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## STUDENT LEARNING, CHILDHOOD & VOICES | RESEARCH ARTICLE

# Kids, cash and sustainability: Economic knowledge and behaviors among preschool children

Farhana Borg<sup>1,2\*</sup>

**Abstract:** Although young children are often involved in economic transactions of various kinds in their daily activities, research on their knowledge and behaviors in relation to sustainable economics is limited. Sustainable economics deals with, among others, equity, corporate responsibility and poverty reduction. This study explored preschool children's knowledge and behaviors concerning the use of money, their willingness to share resources with friends and the sources of knowledge about economic issues. A total of 53 final-year preschool children, aged five to six, from 12 preschools in Sweden were interviewed. The data were analyzed using content analysis and the Structure of the Observed Learning Outcomes (SOLO) Taxonomy. The results show that the children considered money to be used largely for the consumption of goods, while a few wanted to donate their money to the poor and to family members. With regards to sharing resources, most of the children wanted to share their candies with friends, and they viewed sharing as being a social responsibility or a moral obligation, or as being fair. Parents, teachers and the children themselves were reported as the main sources of knowledge. Further research is needed to enhance our knowledge about how to integrate economic sustainability issues in preschool.

**Subjects:** Education - Social Sciences; Behavioral Sciences; Economics; Education; Childhood; Early Childhood; Early Years

**Keywords:** consumption; early childhood education; economic behavior; knowledge; practices; savings; SOLO Taxonomy; sustainable development

### ABOUT THE AUTHOR

Farhana Borg is a lecturer at the early childhood teacher education program at Dalarna University and a doctoral candidate at the Institute of Applied Educational Science at Umeå University in Sweden. She has long experience of working with early childhood care and development programs internationally. Her research interests include environmental and sustainability education, early childhood education and care, child rights, parental influence on children's learning, and educational policy and practices.

### PUBLIC INTEREST STATEMENT

Although young children are involved in different kinds of economic activities at home and preschool, little information is available on how children would like to use their money or share their resources, and what their perceived sources of knowledge are. Fifty-three preschool children were interviewed. This study found that children would like to buy toys, ice-cream and candies with their money. Some of them would also like to save some money for the future to be rich or to be able to buy expensive things. A few children wanted to donate their money to poor people or relatives. Most of the children perceived their parents and their teachers as main sources of knowledge about economic issues. Knowledge about children's economic understanding and behaviors is important to contribute to the development of educational practices, which are intended to prepare children to be responsible consumers in a world with limited resources.

## 1. Introduction

Children are often either directly or indirectly involved in economic transactions of various kinds in their daily activities at home, at preschool and in the playground (Näsman & von Gerber, 2002; Webley, 2005). However, research on preschool children's knowledge and behaviors in relation to economic issues is limited. This study explores preschool children's knowledge and self-reported behaviors when it comes to the use of money, their willingness to share resources, and their sources of knowledge in terms of economic issues.

The term “economics” often relates to “acquisition, management and distribution of assets”, but children's understanding of economics does not always relate to the cash economy; rather, it can be “their understanding of swapping, doing chores and gift-giving” (Webley, 2005, p. 43). Children are growing up in a rapidly changing world where an understanding of economic issues is considered to be crucial at both the individual and national levels in order “to cope with the everyday economics of earning, consuming, borrowing and saving in a world that is increasingly economically complex” (Hutchings, Fülöp, & Van den Dries, 2002, pp. 1–2). Preschool can be a context in which there is opportunity to learn about such issues, because at preschool children play and talk about different things of which these issues are a natural component (Näsman & von Gerber, 2002).

Evidence from longitudinal studies indicates that high-quality preschool education has positive effects on children's well-being, health, and intellectual and social behavioral development (Muennig et al., 2011; Siraj-Blatchford, Taggart, Sylva, Sammons, & Melhuish, 2008). Researchers have stressed the need for introducing issues related to sustainable development in early childhood education, acknowledging that children are capable of sophisticated thinking (Davis, 2005; Pramling Samuelsson, 2011; Siraj-Blatchford, Smith, & Samuelsson, 2010). Sustainable development is defined as being “development that meets the needs of the present without compromising the ability of future generations to meet their needs” and has three intertwined dimensions—namely environmental, social, and economic (The World Commission on Environment & Development [WCED], 1987, p. 43). The environmental dimension of sustainability includes, among others, the following issues: natural resources, climate change, and ecosystem services; the social dimension addresses, for example, human rights, gender equality, cultural diversity and health issues; and the economic dimension refers to poverty reduction, equity, corporate responsibility, accountability and market economy (United Nations Educational, Scientific and Cultural Organization [UNESCO], 2006). This paper focuses on the economic dimension of sustainability, which deals with concerns about the consumption of goods, corporate responsibility and accountability. In this paper, the terms “sustainable development” and “sustainability” are used synonymously as they both are widely recognized in this field.

For the development of a sustainable world, social learning is considered to be a powerful tool (Wals & van der Leij, 2007). According to Bandura (1977), children are surrounded by many influential role models in society (for example, parents, friends, teachers, and TV characters), and children learn from them as well as from one another through observation, imitation and modeling. In terms of the sources of children's knowledge, research shows that it is difficult to trace from where children learn something as “learning is rarely a result of a single experience” (Palmer, Suggate, & Matthews, 1996, p. 326).

### 1.1. Education for sustainability in Swedish preschool

In Sweden, preschools offer early childhood education and care for children until they start school, which normally is at age six or seven. The Swedish National Curriculum for the preschool (Skolverket, 2011) emphasizes children's active participation in society and the need for developing a sense of empathy and concern for others. The Swedish National Agency for Education describes sustainable development as being shared responsibility and solidarity between generations, genders, communities and countries (Skolverket, 2014). However, the term sustainable development is not explicitly used in the curriculum for the preschool (Skolverket, 2011). Although research concerning early

childhood education for sustainability is on the rise, literature reviews show that only a few studies have focused on the economic or social dimensions of sustainability (Davis, 2009; Hedefalk, Almqvist, & Östman, 2015). Therefore, studies are needed to enhance our knowledge about preschool children's understanding and behaviors in terms of everyday economy, so that the development of economic preferences and practices can be addressed in policy and curriculum activities.

### 1.1.1. Aim and research questions

The aim of this study was to explore the knowledge and self-reported behaviors of Swedish preschool children with regards to the economic aspects of sustainability focusing on the use of money, the sharing of resources and the sources of knowledge. This study attempted to answer the following research questions:

- How do children like to use money that they receive?
- To what extent are children willing to share resources, such as candies, with friends?
- How do children justify their choices when it comes to the use of money and the sharing of resources with others?
- What are children's "perceived" sources of knowledge when it comes to sharing resources with others?

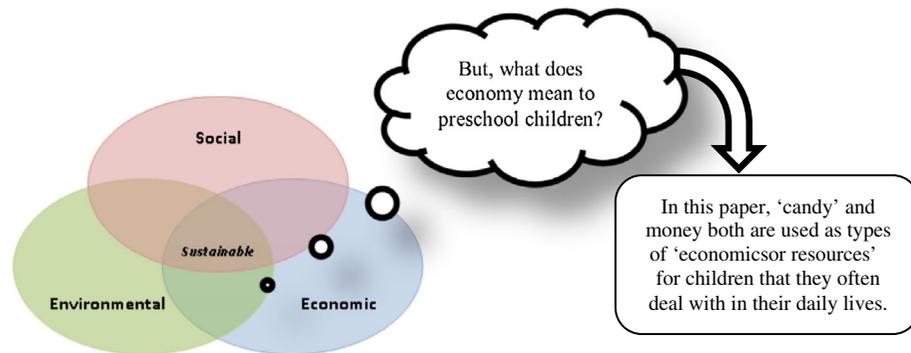
In this text, the term "knowledge" does not refer to the theory of knowledge, which is often associated with the notion of truth (von Glasersfeld, 1990); rather, it refers to the descriptions of children's self-reported thoughts and views on issues related to their everyday lives. Concerning the sources of knowledge of economic issues, this study intended to explore children's 'perceived' sources of knowledge as the actual sources are difficult to trace (Palmer, Grodzinska-Jurczak, & Suggate, 2003). Therefore, the term "perceived sources" is used to indicate that the sources are reported by the children themselves rather than there having been a search conducted for the actual sources of knowledge.

## 2. Conceptual and theoretical perspectives

To promote sustainable development in all aspects of education and learning, the Decade of Education for Sustainable Development (DESD) was declared from 2005 to 2014 (UNESCO, 2006). That period has ended, and in the 2030 agenda for sustainable development, a new plan of action has been outlined for people, planet and prosperity (United Nations, 2015). The 2030 agenda sets 17 Sustainable Development Goals (SDG) to address the rising inequalities within and among countries and to transform the world into a better place. The agenda addresses the equal right to economic resources (SDG 1) and ensures that all learners acquire the knowledge and skills necessary to promote sustainability by 2030 (SDG 4.7).

The underlying issues of sustainable development are complex and the main area of complexity lies in the divergence between economic development and natural environment (Fien & Tilbury, 2002). Children's understanding of economics begins through their participating in and being taught about the economic world of the adult (Webley, 2005). In this study, "candy" was used as an example of a children's possession along with cash, because "candy" was regarded as a kind of "economics" for children that they often deal with in their daily lives at home, at preschool and in the playground, and about which they have decision-making rights (Näsman & von Gerber, 2002; Webley, 2005). The economic dimension of sustainability was operationalized by using 'candies' as an example of a resource for young children (see Figure 1).

**Figure 1. Conceptualization and operationalization of the economic dimension of sustainability for preschool children.**



This study uses the constructivist theories, namely Bruner's (1966) "iconic representation" and Bandura's (1977) "social learning theory", to design research questions, and to analyze and interpret children's responses to economy-related issues. Bruner (1966) proposes three modes of representation—*Enactive* (action-based), *Iconic* (image-based) and *Symbolic* (language or symbol-based)—in which information or knowledge is stored and encoded in the memory. The author argues that young children (from the age of one to six) construct their knowledge by organizing and categorizing information through *Iconic* representation (image-based) in which information is stored visually in the form of images and diagrams. Disagreeing with Piaget's (1952) notion of readiness, which focuses on the child's cognitive stage of development, Bruner (1960) proposes that a child of any age is capable of understanding complex information; even very young children are capable of learning any material if the instruction is organized appropriately. As suggested by Bruner (1960), development is a continuous process and is not fixed in a series of stages. He also emphasizes how the social environment and social interactions are the key elements in the learning process of children. Bandura (1977) mentions that social learning is considered to be powerful among children. Evidence from empirical studies also supports this view (Musser & Diamond, 1999; Palmer et al., 1996). Social learning is also described as being "a transitional and transformative process that can help create the systemic changes needed to meet the challenge of sustainability" (Wals & van der Leij, 2007, p. 32).

### 3. Method

#### 3.1. Design and data collection

A qualitative approach was used to explore the phenomenon of young children's knowledge and practices in terms of economic issues related to sustainability. Docherty and Sandelowski (1999, p. 177) argue that the best way to understand a child's world is by seeing it through their eyes rather than through adults' eyes, as children are considered to be "the best sources of information about themselves". Children have the right to express their views on all matters of concern to them (United Nations Children's Fund's [UNICEF], 1989) and "giving children a voice will also empower them to greater levels of participation and involve them as young citizens" (Lloyd-Smith & Tarr, 2000, p. 70). This study, therefore, was designed from a "child perspectives", which is created by adults so as to understand the perceptions and actions of children as realistically as possible (Sommer, Samuelsson, & Hundeide, 2009). By way of this design, children's voices are heard and respected (Kyronlampi-Kylmanen & Maatta, 2011; Mackey & Vaealiki, 2011); further this study adheres to the relevant ethical codes and guidelines that are applicable when research is being conducted on children's perspectives (Lindsay, 2000).

This study used a non-probability purposive sampling to include six eco-certified and six non-eco-certified preschools from six of the 209 municipalities in Sweden, which has a total of 9,800 preschools (Skolverket, 2017). In order to reduce the environmental impact of traveling, and the cost and time of the study, the preschools were selected from municipalities of various sizes as close as possible to the university where the study was being conducted.

**Table 1. Overview of participating children and preschools**

	Green flag	Preschool for sustainable development	Non-eco-certified	Total
Preschools	4	2	6	12
Children	17	21	15	53
Girls	12	11	6	9
Boys	5	10	9	24

Although there are no specific rules when it comes to determining an appropriate sample size in qualitative research, Patton (1990) has suggested that it is determined by the aim of the study as well as available time and resources. However, to attain saturation—i.e. obtaining most or all of the perceptions (Glaser & Strauss, 1967)—Morse (1994) and Creswell (1998) have argued for sample sizes ranging from 5 to 50 depending on the research approach. To achieve a sufficiently large sample in this study, information letters were sent to the guardians of 146 children in their final-year of preschool. The reason for choosing final-year preschool children, aged five and six, was to investigate their knowledge and practices in terms of economic sustainability issues upon their completion of preschool. Guardians of 53 children consented to their children’s participation. Fifteen of them had children in non-eco-certified preschools and 38 had children in eco-certified preschools (see Table 1).

Six of the preschools worked explicitly with education for sustainability (EFS) with a whole-school approach addressing environmental and sustainability-related issues. Four of the six preschools had been awarded the “Green Flag” certification by the Keep Sweden Tidy Foundation, which is part of the Eco-Schools Program of the Foundation for Environmental Education (FEE). Within this program, a preschool may be awarded a “Green Flag” certification if it works systematically with EFS toward the goals and guidelines of the Swedish National Curriculum for the Preschool. In 2016, about 1,600 preschools in Sweden were certified “Green Flag” (Håll Sverige Rent, 2016). Similarly, two of the six preschools were awarded a “Diploma of Excellence in Sustainability” by the Swedish National Agency for Education. These preschools had applied for the recognition and worked with a number of sustainability-related criteria. The Swedish National Agency has certified 248 preschools for their work with EFS awarding them with the certification “Preschool for Sustainable Development” (Skolverket, 2014). Every third year, a preschool has to submit a renewal application with an evaluation report in order to continue to be certified. In this paper, preschools that are certified “Green Flag” or “Preschool for Sustainable Development” are called “eco-certified” preschools.

Children were interviewed individually and, if permitted by the child and his or her guardians, the interview was audio-taped so that note-taking could be avoided during the conversation. As this study explored children’s knowledge and self-reported practices, the interview was found to be a suitable method, which facilitated collecting data from the children. Parents of 49 children granted permission for audio-recording, whereas parents of four children did not. The researcher spent time with the participating children ahead of the interviews, showing illustrations and playing with soft toys, the intent being that this might open the door for “equal, confidential and open interaction” (Kyronlampi-Kylmanen & Maatta, 2011, pp. 87–88). Sometimes the interview questions were repeated or asked in different ways. Each interview took approximately 5–10 min. Four children were interviewed in the presence of their teachers as per their own wishes. All interviews were conducted in Swedish, and most parts were transcribed and then translated into English. The interviews were carried out between February and June 2015.

### 3.2. Semi-structured interview instrument

A semi-structured interview instrument with closed- and open-ended questions was developed (see Figure 2). The intention with the open-ended questions was to help avoid a single answer type of response and to gain an inner view of the children’s own world (Greig & Taylor, 1999; Kvale, 1996). Consideration was given to the age group of the participants in this study and as such, a colored

**Figure 2. Excerpt from the semi-structured interview instrument.**

1. If you had money, what would you do with it?  
\_\_\_\_\_

2. What would you do if you had a bowl of candies and your friend came and wanted to have some candies from you?

- I would give all the candies.
- I would give about half of the candies.
- I would give a few/very few candies.
- I would not give any candies.



3. Why would you [child's response]?  
\_\_\_\_\_

4. From where did you learn about sharing or not sharing candies with friends?  
\_\_\_\_\_

illustration was developed based on the study theme and was used as an artifact during the interview process. To facilitate the conversation between the interviewer and the child, a cuddly puppet was used together with the illustration and a sitting mat with a picture of two puppies. The conversation started with informal play with the soft toys, and then the illustration was shown. Children were asked what they would do with their money if they had some; the second question was whether they would be willing to share candies with a friend who did not have any. Children were also asked a multiple choice question about how much they would share candies with their friends, with four answering options ranging from *I would not give any candies* to *I would give all the candies*. Then they were asked why they would/would not share candies, and from where they learned to share/not to share with a friend. An excerpt of the interview questions with the illustration can be found in Figure 2. The first page of the instrument included demographic information, e.g. age, sex and type of preschool, which is not shown in Figure 2.

The interview instrument was pre-tested among eight children, aged five to six years, in a preschool, which was not included in the main study. The aim was to check the question design, question wording, appropriateness of the illustration, interview techniques and timing. Necessary changes were made to improve the quality of the instrument. Face validity of the instrument was determined in consultation with three senior researchers.

### **3.3. Ethical considerations**

Research involving young children has the same ethical requirements as do other types of research (Lindsay, 2000). That is why ethical approval was sought from the Regional Ethical Board in Umeå, Sweden, and this study was conducted after the board granted ethical approval. Informed consent to participate voluntarily in the interviews was obtained from the children themselves and their

guardians. Confidentiality was taken into consideration while conducting and performing the study. Children’s participation in the study could be discontinued at any time without any reason being given.

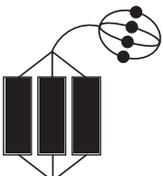
### 3.4. Analysis

Data from the interviews to the open-ended questions were analyzed thematically. The responses of each individual child were read and reread as a means of familiarization, and notes were kept of interesting patterns, inconsistencies and contradictions (Hammersley & Atkinson, 1983). Children’s responses were categorized based on the most significant aspects of their statements from a holistic perspective. The responses were coded under different categories. The frequencies of codes in the texts were counted. After performing open coding of children’s responses line by line, the codes were then grouped into categories, which were given specific names based on similar meanings, phenomena or contents, and were analyzed.

To systematically categorize, classify and analyze qualitative data, the five levels of Biggs and Collis (1982) Structure of the Observed Learning Outcomes (SOLO) Taxonomy were operationalized and applied as an analytical tool. The levels include the prestructural level (a student misses the point), the unistructural level (a student has an idea or carries out a task, which can be relevant but inconsistent with each other), the multistructural level (a student has several ideas, but the relationship between them is missing), the relational level (a student links or connects the ideas), and the extended abstract level (a student has extended ideas and can generalize or create a new understanding): see Table 2. The SOLO Taxonomy has previously been used to measure cognitive learning outcomes and understanding in various subject areas among elementary and high-school students (Biggs & Collis, 1982; Chan, Tsui, Chan, & Hong, 2002; Winberg & Berg, 2007). In this study, the SOLO Taxonomy was used to analyze the quality and complexity of children’s responses concerning the use of money and sharing of resources. The unistructural and multistructural levels are quantitative phases that relate to surface learning outcomes, while the relational and extended abstract levels are qualitative phases, indicating deep learning outcomes of the themes (Biggs & Tang, 2011; Hattie & Yates, 2014).

For young children the five levels of the SOLO Taxonomy have been adapted with “no relevant idea (prestructural)”, “one relevant idea (unistructural)”, “many relevant ideas, but no link (multistructural)”, “linked ideas (relational)” and “extended ideas (extended abstract)” (Borg,

**Table 2. Operationalization of the SOLO Taxonomy**

SOLO level	Prestructural	Unistructural	Multistructural	Relational	Extended abstract
					
	No relevant idea	One relevant idea	Many relevant ideas	Linked ideas	Extended ideas
Examples from children’s responses in this study	I don’t know or I have not thought about it	I will share a few candies with my friend	I will give a few candies to my friend. I like to share things with friends	I would share an equal number of candies with my friend, because people must share with each other and it is fair	I will give half of my candies to my friend, because I think it (candy) should be fairly distributed so that both of us get an equal share. Otherwise, it’s unfair. I want to be kind towards my friends. I want to share with my friends

Source: Biggs and Collis (1982).

Winberg, & Vinterek, 2017a, 2017b; Hook, Wall, & Manger, 2015). According to Biggs (2016), the SOLO Taxonomy classifies “learning outcomes in terms of their complexity, enabling us to assess students’ works in terms of its quality and not of how many bits of this and of that they got right”. Examples of how the SOLO Taxonomy is used in this study to classify children’s justifications for sharing candies with friends are shown in Table 2.

According to Pam Hook (personal communication via e-mail in February, 2016), an indicator of a relational learning outcome for an early learner is when a child explains “why” by using “because” or “so that”. Hook uses a ‘double because’ as an indicator of extended abstract understanding. The example in Table 2 “... Otherwise, it’s unfair. I want to be kind towards my friends”. shows that the child’s idea is extended into a new context, which is about social justice and care for others.

Children’s justifications for the use of money and for sharing resources with friends were scored on a scale ranging from 0 (prestructural) to 4 (extended abstract) using the SOLO Taxonomy. The scores were calculated to investigate the qualities and complexities of children’s justification in terms of surface learning and deep learning outcomes by the time they completed preschool.

#### 4. Results and discussion

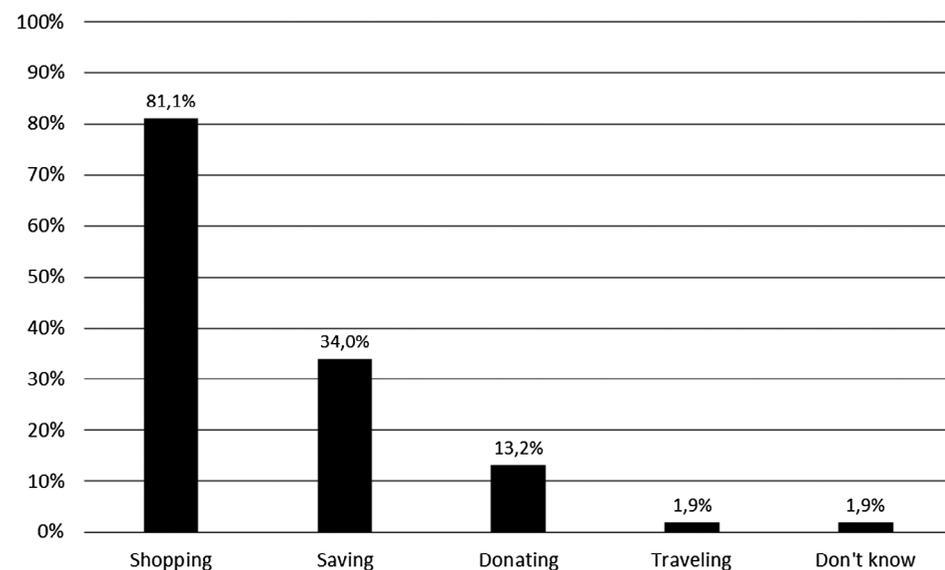
The findings are presented under the following headings: Use of Money; Sharing Resources with Friends; Children’s Justifications for Their Choices; and Sources of Knowledge of Economic Issues.

##### 4.1. Use of money

All participating children, except one (Child no. 33), could share at least one idea about what to do or how to use money if they received any. However, some of the children mentioned more than one ideas about use of money. Their responses fell into five categories: *Shopping*, *Saving*, *Donating*, *Traveling* and *Don’t know* (see Figure 3).

A majority of the children ( $n = 43$ ) wanted to use their money to buy toys, candies, ice cream, pets, and other things. They said that “I would buy a trampoline with my money” (Child no. 30); “I want to buy cars, toy cars” (Child no. 5); and “I would buy something good” (Child no. 1). Thus, children considered money to be somehow related to buying goods, which indicates their intentions for a higher level of consumption, which can be a matter of concern in a world where resources are limited. This finding is consistent with the study by Näsman and von Gerber (2002), which showed that most children considered buying candies, toys and Pokémon cards with their money, and they wanted to plan for shopping on a long-term basis using savings to buy something more expensive.

Figure 3. Children’s responses in terms of the use of money.



The findings showed that saving money was a familiar concept to many children ( $n = 18$ ), and they wanted to save to be rich and to be able to buy more expensive things in the future, like trampolines or remote-control cars. Some children could connect the cause and effect of their choices in terms of the use of money, such as “I want to save my money because I want to be rich. It is good to work, because then you get money” (Child no. 45); and “If I had money, I would save it or buy something with it. If you save, then you can buy more things with your money” (Child no. 41). These findings are in line with earlier studies where children wanted to save money to buy more expensive toys in future (Berti & Bombi, 1981; Näsman & von Gerber, 2002). Moreover, studies on children’s savings have reported that by the age of six, children know that saving is positive, and their saving behavior increases as they grow older (Furnham & Thomas, 1984; Sonuga-Barke & Webley, 1993).

The findings of this study also showed that some children ( $n = 7$ ) wanted to donate money to the poor, as well as to their parents, siblings and cousins. One child argued that:

If I had money, I would give it to the poor, because they don’t have so much money. They cannot do anything. Because poor people have very little money. Imagine if they only have 10 kronor and don’t have anything else. Then I would like to give some money to them. (Child no. 28)

Another child stated that “I would give my money to my mother and father” (Child no. 18). Examples of altruistic consumption are consistent with the findings of Näsman and von Gerber (2002) in their study. However, their examples were restricted to benefiting only the family members of the children. The extension of donating money to the poor may be a result of today’s children having a greater awareness of the global situation through TV programs and other sources, or the more recent and visible phenomena of migrants begging in Sweden.

#### **4.2. Sharing resources with friends**

A majority of the children ( $n = 48$ ) wanted to share their candies (resources) with their friends, whereas a few children ( $n = 5$ ) did not want to share any candies. However, none of the children were willing to give away all their candies to their friends. Children’s justification for sharing or not sharing candies with friends was based on the most significant aspects of their statements from a holistic perspective, and three common categories emerged: *Care for Others*; *Fairness and Social Responsibility*; and *Self-Regard*.

##### **4.2.1. Care for others**

Most of the children ( $n = 17$ ) reported that sharing candies with friends is kind. They described the reason for sharing as being that they did not want their friends to be sad. Some of them stated that it is mean not to share with others and that it is not good to keep everything for oneself. For example, one child explained that

I will give some candies to my friend. I will share ... (because) sharing with others means you are kind and the boy (in the illustration) will be happy. You should be kind to your friends. It is not nice to keep everything for yourself. (Child no. 28)

Children’s justifications for sharing candies with their friends indicated a great deal of kindness and empathy toward other people in terms of their emotions and economic situation.

##### **4.2.2. Fairness and social responsibility**

Some of the responses of the children ( $n = 12$ ) were about being fair and just. For example, one child said that “I will share an equal amount of candies with my friend, otherwise it will be unfair” (Child no. 25). Another child argued that “I would give half of my candies to my friend who doesn’t have any. Because we should have an equal share. Otherwise it is not fair. People should share with each other” (Child no. 18). Here, the child’s justification for sharing extended to the ideas of being fair and socially responsible.

Some children justified sharing as being a social responsibility, whereas other children mentioned it as being fair or being a moral obligation. This finding is in line with the intentions of the Swedish National Curriculum for the Preschool, which states that preschools “should aim to develop the child’s sense of empathy and concern for others” (Skolverket, 2011, p. 3). Social justice and fairness are considered to be important for a sustainable society where people can live together in harmony, which has also been argued by Davis (2015).

#### 4.2.3. *Self-regard*

A few children ( $n = 6$ ) were concerned that sharing with others might lead to their running out of candies (resources). For example, although willing to share, one child noted that “I would give half, so that half of the candies are left for me. Otherwise everything will be finished” (Child no. 15). Another child raised a question about personal responsibility and explained that “I will never give any candies to anyone. If you would like to eat candies, you should buy them yourself. I will hide somewhere to avoid sharing things with others” (Child no. 31). According to Johansson and Johansson (2003), children learn to master the moral rules in school, and what to say or how to feel in talks with their peers. The findings of this study could be interpreted along this line, as most of the children’s justifications for sharing resources sounded morally correct. However, it could also be that the children actually had learned values and norms that contribute to a sustainable society. It could be argued that even though some of the children might have responded in accordance with what they thought was expected of them, other children freely shared their opinions and they were not concerned about what was correct or not.

#### 4.3. *Children’s justifications for their choices*

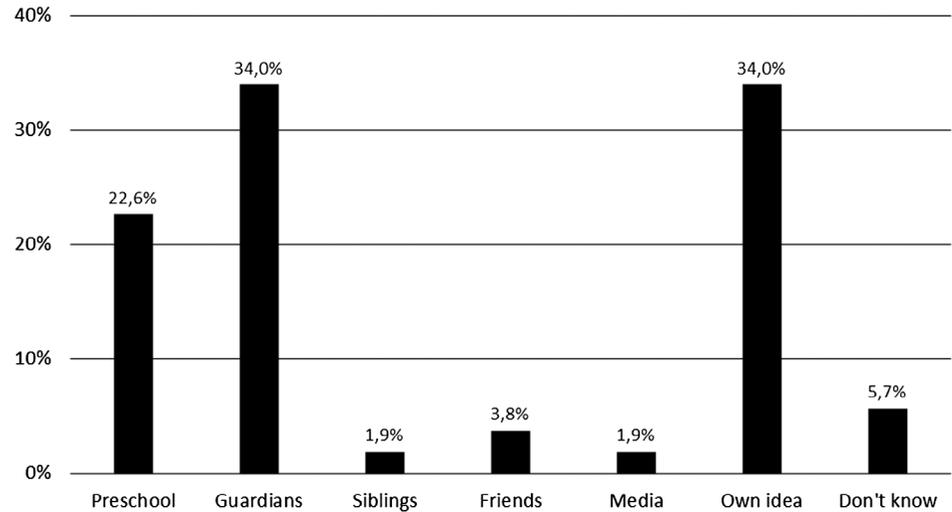
The SOLO levels of children’s justifications about the *Use of Money* and *Sharing Resources with Friends* indicated that by the age of five, children are capable of justifying their choices when it comes to economic issues related to sustainability, but their level of justification varies. The majority of the children’s justifications about the *Use of Money* demonstrated a surface-level understanding, where they came up with one or more ideas, but the relationships between those ideas were missing. On the other hand, most of the children’s justifications concerning the *Sharing of Resources* were at the relational level, which indicated deep learning outcomes. With regards to sharing resources with friends, the findings showed that the most of the children at eco-certified preschools responded on a deep learning outcomes level, whereas the majority of the children at non-eco-certified preschools responded on a surface level of learning. Consistent with this findings, a study in Scotland that explored children’s attitudes toward sustainable transport reported that children who were in whole-school approach programs, such as eco-schools or schools that promote a healthy lifestyle, had a deeper understanding of the issues than did children who were not (Davison, Davison, Reed, Halden, & Dillon, 2003). These results indicate that there is a need to conduct a large-scale study to explore whether eco-certification of preschools has a role to play in the development of children’s understanding, attitudes and practices about economic issues related to sustainability. Such evidence is needed for practitioners and policy-makers to improve educational practices and to facilitate policy-making (Broekkamp & van Hout-Wolters, 2007).

#### 4.4. *Sources of knowledge of economic issues*

All participating children, except three, were able to give the sources of their knowledge of sharing resource (see Figure 4). Most of the children ( $n = 18$ ) talked about learning about sharing from their parents. A similar proportion ( $n = 18$ ) claimed that their responses concerning the use of money and the sharing of resources were based on their own ideas or knowledge. Some of the children ( $n = 12$ ) indicated that the preschool was their source of knowledge.

To some extent, the findings about children’s sources of knowledge in this study differ from those of Palmer et al. (1996). For example, their six-year-olds reported TV and books as their main sources of knowledge. There could be several reasons for these differences: one reason could be that in Sweden children normally start school when they are seven years old, which means that they might not have developed their reading capacity at the age of five or six. Another reason could be that the

**Figure 4. Children’s “perceived” sources of knowledge about economic issues.**



study of Palmer et al. (1996) investigated children’s sources of knowledge on environmental issues, whereas this study explored sources of knowledge on economic issues. Barrett and Buchanan-Barrow (2005) argue that children are sometimes heavily reliant upon indirect and socially mediated sources of information for learning about various societal phenomena since they do not always have first-hand personal experiences.

#### 4.5. Method discussion

The participants in this study represented different types of preschools, which provided useful information about the studied phenomenon of children’s ideas about the use of money, their willingness to share resources with friends, and their sources of knowledge. It is likely that saturation was attained, since the sample size suggested for qualitative research has been exceeded.

A larger proportion of children from eco-certified preschools attended in this study due to the fact that most of the guardians of children at eco-certified preschools consented to their children’s participation in this study, whereas this was not the case at non-eco-certified preschools. The reason for this is not known, but it may be related to the interests and values of the parents themselves.

The use of an illustration and a sitting mat with pictures of puppies was found to be helpful in creating a friendly atmosphere during the interviews, which is in line with a literature review reporting that such artifacts had been useful in previous studies (Clark, 2005). Interviewing young children about economic aspects of sustainability without such artifacts would have otherwise been impossible.

The adaptation of the SOLO Taxonomy for young children was found useful for systematically assessing and classifying the open-ended responses about the justification of the use of money and of the sharing of resources. Applying the SOLO Taxonomy in the content analysis of children’s justifications for sharing resources and using money demonstrated that children’s levels of understanding varied. The SOLO Taxonomy facilitated the analysis of the quality and complexity of children’s responses, and can therefore be utilized as an analytical tool, even in early childhood education research.

#### 5. Conclusions and implications

This study provides insights into Swedish preschool children’s knowledge and behaviors with regards to the use of money, the sharing of resources (candies) with friends, and their sources of knowledge. The results show that by the time the participating children completed preschool, they considered money to be used largely for the consumption of goods, although some of the children wanted to

save, their intention being to become rich enough so as to afford more expensive goods in the future. However, a few children expressed their wish to donate their money to the poor and to family members. With regards to sharing resources, a large majority of the children wanted to share their candies with friends, and they viewed sharing as being a social responsibility or a moral obligation or as being fair, although a couple of children expressed concerns about how their sharing might lead to their running out of candies or resources. In general, the children tended to have a higher degree of complexity in their understanding of the sharing of resources than the use of money. Both the parents and the preschool teachers seemed to play important roles in children's learning of economy-related issues.

Our knowledge about preschool children's understanding and behaviors concerning economic issues related to sustainability remains limited. It is therefore important to enhance our understanding about children's knowledge and behaviors related to economic issues, especially at a time when the world is facing challenges of economic unsustainability, as such knowledge may contribute to the development of educational practices at preschool. This is particularly relevant to the Education 2030 Framework for Action and its target that asks to ensure that children acquire knowledge and skills that are needed to create a sustainable society. Thus, further research on economic thinking in preschool children and on education in economic sustainability in preschool is needed.

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