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Early childhood educators and sustainability

Sustainable living and its materialising in everyday life

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The aim of this study is to explore a sustainable lifestyle and its materialising in the everyday life of Finnish early childhood educators (n = 219) from the Helsinki Metropolitan Area, Finland. The data were collected during 2012 using a semantic differential technique. The data were analysed using quantitative methods. We identified a gap between early childhood educators' thinking (importance of sustainable living) and actual behaviour (materialising of sustainable living). The gap was the narrowest in favouring a vegetarian diet. The largest gap was in replacing goods and equipment only when broken. Increasing activity in non-governmental organisations seems to be a good way of narrowing the gap between thinking and behaviour in general. According to our findings, sustainable living was divided into two orientations: a regional and a temporal orientation. The age of the early childhood educators correlated with sustainable lifestyles. Older respondents seemed to have a more sustainable lifestyle. Our main conclusion is that the fundamental target for human growth is to expand the sphere of human responsibility towards regional and temporal orientations.

Keywords: sustainable living, education for sustainable development, early childhood educators, early childhood education and care.

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Introduction

Sustainable development (sustainability) is a notion of everlasting good life for all on Earth. It can be understood as a process, target or value (Haughton 1999, Salonen 2010). The power of sustainable development is based on a holistic approach with a long-term and interconnected ecological, social, and economic orientation (Bettencourta & Kaurc 2011, Ehrenfeldt 2008, Senge et al. 2008).

Early childhood educators can be agents of change in a society. The years from birth to six have been recognised as crucial learning years for child development. During those years, children develop their basic values, attitudes, skills, behaviours, and habits, which will have an impact on their life for a long time to come. Therefore, early childhood educators have enormous potential to foster values, attitudes, skills, and behaviours that support sustainable development. This is, in the frame of sustainable development, cultural diversity, gender equality, democracy, and the use of natural resources. Early childhood educators transmit their values and attitudes through education. They are role models for children (Chawla 1998, Davis & Gibson 2006, Heckman 2006, Wells & Lekies 2006).

This research was conducted in the Helsinki Metropolitan Area, Finland. In Finland, Early Childhood Education and Care (ECEC) is steered by the Ministry of Education and Culture. ECEC is a service for children from 1 to 6 years, and a service for the family. Pre-primary education refers to education and care provided the year preceding the start of compulsory education. Pre-primary education is directly related to early childhood education and care, and primary education. Pre-primary education is offered for all, irrespective of their place of residence, language, and economic standing. The care and education staff operating at day-care centres includes kindergarten teachers, special kindergarten teachers, social educators or bachelors of social sciences, bachelors and masters of education, practical children's nurses, kindergarten practical nurses, and practical nurses. The ECEC consists of four perspectives: society, children, parents, and staff (Ministry of Education and Culture 2018).

The Finnish National core curriculum for early childhood education and care structures the objectives of Education for Sustainable Development (ESD) combining well-being and a sustainable way of living:

> "All activities take into account the necessity of an ecologically, culturally and economically sustainable way of living. Everyday choices and actions reflect a responsible relationship

> with nature and the environment. Early childhood education and care promotes the shared use of equipment and facilities, moderation and economy in using them as well as repairing and reusing them" (EDUFI 2016, p. 33).

Thus, the curriculum underlines the embedded systematic approach towards ESD.

Towards sustainable society in the Era of Anthropocene

In the Era of Anthropocene, human activity is the biggest single factor affecting the future of the planet (Crutzen & Stoermer 2000). These human-incurred changes of the Earth and its atmosphere occur more quickly than the natural planetary changes. For example, 74% of the observed global warming is due to human activity (Huber & Knutti 2012). For this reason, sustainability is linked to fundamental changes in a society. It is about "long term transformation of basic aspects of the present industrial economic system" (Baker 2006, p. 47). In other words, sustainability is an existential challenge that involves all people in the global community. It requires changing the systems that shape human behaviour (Haughton 1999, p. 235). It deals with culture, ideals, and values. Values can be defined as abstractions that guide our choices (Kluckhohn 1954, p. 395). Morals protect what we value. They guide us in how we balance the things that we value and the everyday choices we make in life. Education has a great role to play in this fundamental social change because it deals with the processes of human growth that tie people to the systems, institutions and communities important to their well-being (Hämäläinen 2003, p. 76). However, a sustainability-promoting way of life is a challenge for the education system itself. Currently, the aims of education mainly focus on national economic growth in industrial countries. Educators are supposed to help children to learn how to be economically productive rather than to think critically and become empathetic human beings (Nussbaum 2010). By doing so, educators reproduce a present culture. Rather than only reproducing the present culture, it would be essential for all of us to learn what it means, in practical terms, to live in harmony on Earth (Martusewicz et al. 2015, p. 19, Foster et al. 2018).

Human beings are fully dependent on nature. There is no human society without a sustaining ecological ground, and there is no economy without people (Åhlberg et al. 2015, p. 231–233). From the point of *ecological sustainability*, it is alarming that the ability of ecosystems to

sustain future generations can no longer be taken for granted (Ripple et al. 2018, MEA 2005, Blunden & Arndt 2016). *Social sustainability* emphasizes human dignity and solidarity. Its foundation is the Universal Declaration of Human Rights. In practical terms, social sustainability promotes inclusion, participation, social identity and social competence (Boström 2012, Hämäläinen & Matikainen 2018). *Economic sustainability* is materialised in a circular economy that is about the effective use of raw material, the energy efficiency of the production process, and manufacturing of long-lasting and recyclable products. On the national level, the increase in economic sustainability can be realized in the form of thriving small-scale entrepreneurship, locally owned companies, and an increase in the companies that are pioneers of sustainable production and services. A transition from industrial society towards the service society is also an example of economic sustainability (Salonen & Åhlberg 2013a).

Temporal and regional orientations overlap in sustainability-promoting life. Ensuring the basis of good life for future generations is a more valuable goal for education than looking for short-term benefits limited to our generation only. The main question for intergenerational justice is "how much sacrifice on the part of the present can be justified or required on the basis of obligations to the future?" (Norton 2005, p. 321). In a complex world, there is a lot to be gained by transforming questions of yes-or-no into questions of more-or-less. Yes-or-no builds confrontation but more-or-less lends itself to trade-offs (Solow 1998). The way forward is clear; most beneficial actions combine a temporal and a regional orientation. These actions indicate planetary orientation that maintain diverse life and intergenerational justice on local and global levels (Barry 2002, Bauman 2008, Dobbelt 2008, pp. 139–145, Kidder 1995, pp. 18–25, Marshall & Toffel 2005). See Table 1.

Life orientation	Individual			Collective					Planetary
Moral circle	I	My family	Friends and relatives	My nation	All people	Human beings and animals	Human beings, animals and plants	Ecosystems	Planet Earth

Table 1. Principles of change and a path towards a sustainable future in the Era of Anthropocene, from left to right (adapted from Salonen & Åhlberg 2012).

Intercultural cooperation is at the centre of human survival (Hofstede et al. 2010). Community brings individuals together in united awareness and feeling, sharing time, energy and information. However, increasing individualism and an emphasis on competitiveness have reduced the attractiveness of cooperation and sharing on local and global levels (Marglin 2008). Social cohesion can be built on the equally shared benefits and disadvantages of development – between developing and developed countries. This is important because "people are the instruments and beneficiaries, as well as the victims, of all development activities" (Serageldin & Steer 1994, p. 5). Sustainability demands people to shift from human competition to collaboration and from individuality towards a planetary life orientation. This is a way forward because people with community-based orientation are more aware of the wide perspective and relations of sustainable well-being. They also tend to stand for the human rights and possibilities of the future generations (Kasser 2011, p. 207).

Extending the moral circle is crucial because we all form a global community. Simple everyday life is a part of a complex global network of communications, trade and transportation. There is an interconnection between people from different countries simply because our commodities and food are often imported from abroad. In addition, humans are fully dependent on the non-human world, for example, by the food humans eat. Therefore, a transition towards a sustainable society and way of life underlines the importance to expand the moral circle not only to cover people and culture but also animals and other organisms, plants, and life-supporting ecosystems (Salonen 2013, Salonen & Åhlberg 2012).

Early childhood educators as teachers can be agents of change in a society (Bour 2016, Fullan 1993, Freire 2005). Education in the early years has a great impact on the development of values, everyday life choices, and on the gradually growing sense of responsibility (Puroila, Johansson & Estola 2016). The practical early childhood educators´ work is based on their worldview and their knowledge about the world – how it is and how it should be – combined with their personal beliefs, feelings, and emotions (Benjamin & Kuusisto 2016). We still need to learn more about the ways the educators' perceptions, norms, and values are manifested in early childhood education practice and guiding documents (Björk Eydahl 2012). Based on the essential role of the educators, we are interested in early childhood educators' thinking (values and the importance of sustainable living) and their actual behaviour (materialising of sustainable living). We also want to reformulate if there would be differences between socio-demographics. Our specific research questions are:

1. What kinds of gaps can be recognised between respondents' thinking and behaviour?
2. What is the respondents' structure of the sustainable living?
3. Can the respondents be divided by socio-demographics based on elements of sustainable lifestyles?
4. How do the respondents react to increased information about and awareness of the sustainability crisis?

Materials and Methods

Our respondents were Finnish early childhood educators (n = 219) in the Helsinki Metropolitan Area, Finland. Their ages ranged from 19 to 63 years. The median age was 42 years. The data were collected during 2012 by applying a semantic differential technique (Osgood 1957). This technique has been extensively applied to studies that have an evaluative approach (Heise 2010). The method makes it easy to evaluate the meaning of the concepts (Fishbein & Ajzen 2010, p. 79–82).

We applied a structured questionnaire with a measurement tool that consisted of ecological, social, and economic aspects of sustainable development (Salonen & Tast 2013). Each aspect included five items. The operationalisation of sustainable development was, thus, made up of 15 items (Table 2).

Ecological	**Social**	**Economic**
Saving energy	Maintaining civil society	Favouring local enterprises
Favouring vegetarian diets	Consumer's social responsibility	Favouring eco-labelled products
Recycling, composting, and dealing with hazardous waste	Supporting communality, intergenerational link and trust	Life cycle as a criterion for choosing commodities
Use of renewable energy sources	Global poverty reduction	Favouring energy-efficient products
Replacing goods and equipment only when broken	Low perceived value of ownership	Use of services instead of ownership of goods

Table 2. Three aspects of sustainable development in the measurement instrument (Salonen & Tast 2013).

Early childhood educators rated the 15 variables on a six-step scale (1–7). The scale ranged from importance (not important–extremely

important) to the actual implementation of the item (not at all–always, perfectly) in the respondent's individual everyday life. The relatively large scale made it possible to obtain differentiated information about the rated items (Osgood et al. 1957, pp. 36–39). See Table 3.

Recycling, composting and taking care of hazardous waste							
Importance and value of the item (thinking)	not important for me – extremely important for me						
	1	2	3	4	5	6	7
Actual implementation of the item (behaviour)	not at all – always, perfectly						
	1	2	3	4	5	6	7

Table 3. Example of the way of rating the variable (item) on a six-step scale in the structured questionnaire.

We also asked participants' gender, age, and activity in non-governmental organisations. In addition, we asked them to tell us how they react when they get new information concerning sustainability issues.

We are aware of the limitations of the structured questionnaire. Respondents can express their thinking and behaviour only to the questions asked. The other weakness is – even if all the respondents are early childhood educators – that they differ in performance, expectations, expertise, experience, and responsibility (Hufnagel & Conca 1994). In other words, items included in the questionnaire could be both the subject of everyday reflection or a strange issue that the respondent has never thought about. Thus, we know that this may cause inaccuracies in the results.

We started our analysis by identifying the potential gap between thinking (importance of the 15 items of sustainability) and behaviour (actual realisation of the 15 items of sustainability) with a *t*-test. In the other words, we were interested in examining differences between respondents' thinking and behaviour. In practical terms, we tested dependent variables, because the compared means were from the same sample (Field 2009, pp. 324–333). We also analysed the correlation of thinking and behaviour by calculating Pearson's correlation coefficients, ranging from -1 to +1. By doing so we were able to identify the kind of relationship between respondents' thinking and behaviour. However, with this method we cannot draw direct conclusions about causality between thinking and behaviour (Field 2009, p. 179).

Following this, we continued with an explorative factor analysis that was conducted on the 15 items that described the implementation of sustainability in the everyday life of early childhood educators. We were interested in how our respondents behave in everyday life and

how their behaviour can be structured. Factor analysis helps us to understand the structure of several variables (Field 2009, p. 628). In this case, factor analysis helped us to concisely describe the relationships among observed variables because it is a technique for identifying groups of variables. In other words, we were interested to know which items in the set form coherent subsets that are relatively independent of one another. (Tabachnik & Fidell 2007, pp. 607–610). First, we verified that factor analysis could be conducted on the 15 variables. The Kaiser-Meyer-Olkin measure verified the sampling adequacy for the analysis (KMO = 0.9), which is well above the acceptable limit (Hutcheson & Sofroniou 1999, p. 225). Bartlett's test of sphericity, $\chi 2$ (105) = 884.3, $p < 0.000$, indicated that correlations between variables were sufficiently large for principal axis factoring. On the other hand, with the correlation matrix, we verified that the correlations were not too strong (>0.8), so that multicollinearity would prevent presenting results. The strongest correlation was 0.6, which means that the results could be presented (Field 2000, p. 446, pp. 456–457, p. 648).

We applied the Principal Axis Method for factor extraction. The analysis was based on the correlation matrix. With orthogonal rotation (varimax), we reduced small factor loads and enlarged the large ones to help the interpretation of the results (Tabachnik & Fidell 2007, p. 620). The eigenvalue was defined as greater than 1, according to Kaiser's criterion. When applying the Principal Axis Method, there is only a little dependence between factors. We are aware that this makes it easier to interpret the results, but may reduce exemplifying of the phenomenon (Tabachnik & Fidell 2007, p. 637).

Results

What kind of gaps can be recognised between respondents' thinking and behaviour?

We calculated the differences between the importance and actual implementation of the items in order to verify the gap between thinking and behaviours (Table 4). The importance of an item indicates thinking, and the actual implementation of the item indicates behaviours. For vegetarian diets, the difference was the lowest, 0.65 points. We analysed the difference more precisely with a paired *t*-test. Respondents valued vegetarian diets more in their thinking (M = 5.60; SD = 2.4) than they actually followed this diet in everyday life (M = 4.95; SD = 2.4; $t(209) = 5.06$; $p < 0.000$; $r = 0.696$). The confidence interval of the difference was the smallest in favouring vegetarian diets.

This means that the respondent who was thinking that favouring vegetarian diets is important also likely ate a vegetarian diet. On the other hand, the respondent who was thinking that replacing goods and equipment only when broken is important still did not do so in their everyday life very often. Thus, a gap between thinking and behaviour was the broadest in this rated item. Also, in the other 13 variables the difference between the importance of the item and the actual implementing of it were statistically significant or statistically very significant.

Variable	Importance of the variable		Implementation of the variable		Paired samples *t*-test					t	df	Sig.
	M	SD	M	SD	M	SD	Std. Error Mean	95% Confidence Interval of the Difference				
								Lower	Upper			
1. Replacing goods and equipment only when broken	6.4	4.9	5.4	1.2	1.0	4.8	.32	.358	1.64	3.07	218	.002
2. Supporting communality, intergenerational link and trust	6.4	.84	5.3	1.1	1.2	1.0	.07	1.03	1.30	17.21	217	.000
3. Consumer's social responsibility	6.3	.84	4.2	1.3	2.2	1.3	.09	2.02	2.37	24.73	215	.000
4. Recycling, composting, and dealing with hazardous waste	6.3	.96	5.1	1.2	1.3	1.1	.07	1.14	1.43	17.78	218	.000
5. Life cycle as a criterion for choosing commodities	6.3	.86	5.0	1.2	1.3	1.1	.08	1.17	1.47	17.26	218	.000
6. Saving energy	6.2	1.0	5.0	1.1	1.2	1.1	.07	1.07	1.36	16.69	218	.000
7. Favouring eco-labelled products	6.0	.99	4.6	1.3	1.4	1.1	.07	1.26	1.54	19.49	217	.000
8. Use of renewable energy sources	6.0	1.1	4.1	1.3	1.9	1.4	.09	1.76	2.13	20.95	210	.000
9. Favouring energy-efficient products	5.9	1.2	4.5	1.3	1.4	1.2	.08	1.19	1.51	16.67	212	.000
10. Favouring local enterprises	5.8	1.1	4.3	1.3	1.5	1.2	.08	1.38	1.71	18.57	215	.000
11. Global poverty reduction	5.7	1.2	3.5	1.3	2.3	1.4	.10	2.09	2.46	23.72	214	.000
12. Maintaining civil society	5.5	1.1	4.0	1.3	1.5	1.3	.09	1.32	1.67	16.84	213	.000
13. Use of services instead of ownership of goods	5.4	1.2	4.2	1.2	1.2	1.2	.08	1.02	1.35	14.55	207	.000
14. Low perceived value of ownership	5.3	1.2	4.4	1.2	.9	1.2	.08	.781	1.10	11.33	217	.000
15. Favouring vegetarian diets	4.4	1.7	3.6	1.6	.7	1.3	.09	.570	.911	8.55	217	.000

Table 4. Means, standard deviations, and results of the paired samples t-tests between importance of the variable and factual implementation of the same variable.

We calculated Pearson's correlation coefficients for each of the 15 evaluations of the variables (Table 5) in order to determine the variation between respondents' thinking and behaviour. The correlation between the matter considered important and the actual implementation of the matter was the strongest for vegetarian diet, r = 0.70. This

means that there is the variance of 48% ($r^2 = 0.48$) between thoughts that vegetarian diets are important and eating a vegetarian diet in everyday life. Other variables with strong ($r > 0.5$), correlation between importance and actual implementation of the item were Favouring eco-labelled products ($r = 0.59$), Favouring energy efficient products ($r = 0.55$), Recycling, composting, and dealing with hazardous waste ($r = 0.53$), Use of services instead of ownership of goods ($r = 0.52$), and Favouring local enterprises ($r = 0.51$). The weakest correlation between thinking and behaviour was for the item Replacing goods and equipment only when broken. It appears that there are challenges with the circumstances. Early childhood educators want to replace their goods and equipment only when broken, but find this difficult to do in everyday life.

Variable (importance and actual implementing of the item)	n	Pearson *r*
Favouring vegetarian diets	218	.703
Favouring eco-labelled products	218	.587
Favouring energy-efficient products	213	.547
Recycling, composting, and dealing with hazardous waste	219	.530
Use of services instead of ownership of goods	208	.523
Favouring local enterprises	216	.513
Saving energy	219	.497
Low perceived value of ownership	218	.494
Supporting communality, intergenerational link and trust	218	.480
Maintaining civil society	214	.450
Life cycle as a criterion for choosing commodities	219	.440
Global poverty reduction	215	.376
Use of renewable energy sources	211	.359
Consumer's social responsibility	216	.329
Replacing goods and equipment only when broken	219	.204

Table 5. Pearson's correlation coefficients of importance and factual realisation of the variables in ascending order.

What is respondents' structure of the sustainable living?

Table 6 shows the results of the factor analysis, which was used to analyse the actual behaviour (implementation of the items) of the

early childhood educators. We ended up with a two-factor solution that explained 46.8% of the variance. The result was justified by Cattell's scree test as the third factor would not substantially increase the explanatory power of the phenomenon. We named the factors (a) Regional orientation and (b) Temporal orientation. The lowest loading included in the interpretation of the analysis was 0.5, which surpasses the limit defined by Dennis Howitt and Duncan Cramer (2008a, p. 242). Cronbach's alpha was used as a reliability analysis. It measures the consistency of the factors. The analysis was conducted on the items that loaded more than 0.4, and the limit of 0.32 defined by Tabachnik and Fidel (2007, p. 649) was surpassed. The overall reliability of the factors is good – values are 0.8 or over (Field 2009, pp. 673–681, Howitt & Cramer 2008b, pp. 406–408).

Variable	Factor		Communality (extraction)
	1 Regional orientation	2 Temporal orientation	
Favouring energy-efficient products	**.680**	.198	.502
Consumer's social responsibility	**.656**	.137	.449
Favouring local enterprises	**.620**	.231	.438
Maintaining of civil society	**.612**	.173	.404
Favouring eco-labelled products	**.603**	.224	.414
Global poverty reduction	**.581**	.354	.463
Use of services instead of ownership of goods	**.574**	.414	.501
Use of renewable energy sources	**.542**	.351	.417
Recycling, composting and taking care of hazardous waste	.409	.199	.206
Saving energy	.391	**.603**	.516
Life cycle as a criterion of choosing commodities	.371	**.592**	.488
Replacing goods and equipment only when broken	.039	**.541**	.295
Supporting of communality, intergenerational link and trust	.150	**.510**	.282
Low perceived value of ownership	.289	.410	.251
Favouring vegetarian diets	.209	.366	.178
Eigenvalues	5.66	1.36	
46.8 % of variance explained	37.7 %	9.1 %	
Cronbach α	.9	.8	

Table 6. Results of factor analysis concerning implementing of the items (variables) in everyday life. Communalities and loadings of variables as well as eigenvalues, explained variance, and alpha-values of factors are presented. The variables included in the interpretation of results are in bold. The extraction method was Principal Axis Factoring and the rotation method was Varimax (with Kaiser Normalisation). Rotation converged in 3 iterations.

Can socio-demographics divide the respondents from each other based on elements of sustainable lifestyles?

The age of the respondent correlated with many of the sustainable lifestyle choices; the older respondents had a more sustainable lifestyle (Table 7). The correlation was at the highest in replacing goods and equipment only when broken. Global responsibility, favouring energy-efficient products, and use of services instead of ownership of goods also increased in accordance with age. Similar results have been found in previous research (Salonen & Åhlberg 2013a).

Variable (actual implementing of the item)	n	Pearson r	Sig. (2-tailed)
Replacing goods and equipment only when broken	214	.267	.000
Global poverty reduction	210	.214	.002
Favouring energy-efficient products	208	.202	.004
Use of services instead of ownership of goods	204	.201	.004
Supporting communality, intergenerational link and trust	213	.197	.004
Recycling, composting, and dealing with hazardous waste	214	.190	.005
Use of renewable energy sources	206	.183	.005

Table 7. Correlations between age and sustainable lifestyles.

The correlations between Non-Governmental Organisational (NGO) activity and sustainable lifestyles appeared in eight categories. Previous studies (Salonen 2010) have found similar results. These correlations were relatively stronger than the correlations between age and sustainable lifestyles. These correlations are presented in Table 8.

Variable (actual implementing of the item)	n	Pearson *r*	Sig. (2-tailed)
Recycling, composting, and dealing with hazardous waste	218	.313	.000
Global poverty reduction	214	.257	.000
Favouring eco-labelled products	217	.239	.000
Favouring energy-efficient products	212	.237	.000
Use of renewable energy sources	210	.219	.001
Use of services instead of ownership of goods	207	.201	.004
Supporting communality, intergenerational link, and trust	217	.188	.006
Favouring vegetarian diets	217	.186	.006

Table 8. Correlations between non-governmental organisational (NGO) activity and sustainable lifestyles.

How do the respondents react to increased information about and awareness of sustainability crisis?

We asked early childhood educators to write what they did when their consciousness and awareness changed or when they received new information concerning a sustainable way of living, climate change, or inequality of people (Table 8).

	n	%
I become incapable	2	1.0
I feel guilty	32	15.6
I start to act to achieve social change	97	47.3
I gain confidence in my own viewpoints	74	36.1
Total	205	100

Table 9. The emotions and responses of the early childhood educators when they received new information concerning a sustainable way of living, climate change, or inequality of people.

According to our data, 47% of the early childhood educators responded that they would start to act in order to achieve social change. More than one-third of the respondents (36%) felt that raising awareness normally increases their confidence to act towards more sustainable future. Some of the early childhood educators responded that they would feel guilty (16%) or even become incapable to act (1%) when they would get new

information concerning a sustainable way of living, climate change, or inequality of people.

Discussion and concluding remarks

Results of this research deepen the understanding of a sustainable lifestyle of early childhood educators in Finland. According to our results older early childhood educators have a more sustainable lifestyle. It seems that the younger generation does not follow a sustainable lifestyle as expected even though awareness of the consequences of an unsustainable lifestyle is increasing. Younger respondents have more likely been brought up in a consumer culture. Older respondents might have a more stable life situation and balanced financial state and feel less social pressure to build an identity via trends of consumerism (Salonen et al. 2018). Maybe they also have better sense of interconnectedness than the younger early childhood educators (see Lehtonen et al. 2018).

The gap between thinking and behaviours is widely recognised (Ajzen 1991). Most people relate to sustainability issues positively but passively (Diekmann & Preisendörfer 2003, Kollmuss & Agyeman 2002). According to our findings, the gap between thinking and behaviours for a sustainable lifestyle varies. The gap is *narrow* in those variables where the surrounding conditions are not challenging. The narrowest gap between thinking and behaviour was in vegetarian diets. This confirms previous results that indicate a strong effect of contextual factors (Salonen & Tast 2013, also Salonen & Åhlberg 2013b). Human behaviour is always limited by contextual factors such as laws and regulations, financial incentives and penalties, and social pressure (Doppelt 2008, pp. 69–71, Giddens 2009). The gap between thinking and behaviours was *broader* in variables related to everyday life situations where the surrounding conditions do not support sustainable actions. The facilitating conditions are not only concrete environmental elements but also the social atmosphere. For example, in replacing goods and equipment only when broken, the implementation of this variable is related to the life cycle of a product – not only mechanical breakage but also technical functionality, sometimes even unsustainably effected by the manufacturers (Salonen et al. 2014). According to previous research, an intervention in the context of society is a more effective way to reach sustainability than encouraging individuals to change their attitudes and behaviour (Salonen & Tast 2013, Salonen et al. 2018, Salonen & Åhlberg 2013b). This raises a question about how early childhood educators

can facilitate sustainability-promoting circumstances for children. This is also a challenge for policies and decision making in society.

According to our findings, a structure for sustainable living is divided into two orientations: a regional and a temporal orientation. The elements of the *regional orientation* are related to place and distance. Currently, both global and local circumstances are apparent in everyday life. In the global economy, our everyday life choices as consumers of food, clothes and other products have an impact on the lives of people far from us and the sustainability of the natural resources globally. On the other hand, supporting local products and services enhances the local economy. This is also a case of active citizenship. Active citizenship helps maintain strong local civil society. Collaboration between early childhood education and national and international non-governmental organisations offers the potential to support growing towards active membership of society in an era of globalisation. This aim is important because abstract and dynamic impacts of our everyday choices such as energy solutions and eco-labelled products that have impacts both on local and global levels.

The elements of the *temporal orientation* illustrate the time-related orientation of the value-based actions of early childhood educators. In practical terms this means using life cycle as a criterion of choosing commodities or switching of unnecessary lights. Awareness of various temporal impacts of our everyday actions is very much needed. It is apparent that we can still trace echoes of the earliest human-caused carbon emissions in our atmosphere (Pongratz & Caldeira 2012).

If early childhood educators want to be strong agents of change in society, they can enhance both the regional and temporal orientations of children. Melting glaciers, burning equatorial rainforests or mountains of accumulated toxic waste are easy to depersonalise (Pratatelli & Aragon 2008). However, our planet is not a collection of discrete phenomena and events but a system of interdependence. All past, present and future forms of life are connected as well as all areas of the planet (Miller & Spoolman 2009). Therefore, in the era of Anthropocene, human responsibility should include people, animals, plants, life-supporting ecosystems and natural resources of the planet now and in the future. Regional orientation can be built, for example, by talking about the origin of goods. When we buy a can of soda, we hardly think of the chain of human beings, institutions and natural resources affected by our choice. Children can be very interested in the impact of small changes, for example, how recycling a soda can supports sustainable utilisation of global resources. The foundation of the sustainable temporal orientation is built in the aware, conscious and active interaction between educators and children. The

temporal orientation could also be materialising by working together with elder generations, the grandparents. By understanding the past, how previous generations have built our society, we can also build an idea of the future and our own agency in forming it.

According to our findings, the impact and the role of non-governmental organisations in education for sustainability seem to be significant in general. This finding is similar to previous research (Salonen 2010, Salonen & Åhlberg 2013a). Frequent interaction among a diverse set of people tends to produce a norm of generalised reciprocity. Civic engagement and social capital entail mutual obligation and responsibility for action (Putnam 2000). Citizen participation is essential to a socially sustainable and healthy democratic society. This is any activity that involves spending time, unpaid, doing something that aims to benefit someone or the environment (Williams 2003). By nourishing the relationships with inhabitants of less wealthy countries, we can build awareness of the impact of our actions, understand equal global human rights, and grow a sense of moderation of consumerism. This relationship can be reached by working with sister institutions or by supporting godchildren in deprived countries together with the children in early childhood education and pupils at school.

According to Marc Pratarelli (2014) people may simply shrug their shoulders and rationally conclude that there is no hope or impact, for example, combat climate change, and, thus, no reason to change their unsustainable way of living. However, according to our data, one-third of the early childhood educators felt that raising awareness increases their confidence. Even half of them mentioned that they would start to act in order to achieve social change. Awareness gives most of them the confidence to act and to have a social change in their environment. This is important because competing factors, conflicting results, and tolerating compromises form a new normal in our societies (Bauman 2008). Transition towards a sustainable society is powerful if education helps to enhance critical thinking so that children can synthesize the rich information about the wide range of situations around them (Nussbaum 2010). Constructive criticism and questioning the dominant culture are very much needed, but we are on the wrong path if the consequence is a paralysing feeling of guilt.

By working with the literature of this field and conducting the study, it become clear that early childhood education is one of the keys to strengthen the sense of global responsibility and to build a society where a sustainable lifestyle could be an imperative for all. The fundamental target for human growth is to expand the sphere of human responsibility towards a regional and a temporal orientation. In the end, human responsibility should cover people, animals,

plants, life-supporting ecosystems and the natural resources of earth now and in the future.

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