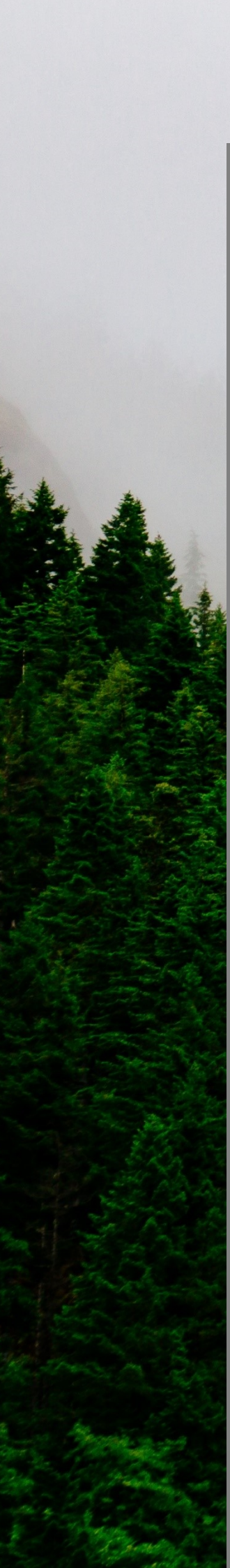

# Using futures consciousness to imagine a desired post-Corona future with environmental concerns: A qualitative analysis

**M.Sc Thesis – Positive Clinical Psychology and Technology**

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# Contents

**Abstract**

The Corona crisis has changed the perception of the environment for many individuals. The concept of environmental concern (EC) plays a new role as a result of the changes, as does the ability to imagine the pathways of the future, which is referred to as futures consciousness (FC). In the context of the pandemic, some people may have gained a new vision of what a desirable image of the environment should look like in a post-Corona future. The focus of this paper is on what these positive images of a post-Corona future might look like. A collaboration of several universities in different countries collected letters about such a post-Corona future in an online study in the general population. For this thesis, 30 letters were qualitatively analyzed using the context-sensitive FC model developed by Sools et al. (in press). The model consists of five interrelated dimensions, Time Perspective, Attribution of Agency, Openness to Alternatives, Systems Perception, and Concern for Others. Furthermore, to investigate how strongly EC is manifested in the letters, a coding scheme was developed to analyze EC based on: (a) content, e.g., number of environment-related topics, (b) linguistic markers, e.g., in-text passion indicators and (c) the proportion of text dedicated to the environment in a letter. The results showed that letters high in EC portrayed a higher attribution of agency, systems perception, and a more specified focus on social and environmental concerns in contrast to the low EC group. This can imply that people in the high EC group have a more specific image of actions to change the future, a deeper understanding of underlying connections between global and societal levels, and care for social matters more than for individual ones compared to people in the low EC group. Yet, especially in terms of time perspectives and openness to alternatives in particular, all participants showed similar patterns.

*Keywords*: environmental concern; futures consciousness; letters from the future; qualitative analysis.

# 1. Introduction

In the spring of 2020, the Corona pandemic came, and with it, big changes for all kinds of people. This pandemic is often referred to as being a dress rehearsal for the climate crisis (Davis-Peccoud & van den Branden, 2020; Wainwright & Mann, 2020). The latter is thereby expected to be a bigger challenge than Corona. The severity of the climate crisis has been known for a long time. It has gained further popularity with the publication of the *United in Science* climate report of 2020 (World Meteorological Organization, 2019).[1] Concerns about the environment have manifested themselves at many levels in society. According to Diekmann and Franzen (2019) environmental concern (EC) "is individuals' awareness that the state of the environment is threatened by human-inflicted resource depletion and pollution."(p. 254). Both crises, Corona and climate change, bring dangers, but also opportunities. Due to the Corona pandemic, people saw what is possible when a crisis forces them to change their way of living. Therefore, positive environmental changes might be expected because of the pandemic and the way this crisis is managed. On the other hand, one could see the struggles and difficulties with which society is handling this crisis and still expect or hope for positive changes. The question arises: How does a person imagine such a positive change for the environment?

To be able to answer that question, the ability to mentally imagine, anticipate and plan for the future is necessary. This ability has been studied under the name of futures consciousness (FC). It is described by Ahvenharju et al. (2018) as a "holistic concept that draws attention to the future as an internalized and experienced phenomenon" (p. 2). Further, with regards to a definition by Galtung (1982) it is summarised as "a heightened awareness of what could and should happen in the future" (Ahvenharju et al., 2018, p. 2). This awareness is of a subjective nature. FC is also regarded as cognitive skill that enables people to understand

[1] With reference to the climate reports published by the *United Nations*, this thesis is based on the scientific understanding that there is a climate crisis and that there is a need for proactive action regarding it as stated in World Meteorological Organization (2019).

possible developments in the future and the aspects influencing present and future perceptions (Ahvenharju et al., 2018). Lalot et al. (2021) found that having this ability can serve as a protective factor of mental health during the Corona crisis. People with high FC had higher well-being and more hope towards the future. They also were more likely to be compassionate about others and care about societal issues (Lalot et al., 2021). It can be seen that FC can make a valuable contribution to coping with crises.

### 1.1 Studying the future

The ability to imagine positive changes in the future has many advantages. For example, this ability promotes the formation of one's own values and attitudes (Lalot et al., 2021). Looking at what could and, especially what *should* happen, has the potential to reveal new paths and bring about tangible change (Sools, 2020). So, in this sense, it may be more beneficial to focus on what is possible and develop a desired vision of the future, rather than thinking about what is and discussing probabilities. (Sools, 2020). The field of future-creating processes and futures research in the psychological field deals with this.

With the world and the people being faced with constant changes and the growing complexity of the globalized world presents people with new kinds of challenges, futures research has become increasingly important (Sools & Mooren, 2012). The area of future studies is concerned with how people approach their future and how "imagining [a] possible and preferred future guides and motivates present thought and action." (Sools, 2020, pp. 451, 452). Wishes and ideas about how people hope the future to look like is in the focus of this research area (Sools, 2020). The question is how these ideas about a preferred future can be made specific and expressed to explore them.

One possibility to do this is the narrative approach. An exemplary study by Sools et al. (2018) illustrated this with Greek citizens before the 2015 referendum vote. Participants were asked to write a letter from the future as they wish it would be as a result from the vote. It was shown that participants were confronted with difficult emotions like ambiguity and

uncertainty with regards to the vote (Sools et al., 2018). Moreover, the study indicated that this narrative story-telling approach allows people to find an individually appropriate way of dealing with ambiguity and uncertainty by reflecting and imagining a preferred future in detail (Sools et al., 2018). Imagining and especially writing about a desired future world can stimulate thought processes and enable discussions, as has been found in a qualitative and quantitative study by Kress et al. (2011).

### 1.2 Dimensions of futures consciousness

Ahvenharju et al. (2018) developed a model distinguishing five interrelated dimensions of FC. The first dimension is Time Perspective which refers to an awareness of passing time, as well as being able to think in the long-term and plan for the future. The second dimension is Agency Beliefs. These beliefs express in what way an individual sees its own doing in influencing the future and a sense of control about future events. The third dimension is Openness to Alternatives and describes whether a person is able to question common assumptions and see what new paths are possible. It is also about critical thinking and has a creative aspect. Systems Perception is the fourth dimension and depicts the awareness of the complex structure within the world. The term systems refers to systemic or holistic thinking where the world is seen as a whole and everything seems to be connected (Ahvenharju et al., 2018). It is about understanding the interconnectedness of different areas or levels. For instance, assuming that people influence nature and nature influences people. The way someone understands this shows their perception of this connection between two systems, nature and humans. Systems perception can refer to only two levels or to many. The last dimension is Concern for Others (5). It represents a moral perspective of caring for the future of not only oneself but also other people, nations, generations and more. The authors state that specific levels of the construct may be different related to the context or the person (Ahvenharju et al., 2018). For

example, someone could have high levels of agency beliefs but only in specific contexts, like only concerning their career, and not relationships.

These dimensions play different roles in their relationship to the topic of the environment. The first dimension that can be applied is Time Perspective. This dimension includes questions about long- versus short-term perspectives and about the time frame or setting in which a person's imagined future takes place (Ahvenharju et al., 2018). What ecological changes are possible also depends on how much time the environment has had to change. For example, greater changes can happen in a hundred years than in two. Agency Belief is also a dimension which is relevant in the context of the environment. It can be about who has the power and responsibility to act for the environment in the future and what those actions look like. Openness to alternatives also plays a role for the environmental topic. Being able to imagine alternative developments to a negative future of the global climate influences the way people anticipate the future. It affects whether they are hopeful or fearful, whether they participate in preventive measures or not. Furthermore, Systems Perception is a relevant dimension because people who care about the environment differ in whether they view the issue as systemic or not. As an example, they might see the environment as a neutral topic or area that is separated from other areas and develops independently. They might also see the topic of climate change as being interconnected with various other areas, such as politics. The dimension of Concern for Others can clearly be applied to the environmental context as it provides an indication of whether people care about things beyond their own personal lives, like the environment, nature, future generations and all living beings on the planet.

### 1.3 The context of Corona

While FC can be seen as a disposition, it can also be considered in a context-specific way. This means that how a person shows FC is not fixed and predetermined but can depend

on the situational context the person is in (Sools et al., in press). An option is studying how people use FC to design their image of the future in a certain context like the Corona context. Then, FC is studied, "not as general disposition but as a situated, sense-making ability" (Sools et al., in press, p. 5). For example, the dimension Time Perspective does not simply refer to thinking in the long-term but also specifically to when a person expects or imagines the pandemic to end and how the time perspective is affected by the vanquished crisis in the desired future.

This thesis examines FC in the context of the Corona crisis. People's visions and ideas about the future are influenced by their context. As a result, it can be detrimental to consider these visions and ideas detached from the context. Therefore, it is worthwhile to investigate the question how people envision a positive future for the environment in the setting of Corona.

Concerns about climate change have been a central topic in politics and activism movements across the globe before the appearance of the Corona virus. It can be assumed that new individual future-shaping processes are emerging as a result of the pandemic. The fact that both issues, environment and Corona, are at the center of two globally relevant crises, connects them and makes them a topic of interest. Because it affects almost all the people in the world, the ongoing global pandemic provides a unique opportunity to explore peoples sense-making processes regarding their desired future across all countries, ages, education levels, and more. It can be seen that the pandemic is an ideal context to study how environmental issues are constructed in future narratives.

### 1.4 The current study

As mentioned in the introduction, EC is an awareness of the threat the environment is under, while FC is based on an interest in the concept of desired futures. The latter concept includes five dimensions of FC which are all relevant for the environmental topic in various

ways. In the context of Corona, future visions changed. The study of future visions and narratives with the dimensional model of FC is a useful tool to see how people process these times and how they create an image of a desirable future. Moreover, the crisis changed not only objective conditions but also subjective perceptions about the concern about the environment. This shows how Corona serves as a context that can change images of the future and, in particular, images of the future of the environment. Therefore, the link between FC dimensions and EC will be studied in a context-sensitive way, considering Corona as the context. It will be explored how people make sense of their future world after Corona and what positive and desired future images of the environment might look like.

Therefore, the main research question is: *How do futures consciousness dimensions relate to the degree of environmental concern in letters about a preferred post-Corona future*? Two sub-questions are formed to provide the answer to the main question. The first sub-question is: *How does futures consciousness take shape in letters about a post-Corona future by people writing about the environment?* The second sub-question is: *How does environmental concern manifest itself in letters about a post-Corona future?*

## 2. Methods

The basis for this study are letters that were collected in an existing project. Therefore, the following section is organized in a way that the original project and its characteristics is presented first and then the methods of the present study.

### 2.1 Original project

The project "Will the world never be the same? Letters from a Post-Corona future" that provided the groundwork for this thesis, started in April 2020. It was conducted by researchers from the University of Twente in the Netherlands, in collaboration with researchers from several countries.

### *2.1.1 Project description*

Participants from different countries were asked to write a letter from the perspective of the future after the Corona-pandemic. Therefore, the present study is a secondary analysis of an existing dataset. Ethical approvement has been given by the Ethics Committee of the faculty of behavioral sciences (BMS) of the University of Twente. The letters were written in the participant's native language and translated to English before analysis. Possible participants had to be at least 16 years old and were recruited using a convenience sampling method via social media groups as well as newsletter and local newspaper articles. Participants were encouraged to further distribute the study in their social networks. The participants did not receive any kind of reward or compensation. Data was collected from April until July 2020 (see appendix for instructions).

Participants received a link to the Qualtrics study instructions, a textbox and a short questionnaire. The instructions for the letter were formulated in an open way to leave participants as much creative freedom as possible with regards to how they define Corona and how they imagine the future. The instructions included questions relating to the time the future takes place in, descriptions of the future world, descriptions of the participant in this future, how the future came to be and finally, what message the participant wants to send to the present. In the following section the participants were asked to describe how the pandemic affected their life. Additionally, they received a questionnaire with socio-demographic questions and a query about hope and uncertainty. Only the letter and socio-demographic data of each participant are part of this thesis and analysis.

A number of 237 letters were eligible for further analysis. The letters had an average word count of 491. The participant age ranged from 16 to 81, while a minimum age of 16 was a requirement. People from 12 different European countries and 14 non-European countries took part in the project, with most letters coming from Estonia, the Netherlands, Ecuador,

Greece, Finland, Germany and France. Most participants had a higher education level i.e., the majority had a university degree.

### *2.1.2 Letters from the future method*

The method that was used as the basis of the project is a narrative approach to how people imagine a desired future and is called Letters from the future. Sools and Mooren (2012) argue that writing about a preferred version of the future helps to strengthen resilience towards many sorts of crises. It is a creative writing exercise where the writer is invited to imagine taking a trip to the future in a time machine and writing a letter to someone who is back in the present time (Sools, 2020). The instructions are to first describe the time and place the time machine arrives at, then what the world looks like and how it came to be and finally, to whom the letter is addressed with a message to that person in the present. The instructions for the post-Corona project were slightly adapted to better fit the circumstances. For one thing, the time frame of the future was set in a time after the pandemic, therefore the option to set the time just hours or days ahead of time were not applicable anymore. For another, a distinction has been made apparent between descriptions of the future world and the state of the writer themselves. The focus has been shifted towards a more broad and global future rather than more individual perceptions in the original study by Sools (2012).

## 2.2 The present study

In this study, certain letters were selected from all the letters of the original project and analyzed using the ATLAS.ti 9.0 software.

### *2.2.1 Selection of letters*

First, all the 237 letters were scanned for descriptions of environmental topics with the keywords “climate”, “environment”, “nature”, “pollution”, “planet” and “earth” using the text search tool. The resulting 130 letters were then individually examined to indicate whether the keyword had indeed the meaning sought, e.g., environment in a natural rather than a social

context or nature with a reference to natural rather than as a synonym for kind. If not, the letter was excluded. Since the concept of interest was EC, a selection criterion was that the writer shows a critical view on the state of the environment in any way, for instance, how nature is protected instead of destroyed and how consumption patterns changed for the better. Therefore, letters *solely* describing nature in a superficial way, how to profit from it, e.g., doing sports outside, enjoying birdsong, descriptions of natural scenery or of how being in nature feels nice, were excluded. No bias was created in excluding these letters because the initial focus was on environmental *concern*, not the environment in general. Approximately 50 letters remained after that.

Lastly, selection criteria were diversity of country and age. Since most writers in the selection were above 40, letters with writers younger than 30 were preferred. A roughly even distribution of countries was intended to reflect the fact that the Corona pandemic is a global event, which excluded 20 letters. The final sample made up 30 letters.

In the final set of 30 participants, the writers age ranged from 18 to 73 with a median age of 39 (mean age: 43). The majority was female (n=21), and two participants did not report being male or female. The eligible letters were from inhabitants of The Netherlands (n=5, 17%), Ecuador (n=6, 20%), Estonia (n=7, 23%), Finland (n=3, 10%), France (n=3, 10%), Greece (n=5, 17%) and Italy (n=1, 3%).

### *2.2.2 Coding scheme for futures consciousness dimensions*

The basis for the analysis of the data is an operationalization of the five dimensions of FC. It is a hierarchical coding scheme developed by Sools et al. (in press) with two main codes for each dimension and several subcodes. The authors Sools et al. used slightly different terms for some of the dimensions, for example, Attribution of Agency instead of Agency Belief and Awareness of Interconnectedness not Systems Perception. This does not change the general meaning of the dimension so in this thesis, these terms are used and should be understood interchangeably. The codes have different analysis levels: A letter-level, where a

subcode is attributed to a whole letter and a section and sentence level, where a subcode can be assigned to several parts of a letter. Like this, letters can be analyzed with regards to how dimensions of FC are represented in the narrative. The coding scheme with descriptions for each subcode is depicted in Table 1.

Table 1

*Coding scheme for the dimensions of Futures Consciousness*

| **Dimension** | **Code** | **Description** |
|---|---|---|
| Time Perspective | | |
| | **Objective Time Horizon** | The writer has dated the letter (year, day) so that the exact timespan can be determined |
| | Short-term | short-term: less than or 1 year ahead |
| | Medium-term | mid-term: over 1 year up to 10 years ahead |
| | Long-term | long-term: over 10 years or more ahead |
| | Unspecified | The date has not been made explicit in the letter |
| | **Subjective Time Horizon** | The timespan can be deduced based on the depicted events in the letter |
| | Within Corona | During the Corona crisis period, typically describing social distancing measures or lockdown |
| | Extended Corona/ new pandemic normal | Aspects of Corona still influence life, even if the pandemic is already gone. It might be that certain measures (social distancing, wearing masks) or behavior remains the same as during Corona. |
| | Relief of end of pandemic | A proximate post-corona future estimated or explicitly situated only weeks or months after the pandemic came to an end or when measures or the lockdown had ended. |
| | Larger scope | A post-corona future situated clearly at a distance to the pandemic, with a focus on large (societal) changes |
| | Timespan unclear | It is unclear when the depicted future takes place |
| Attribution of Agency | | |
| | **Degree of Agency** | Section -level codes indicating (a) the degree to which the actor and action(s) are specified and clear and (b) the number of agency-aspects made explicit. There are four aspects of |

| | | |
|---|---|---|
| | | agency (actions, responsibility for actions, reflection on consequences of actions, intentions or plans for actions). |
| | Low Agency | There may be a specified agent, but the actions, responsibility, reflection on action consequences, and plans/intentions for action are vague. |
| | Intermediate Agency | There is an unspecified agent with 2 or more aspects of agency attributed, or there is a specified agent with one aspect of agency made specific. |
| | High Agency | There is a specified agent with 2 or more aspects of agency made specific. |
| | **Distribution of agency** | Letter-level code describing whether in the letter as a whole a collective or personal agent dominates |
| | Personal agency | In this letter agency is primarily allocated to a personal agent (typically an I-agent or You-agent, i.e., referring to the future or present self of the letter writer, sometimes including the immediate relations/family of the I). |
| | Collective agency | In this letter agency is primarily allocated to a collective agent, either the government, an organization, institution, community, or group. |
| | Mixed personal/collective agency | In this letter the allocated agency is equally distributed between collective and personal agents, for example because the letter has multiple sections which each have different actors varying between the personal life and societal developments. |
| Openness to Alternatives | | |
| | **Attitude** | Sentence-level code indicating the stance towards the future |
| | Closed | A closed stance towards what the future will hold, in giving a sense of certainty, predictability and control. This can be observed in word use (definitely, certainly, no doubt) and the lack of subjunctivizing language. |
| | Open | Openness towards what the future will hold, allowing uncertainty and unpredictability. Openness can be observed by content (I surmised, it seems, I doubt, as if) and by subjunctivizing language (Sools, 2012). |
| | **Multiplicity** | Letter-level codes for various ways in which multiple manifests in the letters in topics, thoughts or action possibilities |
| | Single-issue | Letters that predominantly deal with one central issue |
| | Multiple-issue | Letters dealing with at least 2 issues and a single key issue cannot easily be identified. |

| | | |
|---|---|---|
| | Contrasting group action | Contrast is created in action possibilities between groups (some versus others, others and self, or different stakeholder groups). |
| | Reflective questions | Through raising reflective questions, the writer opens up multiple options and alternative perspectives |
| Awareness of Interconnectedness (refers to Systems Perception) | | |
| | **Explicitness of systemic awareness** | Section-level codes for letter parts showing the extent to which awareness of interconnectedness between system parts is demonstrated observably in implicit or explicit reflection. |
| | Implicit interconnectedness | The wording does not express a (cause and effect) relation between parts (e.g., generations, timeframes and/or domains). Parts are implicitly connected for example when a narrator moves from the description of developments at one level to developments in another, without referring to how one level influences the other. |
| | Explicit interconnectedness | A connection between levels, generations, times or domains is made explicit, for example by causal connectors or other linguistic markers or when the content of the letter reflects awareness of how things cohere, are part of a larger whole and cannot be thought of each other independently. |
| | **Degree of Systemic awareness** | Whole letter-level code of the degree of awareness shown overall of interconnectedness between parts, e.g. (a) personal-social-planetary levels; (b) generations; (c) times, e.g., past, present, future; (d) domains in life / society such as health, education, economy. |
| | No interconnectedness | One level only (no descriptions of explicit relations between levels) |
| | Some interconnectedness | Relations between 2 levels are mentioned explicitly (if other relations are mentioned implicitly, letters are coded at this level) |
| | Extensive interconnectedness | 3 or more relations presented explicitly OR one relation is described in a way that shows complexity (e.g., nonlinear thinking) OR one relation is described extensively (= elaborative narrative) |
| Concern for Others | | |
| | **Kind of Concern** | Section level code about the object of concern |
| | Self | Concern for the personal life of the writer (well-being, health, education, housing, etc.) and the immediate circle of friends and family |

| | |
|---|---|
| Freedom | Concern about freedom of movement, of doing what one wants to do, of being free from fear |
| Awareness of what matters | Realization or (renewed) appreciation of values in (personal) life |
| Humans & generations | Concern for other humans beyond the immediate circle of friends and family (local or global) or even extending to generations before and after |
| Society | Concern for social inequality, the economy, the health-care system, the educational system etc. |
| Green | Concern for the environment, either locally (sustainable communities) or globally (e.g., climate change and transition to a green economy) |
| **Degree of Concern** | Whole letter-level code about the number of self-transcending concerns (from none to – nearly – all) |
| Self-only | The writer shows concrete concern(s) related to the personal future (happiness, well-being, education, employment, finances) that may include the immediate circle of friends/family |
| Low | One self-transcending concern is mentioned (e.g., freedom, awareness of what matters, humans/generations, society or green) with or without concern for self |
| Intermediate | Two or three self-transcending concerns are mentioned (e.g., freedom, awareness of what matters, humans/generations, society or green) with or without concern for self |
| High | Four or five self-transcending concerns are mentioned (e.g., freedom, awareness of what matters, humans/generations, society, green) with or without concern for self |

*Note.* Adapted from Sools et al. (2021). The green-code in Concern for Others was further analyzed.

In the coding scheme in Table 1, there is a section about kinds of concern for others (i.e., society, freedom, green, etc.). The authors Sools et al. (in press) explain that these kinds of concern could also be elaborated in terms of how important that concern for the person is. For example, it could be investigated not only *whether* a person cares about societal matters but also to what *degree* the person cares. Those authors decided not to include such a distinction in their scheme. In this thesis, however, a distinction will be made by examining one particular concern in detail, namely green concern. A scheme will be created to find aspects of a *degree* of green or environmental concern, distinguishing different levels of this concern or

how important the environment is for a person. This comes into use for the second sub-question.

To answer the first sub-question about how FC takes shape in letters about a post-Corona future, the letters that were selected for a thorough analysis were deductively coded in ATLAS.ti according to the coding scheme. First, the first main code with subcodes was applied to all letters, then the second main code was applied to all letters until all codes had been assigned.

### *2.2.3 Degree of environmental concern*

To answer the second sub-question about how EC manifests itself in the letters, a way to operationalize EC was sought. To start, the letters and particularly the sections about green concern were thoroughly read and notes were taken on possible patterns. It became apparent that they differed in terms of how the participants wrote about the environment and showed green concern. Based on this finding an operationalization of the degree of EC was made using an inductive approach by developing a rating scale. Three aspects were distinguished (area of concern, passion for concern, and proportion of environmental words in the letter) which together constitute the degree of EC. Each of these three aspects were divided into low, medium and high levels.

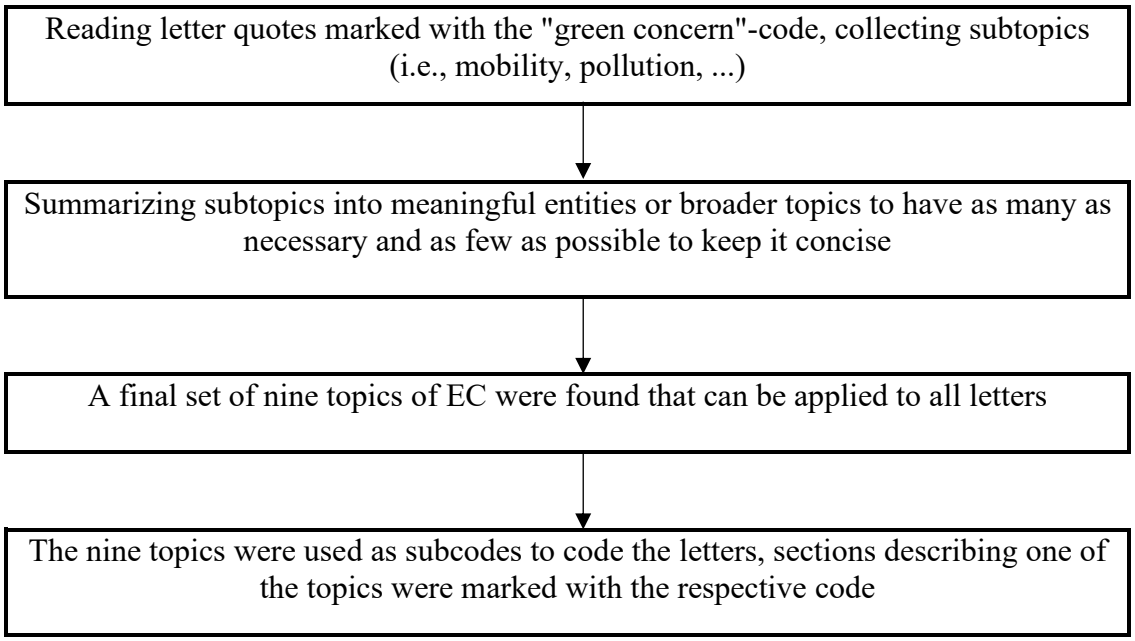
**Topics**. The following process description is visualized in Figure 1 for an easier comprehension. It shows the process of finding topics of EC in the letters to developing subcodes for the rating scheme.

First, the area of concern was analyzed by collecting subtopics from phrases coded with "green concern" (i.e., mobility, consumption, pollution, etc.). They were then combined so as to have as few categories as possible and as many as necessary to be meaningful which resulted in nine topics. The categories or topics that were found were then applied to the letters as section-level subcodes. This was done by marking sections describing one of the topics with the respective code. Afterwards, the number of different topics in each letter was noted

and the range determined. In the categorization process, letters with 0-2 topics were classified as low, letters with 3-4 topics as medium, and those from 5-9 topics were classified as high.

Figure 1

*Process of developing subcodes of topics of EC*




**Passion**. To further increase the quality of a measurement of EC, another aspect was included, namely passion. Many letters showed signs of an emotional view on environmental topics in their writing, both inside and outside the sections marked “green concern”. Indicators for passion or emotion were signs of sincere concern about the environment and passionate descriptions about the importance of its protection, i.e., use of strong language, punctuation like exclamation marks, addressing the reader with a call for action, suggesting emotions like anger about failure of protection or happiness about positive changes.

Examples of these are expressions of happiness about a positive change in nature or the overall environment (“*Sitting in my springtime garden – sipping on some good tea, being surrounded by my family and animals, in the peace and quiet… I have never been this happy”*), describing details with embellished language (*“I can tell you though that the planet is recovering, the sea is magnificent to see, the cacao trees are multiplying”)*, strong language

like using swear words ("*most of the assets of rich people were seized and how the biggest penny-pinchers and greedy bastards got even punished"*), use of punctuation (*"I feel that the environment is breathing again !!! It was born again… !!!"*), calls for action directed at the reader (not only the recipient) (*"choose your rulers well and try everything, recycle, reuse, reuse and don't buy what you don't need, stop consuming."*), references about humanity being punished for damaging the environment *("My conclusion is that the pain endured must have served to slightly feel the pain we cause our Pachamama with our arrogance, unconsciousness and ignorance."*). All the letters were searched for these linguistic indicators which were collected and assessed whether they fit. It was a requirement that the passionate section referred, at least in part, to the state of the environment. After that, the letter sections that fit this requirement were marked with the code "passion".

During the process of evaluating and processing the passion category for its use in an EC scheme, it became apparent that 13 letters did not have any passion indicators. Since this is already almost half of the sample, it was appropriate to make these 13 letters the first category. Therefore, if a letter had one indicator it was already rated with a medium level. Consequently, letters with no indicators were classified as low, letters with 1-2 passion sections were rated as medium and 3-4 as high.

**Proportion**. Finally, the third aspect identified was the proportion of the letter that addressed ECs, i.e. the question was, how much of the letter is about the environment? To determine the amount of EC in a letter, the number of words in EC-related sections of letters was divided by the total number of words in the letter and a rounded percentage was calculated. To divide them into low, medium and high levels, first, the range was determined. However, on the upper end of the percentage range, between 38% and 52% there was a gap. Therefore, 38% was used as a maximum to determine the range. The range was divided by three so that 4-14% was classified as low, 15-26% as medium and 27-38% as a high level of proportion.

**An EC rating scale.** By combining the three aspects (area of concern, passion for concern and proportionate use), a score for the overall degree of EC for each letter was established. The range of the scores was 3-9 and was divided by three. Letters rated with 3 or 4 were assigned to the low EC group, letters with 5 or 6 composed an intermediate EC group and letters with scores from 7-9 were assigned to the high EC group. For the sake of clarity in answering the research question, only the two extreme groups, high and low EC, were compared and intermediate degree left out of the main analysis. There were 13 letters in the low EC and 8 letters in the high EC group. It should be noted that all the letters still include a certain amount of green concern since this was a selection criterion in the beginning. So, high and low EC are to be seen relative to the sample and do not represent all the letters of the project. An image of EC in context-specific letters about the future is the goal and not a comparison between EC and no EC.

Finally, a letter with low EC would have a combination of the three characteristics to a low degree. It could be at a medium level on one of the categories but the other two would then be at the lowest level. A typical letter in the low EC group has a comparably small percentage of words dedicated to the environment within the letter, mentioning fewer green topics and no or just minor indicators of passion to the topic. A high EC letter is characterised accordingly, with high degrees of the three categories. One category could be at the lowest level but that is compensated by the other two which are at the highest level.

### *2.2.4 Analysis of environmental concern and futures consciousness dimensions*

Considering the main research question about how FC dimensions relate to the degree of EC, the coding with the FC coding scheme and the classification of EC made up the groundwork. The co-occurrence and document-code table tools in Atlas.ti were used to find patterns in the codes. Several methods were applied using ATLAS.ti tables. To find patterns between the FC codes and EC, the section- or sentence-level subcodes of FC and the nine EC topics were analyzed in terms of co-occurrences to see which codes appear in a context in the

same quotes. Only the nine topics of EC and the passion code could be taken into account because they were on the section-level, whereas the proportion aspect was on the letter-level and could therefore not be incorporated into a co-occurrence table. However, the proportion aspect was included in the overall distinction between high and low EC within the comparison in a code-document table. Accordingly, the topics and passion codes were compared with each FC section-level code. To give more depth to the presentation of the results, each finding is accompanied by an exemplary quote with an elaboration about how the codes come to expression in the section of the narrative of the future world.

The letter groups of high and low EC were analyzed in a code-document table in terms of the FC letter-level codes. For example, it was examined whether one of the objective time perspective subcodes appeared more frequently in one of the two EC groups than in the other. For the code-document tables, the tool of normalizing[2] the values was used to increase comparability of the two groups. This shows uneven numbers, but they still represent the frequency of a code.

## 3. Results

The letters had a word length range of 134 –1626 and on average 645 words. As a comparison, the average number of words in all the letters of the project was 491. In Table 2, the codes of the dimensions with their frequencies are depicted along with the two extreme levels of EC, high and low EC, leaving the intermediate EC level out. The extreme levels were the basis for the analysis because they provide a clearer distinction between letters high and low in EC. First, the results of the EC analysis operationalization and classification are presented. Then, the results of the connection of EC and the FC dimensions are shown along

[2] Normalizing is done to find a common scale for values with uneven range to make them comparable. This tool in ATLAS.ti adjusts values to balance the coding density for better comparability of unevenly distributed documents.

with example quotes from section- and sentence-level codes to illustrate the findings of the coding.

Table 2

*Frequency of codes of each dimension of futures consciousness by level of EC*

| Dimension | Code | Low EC n=13 | High EC n=8 | Mean frequency of low, intermediate and high EC n=30 |
|---|---|---|---|---|
| Time Perspective | | | | |
| | Objective time horizon short term | 1 | 1 | 0.7 |
| | Objective time horizon medium-term | 7 | 5 | 4.7 |
| | Objective time horizon long-term | 2 | 2 | 3.3 |
| | Objective time horizon unspecified | 3 | 0 | 1.3 |
| | Subjective time horizon within Corona | 0 | 0 | 0 |
| | Subjective time horizon extended Corona | 4 | 3 | 3 |
| | Subjective time horizon relief end of pandemic/measures | 3 | 0 | 1 |
| | Subjective time horizon larger scope | 7 | 4 | 6 |
| | Subjective time horizon unclear | 1 | 1 | 0.7 |
| Attribution of Agency | | | | |
| | Agency degree low | 9 | 7 | 10.7 |
| | Agency degree intermediate | 15 | 18 | 15.3 |
| | Agency degree high | 4 | 8 | 5 |
| | Agency distribution personal | 1 | 0 | 0.7 |
| | Agency distribution collective | 6 | 4 | 5.3 |

| | | | | |
|---|---|---|---|---|
| | Agency distribution mixed | 6 | 4 | 4 |
| Openness to Alternatives | | | | |
| | Attitude: Closed | 14 | 11 | 12.3 |
| | Attitude: Open | 25 | 18 | 18 |
| | Multiplicity: single issue | 0 | 2 | 0.7 |
| | Multiplicity: multiple issue | 11 | 5 | 8 |
| | Multiplicity: contrasting group | 1 | 1 | 1 |
| | Multiplicity: reflective questions | 1 | 0 | 0.3 |
| Awareness of Interconnectedness (AI) | | | | |
| | AI implicit interconnectedness | 12 | 13 | 11 |
| | AI explicit interconnectedness | 27 | 22 | 26.3 |
| | AI no interconnectedness | 1 | 0 | 0.3 |
| | AI some interconnectedness | 5 | 2 | 3.3 |
| | AI extensive interconnectedness | 7 | 6 | 6.3 |
| Concern for Others (CO) | | | | |
| | Self | 14 | 5 | 9.7 |
| | Freedom | 10 | 4 | 5 |
| | Awareness of what matters | 6 | 2 | 4.3 |
| | Humans & generations | 11 | 10 | 9.7 |
| | Society | 17 | 11 | 13 |
| | *Green* | *24* | *26* | *24* |
| | CO self-only | 0 | 0 | 0 |
| | CO low | 0 | 0 | 0 |
| | CO intermediate | 8 | 5 | 6.7 |
| | CO high | 5 | 3 | 3.3 |

*Note.* Frequencies of codes in the FC coding scheme. The intermediate EC category is not shown since it is not analyzed in the thesis. The right column shows the mean frequency of each subcode in all three categories: low, intermediate and high EC.

### 3.1 Manifestation of environmental concern

To answer the question of how EC is manifested in the letters, the three aspects of the construct, as described in 2.2.3 in the Methods section, were taken into account: topics, passion and proportion. A depiction of the first aspect, the topics that have been collected, can be seen in Table 3. The collected topics were sorted to gather meaningful entities.

Table 3

*Code descriptions for environmental concern topics and frequencies in all letters (N=30)*

| Subcodes for topics of environmental concern | Section-level code about the number of environment related topics and the passion that is portrayed in the writing. | Frequencies |
|---|---|---|
| Pollution, plastic & recycling | Notes about either pollution (i.e., ocean, forests, nature in general), plastic use (also, package-free stores) or recycling are made | 23 |
| Respect of flora & fauna | The writer describes changed landscapes, i.e., green areas, reforestation, insect abundance or mentions respect or appreciation for nature and animals as well as their worth of protection | 23 |
| Green mobility or travel | Descriptions of how people in the future get from a to b (i.e., more bikes, electric cars, public transport) or changed travel habits like no more flights | 21 |
| Green energy | Sections containing details about energy generation, often referring to renewable energy, solar panels, wind farms or general descriptions of changing energy policies. | 13 |
| Industrial production or emissions | Sections with remarks about restrictions or punishments for companies' emissions or production methods, also references about CO2 emission on a larger scale | 12 |
| Gardening & local consumption | Descriptions about how the writer or common people have their own garden and grow their own vegetables or buy local vegetables on the market. | 12 |
| Conscious consumption | Sections containing thoughts or actions about shopping choices (i.e., what product is more eco-friendly) and ways to consume more sustainably or less in general | 10 |
| Animals & meat consumption | Sections describing animals in farming or non-farming conditions as well as references about meat production and consumption | 7 |

| | | |
|---|---|---|
| Change of climate or weather | Remarks about changing weather conditions and their consequences like warm winters affecting winter sports tourism. | 6 |

In Table 4, the distribution of the overall EC category frequencies is depicted. This table represents the result of the analysis process of finding degrees of EC. A listing of the frequencies and distributions of the codes by country and education levels in high and low EC can be found in appendix C as well as an example letter with the maximum score in EC in appendix B.

Table 4

*Frequency of categories representing environmental concern*

| | Level of each category (*with classification criteria*) | | |
|---|---|---|---|
| Category | low | medium | high |
| Proportion | 13 *(4-14%)* | 7 *(15-26%)* | 10 *(27-38%)* |
| Topics | 13 *(0-2)* | 11 *(3, 4)* | 6 *(5-9)* |
| Passion | 13 *(0)* | 14 *(1, 2)* | 3 *(2, 3)* |

*Note*. In each row and column there are different letters. E.g., the category of passion was at a high level in 3 letters (with 2 or 3 passion indicators, as shown in brackets). The italic numbers represent the classification criteria as described in 2.2.3.

### 3.2 Connection of environmental concern and futures consciousness

An answer to the main research question of how EC and FC relate to one another is presented in the following section. First, the results of comparisons between FC codes and the two groups representing letters high vs. low in EC are described using normalized values. Afterwards, co-occurrences from Atlas.ti tables plotting the EC topics and the FC codes together are presented along with exemplary quotes to give a deeper look into how each topic correlated with the dimensions.

**Co-occurrences of EC topics in FC dimensions.** When looking at co-occurrences between the five dimensions and the topics of EC, three dimensions show connections within the subcodes. For one, in the subcode intermediate agency, the topics green mobility and pollution, plastic & recycling co-occurred most frequently. This shows that a certain perception of agency is attributed to these two topics and is reflected in their expression. In a quote showing the connection between intermediate agency and green mobility, the female author writes: *"Electric cars have become popular and our female president drives around Estonia on her own with an electric car".* The Estonian writer has a specified agent in mind, the female president, who uses green mobility. This public figure has power and is expected to use this to be a positive role model in questions of the environment by the writer. She explicitly mentions that it is a female president, which is still the case in Estonia, which gives the excerpt a feminist tone. She drives the car by herself which attributes autonomy to this person. The first sentence states that she is not the only one showing this behavior, but it has become popular in the general public as well. The combination of the two, the public and the president making the same ecological choice shows the embeddedness in the general behavior in society.

Another quote with intermediate agency but with the topic pollution, plastic & recycling is this: *"With 'Let's do it' we have managed to almost entirely rid our forests and roadsides of trash. Rarely it is possible to see an empty bottle or package lying somewhere, but even if anything like this occurs, it is cleaned up quickly."* The agency is given to an unspecified "we"-agent who makes a positive difference by removing trash and avoiding pollution of the forests. "Let's do it" seems to be a common activity where people collect trash they see, irrespective of whether it is theirs. Like this, the 73-year old Estonian writer gives the agency and responsibility to the individual people living in the country.

Secondly, cooccurrences are found in the subcode closed attitude and a whole range of topics of EC which is surprising because the subcode open attitude has been applied more

often. An example quote that shows this connection is from a letter describing a two-sided future where the writers own life is peaceful and he sees the positive changes, however in the end the 39-year-old Ecuadorian changes back to a negative future world and writes that *"[...] in the rest of the world it will be very similar to the past except that we will have less green areas, more pollution, many factories and businesses other than a lot of garbage due to technological advances."* Three EC topics can be found in this sentence alone and the writing stating "it will be" with use of the future shows a closed attitude of the author. He also might have written what a probable future can look like, not a desirable one. Nevertheless, a pessimistic and closed stance is perceptible.

The last dimension that showed cooccurrences is Systems Perception with three topics of EC and the passion aspect. Explicit interconnectedness and green mobility, industrial production or emissions, pollution, plastic & recycling had ten or eleven co-occurrences each. This one quote shows a connection between explicit interconnectedness and three EC topics mentioned: *"The generation of Gretas has grown up – there are people with an environmentally friendly way of thinking among decision-makers; conservation is important. For the most part, renewable energy is used. Transport – more hybrid vehicles, bikes, electric bicycles. Industries have changed their regulations, the labour force that was employed by fashion and other junk industries now grows food both organically and in artificial conditions. Most of the materials are reused."* The 47-year-old woman shows her awareness of the interconnectedness of a new generation of people with more ecological values who have gained positions of power and the effect on changes in environmentally friendly behaviors among the people and businesses. By mentioning that the new generation "has grown up" she shows that she takes notice that this generation with the same values has been there before (in the present) but was too young to be in influential positions but has now (in the future) set many changes in motion, giving the section a sense of time levels.

A quote with cooccurrence to passion is:

"*You can all choose to unite for a better tomorrow for you and the environment. It is thanks to the natural world that we exist. We are the ones who really need it. Nature will rejuvenate without our interventions (emissions, non-passage of ships from the seas, limited fishing, etc.) as long as the quarantine period is extended due to the mockery. As long as we are united, defending our rights and knowing our obligations to all living beings on this planet, things can and will go much better! Moving forward towards another reality, respecting the environment, ourselves, and the generations to come!"*

The 22-year-old Greek woman shows systems perception, more specifically, an explicit awareness of interconnectedness by pointing out that the people have the possibility to realize a positive future for humans but for the environment as well, meaning that both parties cannot be thought of as separate regarding the future. She further elaborates that people live because of the environment and nature does not need humans but humans do need nature to live. Moreover, she makes the connection between the quarantine causing people to stay inside, reduce their economic activities and the effect of this on the recovery of nature. The Greek woman calls for action to the reader ("you […] all"), connecting respect for the environment with respect for the people ("ourselves") and for the next generations.

**Relation between FC dimensions and the degree of EC.** To answer the main research question about how FC dimensions and high vs. low EC relate to each other, first, the dimension Time Perspective will be taken into account. Overall, the participants mostly focused on a broader perspective with long-term changes. However, more participants in the low EC group attributed a greater role to the end of Corona measures than the high EC group. In both high and low EC, a time horizon of 1-10 years was the most common and the subjective setting of most letters was based on a larger scope narrative. The only three letters with an unknown objective time horizon were in the low EC sample. Similarly, the only three letters focusing on a relief of the end of Corona measures as subjective time horizon, were in the low EC sample.

Regarding the dimension of Attribution of Agency, there was a slight tendency for higher agency attribution in the high EC group while both groups also shared many similarities. When comparing the two groups of high and low EC, it can be seen that the distribution of intermediate and high agency is similar within both groups. Intermediate agency attribution was the highest ($n_{lowEC}$=15; $n_{high\ EC}$=18) and high agency the second highest ($n_{lowEC}$=4; $n_{highEC}$=8). However, when considering the two groups combined as one sample, most letter quotes with high and intermediate agency are in the high EC group. This means that agency was mostly attributed to either a specified agent with one specific aspect of agency (i.e., action, reflection on consequences, responsibility or intentions and plans) or an unspecified agent with two aspects of agency. This occurred to a greater extent in the high EC group. Unspecified agents were "people", "they" or "we" if unclear who the writer meant. Specified agency in the future was attributed to "environmental activists", "volunteers across Europe", "my partner and I", "the scientists", "Estonia as a country and Estonians", "farmers", "young people and children in particular", "I", "states that have taken care of everyone", to name a few. The following quote is an example of high agency attribution in a letter by a 32-year-old Italian woman in the high EC sample:

"*We preferred to spare you the anguish of life, perhaps you would have grown up healthy and passionate but we were afraid that you might get a tumor at too young an age, or that it might come to us and you would have seen us die without having given us the chance to see you on your feet, on the way to your place in the world*."

Here, "we" refers to the writer and her partner and poses as agent. The action here is up for debate. It could be interpreted that the couple generally uses contraceptives to avoid a pregnancy. By deciding not to have a child, the couple showed the intention to avoid harm to it. Further, the writer reflects on the feared consequences of having a child. The quote also portrays a sense of responsibility of the agents.

In both groups, collective as well as mixed agency were evenly distributed so no clear pattern could be found. In collective agency letters, participants assigned agency overall to a collective, like society ("they", "people") or smaller groups of people to which the writer attributed power. In mixed agency, agency is attributed to a personal agent and to collective agents to equal parts.

Regarding Openness to Alternatives, both groups showed large similarities in their attitude but slightly differed in terms of multiplicity. Overall, in both groups, an open attitude to alternatives was most prevalent (n=25 in both) compared to a closed attitude ($n_{lowEC}$=14; $n_{highEC}$=15;). Open attitudes were expressed by phrases that showed openness towards how the future might look like, showing that the future is not fixed and that several outcomes are possible. An exemplary quote for an open attitude from the high EC sample is:

"*It seems like there is less activity on the war fronts. Not sure whether it's the pandemic that wore them out or made them think things over or are they taking a break to gain strength in order to start with the killing again".*

The language used in this quote shows that the writer is not fixed on the circumstance and expresses uncertainty about the state of war fronts themselves as well as reasons for that state and whether it is going to last. It also shows distrust and skepticism about the positive part of the future world, yet it portrays openness. Another example from the same group is this quote: *"I think that I'll still live here in the future. I was born in the country side and I like it here*." which demonstrates openness by use of the phrase "I think". The writer hopes or wishes to live in the same place in the future but also shows she knows that there is a chance this might not be the case.

Regarding the expression of multiplicity of future outcomes, in both groups most letters contained descriptions of multiple issues ($n_{lowEC}$=11; $n_{highEC}$=8). The only two letters focusing on one single issue, which was the environmental issue, belong to the high EC group.

One participant of each group focused on contrasting groups in their future world interpretation. One of these, a 44-year-old French woman from the low EC sample, explains how certain regions changed their ways to become more “egalitarian”, remove public cameras and bring the power to the people while other regions still followed the old ways of suppressing and controlling people.

In the dimension Systems Perception, interconnectedness is shown by language use. Influences from one level or group to another are implicitly or explicitly suggested in a cause-effect relationship. A letter shows extensive interconnectedness if connections between three or more levels or groups, or a relationship between two elements is explained in detail, showing a certain complexity to the connection. Examples for levels or groups in the sample are areas such as the health or educational system, personal and social levels, or time levels. Most letters showing extensive interconnectedness were in the high EC group (n=10), less in the low EC group (n=7). Comparing the number of times interconnectedness has been expressed explicitly, slightly more sections with this trait belong to letters in the low EC (n=27) compared to the high EC group (n=25). In the following excerpt from the low EC sample, explicit interconnectedness can be seen:

*“We also enjoy the nature around us a lot. In our spare time we go cycling, walking, bird-watching, looking for plants and all kinds of other activities in nature. In this way we get to know nature again: what is edible, which plants/herbs have a healing effect, what kind of plants grow where and when, which birds live in which areas.”*.

The writer of this section makes an explicit connection between going out in nature more frequently (presumably due to the Corona restrictions) and finding a new relationship to nature again, learning about it to eventually profit from that knowledge and nature. To sum up, both groups are similar with regards to section-level interconnectedness, but the high EC sample shows a deeper understanding of interconnectedness in the letters overall.

Lastly, the analysis of the letters regarding the last dimension, Concern for Others, revealed that participants in the low EC sample had their areas of concern more evenly distributed while the high EC sample has a stronger focus, not only on green concern, but also on society. Green concern was by far the most common concern in both high and low EC groups ($n_{lowEC}$=24; $n_{highEC}$=37). This result was expected since the letters were pre-selected based on the criterion that they show green concern. However, in the high rated EC group the two next most frequently mentioned concerns were about society (n=20) and humans and generations (n=18) with a large distance to the other codes. Compared to this, the patterns in the low EC sample are more evenly distributed. Here, the next most frequent codes are society (n=17) and self (n=14). When comparing the subcode Self in the two groups, it can be seen that low EC has a higher rate of Self than high EC (n=9). This could mean that people in the low EC sample focused more frequently on a concern of themselves than people in the high EC sample. In both groups, letters with an intermediate degree of concern are the most prevalent, followed by high degree of concern. This means that in most letters, two or three different self-transcending concerns were shown.

## 4. Discussion

In this thesis, letters from the future have been studied with regards to how FC and EC relate, using operationalizations of these constructs in a qualitative analysis. These patterns were studied in 30 people across various countries, such as Estonia, Greece and The Netherlands.

Regarding the main research question, of how FC dimensions and high vs. low EC relate to each other, the following observations were made: Differences were found in terms of a stronger agency attribution and systems perception in the high EC sample compared to the low EC sample. A pattern was also found in the Concern for Others dimension, with different

areas of concern being favored in the two groups. In the dimensions of Time Perspective and Openness to Alternatives, no clear patterns or differences could be found between the high and low EC groups.

One remarkable finding was revealed in the comparison between participants with low vs. high levels of EC and awareness of interconnectedness. People high in EC seem to have a deeper understanding of connections and complex relationships between systems than people with low EC. Palmberg et al. (2017) studied the ability for systems thinking regarding ecological sustainability. The authors argue that systemic thinking is not mainly influenced by education, but that experience plays a greater role because older participants showed more systemic thinking than younger ones. In fact, the median age in the high EC group was 53, and 33 in the low EC group. Thus, age may have been an influencing factor on how this dimension and possibly the others were used.

Further, people with high EC letters showed a higher agency attribution. This group had more specific ideas about who takes action and what kinds of behaviors influence and will have influenced change in the future. This can also be observed in the co-occurrences between intermediate agency and the topics of EC, where specific actions about how the environment is influenced were described. Fleming and Vanclay (2010) argue that agency and responsibility taking regarding climate change are fundamentals for taking action. They further state that having a specific and clear image about future actions is a crucial precondition. Therefore, it could be argued that people with higher EC could be more likely to engage in pro-environmental behavior, provided the agency attribution is personal.

Another finding suggests that those with high EC showed a stronger focus of concern towards the environmental issue whereas those with lower EC rates exhibited a more even distribution of concerns, with the self, freedom and society also standing out. When looking at the frequency of the other concerns in both groups, it can be seen that the salient second and third priority in the high EC letters are humans, generations and society. In contrast, in the

low EC letters, the other concerns are more evenly distributed so only concerns for society stand out next to self-concern.

On a societal level, this can mean that other topics might not be seen as important as ecological topics by the high EC group. Nevertheless, other topics are not out of sight as society, humans and generations stand out with high frequency. In the low EC group, concern for self was portrayed significantly more frequently than in the other group which also supports the finding that this group might focus more on individual concerns that might not be self-transcending. In a study by Binder and Blankenberg (2016) it was found that altruistic concerns, such as ECs supported volunteer work. Thus, people with higher EC might be more likely to care about social matters as well.

In both groups, agency was ascribed to collective and mixed agents to equal parts. This finding can be interpreted in a sense where the future is not mainly created and influenced by the self but also by others. There is an understanding that in the future, there is a level where individual people follow rules set by others but also a level where these individuals can shape their own lives and have an impact on their future. When examining the collective agents, it can be seen that agency is ascribed to specific groups of society; for instance: “the scientists”, “farmers”, “young families”. This shows how these participants see a responsibility and power to shape the future in societal groups each doing their part. They could imply that many communities have to work together to achieve a difference and that governmental decisions supporting that are not a requirement, as they are rarely mentioned. In a study it was examined how people react to measures to contain a crisis, depending on whether responsibility is seen as belonging to themselves or to the government (Howell et al., 2016). It was found that governmental measures caused polarized reactions with people strongly agreeing or disagreeing with them. The result further depended on political orientation and perceived threat of climate change. These aspects could have had an influence on why the participants in

this study rather focused on social groups or personal agents as being responsible for future change.

Furthermore, all the letters primarily showed an open attitude towards what the future will hold in comparison to a closed and determining attitude. This suggests that these writers who assign some importance to environmental topics in their future world mostly have an open mind with how things can develop. Even though the subdimension is primarily intended to be a positive trait because it is put in a context of a desirable future, this can be understood both negatively and positively in this case because the sample did not exclusively write about preferred futures. Sometimes also negative aspects, fears and uncertainty were expressed, or a probable future description was incorporated in addition to or instead of a desired one. Therefore, not knowing and seeing several possibilities of how the future (of the environment) could develop in a future marked by fear depicts a negative narrative. However, considering the high EC sample and its high agency attribution, a different image emerges. In that group, many specified agents and actions were identified. It can be interpreted that people writing about a negative future scenario who have specific agents in mind with an open attitude show that they still manage to have hope. After all, hope is about concerning oneself with an issue and reflecting about it, despite having a negative image in mind. Further, hope was found to be linked to high agency thinking (Tong et al., 2010).

A finding that was rather unexpected is that closed attitude co-occurs with many of the EC topics in comparison to open attitude although the latter is the more frequent code. This can mean that the openness does not so much refer to the environmental topics but rather to other aspects. Instead, when it comes to concrete ecological topics and a concern that is connected to them, the narrative becomes more determined regarding future outcomes.

The context of the pandemic might also be visible in this finding. Many letters referred to Corona as the one factor that changed everything without going into detail how that came about. This critical event seems to be a great source of hope, that did not only cause

negative but also stimulated larger changes that were long seen as necessary but could not be implemented due to the indolence of a globalized world. In some letters the crisis became a form of societal force, causing changes all over society and the world and helping the people in the future world realize what is important.

Looking back at the question in the beginning of how positive future images of the environment might look like, it could be seen that "positive future" was defined by the participants in various individual ways that show what is important for the individual person to imagine and to communicate to a reader.

### 4.1 Limitations, Strengths and Outlook

A strength of this study is that it provided a qualitative coding scheme for narrative future studies specifically for the degree of EC. This means that other areas of concern for others from the FC coding scheme by Sools et al. (in press) could be studied with the same technique, applying the EC scheme to concern about society, freedom, humans and generation and others. Then, the themes would be adapted to the area of concern and the passion indicators should relate to the respective area as well.

An aspect that can be considered a shortcoming of the thesis is that the EC coding scheme has not been evaluated regarding its reliability or validity. By applying the procedure to other areas of concern, it could become apparent whether the scheme is a suitable measurement. However, this has not been the goal in this thesis because the main interest lies in the letters and their portrayals of individual futures.

The use of a futures research method and the concept of FC in times of change such as the pandemic poses as a strength of this thesis. The context offers unique possibilities to study how people imagine what the natural world will look like and how it will have developed. The results showed that many see the crisis as the most influential factor that brings about positive changes.

Another limitation to this study is that the letters were translated to English before the analysis so no influence on the translation was possible. Therefore, the letter content could have had a different meaning in the original language and things might have been lost in translation. However, it would have meant a disproportionate additional expenditure of time to translate the letters again personally.

It became apparent that the average word count in the sample that was analyzed was significantly higher than the average in all the letters of the project. For the analysis this was considered by using the proportion of words in the letter (referring to the environment) and not the absolute number of words. Yet, this disproportionality in word counts could have been a sign that the participants in the sample felt more comfortable to write more and to imagine specific scenarios. Therefore, the participants might not be representative to the average participant in the project. Further, the people who participated in the project might not be representative to the average person because they showed above average writing and reflection skills, which should be considered when appraising this thesis.

During the classification of degree of EC, two options were weighed up. The first was to split the whole sample into higher and lower EC letters, the second option was to make three categories and only compare the letters scoring highest and lowest. Both versions were applied. In retrospect, the differences between high vs low and very high vs very low were minor while it still made certain differences clearer. However, in other areas this may be the best choice to approach the analysis because it gives a clearer distinction between two groups that are on one or the other level.

While a relationship between FC and EC was show, the question of the exact nature of this relationship remains undefined. To make an educated assessment of the nature of the relationship between FC and EC, the letters could be divided into different levels of FC, as suggested in Sools et al. (in press), and compared with the EC levels. According to the data in this study, a statement about a causal relationship cannot be made.

A remark can be added here on the subcode of awareness of interconnectedness. In many letters fictional situations and interplays are described in which the writer sees interconnectedness. In other cases, connections are seen that are worthy of discussion in other contexts. For instance, in one of the letters, Cuba is described as a country that cares for its inhabitants. The person who analyzes the letters cannot make a judgement about these relationships in the analysis, but only about the perceived interconnectedness that is seen in the writing from the point of view of the author. This shows that this code can be susceptible to biases and distortions. Therefore, when applying the coding scheme, special attention needs to be given to an objective assessment of personal views by the person analysing.

The question arises whether the FC facets in the writing can be attributed to the author's original ways of thinking or to the method of writing. This cannot be clearly assessed. Instead, the FC qualities in the letters could be due to either the writing or the writers themselves. Moreover, it could be a result of the combination of both. Yet, it has been found that the writing itself can make a change (Kress et al., 2011). Being prompted to think about specific scenarios has the potential to stimulate new beneficial thought processes (Sools et al., 2018).

As the dimensions Agency Attribution, Systemic Perception and Concern for Others showed most variations in the letters, they could be a focus for future research. There are already studies looking into the aspect of concern for others, such as Binder and Blankenberg (2016) who studied altruistic concern and environmentally friendly behavior. In addition, agency could be a focus because it might be helpful in the future to understand how people experience their own agency in times of crisis. This is particularly relevant with regard to the climate and the Corona crisis, as these are current threats. As stated in the study by Palmberg et al. (2017), systemic thinking is influenced by life experience. Thus, studying this dimension could be insightful to gain more knowledge about the connection to age combined with the crisis setting.

Another way EC and FC could be studied is in an analysis of the role of age with regards to the content of their letters. For instance, considering the time perspective, younger people might set their imaginative future of nature in a different time than older people. This becomes more apparent when considering that imagining 20 years from now has a different meaning for a 20-year-old than for a 70-year-old. With regards to the climate crisis, younger people may be more focused on their own futures and life plans, whereas older people might be more likely to think about the future of younger generations and how their lives may be affected by the crisis. In a quantitative cross-European analysis, it was shown that older people were generally less concerned about climate change than younger people (Poortinga et al., 2019). They argue that this age effect can be explained by differences in (political) values, education and motivation to change social orders. A qualitative study examining individual views on climate change and age differences could provide new and more in-depth insights.

The construct of FC is considered to be a beneficial capacity to cope with crises (Lalot et al., 2021). “In the light of these different challenges, FC hence seems an especially relevant construct to investigate people's perceptions, behaviours, and sense of resilience in the face of the pandemic.” (Lalot et al., 2021, p. 1). Therefore, FC should be strengthened which could be implemented by offering writing impulses to people and making thinking about the future in a structured way more common and popular within and outside of educational settings.

### 4.2 Final Remark

The focus of this work was to get a picture of EC and FC and how they are related, in the setting of the Corona crisis. Therefore, all findings should be interpreted in this context. With respect to EC, the focus was on exploring the construct, so no major differences were expected, unlike a comparison between letters with EG and those without. Yet, this puts more meaning to the differences found.

The degree of EC turned out to be a useful marker to find differences in the way FC was presented in the letters. It provided a unique point of view and focus to the letters in the context of Corona. It showed how the writers had a different emphasis on FC dimensions depending on how concerned they were about the environment.

FC can be considered relevant for environmental thinking because indicators were found that the different dimensions play individual roles in their effect on environmental thinking. People with high EC have a certain way of using FC especially in terms of agency attribution, systemic perception, and concern for others. They have a clearer image in mind about how things in the future should be and should have been handled, have an understanding of complex connections between levels, and emphasize social aspects more strongly in contrast to individual ones.

In conclusion, FC is useful to make connections visible and to build a bridge between research on current and future visions. However, the benefits of the construct come to display specifically when considering the five dimensions it is represented by. This made it possible to show the spectrum of EC in its various dimensions and the individual ways in which they were expressed. This was further enhanced by the context-specificity that allowed to understand the letters in their crisis setting. Furthermore, the passion with which environmental issues were described in the letters shows how important it is in today's times of crisis to further explore visions about the future of the environment in a dimensional model. More knowledge about this could be used not only in research but also in politics.

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# Appendices

## Appendix A

## Original project - Letters from the Future

Will the Future Never be the Same? Letters from a Post-Corona Future

Welcome to this research study!

How do we envision our future lives and the future world once the current coronavirus outbreak is over? How do our present actions and decisions ensure that the new world to come will be a world we would like to be living in? Thanks to your contribution, this study will explore these questions.

For this study, you will be asked to:

1. Write a letter from the viewpoint of the future back to the present. You will receive more detailed information about how to write this the letter via a time machine exercise.

2. Answer 10 questions about yourself.

Your responses will be kept completely confidential and processed anonymously. The study should take you around 20-30 minutes to complete, but feel free to take as long as you need. Your participation in this research is voluntary. You have the right to withdraw at any point from the study. The project leaders of this study are located at the University of Twente in the Netherlands and can be contacted at:

Anneke Sools: a.m.sools@utwente.nl
Yashar Saghai: y.saghai@utwente.nl

By clicking the button below, you acknowledge:

Your participation in the study is voluntary. You are at least 16 years of age. You are aware that you may choose to terminate your participation at any time while taking this survey without giving a reason.

O I consent and begin the study.

O I do not consent, I do not wish to participate.

*Instructions: How to write your letter from the future*

In this exercise you will imagine traveling to the future with a time machine. You will travel to a moment in time when the current coronavirus outbreak had ended. It may be the time just after the dust has settled or a longer time ahead when the longer-term impact of the corona outbreak has become clear. Once arrived in the future, you will write a letter about that future and send it back to the present.

The following suggestions give you an idea about what your own letter from the future might look like. Feel free to use these instructions as a basis for writing the letter your own way. Don't worry about spelling, sentence structure, or grammar but simply write anything that comes to your mind. There is no right or wrong answer.

Keep in mind that it is a letter that is written backwards from the future to the present, so you imagine the future situation as if it is already realized. Feel free to use your full imagination: Remember that it is about a future which has not occurred yet. Consider it an opportunity to think about possibilities to transform your own life and the world around you for the better.

Ready to travel to the future? Then start writing your letter with the following guidelines.

Imagine the following points as vividly as possible, giving a detailed description so that others reading your letter will be able to see the future you imagined as if they were watching a movie.

*(1) How far into the future and where did you travel?*

Imagine traveling with a time machine to the future. Once arrived, you step out of the time machine and start living in this new time. Do you have a sense of where and when this future will take place? This time may be a week, a month, half a year, one full year, many years, decades or even centuries or millennia ahead of us. (2) Describe your future world Now that you're familiar with your future world, can you describe it? Look at your immediate surroundings. What do you see, feel, hear and smell? Do you for example see nature, buildings, people, technology? Are you in a city or in the countryside? Are you in your own country or elsewhere? Are you inside a building or outside? Is it noisy or quiet? Now turn to look at your future world at large (community, society, humanity, the planet). Do you notice anything about how society or nature are functioning now that the corona outbreak is over (such as, social relations, the environment, schools, hospitals, employment, businesses, industries, transportation, technology, the concrete effects of laws, regulations, policies)? What positive changes do you notice in what matters to you? What has disappeared that you're glad has not returned?

*(3) Describe yourself in the future*

Consider now yourself. What are you feeling, thinking, and doing? If there are other people, what can you tell about them? What is happening in your future life?

How are you dealing with opportunities and setbacks on a specific day, moment or event?

*(4) Path towards the future*

Now think about the path that led to the future you just described. How did this future come into being, who or what has contributed to making those changes possible? How do you look back on this path to the future?

*(5) Message to the present*

You decide to whom you want to write the letter and give a message to this person in the present. This could for example be yourself in the present, another person, group or organization (for example, your child or grandchild, friends, the next generation, the minister of Health etc.).

Thank you for your letter! To complete the survey, please answer the following 10 questions.

[The survey was not analyzed in the present thesis and is therefore not included in the appendix.]

**Appendix B**

Example letter with high EC

*"01/05/2022, Greece, To the next generation: The door opens. The glare of the sun blinds me, and I close my eyes abruptly. The heat is invading the capsule, and I take the first step to get off the time machine. I step on dense vegetation of tall plants and flowers and immediately get overwhelmed by the sounds of insects and especially bees that exist around. The smells of flowers and green invade my nose, and I stand still as I gaze at the spectacle. In front of me, there is life and behind me, death. All the blooming vegetation, the beautiful smells, and images disappear as soon as I turn and see a few meters below expanses of burned trees, plants, and animals.*

*Only the bare trunks of the trees are seen shrouded in sorrow for what they once were and how they became. A light breeze soothes my grief. I close my eyes and listen... Now I'm really listening... I hear all that existed and all that is now consumed by a fire; a misunderstanding of all the centuries of meaningful contact and connection with nature for the sake of "economic development", because this is the modern man, adrift due to his passions and his fierce desire to dominate... At the thought, I was interrupted by the laughter of little children heard from the distance behind me. They remind me that there is still joy, laughter, life, and*

*carelessness, which again gives me hope that things can change..! At the very moment when this thought passes through my mind, it is taken from me most forcibly. I see every child has a full bouquet of flowers in his hands, and they keep cutting and cutting and cutting without mercy and without stopping more and more! And the question is, why??? just why? Where did they learn to be so ruthless and without respect for what is most important another life??? Life is as essential as their own or the people they love or an animal... And then I remember the day. It is May 1st, a day of ideals and values that has turned into a day of "celebrating spring" by cutting lives and rejoicing in it by making wreaths like those in funerals...*

*I observe that while nature has been born again, man has, unfortunately, not... Although he went through a critical period, appreciated the good of freedom, and saw the world change in a hard and painful way, he stayed at his base himself... After overcoming the obstacle of economic collapse with the cooperation of all countries from around the world, it found its rhythm again, slowly but surely and, of course, with greater exploitation of the weakest. Although he was allowed to act in solidarity and change his way of perception of everything around him, another path was chosen. It is sad and frustrating to experience such a state of watching and not doing anything to counterbalance things, simply because "others" always decide for you. But are things really like that? The only thing that is important and you must remember no matter what happens and what changes take place and no matter how "normal" such changes seem-You can all choose to unite for a better tomorrow for you and the environment. It is thanks to the natural world that we exist. We are the ones who really need it. Nature will rejuvenate without our interventions (emissions, non-passage of ships from the seas, limited fishing, etc.) as long as the quarantine period is extended due to the mockery. As long as we are united, defending our rights and knowing our obligations to all living beings on this planet, things can and will go much better! Moving forward towards another reality, respecting the environment, ourselves, and the generations to come!"* (22-year-old Greek woman)

**Appendix C**

Table C1

*Frequency and distribution of high and low scoring letters in EC by country*

| Participant Country | Low EC letters | High EC letters | Total sample |
|---|---|---|---|
| Ecuador | 3 | 3 | 6 |
| Estonia | 3 | 4 | 7 |
| Finland | 3 | 0 | 3 |
| France | 2 | 1 | 3 |
| Greece | 4 | 1 | 5 |
| Italy | 0 | 1 | 1 |
| The Netherlands | 2 | 3 | 5 |
| sum | 17 | 13 | 30 |

*Note.* Here, the columns low and high EC represent the lower and upper part of the sample.

Table C2

*Frequency and distribution of high and low in EC scoring letters by level of education*

| Participant education level | Low EC letters | High EC letters | Total sample |
|---|---|---|---|
| less than high school degree | 0 | 1 | 1 |
| High school graduate | 1 | 0 | 1 |
| some college, no degree | 2 | 2 | 4 |
| associate degree | 2 | 4 | 6 |
| Bachelor’s degree | 6 | 0 | 6 |
| Master’s degree | 5 | 3 | 8 |
| Doctoral degree | 1 | 2 | 3 |
| other | 0 | 1 | 1 |