# Hope as a generative force

A form of hope to be nurtured by academic institutions to foster proactive engagement among university students

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# Hope as a generative force:

A form of hope to be nurtured by academic institutions to foster proactive engagement among university students

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## Abstract

Understanding hope and its motivational generative force in the face of climate change is an imperative, especially in the contemporary context of climate anxiety, doom-and-gloom communication, and spread of hopelessness among the younger generations. Concomitantly, academic research has bloomed this last decade when it comes to demonstrating the potential of hope to draw on negative emotions to nurture engagement towards pro-environmental behaviours. However, a gap remains concerning the nature, the characteristics, and the transmission modalities of this form of constructive hope.

In this thesis, I study the case of proactive students enrolled in university programmes related to global environmental challenges, how they reflect upon hope in the face of climate change, and what form of constructive hope they embody through proactive engagement. To that end, I collect qualitative empirical material through interviews among a sample of outstandingly engaged students, who are preliminarily selected based on the results of a purposive survey. Then, I run a content analysis, driven by Webb's theoretical framework of the various modes of hoping, and Snyder's theory of hope and its four components (i.e. goal, pathway thinking, agency thinking, emotional reinforcement).

The results of the analysis shed light on the twofold benefit of constructive hope: its contribution to enforce sustainable emotional regulation in the face of climate change and its role in promoting pro-environmental behaviours at an individual and collective level among students. The study emphasises the importance of discussing visions of desirable, yet possible, futures, balancing *critical* and *utopian hope* (goal). It suggests that constructive hope requires the reinforcement of trust in collective potential and external actors (pathway thinking), as well as students' increased confidence in their own contribution and the articulation of their learning with practical and professional applications (agency thinking). The study further advocates for the acknowledgment of both negative and positive emotions raised by knowledge acquisition, and for the explicit teaching of the different coping strategies and their consequences on students' well-being (emotional reinforcement).

Finally, the implications of these outcomes for the academic context are discussed and made applicable through practical recommendations for educational methods and communication at multiple levels of university education (i.e. university, programme, teaching methods, students' interactions). In turn, academic institutions should be empowered to better exploit the so-far-neglected potential of hope as generative force fostering proactive engagement and increasing emotional stability among students, and thus develop their long-term ability to respond constructively to any major challenge they encounter.

## Acknowledgements

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## Abbreviations and concepts

**RQ**: research question

**N**: number of interviewees who evoke the theme being discussed (in the appendices).

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**Hope**: "a goal-directed thinking, in which people appraise their capability to produce workable routes to goals, along with their potential to initiate and sustain movement via a pathway" (Snyder, 1989, p. 143).

**Constructive hope**: refers to a form of hope which fosters long-term, proactive engagement at the individual and collective level.

**Proactive engagement:** involvement in individual (e.g. lifestyle choices, high-impact individual actions) and collective (e.g. political engagement, participation to social movements) actions which intends to contribute to climate change mitigation (see section 4.1.1 for further details).

**Inner transformation:** refers to changes related to people's inner dimensions, i.e. mindsets which are made of beliefs, values, worldviews, or paradigms and associated with cognitive and emotional capacities (Wamsler et al., 2020). I rely on the assumption that this personal sphere of transformation can open new pathways towards sustainability and potentially have high transformative impacts on our world.

**Young adults:** adults between 18 and 30 years old.

*"If you want to build a ship, don't drum up the men to gather wood, divide the work, and give orders. Instead, teach them to yearn for the vast and endless sea."* **Antoine de Saint-Exupéry**

# 1. Introduction

## 1.1 The hope deficit of our times

The news is not good. It seems that we are running out of time to address climate change, depicted as one of the most serious threats that humanity is facing on a global scale (Cook et al., 2013; IPCC, 2014). Other anthropogenic, environmental challenges put further pressure on our survival and the ability of the other living beings on this planet to subsist (Steffen et al., 2015). People are facing this terrifying vision of dystopian apocalypse with almost no faith in an alternative future (De Cock et al., 2019; Hicks, 1998). The stress and worry generated by the communication on climate change and its impacts is connected with the rise of negative emotions (Nolen-Hoeksema, 2000), such as anger (Bushman, 2002), a sense of guilt (Skinner et al., 2003), and hopelessness (Connell et al., 1999; Eckersley, 1999). In fact, these emotions are not surprising since anxiety arises when faced with major threats of great danger paired with no effective or implementable solution (Costello et al., 2011). Climate change fulfils both conditions (Cook et al., 2013).

Alarmingly, young adults appear particularly exposed to deficit of hope in the face of climate change (Ojala, 2015). Studies indicate that although they demonstrate a particular interest in and worry for the global future in the face of environmental problems (Dunlap et al., 2000; Holmberg & Weibull, 2006; Lindén, 2004; Nord et al., 1998), they are not collectively engaged in global societal issues (Ellis, 2004; Putnam & Putnam, 2000). Moreover, young adults demonstrate the largest gap between pro-environmental attitude and actual behaviour in the private-sphere actions (Lindén, 2004 in Ojala, 2007a). It is therefore not surprising that this age range has a propensity for negative emotions such as helplessness, despair, and anxiety in relation to global problems (for a literature review, see Hicks, 1996; Hicks & Bord, 2001; Nordensvard, 2014; Norgaard, 2006; Rickinson, 2001; Rogers & Tough, 1996). Pessimism and hopelessness among young adults are especially widespread and serious when it comes to global environmental problems (for a literature review, see Connell et al., 1999; Dean, 2008; Eckersley, 1999; Fien et al., 2008; Hicks & Holden, 2007; Naval-Duran & Reparaz-Abaitua, 2008; Persson et al., 2011; Threadgold, 2012) and more specifically to climate change (Albert et al., 2011; Inglis, 2008; Tucci et al., 2007). Yet, hope among young adults is essential, given their critical role in modelling our mitigation and adaptation responses to climate change for the coming decades (Reser & Swim, 2011). Besides, contemporary young adults play a decisive role in decision-making as citizens and voters, and in practice as consumers and activists (UNEP, 1992). They represent key leverages in the societal deliberations about climate change and other global environmental problems (Ojala, 2007b).

Among the generation of young adults, a sub-cluster of university students appears particularly vulnerable to the lack of hope, due to their regular exposure to sensitive information about the global state of the world and its future (Stevenson & Peterson, 2016). Indeed, students enrolled in programmes related to climate change and other major global environmental problems demonstrate an exceptionally-high level of worry in the face of climate change (Ojala, 2007b). Research has shown that education about global issues sometimes increases students' negative emotions (Hicks & Bord, 2001; Taber & Taylor, 2009). Yet, these students represent the major actors of change of the future. They are the forthcoming policy-makers, scientists, researchers, communicators, and educators of climate change (Johnson et al., 2009; Ojala, 2013a). In addition, the rising number of students enrolled in university programmes on sustainability science, climate change, and environmental studies (Vincent & Focht, 2011) indicates the growing importance of exploring hope among this category of young adults.

## 1.2 What is hope?

The concept of hope is incredibly complex, and there is no consensus on its nature and characteristics (Webb, 2007). The definition adopted in this thesis is that hope is "a goal-directed thinking, in which people appraise their capability to produce workable routes to goals, along with their potential to initiate and sustain movement via a pathway" (Snyder, 1989, p. 143). I expand on this particular definition and justify its relevance for the case of hope in the face of climate change in section 2.3.

The academic literature recognises the coexistence of various components underlying the concept of hope. The cognitive and emotional components constitute the most acknowledged dimensions of hope (Lazarus, 2006), but they coexist in some theories with a behavioural dimension (Hornsey & Fielding, 2016; Ojala, 2015). In short, the cognitive component of hope enables the identification of certain desired goals, the conception of desirable futures, and the means to reach them (Bovens, 1999, p. 674 in Webb, 2007), whereas the emotional component represents the motivational force to act in the absence of certainty (McGeer, 2004; Snyder, 2000a). For its part, the behavioural dimension becomes apparent when hope is embodied through actions and concrete adaptations of behavioural patterns.

Additionally, for the sake of exploring hope in the face of climate change and including views on hope from other disciplines (Ojala, 2016a), hope is also considered as a way of coping with negative emotions (Ojala, 2007b). Likewise, Lazarus (2006) describes hope as a positive emotion related to a cognitive appraisal pattern of wishing for and expecting a desired goal in the future to be realised, though without certitude, as well as a coping strategy to face negative states by hoping for a solution.

Finally, hope in the face of climate change also encompasses a collective dimension, since hope is based on a common vision of social change for the greater good of a larger group of people, or even humanity as a whole (Bar-Tal, 2001; Braithwaite, 2004; Courville & Piper, 2004; McGeer, 2004; Ojala, 2016)

## 1.3 Why is hope needed?

As Orr (2011) says, hope is an imperative in the face of global environmental challenges. Not only is hope essential for its positive psychological and behavioural contributions, but it is also an essential strategy for coping with despair and its indirect effects. Indeed, hope has the potential to mitigate hopelessness and regulates worry and anxiety in the face of climate change (Li & Monroe, 2019). By helping to mitigate negative emotions, it promotes awareness raising, knowledge learning (Ojala, 2010), and action competence developing (Ojala, 2012b), defined as the capacity to critically select and conduct actions aiming at responding to societal challenges (Jensen & Schnack, 1997). Furthermore, eco-despair and environmental grief are barriers to environmental engagement (Kevorkian, 2004). In the absence of hope, young people with a high interest in solving global justice problems are exposed to the damaging consequences of hopelessness on their well-being (Eckersley, 1999; Fien et al., 2008; Fleer, 2002; Hicks, 1996; Kronlid, 2009).

Moreover, hope can spark the awareness that the future is open and possible to shape (Bell & Olick, 1989). It is precisely this openness of futures that makes us responsible for the actions and the non-actions of today (Hamilton, 2009; Williams, 2004). Alternative pathways and desirable futures are currently not being discussed seriously or publicly, resulting in an increasing number of people experiencing hopelessness (De Cock et al., 2019). The intensification of possibilities could provide individuals with a sense of empowerment since they would perceive the potential to influence their future with other human beings (Debaise & Stengers, 2016). Parallelly, these windows would foster their sense of community, integrative attitude (Candy, 2010), searches for meaning in their human relationships (Jameson, 2005), and increased well-being (Ojala, 2013a).

From a behavioural perspective, hope appears as an essential component in engaging individuals in solving global problems (Snyder & Folkman, 2000). At first glance, the stronger the feeling of hope in the face of climate change among young people, the more likely their goals' achievement and the related positive outcomes because of their proactive engagement (Li & Monroe, 2019). Indeed, hope seems to promote pro-environmental behaviours (Hicks, 2014; Lueck, 2007) both in terms of lifestyle choices (Stevenson & Peterson, 2016) and political engagement (Ojala, 2015). More specifically, people feeling strong hope are more frequently actively committed to mitigating climate change (Lueck, 2007;

Ojala, 2007a, 2012a, 2012c; Stoll-Kleemann et al., 2001). Therefore, hope among young adults is indispensable to ensure their contribution to achieve a desirable future through participation in concrete actions and societal decisions (Ojala, 2007b).

However, there are also empirical studies that relate hope to a weaker motivation for action (Hornsey & Fielding, 2016), a form of denial of the seriousness of climate change when combined with a low degree of worry  (Ojala, 2008), a wishful thinking replacing agency (McGeer, 2004) or an optimistic bias inhibiting sense of responsibility for pro-environmental actions (Gifford, 2011). These diverging opinions on the potential of hope for agency (Homburg et al., 2007; Lorenzoni et al., 2007; Snyder et al., 2002; Stoll-Kleemann et al., 2001) emphasise the need for exploratory research on the various modes of hoping, and the characteristic of constructive hope which motivate an individual's proactive engagement. As Anderson (2006, p. 733) underlines it: "Hope is easily identified and its quantitative presence or absence highlighted, but the taking-place of hope, its mode of operation, remains an aporia".

## 1.4 Aim of the study and research questions

This thesis aims at increasing knowledge about the practice of constructive hope among proactive students and understanding how they maintain hope around climate change from the perspective of positive psychology (Bolier et al., 2013). More precisely, the purpose of this research study is to unleash the potential of hope when trying to strike a balance between informing academically students, building concern but avoiding hopelessness, while encouraging the translation of legitimate worry about climate change into proactive engagement (Stevenson & Peterson, 2016). In turn, educational methods in academic institutions could allow for communication on climate change and other major sustainability challenges, in such a way that they instil a form of constructive hope among their students, overcome despair, and foster action as a more productive response to concern.

A sample of students enrolled in university programmes related to global environmental challenges and demonstrating outstanding proactive engagement is examined in this thesis to answer the following research questions:

**Overarching research question:** What is the potential role of hope as a generative force for proactive engagement in the face of climate change?

- **Sub-question 1:** How do proactive students enrolled in university programmes related to global environmental challenges experience and reflect upon hope in the face of climate change? (RQ1)

- **Sub-question 2:** What form of hope is fostering a proactive engagement among students enrolled in university programmes related to global environmental problems? (RQ2)

- **Sub-question 3:** What are the implications of these findings for educational methods and academic communication in university programmes related to global environmental problems? (RQ3)

At this point, it is important to specify that focusing research attention on climate change is necessary to formulate tangible research questions and relate to a concrete, well-known global environmental challenge during the data collection. However, the outcomes of this study are not limited to climate change. Indeed, the climate crisis is entangled with a myriad of global environmental and sustainability challenges, and it is neither the only nor the last threat humanity is facing. Hope is one of the potential leverages that could be used to promote constructive responses of human beings, and more specifically students, at an individual and collective level to any threat.

## 1.5 Relevance for sustainability science

Before going further, the relevance of a research study on hope for sustainability science must be clarified. Firstly, even though the vast majority of sustainability research focuses on the external world, the potential of individuals and their inner dimensions is progressively being recognised (Dhiman & Marques, 2016; Esbjörn-Hargens & Zimmerman, 2011; Frawley, 2005; Gidley, 2007; Inglis, 2008; Wamsler et al., 2018). It becomes acknowledged that a broader change towards sustainability in people's mindsets represent a deep leverage point with high potential for transformative impact (for a literature review, see Daffara, 2011; Dhiman & Marques, 2016; Edwards, 2015; Esbjörn-Hargens & Zimmerman, 2011; Hamilton, 2009; Inayatullah, 2011; Koger, 2015; O'Brien & Hochachka, 2010; O'Brien & Selboe, 2015; Parodi & Tamm, 2018; Sandercock & Senbel, 2011; Wamsler, 2018; Wamsler et al., 2018; Woiwode, 2016). Therefore, approaching sustainability from the other end, by exploring how inner transformation could have an impact on global sustainability challenges, is an inherent part of the necessary exploratory research of our times (Wamsler et al., 2018; Wamsler, 2019). In addition, this research study is not limited to describing and increasing understanding about the phenomenon of constructive hope, but is complemented by action-oriented and prescriptive components (Wiek et al., 2011), since it provides concrete suggestions for academic institutions.

Secondly, hope in the face of climate change is a socio-ecological interaction in essence, grounded in different reinforcing mechanisms, which exemplify the complexity of the relations between humans and their environment (Head, 2012; Head & Stenseke, 2014). Indeed, the global issue of climate change is intertwined with the global patterns of production and consumption (Swim et al., 2009), and its complexity and severity lead to severe psychological impacts on human beings (Koger et al., 2011), their emotions and their feeling of hope (Connell et al., 1999; Eckersley, 1999; Hicks, 1996).

Finally, the relevance of the promotion of constructive hope as a learning outcome *within* Sustainability Science programmes is unambiguous. Hope relates to one's ability to deal with future dimensions (Hicks, 2014; Ojala, 2012b, 2017; Stevenson & Peterson, 2016; Wals, 2015), and is, therefore, an anticipatory emotion. Its development requires both inter-personnel skills (Ahmed, 2010) and normative competences (e.g. ability to deal with ethical questions) (Ojala, 2017). These aptitudes represent key competencies in sustainability science (Wiek et al., 2011). Therefore, this research study has the potential to contribute to developing such learning outcomes among students in Sustainability Science programmes and other university programmes.

## 2. Theoretical background

This section provides some theoretical perspectives on the potential of hope to translate negative emotions into proactive engagement, on the coexisting modes of hoping, and on the basis of Snyder's theory of hope. These theories guided the data collection and results' analysis, and are integrated into the overarching research process in Figure 2.

### 2.1 Coping strategies: translating negative emotions into proactive engagement

Coping can be understood as "cognitive and behavioral efforts to manage specific external and/or internal demands that are appraised as taxing or exceeding the resources of the person" (Lazarus & Folkman, 1984, p. 141). Different coping strategies coexist and modulate differently subjects' responses to threats. The problem-focused coping strategy consists of addressing and trying to act upon the stressor or the driver of the negative emotions, whereas emotion-focused coping strategy aims at regulating or eradicating the negative emotions themselves (Lazarus & Folkman, 1984). In practice for climate change, problem-focused coping strategy involves research for information, creation of action plans, or involvement in constructive actions (Ojala, 2012b), inspired directly by concern (Stevenson & Peterson, 2016). On the other hand, emotions-focused coping strategies often imply disengaging from actions (Norgaard, 2006; Olausson, 2011; Stroebe et al., 2007), distancing oneself from or even denying the stressor (i.e. climate change), seeking emotional support from fellows close to one (Ojala, 2012b), or hyperactivating one's negative emotions through rumination (Nolen-Hoeksema, 2000), guilt, shame (Skinner et al., 2003), and anger (Bushman, 2002).

A third coping strategy complements the two previous ones and appears particularly adequate for the study of constructive hope (Park & Folkman, 1997). Meaning-focused coping strategies involve finding meaning and calling on values and beliefs in the face of difficulty (Ojala, 2012b). They are specially relevant for problems which are unsolvable in appearance (Folkman, 2008) and yet demand active involvement (Folkman & Moskowitz, 2000), which is undoubtedly the case for climate change. Meaning-focused coping strategies relate to the activation of positive emotions, such as hope, which can motivate action and indirectly buffer negative emotions (Park & Folkman, 1997). Unlike an exclusive problem-focused coping strategy which often leads to uneasy feelings (Hicks, 2010; Ojala, 2013a, 2016a), they recognise the negative emotions but consciously choose to focus on positive trend (Stevenson & Peterson, 2016), through re-appraisal of the problem in a more positive and manageable manner, and trust in different societal actors (Ojala, 2012b). Therefore, meaning-focused coping is not

about alleviating negative emotions, but rather acknowledging them while building resources and fostering a proactive stance towards the stressors (Greenglass & Letterman, 2002).

In turn, people relying on a meaning-focused coping strategy are empowered in the face of difficulties, develop engaging responses, and learn how to cope proactively with the threat (Folkman, 2008). In the case of climate change, subjects report a sense of environmental efficacy, constructive engagement, and sense of well-being (Ojala, 2010, 2012b, 2012c). A meaning-focused coping strategy relying on the activation of hope could be what relates the closest to constructive coping (Ojala, 2012b), representing a huge potential for social change and therefore the socio-environmental transformation of our world (O'Riordan & Timmerman, 2001). However, despite the abundance of academic research demonstrating the potential of hope to promote meaning-focused coping strategies, a gap remains concerning the nature, characteristics and transmission modalities of this form of constructive hope in the face of climate change.

## 2.2 The different modes of hoping: Webb's theoretical framework

The number of definitions and theories of hope has exploded these last two decades across disciplines (Benzein & Saveman, 1998; Lopez et al., 2003). Even though each model claims the superiority of its perspective, hope remains a differentiated experience for individuals, influenced by social interactions, classes, and power relations (Webb, 2007). No theory can possibly capture simultaneously all the cognitive, behavioural, and emotional complexities of hope. Nevertheless, these different theoretical models should not be seen as competing, but rather as coexisting and complementary (Webb, 2007). Ultimately, I chose Webb's theoretical framework because it presents five modes of hoping, which adequately convey the diversity in conceptualisations of hope. The framework is used to guide the choice of an appropriate theory in a second phase (see section 2.3). Furthermore, the framework's consideration for both cognitive and behavioural implications of hope appears aligned with the overarching research question of this study.

The first taxonomical distinction between various modes of hoping is based on the nature of the goal: undetermined and open-ended, or concrete and goal-directed. The objectives of goal-directed modes of hope are various, but commonly significant and future-oriented (Snyder, 2000a). Webb (2007) developed a second taxonomical categorisation, differentiating *patient* and *critical hope*, as well as *estimative*, *resolute*, and *utopian hope.* The characteristics of these modes of hoping are summarised, classified, and adapted for the case of climate change in Table 1.

**Table 1**. Adapted version of Webb's (2007) theoretical framework of the various modes of hoping, interpreted, and developed by the author for the case of hope in the face of climate change.

| Taxonomical classification | Modes of hoping | Objective of hope | Cognitive dimension of hope | Behavioural dimension of hope |
|---|---|---|---|---|
| **Open-ended hope** | Patient hope | **Unrepresentable:** The objective is generalised and open. No clear climate change mitigation goal. | **Secure trust:** Basic trust in the goodness of life. Historical perspective upon the various crisis humanity has faced. | **Courageous patience:** Trust in behavioural agency of others to mitigate climate change. Personal inactive attitude towards the climate crisis. |
| | Critical hope | **Negation of the negative**: Goal based on a critical view of the contemporary environmental and societal situation. | **Passionate longing:** Suffering and restless longing. Hyperactivation of negative emotions (e.g. rumination, self-blame for climate change). | **Social criticism:** Compulsion to critically negate the conditions of our contemporary world. Agency directed towards understanding of the issue rather than concrete actions. |
| **Goal-directed hope** | Estimative hope | **Future-oriented and significant desire:** Vision of a probable environmental future (dystopian future). | **Mental imaging and probability estimate:** Hope towards a future of probable attainment. Realism with no transcendental function. | **Possible goal-directed action for more than fair gambles:** Extremely limited agency for climate change mitigation in the face of discouraging prognostic. |
| | Utopian hope | **Shared utopian dreams:** Idealised vision among a collective of people, strengthened by a deep sense of community. | **Mental imaging and cognitive resolve:** Profound confidence in human beings to solve the climate crisis. Relate to a form of existential hope. | **Mutually efficacious social praxis:** Commitment to social praxis. All humans become agents of their destiny. Collective agency relying on trust in others to contribute. |
| | Resolute hope | **Future-oriented and significant desire:** Vision of a desirable, yet possible, environmental future. Topic of significance for the subject. | **Mental imaging and profound confidence:** Resolve to set aside evidence-based beliefs of human inability to mitigate climate change. Positive re-appraisal of situation. | **Goal-directed action for less than fair gambles:** Commitment for proactive engagement, personally transformative in terms of individual and collective behaviours. Strong individual agency thinking. |

## 2.3 Snyder's theory of hope

### 2.3.1 Justification of choice of Snyder's model

Snyder's theory of hope appears as a relevant theoretical lens to answer the research questions of this study for several reasons. Firstly, Webb (2007) has identified Snyder's theory of hope as a form of *resolute hope*, characterised by a future-oriented desire and a strong behavioural dimension (i.e. goal-directed actions), despite low expectation of goal's attainment. I assume that this mode of hoping in the face of climate change is the most prevalent among proactive students enrolled in university programmes related to global environmental changes. This hypothesis is tested during the process of data collection (see question 4 and 5 in Table 2). Secondly, the clear articulation of the cognitive and behavioural dimension of hope in Snyder's (2002) model appears especially relevant for exploring a form of hope leading to proactive behaviours. Thirdly, the acknowledgement of the motivational importance of emotions in Snyder's (2000a) model provides an opportunity to explore the emotional reinforcement of hope, to articulate it with other emotions, and to explore student's self-reflection on their emotional processes. Furthermore, Snyder (2002, p. 253) describes hope as a learned thinking pattern and he argues that "people lack hope, therefore, because they were not taught to think in this manner". By implication, hope is an inner dimension that must be cultivated as a learning rather than an inherent characteristic of individuals, and is, therefore, appropriate to investigate in the context of academic institutions. Finally, the choice of Snyder's model of hope is supported by the fundamental character and stability of this theoretical model, which has already been successfully applied to global environmental challenges (Grund & Brock, 2019; Li & Monroe, 2019).

### 2.3.2 Components of Snyder's theory of hope

Snyder (1989, p. 143) defines hope as "goal-directed thinking, in which people appraise their capability to produce workable routes to goals (pathways thinking), along with their potential to initiate and sustain movement via a pathway (agency thinking)". The goals are essentially the anchors of hope (Snyder et al., 1997). They must be of sufficient value, long-term, future-oriented (Snyder, 2000a), and physically attainable, yet not necessarily probable (Averill et al., 2012; in Snyder et al., 2002). Pathway thinking refers to the ability of conceiving means to attain a certain goal, whereas agency thinking refers to the capability of executing these means (Li & Monroe, 2019; Snyder et al., 2002; Snyder, Irving & Anderson, 1991).

The singularity and complexity of hope result from the entanglement of its cognitive and emotional components (Snyder et al., 2002). Indeed, the cognitive component of hope might enable one to

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construct and act upon ways to reach desired goals (Snyder, 2000a), but the emotional dimension of hope is an essential motivational force to further reflect upon pathway and agency thinking, and implement action even without any certainty regarding the outcomes (Courville & Piper, 2004; McGeer, 2004; C. Smith & Ellsworth, 1985). On the other side, goal-pursuit cognitions cause emotions, resulting in a reinforcing relationship between cognitions and emotions (Snyder et al., 2002). In practice, positive emotions rise from the perception of success of a goal pursuit (Snyder, 1996), whereas negative emotions are the result of unsuccessful goal pursuits (Brunstein, 1993; Emmons, 1986; Little, 1983; Omodei & Wearing, 1990; Ruehlman & Wolchik, 1988).

### 2.3.3 Application of Snyder's model of hopeful thinking for climate change

Snyder's model describes how these four components (i.e. goal, pathway thinking, agency thinking, emotional reinforcement) interact with each other to constitute an interrelated system of goal-directed thinking, responding to feedback processes at different stages (Snyder et al., 2002) (see Figure 1). In the first instance, the outcome value of the goal pursuit grows from continued mental attention to a hopeful environmental future and imagined outcomes of climate change mitigation (Snyder et al., 2002). From a certain outcome value, cognitive thoughts of pathway (i.e. trust in societal actors, cognitive restructuring) (Ojala, 2012c, 2015) and agency (i.e. trust in one's ability to contribute to climate change mitigation through individual and collective actions) iterate or sometimes cycle back in order to verify that the outcome is still of sufficient importance to justify continuing the process. If it is the case, the behaviour of the subject is modified in a way that contribute to reaching the desired goal.

When a consequent step in the goal pursuit has been completed, positive emotions rise with one's perception of their meaningful contribution. In turn, these generated success-derived emotions cycle back to strengthen the subject's perceived pathway and agency capabilities, and the perception of the outcome value (Snyder et al., 2002). Conversely, negative emotions arise from thoughts of goal non-attainment and reinforce the subject's belief that there exists no adequate response to this global threat (lack of pathway thinking) and the subjects' sense of helplessness (lack of agency thinking) (Stern, 2012; van Zomeren et al., 2010 in Stevenson & Peterson, 2016).
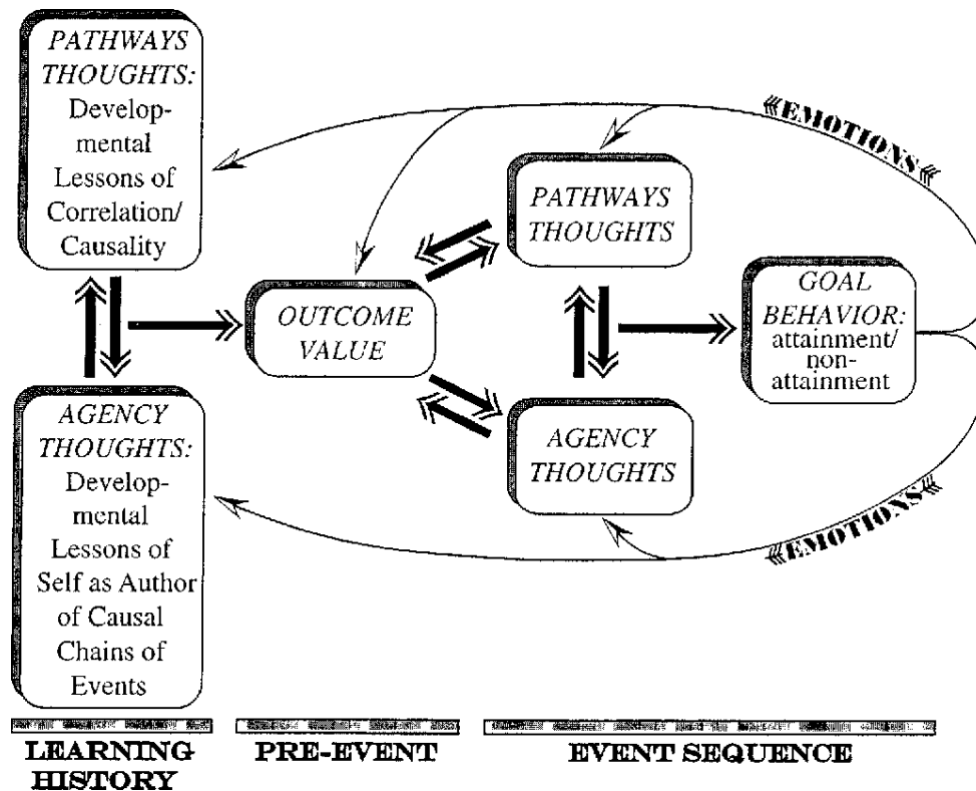
**Figure 1.** Schematic of feed-forward and feed-back functions involving agency and pathway goal-directed thoughts in Snyder's theory of hope. The left to right broad lined arrows of the figure reflect the overall feed-forward flow of hopeful goal-directed thinking (Snyder et al., 2002).

## 2.4 Integration of multiple theories in the overarching research process
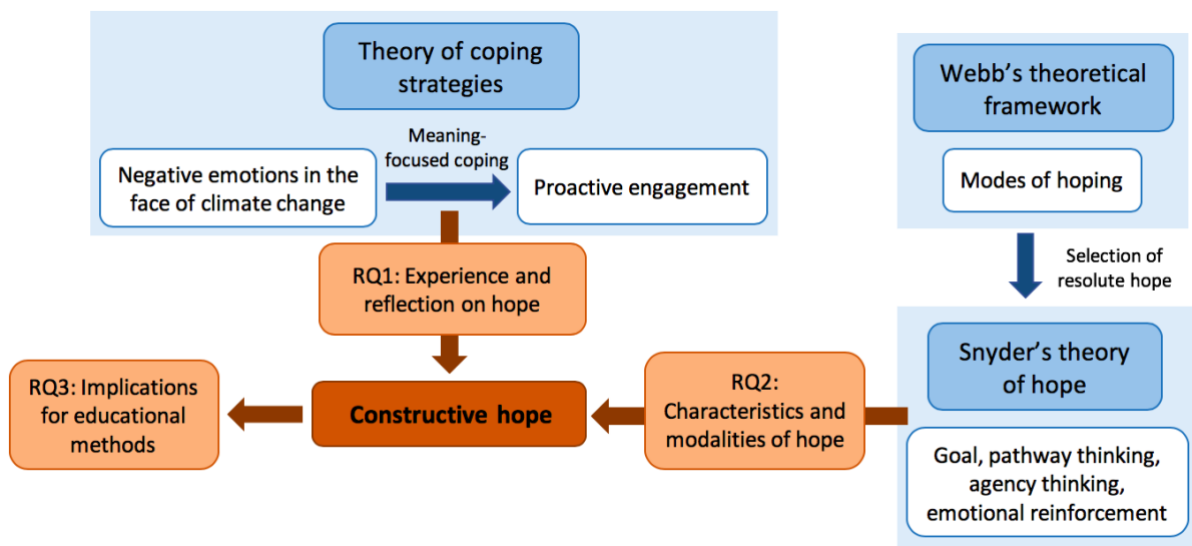


**Figure 2.** Schematic integration of the coping strategies' theory, Webb's theoretical framework, and Snyder's theory of hope (in blue) into the overarching research process on the potential role of hope as a generative force for proactive engagement in the face of climate change (in red), and the three research sub-questions (in orange).

# 3. Methods

This thesis is grounded in existing theories about hope and further develops them. It leads to generalisable outcomes for the academic field in general. The research theory is explorative and explanatory to a minor extent. The overarching strategy of the research is comparative and embedded into a positivist philosophy of knowledge.

## 3.1 Quantitative data collection

Originally, the quantitative study aimed at drawing a correlation between hope and pro-environmental behaviours among students in university programmes related to global environmental problems. In the absence of any statistically-relevant correlations, it was used as a quantitative scoping and sampling study for qualitative research around constructive hope (see Figure 3).

### 3.1.1 Context of the study and justification of sample

My decision to sample students enrolled in university programmes related to global environmental problems, in Europe for ease of accessibility, is motivated by several factors. Firstly, the academic status of the respondents is a guarantee that their awareness about climate change is not a limiting factor. Indeed, since knowledge is an essential factor in predicting pro-environmental behaviours (Barr, 2004; Meinhold & Malkus, 2005; Young et al., 2010), controlling the influence of this variable on agency simplifies the analysis of the role of hope in nurturing environmental engagement (Ojala, 2012c). Secondly, I deduce that students enrolled in such university programmes acknowledge the existence of climate change and are worried about it. In this way, I exclude from the sample the presence of a form of hope which is based on denial of the seriousness of climate change (Ojala, 2012b). Besides, due to their intense and daily exposure to knowledge about climate change, these students are particularly vulnerable to feelings of hopelessness, pessimism, existential anxiety, and chronic stress (Chiras, 2004, p.549). Finally, these young adults represent the future key actors of the transition towards a low-carbon society. It is therefore vital to ensure their long-term ability to create alternative visions of the future, to cooperate to enforce sustainability at multiple levels of society, and to adopt a proactive attitude towards climate change mitigation (Ojala, 2007b).

### 3.1.2 Subjects and procedures

The search for a statistical correlation between hope and pro-environmental behaviours was conducted as part of my final individual assignment for the course of "Sustainability and Inner

Transformation" (MESS53) at Lund University. It is therefore not formally part of this thesis, but it informed my research and guided the selection of the sample for qualitative data collection. To summarise, an online survey was used to quantify and evaluate the various levels and types of hope among students, and their degree of individual and collective environmental engagement. The survey was distributed through social media and email, and answers from 61 students in total were collected among three different Master's programmes at Lund University, Sweden: "Environmental Studies and Sustainability Science" (39), "Disaster Risk Management and Climate Change Adaptation" (5), "Human Ecology: Culture, Power and Sustainability" (1), as well as from Climate-KIC alumni enrolled in various European university programmes related to global environmental challenges (16). Since the majority of the questions involved requested, multi-choice answers from respondents, the simplification of the answers to numerical values was a straightforward process. The aggregation of answers provided me with simplified performance indices of the level of hope, despair, individual pro-environmental actions, and collective pro-environmental actions.

### 3.1.3 Data analysis

The analysis of the data has not led to statistically relevant correlations between the indices of hope and pro-environmental behaviours, raising the issue of the various and coexisting modes of hoping, and the diverse characteristics of hope. The multifaceted and contested nature of hope justifies the need for qualitative data collection to understand the potential role of hope as a generative force for proactive engagement. Since the anonymous process of the quantitative data has generated a range of performance indices on individual and collective environmental engagement in the face of climate change, I used this quantitative study as a sampling study. Among the 39 respondents who have left their contact details in the survey, 20 candidates were selected because they demonstrated the highest performance index of proactive engagement, combining individual and collective components. The representatives of this reduced sample were contacted individually to ask them to take part to further qualitative data collection aiming at deepening the understanding of the nature and characteristics of hope. Participants were not told the reason of their selection for the interviews to limit the bias of their answers.

### 3.2 Qualitative data collection

The qualitative study represents an in-depth exploration of a distinctive share of the sample outlined above (Bernard, 2012), namely students demonstrating outstanding proactive attitude towards climate change mitigation.

### 3.2.1 Context of the study and justification of sample

Proactive students are the most relevant subjects of investigation for answering the research question on hope as a generative force. On the one hand, they are not so young that their actions and lifestyle's choices are constrained by their parents' way of living (Dostie-Goulet, 2009; Grønhøj & Thøgersen, 2009; Pancer et al., 2007), exclusively modulated by peers' pressure (Göckeritz et al., 2010; Nolan et al., 2008), or embraced as a fashion trend (Ojala, 2008; Smetana & Metzger, 2005; Zaff et al., 2008). On the other hand, their status of students provides them a facilitated access to knowledge, consequent time flexibility and thus opportunities to engage, and a learning environment rich of human interactions.

### 3.2.2 Subjects and procedures

The format of semi-structured qualitative interviews was chosen to extract data relating to the experience, the cognitive characteristics, and the emotional motivational character of hope. Comprehensive interviews allow thorough exploration and understanding of a specific topic (Charmaz, 2006). This method is useful for exploratory inquiry (Lofland & Lofland, 1995) and for in-depth elaboration around predetermined themes from existing theories (Ojala, 2007b). The flexible format of semi-structured interview is particularly adapted for sensitive subjects, since a few open-ended questions encourage unanticipated answers, shared experiences, and complementary ideas to emerge (Charmaz, 2006). These unexpected themes can directly be picked up and pursued if they are considered as relevant to answer the research questions and fill the conceptual gaps (Charmaz, 2006).

Overall, 13 open-ended questions represented the core of the interview (see Table 2), inspired by Folkman's theory of coping strategies, Webb's theoretical framework, and Snyder's theory of hope. They were preceded by a presentation of the terms of the interview and introductory questions, and followed by concluding questions (see Appendix A). I started by conducting a pilot interview on a student corresponding to the criteria of selection of the sample for qualitative data collection in terms of age, academic enrolment, and proactive engagement. Based on the answers and the feedbacks I received, I modified the wording of some questions, deleted a redundant question, and made the flow of the interview more consistent. The interviews were conducted with 13 young adults, 11 females and 2 males. To keep their identity anonymous, all the names mentioned in this study are fictional. However, a short academic profile of the interviewees is presented in Appendix B. All online interviews were conducted personally between 2nd March and 17th March 2020, and lasted approximately one hour each.

**Table 2.** Overview of the interview guide: 13 core questions and expected data extracted.

| Themes | Questions | RQ? | Expected data extracted |
|---|---|---|---|
| **Emotions in the face of climate change** | 1. What main emotions emerge in you when you think about climate change? How do they affect your physical and mental well-being? | RQ1 | Coping strategies theory: Do students perceive the emotional dimension of climate change? Is hope a recurrent emotion? Do these emotions affect students' personal life? |
| | 2. How do you see the potential of turning negative emotions in the face of climate change into something constructive? | RQ1 | Coping strategies theory: Do students perceive hope as a way to transform their worry into actions? Do they distinguish a form of constructive hope? |
| | 3. How would you define hope in general? | RQ1-RQ2 | Webb's framework: Do students reflect on hope and its components in an open way, and how? |
| **Hope: dimension of goal** | 4. Can you describe what sort of future you feel hope for, in terms of society and environmental situation? | RQ2 | Webb's framework: Test of hypothesis (first step). Necessary to navigate the theoretical framework. Is interviewees' hope in the face of climate change open-ended or goal-directed? |
| | 5. How likely is this future to occur to your understanding? | RQ2 | Webb's framework: Test of hypothesis (second step). Distinction between *estimative* and *resolute hope*. Confirm choice Snyder's theory? |
| **Hope: dimension of pathway thinking** | 6. What does activate hope for you in the face of climate change? | RQ2 | Snyder's theory: Open question about pathway thinking. What cognitive strategies of pathway thinking are common among interviewees? |
| | 7. What actors or who do you have trust in to transform our world towards the vision you depicted previously? | RQ2 | Snyder's theory: Explore trust in sources outside oneself (pathway thinking). What forms of trust are common among interviewees? |
| **Hope: dimension of agency thinking** | 8. To what extent do you trust that you can have an influence on climate change mitigation? How do you feel about it? | RQ2 | Snyder's theory: Agency thinking: explore forms of trust in one's own ability to influence climate change mitigation. |
| | 9. How do you imagine yourself being active in the face of climate change in 10 years from now? | RQ2 | Snyder's theory: Projection of agency. Extension of engagement from individual or collective actions to professional career? |
| **Hope: dimension of emotional reinforcement** | 10. Could you tell me about your thoughts and emotions before and after you started to be proactive in the face of climate change? | RQ2 | Snyder's theory: Emotional dimension of hope. Do emotions have a role to play in interviewees' engagement, and how? Are interviewees aware of it? Is bidirectionality of hope apparent? |
| | 11. Could you compare the emotional force of both hope and hopelessness? | RQ2 | Snyder's theory: Emotional dimension of hope. Explore feedback loops as motivational force. |
| **Hope in academic environment** | 12. If you compare with before starting your university programme, how has evolved your perception of hope in the face of climate change? Why? | RQ3 | Explore the academic influence on hope: does it decrease, increase, stabilise? Spot inadequacies in academic institutions concerning hope and perceived areas for improvements. |
| | 13. If you had a recommendation for your university regarding hope in the face of climate change, what would it be, if any? | RQ3 | Practical recommendations according to current interviewees' perception of educational methods and academic communication. |

### 3.2.3 Data analysis

In order to extract the data from the interviews, a protocol inspired from Grounded Theory was applied. Firstly, each audio-recorded interview was transcribed in its entirety. Then, the manual content analysis started. The transcripts were closely read and the segments of data were categorised by a process of initial coding, inspired by existing qualitative studies on hope among young adults (Li & Monroe, 2018; Ojala, 2007b). This thematic coding scheme based on existing analytical categories enabled the emergence of high-significance and high-frequency themes through an iterative process (Charmaz, 2006; Höijer, 1990). Thirdly, I conducted a theoretical sampling and sorting to refine the categories representing the overarching themes. I then attempted to allocate each paragraph of the interview transcripts into one of these groups. The data was double-coded by a second person when uncertainties occurred. Meanwhile, sub-themes started to emerge and sub-categories were created. During the next stage, the various paragraphs were isolated from the individual interview transcripts and merged under their respective themes and sub-themes. The properties, scope, and the relationships between these categories were made apparent and ordered in relation to each other under the visual representation of tables and diagrams. This allowed the preservation of the empirical realities and complexities while working towards an analytical integration of the themes into a theory (Clarke, 2003; Corbin, 1998; Strauss, 1987)

## 3.3 Overview of the methods
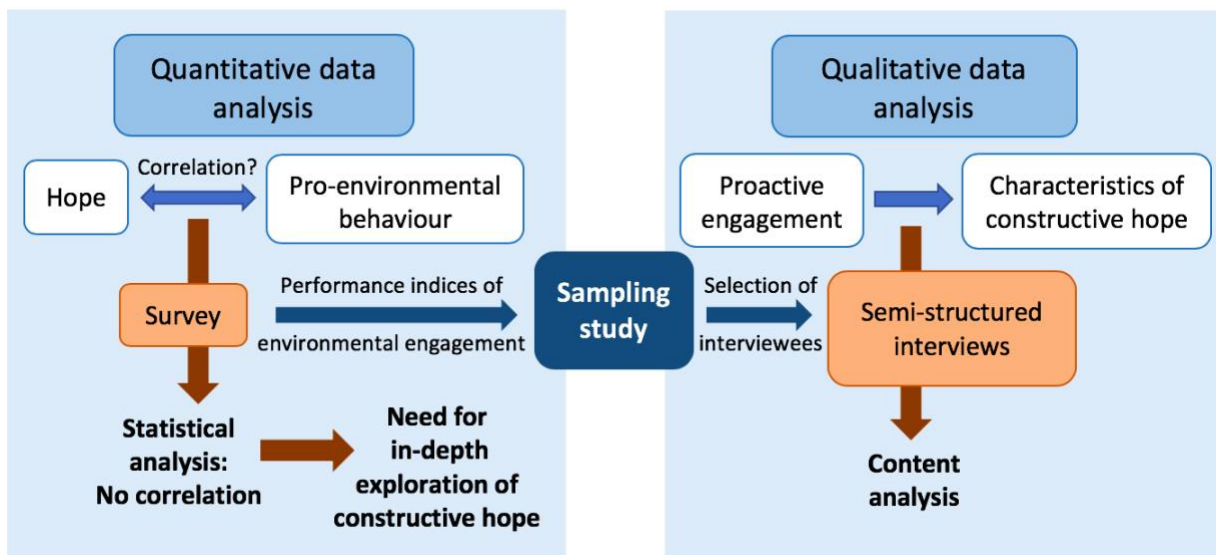


**Figure 3.** Schematic representation of the complementary quantitative and qualitative data analysis. The need for qualitative data deriving from limiting quantitative data analysis is apparent, as well as the way quantitative data collection is used in a second phase as a sampling study guiding the qualitative data collection.

# 4. Results and analysis

In order to increase understanding on the potential role of hope as a generative force for proactive engagement, the qualitative data extracted from the interviews is classified under several themes. The major empirical findings are illustrated by direct quotes, compared to existing studies, discussed in regards to academic literature, and summarised in tables (see Tables 3, 4, 5). The classification is illustrated by several quotes in the appendices.

Section 4.1 focuses on the phenomenological meaning of hope and describes how proactive students experience and reflect upon hope (RQ1), whereas section 4.2 investigates the behavioural component of hope, presenting material to understand what form of hope is fostering a proactive engagement among students (RQ2). Section 4.3 introduces the implications of participants' responses to the first and second research sub-question for educational methods and academic communication (RQ3). Finally, additional findings are presented in section 4.4.

## 4.1 Proactive students' emotional experience and reflection upon hope in the face of climate change

I start by investigating what proactive engagement means in the context of climate change to address the various dimensions of the first research sub-question. I then extract data concerning proactive students' personal emotional experiences of the climate crisis, as well as the potential they see in turning some of the negative emotions into "something more constructive". Finally, the last section explores general perceptions of hope of the participants.

### 4.1.1 Proactive engagement

#### Proactive engagement at the individual level

Unsurprisingly, proactive students demonstrate a sharp awareness of the high-impact individual lifestyle choices representing the greater potential to reduce greenhouse gas emissions (Wynes & Nicholas, 2017) and they behave coherently with this knowledge (see Appendix C). Throughout interviews, the main areas of individual environmental engagement are identified as transportation, diet, consumerism patterns, and professional contribution.

***Proactive engagement at the collective level***

When it comes to engagement at a collective level, interviewees emphasise their participation in environmental social movements related to climate change (e.g. Fridays for Future, Extinction Rebellion), the continuous process of awareness raising, and involvement in various organisations playing a role in climate change mitigation (see Appendix D). Some interviewees also mention a form of engagement in the academic context (e.g. Master's thesis, internship) and as democratic citizen (e.g. vote, petitions).

***Perception of personal proactive engagement***

This research study further investigates another dimension of proactive engagement, since it raises the question of the self-perception of the proactive attitude of participants themselves. Interviews indicate that half of the participants demonstrate a high degree of self-awareness and confidence in their personal proactive engagement (see Appendix E).

> *"I think I managed to dedicate pretty much all of both my public and private life (…) towards a more sustainable future, as far as I can tell."* **Gabrielle**

Some participants express mixed feelings, or acknowledge that they could enhance or complement their engagement. Only one respondent appears more doubtful about their active commitment to pro-environmental behaviours.

## 4.1.2 Personal emotional experience of climate change

***Various characteristics of emotions in the face of climate change***

Since hope is inherently entangled with a variety of positive and negative emotions, the following section aims at describing how students experience climate change emotionally (see Appendix F). Firstly, participants recognise the oscillatory nature of their feelings about climate change, an aspect which has previously been emphasised in research on environmental scientists (Head, 2016). Proactive students also identify the negative impacts of these emotions on their mental well-being, either directly or through peers, given the difficulty to compartmentalise acquired knowledge about climate change apart from their private life. Some participants even see the effects of these negative emotions upon their health.

> *"(…) it is challenging mentally to work on something that you think is very important and it is also difficult to not let that affect your day-to-day feelings. I think it's difficult to compartmentalise."* **Camille**

Even more importantly, climate change is identified as an "emotional topic" by interviewees, who recognise the importance to consider the inner dimension of environmental challenges. Finally, interviewees underline the short-term effects of negative emotions, and refer to a conscious distancing process from overwhelming feelings. This latter relates to defensive emotion-focused coping strategies to handle the emotional impacts of climate change knowledge on the long-term (Head, 2016).

***Various emotions in the face of climate change***

When it comes to emotions triggered by climate change, interviewees mention a variety of negative emotions, in order of occurrence: anger, frustration, anxiety, disillusion, sadness, hopelessness, sense of responsibility, and sense of injustice (see Appendix G). On the other hand, a non-negligible part of participants evokes spontaneously hope.

> *"I have to be hopeful and positive about it (climate change) because I don't know what else to do besides that."* **Nancy**

Interestingly, many participants refer to contradictory emotions to depict their feelings about climate change, such as simultaneously hope and hopelessness, disillusion and sense of responsibility.

### 4.1.3 The potential of translating these negative emotions into proactive engagement

When asked to elaborate on the potential they could see in turning negative emotions into more constructive energy, interviewees' most common answer appears to be hope (see Appendix H). In corroborating studies (Lueck, 2007; Ojala, 2007a, 2008, 2012a, 2012c; Stoll-Kleemann et al., 2001), students identify hope as a generative force for proactive engagement in themselves and others. Besides, they mention the willingness to escape emotional inconvenience by taking actions to explain their engagement. Some students underline how they see the potential of turning negative emotions into proactive actions through uplifting and relatable communication methods. Furthermore, some students see their active involvement as a logic consequence of their emotions. The potential of negative emotions in attesting the conviction and concern of proactive students when communicating with peers is also identifiable.

> *"(…) the things that I'm feeling about the climate change crisis, they give an indication of what kind of person I am, and then what kind of ability I have within this realm to use that for good."*
> **Romane**

Some participants' answers indicate that they identify negative emotions as inhibiting personal functioning and productive engagement, which appears aligned with some existing literature (Gifford, 2011; Hornsey & Fielding, 2016; McGeer, 2004). However, only one interviewee underlines their inability to make constructive use of negative emotions.

> *"It's a bit challenging to figure out how to channel those emotions (…). I think I'm still going through that process and trying to find ways to cope with these negative emotions and energy."*
> **Phillip**

Lastly, one participant recognises a facilitated access to platforms and communities fostering the constructive use of negative emotions through their current academic context. Overall, interviewees largely recognise the potential of emotions in general to foster engagement (see Appendix I).

> *"I feel like in general, in life, emotion is what is driving you to act."* **Hannah**

### 4.1.4 Students' perception of hope

Finally, proactive students demonstrate their ability to reflect upon the nature of hope, its contextual character, its singularity, its potential for individual and collective transformation, its consequences on one's identity and attitude, and its bidirectional character (see Appendix J). As mentioned above, interviewees identified hope as an essential factor to be promoted to develop agency among citizens.

> *"I think, basically, the most important thing is to always generate hope and be trying to be hopeful. I think that's one of the key drivers that can bring about change."* **Angela**

In addition to its importance for behavioural intention and action, interviewees recognise its implications for their learning process in the academic context. Some participants further demonstrate a sharp awareness of the distinction between a passive hopefulness based on denial of the seriousness of climate change or a recomforting mechanism taking away all sense of responsibility, and a form of embodied and constructive hope. This latter is depicted as a constant and active pursuit, unlike unrealistic optimism which is pointed as a hazardous loophole weakening individual and collective engagement.

*"I put hope in specific things and I understand that hope is less of just this emptiness and almost naive optimism, and it's more of an active pursuit. And so, I can hope for things (…) that are not just (…) a way to appease the bad feelings. It's actually a functional and productive way forward."* **Romane**

Interviewees also identify the concept of hope as having a singular connotation for each individual, justifying the complexity of its analysis and the need for individual considerations through qualitative data collection. The inability to reach an agreement concerning its nature and characteristics among scholars (for a review, see Benzein & Saveman, 1998; Lopez et al., 2003) further supports this idea.

*"I guess hope (…) so differently affects people, not only just because of who you are as a person, but also just in your own situation."* **Gabrielle**

Moreover, hope is seen as contextual for many students, who consider their direct environment and community as determining factors for instilling or inhibiting hope in their lives. This context-dependent nature is particularly visible when it comes to the contemporary pandemic global situation. Finally, not only is hope identified as a driver for engagement, but, conversely, participants also perceived an active stance against climate change as nurturing hope. Consequently, the bidirectional causality between actions and constructive hope leads to a reinforcing process between these two factors.

*"(…) the more active and more proactive I became (…), it does give you a sense of purpose, which really resonated quite strongly with me when I was doing things where I felt like I was having an impact, things that I was involved in could be making a difference. It did make me feel I was in the right place, and it was a really warming feeling and a hopeful feeling."* **Romane**

### 4.1.5 Summary of findings for research sub-question 1

**Table 3.** Summary of findings: Proactive students' reflection and experience of hope in the face of climate change.

| Research sub-question 1: How do proactive students in university programmes related to global environmental problems experience and reflect on hope in the face of climate change? | | | |
|---|---|---|---|
| **Hope in the face of climate change** | **Categories of refection upon hope** | **Sub-categories of reflection upon hope** | **Summary of students' experience and perception of hope** |
| **As an emotion** | Of importance | / | Highest occurrence of participants' spontaneous mention among positive emotions in the face of climate change. |
| | Varying | Over time | Oscillatory nature of hope, instability over time. |
| | | Contextually | Increased complexity of hope due to the influence of environment and community. Instability deriving from dependence of hope on external elements. <br><br> Hope in the face of climate change cannot be isolated from the wider environmental and societal situation (e.g. Corona virus). |
| | | Depending on the hoper | Complexity of the concept of hope due to its different meaning for individuals. Need for communication around hope for students to learn how to use it constructively individually. |
| | Impacting well-being | / | Escape from reinforcing feedback loop of negative rumination (e.g. sense of guilt, anxiety). Appeasement of negative emotions. |
| | Linked to other emotions | Negative emotions | Need for hope to balance negative emotions and articulate them into something constructive. |
| | | Positive emotions | Need for hope in reason of its link to other personal positive emotions and its potential to nurture student's well-being. |
| **As a potential to turn negative emotions (e.g. anxiety, anger) into a more constructive attitude for…** | Proactive engagement | At individual level | Awareness of role of hope in turning negative emotions into pro-environmental behaviours through individual engagement. |
| | | At collective level | Awareness of role of hope in turning negative emotions into pro-environmental behaviours through collective engagement. |
| | | Bidirectionality of hope | Actions leading to the reinforcement of hope in parallel to constructive hope fostering proactive engagement. |
| | Learning process | / | Motivation for learning process for a future professional contribution, the spread of awareness, and knowledge. |
| **As a tool for communication** | In academic context | / | Motivation for proactive engagement, reflection on professional contribution, and developing further students' interest in the topic. |
| | For real-world context | / | Need for students to be skilled in communication with external environment to convince, influence, and motivate citizens through the spread of constructive hope. |
| **Different from naïve optimism** | / | / | Need for constructive hope to be embodied and empowering, making the hoper functional and proactive. |

## 4.2 Type of hope fostering proactive engagement among students in university programmes related to global environmental problems

To identify the type of hope to be fostered among students to encourage them to adopt a proactive attitude, the content of the interviews is extracted under Webb's theoretical framework and Snyder's theory. Firstly, I find that students demonstrate a prominent use of *resolute hope,* validating the assumption made prior to designing the interview guide. Besides, the relevance of Snyder's theory for this research study is further illustrated. Then, I dive into Snyder's dimensions of hope, classifying participants' answers under different themes illustrated with direct quotes, and discussing these empirical results in regards to existing academic studies and theories.

### *4.2.1 Combining empirical data with Webb's theoretical framework*

The coexistence of various modes of hoping is an expected result and is theoretically suggested by Webb (2007). However, it is important to underline the prominence of expression of *resolute hope* among participants (see Appendix K).

> *"I would say it is very unlikely to happen, the way that I picture it, but I still think it's a very powerful tool to at least have something to strive for."* **Angela**

This confirms the assumption made before conducting interviews. Indeed, interviewees predominantly demonstrate goal-oriented modes of hoping, and they consider the hopeful future they envision as a possible and desirable collective goal, yet unlikely to be reached (see Appendix L).

> *"(…) even if there is a very small percentage of hope and likelihood, I put all my energy into it."* **Nina**

*Critical hope* also appears particularly present, whereas *patient* and *estimative hope* seldomly reflect in interviewees' answers. *Utopian hope* is harder to identify with certainty, since most interviewees express major contradictions concerning their profound confidence in human beings to construct a new way of living as agents of their destiny (Webb, 2007). Some participants also shed light upon a more existential form of hope.

> *"(…) ultimately, in the end, it's going to be okay. I guess that's what hope is to me."* **Nancy**

### 4.2.2 Combining empirical data with Snyder's theory

The data collected is further analysed through the four entangled components of Snyder's theory of hope, namely goal, pathway thinking, agency thinking, and emotional reinforcement.

***Goal***

Even though some references to open-ended hope occur, most participants demonstrate their ability to depict a desirable future through a visioning exercise (see question 4 in Table 2).

> *"I don't know exactly what this future is like but (…) the process is very important for me."* **Nina**

Interestingly, most participants relate more easily to envisioned goals that are limited to a local scale (e.g. one city, community, country, continent) than on a worldwide scale. In general, the most commonly expressed desirable vision is a form of future unthreatened by environmental problems, free of global injustices, with a larger focus on human values (e.g. justice, equality, democracy, freedom, compassion, embracement of complexity, harmony with nature) than on material concerns.

***Pathway thinking***

When indirectly asked about pathway thinking, participants fall back on two different meaning-focused coping strategies to conceive means to reach their desired future (see Appendix M). The first one is more seldomly mentioned and consists of a cognitive restructuring of the situation. Empirically, three sub-themes align with this strategy: a positive re-appraisal (e.g. "process matters more than the end", shift in perspective), the emphasis of the beauty of the environment as a source of inspiration, and the persistence of uncertainties concerning the future.

> *"(…) to switch and to reframe the situation, show the more positive sides and show reasons why we can be hopeful."* **Angela**

Secondly, participants relate to actors of society that they have trust in to generate pathways towards their desired future. No less then eleven sub-themes are identified for this second strategy. Most importantly, all participants refer to some form of trust in collective potential of human beings. Similarly, social movements represent a frequently identified pathway to a desired future. Most interviewees mention mitigated trust or lack of trust in political actors. Trust in science also appears controversial in regards to technological field, expected neutrality of science, and scientists' ivory tower.

*"I've trust in science very much, but I do not trust in science being carried over."* **Gabrielle**

The role and responsibility of academia is generally recognised and valued in this research study. Participants demonstrate various levels of trust in young generations, and recognise the raising awareness of these last years, even if they express doubts concerning the translation of this awareness into actions. A huge scepticism surrounds business actors, whereas the potential of environmental organisations appears solidly grounded. Interestingly, some interviewees refer to a more basic trust in humanity at large in consideration to its history, the ingenuity of human beings, and their inherent goodness.

*"(…) seeing the diversity and the creativity of people in the face of all these challenges is definitely something that gives me hope."* **Romane**

Finally, trust in some individual figures and the potential of art are sporadically evoked. Most of the actors mentioned as themes for pathway thinking in this study are covered in existing research studies concerning hope and young people (Eigner, 2001; Marlon et al., 2019; Ojala, 2007b; Pettersson, 2014).

Nevertheless, some demonstrations of lack of pathway thinking are also apparent among the participants, who sometimes struggle to identify pathways leading to their envisioned goal. Indeed, interviewees' answers contain consequent contradictions concerning identified workable routes to desired future.

*"I think to some extent, I know what I would like it to be, but at the same time there are just more abstract (aspects such as) the way that we arrive to (…) that society with such characteristics."* **Nina**

### *Agency thinking*

When it comes to agency thinking (i.e. the belief of oneself to contribute to climate change mitigation), 6 sub-themes are identified and the importance of a sense of agency is widely recognised (see Appendix N).

*"(…) people can feel that (…) they can do something, so they have more control over the issue, because I think ultimately (…) people get that anxiety over it (climate change) because they lack control over the issue."* **Nancy**

Indeed, defensive and unproductive coping strategies usually derive from a lack of control and agency thinking (Folkman & Lazarus, 1980; Ojala, 2013a; Stern, 2012). Interestingly, all participants mention

trust in one's own ability to contribute to climate change mitigation through professional engagement, even though various degrees of self-confidence are expressed.

> *"I do think I can make a difference also by choices in how I consume (…) but compared to the effects that I can have through my work, I don't think they are that big."* **Christian**

Furthermore, the majority of participants express trust in their own ability to contribute to climate change mitigation through collective actions and by influencing other people (e.g. private network, inspiration for people, awareness raising).

> *"It is very vulnerable to do it as an individual and therefore, we need to be a collective movement."* **Sylvia**

On the other hand, participants demonstrate various levels of trust in their ability to contribute to climate change mitigation through individual actions. As identified by Ojala (2007b), trust in the long-run efficiency of everyday actions is complex since it requires the ability to shift perspectives from the global level of the threat to the local level of mundane everyday actions and lifestyles' choices. Moreover, this form of agency thinking has double-edged impacts on the emotional balance of students, since it contributes to buffer their sense of hopelessness and meaningless, but it might increase their sense of guilt about not being as proactive as they could be (Ojala, 2007a).

Finally, a few participants emphasise the importance of the continuous pursuit of knowledge they feel responsible for as agents and their contribution to the creation of a new social norm. Nonetheless, the fragility of agency thinking pervade in most interviews, since participants express major doubts and discouragements concerning their personal impacts and the inevitable structural constraints they face. However, even when lacking agency thinking, interviewees can reflect upon the benefits of increased confidence in their personal agency.

> *"(…) I think my influence would benefit from me also just being more confident in my own ability to communicate and work on issues (…). The fear of not being good enough has held me back from doing work that might be very useful."* **Camille**

Lastly, interviewees contrast their sense of agency on a local and global level, and appear overall more confident in their potential in local initiatives.

***Emotional reinforcement***

The role of emotions in fostering actions is widely recognised by proactive students (see Appendix O).

> *"(…) they (my emotions) have definitely been a strong driver in the whole journey that I've had through understanding climate change and working about it."* **Romane**

Participants point different factors influencing their emotions in relation to action, such as peers' influence and media communication. They also extensively refer to teachers' influence and the impact of knowledge acquisition, which appear especially relevant for a study aiming at providing recommendations to academic institutions. The comparison of positive and negative emotions as reinforcing or weakening force for proactive engagement is another key aspect. The rise of failure-derived negative emotions is perceived as the result of a lack of pathways and agency capabilities, but also as linked to goal-setting.

> *"So, one needs to be very careful on how one sets one's goal (…), so the goals are not too unrealistic. Because then, you won't reach them and you will feel hopelessness."* **Sylvia**

When asked to elaborate on the potential of negative and positive emotions in reinforcing goal-directed behaviours, participants present a variety of opinions (see Appendix P). The most common perspective is the recognition of positive emotions as a prominent motivational force to continue their proactive engagement.

> *"It was actually mostly the positive emotions and the positive experiences that I made that made me want to continue and even to become more proactive.*" **Angela**

Indeed, positive emotions rising from one's contribution to climate change mitigation buffer excessive and unproductive feelings of guilt, making it possible for these young adults to maintain their proactive engagement despite imperfection (Ojala, 2007a). However, some interviewees underline the inevitability and potential of a combination between positive and negative emotions.

> *"I think you need both in a way. I think you need the anger or the negative emotions as the engine starter and the positivity is the thing that makes the car move."* **Livia**

Negative emotions are mostly evoked to underline the difficulty in escaping the paralysing and reinforcing loop of painful emotions, which appears consistent with existing literature (Stevenson & Peterson, 2016; Stoknes, 2015).

*"(…) sometimes I just have to ride through that helplessness and just feel it and let it soak in for a bit (…). I can try to pull myself out of a hopelessness and try to give myself hope, but then it just feels disingenuous and makes me feel a bit more helpless."* **Romane**

Reversely, one participant underlines the potential of negative emotions such as guilt and anger to reinforce one's engagement, confirming the motivational potential of negative emotions (Head, 2016).

More specifically, when asked about their feelings when they can see their proactive engagement contributing to goal attainment, interviewees shed light upon the different positive emotional reinforcing loops, through a sense of empowerment, a sense of meaning, and a sense of usefulness (see Appendix Q). These all relate to the reinforcement of agency thoughts (Snyder et al., 2002).

*"Even if it does come with these heavier emotions and feelings, at least it feels a little bit more deliberate and intentional, the way that we live."* **Romane**

One participant also mentions a strengthened interest for the goal attainment, relating to the outcome value (Snyder et al., 2002). Finally, a sense of relief resulting from actions is evoked.

On the other hand, most participants spontaneously mention loops of negative emotions, often through a sense of worthlessness of their personal contribution, disempowerment in regards to the global situation, and distrust of potential solutions. Furthermore, the necessity to acknowledge and accept these negative emotions is emphasised. The profound understanding of one's hopelessness might actually be a prerequisite to figure out more constructive ways to address painful emotions or reframe one's engagement.

*"I think you also can't escape that: Yes, there are negative emotions and it's okay."* **Camille**

Interestingly, only one interviewee does not consider emotions resulting from goal attainment or non-attainment as playing any role in their proactive engagement, even though this person recognises that it is the case for most people.

### 4.2.3 Summary of findings for research sub-question 2

**Table 4.** Summary of findings: type of hope fostering proactive engagement among students in university programmes related to global environmental problems?

| Research sub-question 2: What form of hope is fostering a proactive engagement among students in university programmes related to global environmental problems? | | | |
|---|---|---|---|
| **Theoretical model** | **Categories** | **Sub-categories** | **Findings among proactive students** |
| **Webb's theoretical framework** | Goal-directed hope | Resolute hope | Most common mode of hoping: proactive attitude in the absence of faith in the probability of occurrence of the future they feel hope for. |
| | | Utopian hope | Common mode of hoping inspiring students and promoting a sense of community. Importance of transcending the probable scenarios. |
| | Open-ended hope | Critical hope | Common mode of hoping, deriving from the academic context. University programme leading to exacerbated criticism of the contemporary environmental and societal situation. |
| **Snyder's theory of hope** | Goal-setting | / | Prominent goal-directed hope, visioning easier at local scale and used as a tool to picture something to strive for. Coexistence with some forms of open-ended hope |
| | Pathway thinking | Cognitive restructuring | Positive re-appraisal of the situation as a meaning-focused coping strategy to avoid paralysing effect of anxiety. Force to be proactive found in internal resources (e.g. motivation by the beauty of our environment, remaining uncertainties). |
| | | Trust in sources outside oneself | Pronounced trust in collective potential of human beings (e.g. social movements, rise of awareness, humanity). Mixed levels of trust in academia and science. Extreme and mixed levels of trust in political actors. |
| | Agency thinking: Trust in one's own ability to contribute to climate change mitigation … | … through individual actions | Pronounced trust in a future professional engagement. Mitigated trust in contribution through individual actions. |
| | | … through collective actions | Pronounced faith in their contribution as part of collective actions (e.g. social movement, citizenship) Pronounced trust in their ability to influence and inspire people they have direct contact with. Trust in contribution as information-holder and actors of a new social norms. |
| | Emotional reinforcement | / | Motivational force deriving from positive emotions or from negative emotions combined with positive emotions. Additional positive and empowering emotions deriving from the perception of goal attainment and agency thinking, contributing to well-being (reinforcing feedback loop). Importance of acknowledging the emotional reinforcement of hope, and its influence by external and internal factors. |

## 4.3 Hope in the academic context: implications for educational methods

### 4.3.1 Identified academic inadequacies in fostering hope among students

Proactive students point various inadequacies in the promotion of hope in the academic context, and more specifically in university education (see Appendix R). Some interviewees explicitly depict a lack of hope resulting from their enrolment in university programmes related to global environmental problems.

> *"After I joined the Master's programme (…) I would say it got harder to be hopeful in the rest of the world (…)."* **Clara**

The factors linked to academic inabilities to instil or maintain hope identified by students are classified under 4 levels: the structural level of university, the programme itself, the teaching methods, and the students' interactions.

Two sub-themes at the scope of the university structure are identified: the limited inclusiveness of sustainability in other university's programmes and the lack of space to express emotions in the academic context. Students enrolled in programmes related to global environmental challenges have difficulties to maintain hope since they feel that their own environment is not representative of most academic degrees and the external world. Interviewees also point the lack of structural initiatives to provide a space welcoming the expression of feelings triggered by knowledge acquisition, resulting in an exclusive reliance on peers for emotional expressiveness.

> *"(…) with my peers, we maybe self-organise in talking about how we feel (…). We often have sessions where we just express our feelings and emotions, and we just speculate on how to support our friends in dealing with the emotions."* **Phillip**

When it comes to the programme itself, some interviewees shed light upon the lack of education on how to personally deal with emotions and stabilise the oscillating levels of hope over time.

> *"We don't have the capabilities to know how to deal with anxiety, and I think that there are some personal skills that we have to learn and (…) it is definitely missing from our (Master programme) (…)."* **Nina**

Some of them also feel deprived of communication skills to handle discussions and interactions with people outside their field of study, and express how depressing and stressful these can be.

The third level of potential intervention concerns teaching methods, and is exemplified by the missing articulation between knowledge and practical actions, the inability to develop visioning skills of alternative futures, and the lack of emphasis of the role of inner dimensions for climate change mitigation. The missing link between knowledge and action is stressed and identified as an obstacle to concrete pathway thinking and personal sense of agency upon an issue.

> *"(…) being more hands on, practical during the programme could bring more hope as well."*
> **Hannah**

Furthermore, interviewees expressed troubles to depict the type of future they feel hope for, revealing the need for further development of goal-setting and projection capabilities during the lectures. Lastly, a few participants express the lack of inclusiveness of inner dimensions in their courses, such as the role of emotions.

Finally, academic inadequacies concerning hope at the level of students' interactions are evoked under three sub-themes: the difficulty to provide support to peers expressing hopelessness, the lack of ability to face ethical dilemmas at a personal level, and the neglect of students concerning their own well-being. Indeed, interviewees strongly underline their sense of disempowerment in the face of others' hopelessness, and how this additional pressure and anxiety inhibit their own hope.

> *"I am not affected that much, but I am affected by my friends that are experiencing anxiety, and I have no idea on how to deal with it (…)."* **Nina**

Ethical dilemmas are often mentioned in relation to a prominent sense of guilt resulting from contradictions between one's behaviours and one's knowledge and values. Indeed, empirical studies illustrate the difficulty for students to balance their responsibility for society at large and their own needs through inner dialogue (Ojala, 2007b).

> *"So, I try to be aware of that in my daily life, but I also try to balance that with not feeling guilty for everything I do, because I think that's actually harmful and not very sustainable for myself, emotionally."* **Hannah**

Lastly, almost all interviewees touched upon the necessity to take care of oneself and to balance one's mental and physical health with their engagement.

### 4.3.2 Academic promotion of agency thinking among students: sense of empowerment

When asked about an envisioned sense of empowerment at the end of their university programme, proactive students provide heterogenous responses (see Appendix S). They range from a pronounced expected sense of empowerment to a more mitigated anticipated empowerment due to the confrontation with external professional world. The importance to develop action competence and a sense of empowerment among young adults in the academic context has already been demonstrated (Fien et al., 2008; Mogensen & Schnack, 2010) and indicates the need for measures aiming at empowering students during their university education.

### 4.3.3 Areas of improvement to instil hope in academic context.

All proactive students appear capable of identifying potential leverage points in academic institutions to nurture constructive hope among students. A few of them mention the importance and responsibility of university institutions in bringing about this form of hope.

> *"I think it is important, in academic realms to have and instil hope. And I think it just really has to be a constructive hope (…)."* **Romane**

All but one participant appear confident in the potential of university education to improve the promotion of constructive hope among young adults, and two of them underlined that they have already taken steps to communicate recommendations linked to hope to university administration.

Students' recommendations are classified under the four above-mentioned levels of interventions in university institutions: the structural level of the university, the programme itself, the teaching methods level, and the students' level (see Appendix T). The most promising ideas are presented in Table 5, and discussed in section 5.2.

Interestingly, one interviewee emphasises the need for reconsidering our approach to hope and emotions in the face of climate change in the educational system as a whole, as supported by existing literature (Holden, 2006; Liarakou et al, 2011; Snyder, 2000b).

> *"(…) I would implement it even in lower education, like in (elementary and secondary schools), I would put education on emotions, like classes on emotions (…)."* **Livia**

### 4.3.4 Summary of findings for research sub-question 3

**Table 5.** Summary of findings: Hope in the academic context: implications for educational methods

| Research sub-question 3: What are the implications of these findings for educational methods and academic communication in university programmes related to global environmental problems? | | |
| --- | --- | --- |
| **Level of implication** | **Recommendations in terms of academic hope promotion** | **Consequence: nurturing constructive hope among university students through …** |
| **Structural level of university** | Alignment with students' values | Reinforcement of trust in external actors (e.g. academia) (pathway thinking). |
| | Research upon the phenomenon of climate anxiety among students | Explicit communication of emotional dimension of knowledge. Acknowledgement of the potential of negative emotions to be turned into constructive attitude. |
| | Teaching programme about emotions in the face of climate change | Explicit communication of emotional dimension of knowledge. Pathway thinking: promotion of trust in external actors (e.g. academia, other sectors of society) (pathway thinking). |
| **University programme level** | Development of interactions with other university programmes and external actors | Promotion of trust in external actors (pathway thinking). Inclusiveness of other programmes in collective agency (agency thinking). |
| | Balance of the critical perspective with the celebration of successful cases | Balance of prominence of *critical hope* among students (goal). Cognitive meaning-focused coping strategies such as positive re-appraisal (pathway thinking). |
| | Articulation of theoretical learning with practical implications | Reinforcement of students' trust in their ability to contribute to climate change mitigation through professional engagement and collective actions (agency thinking). |
| | Additional module teaching students how to deal with their emotions | Explicit communication of emotional dimension of knowledge. Acknowledgement of the potential of negative emotions to be turned into constructive attitude. |
| | Internal structure to deal with students' climate anxiety | Explicit communication of emotional dimension of knowledge and acknowledgement of its impacts on students' private life. |
| | Content of the courses | Encouragement of students to reflect upon and discuss collectively what they strive for (inspiration from *utopian* and *critical hope*) (goal). Teaching of the various ways to reach this future and provide students with some forms of trust in external actors (pathway thinking). Promotion of students' trust in their own ability to contribute to climate change mitigation (e.g. professional engagement, |

| | | |
|---|---|---|
| | | collective and individual actions, awareness spreading) (agency thinking). |
| | Link of the content of the course with potential professional contributions | Promotion of students' trust in their own ability to contribute to climate change mitigation through professional engagement (agency thinking). |
| **Teaching methods level** | Provided space for expression of emotions in class | Explicit communication of emotional dimension of knowledge. Acknowledgement of the potential of negative emotions to be turned into constructive attitude. |
| | Interactions between teachers and students | Facilitation of communication around knowledge, emotions and provide more opportunities for students to clarify their pathway and agency thinking. Reinforcement of trust in external actors (e.g. academia, science) (pathway thinking). |
| | Personal engagement of teachers into individual and collective actions | Reinforcement of trust in external actors (e.g. academia, science) (pathway thinking). |
| **Students' interactions level** | Reinforcement of the community spirit and encouragement for students' emotional expression | Reinforcement of students' trust in collective potential of human beings (pathway thinking). Reinforcement of student's trust in students' ability to contribute to climate change mitigation through collective actions (agency thinking). |
| | Consideration for peer-to-peer influence among students | Recognition of complexity of emotional reinforcement of hope. Acknowledgement of emotions in the face of climate change and their contagious nature among a group of young adults. |
| | Acknowledgement of negative emotions and balance with students' personal well-being | Explicit communication of emotional dimension of knowledge. Acknowledgement of the potential of negative emotions to be turned into constructive attitude. |
| | Encouragement for students' personal proactive engagement | Reinforcement of students' trust in their own ability to contribute to climate change mitigation through collective actions, individual actions and its influence, and spread of awareness (agency thinking). |

## 4.4. Additional findings

Some recurrent and not intended patterns appear throughout interviews and are worth being mentioned. Firstly, participants consistently emphasise how they perceive climate change as entangled with other environmental challenges and embedded into a wider societal context, which complexify their perception of hope.

> *"(…) most environmental crisis that we have, they are so much social, (…) so it is not just about climate and environment, it is about how society responds to those."* **Nina**

Secondly, interviewees demonstrate a certain realism and critical perspective towards the future, and are not embedded into a form of naïve optimism, consistently with their level of awareness and academic experience. They further emphasise that the promotion of hope in university context should in no case alter the teaching of critical knowledge.

> *"(…) I also feel that sometimes being super critical (…) made me feel hopeless. But if that's the reality of the world we live in, then that's also something we cannot deny."* **Hannah**

Lastly, many interviewees identify the start of their university education with their increasing awareness and their consequent proactive response, even if no consistent patterns can be extracted. Indeed, the fact that participants are exceptionally diverse in terms of academic backgrounds and contexts of living, and the gradual nature of the process of engagement further complicate the identification of the beginning of their proactive engagement.

# 5. Discussion

The following section discusses the major outcomes of the results' analysis and its implications. It further develops the answers to the three research sub-questions, with a special attention devoted to the second and third research sub-question, and contextualises the findings into existing academic literature.

## 5.1 Proactive students and their twofold experience of hope in the face of climate change

### 5.1.1 Hope as part of an emotional process

My findings suggest that proactive students appear outstandingly conscious of the negative emotions rising from climate change knowledge acquisition, and consider them as a potential prerequisite for individual and collective involvement in climate change actions, which is in line with existing research (Alhakami & Slovic, 1994; Lazo et al., 2000; Smith & Leiserowitz, 2014; Stevenson et al., 2014; Sundblad et al., 2007; Tobler et al., 2012). They recognise how the unavoidable discomfort resulting from painful emotions is contributing to breaking the routines that regulate the individual and collective behaviours (Marcus, 2002; Marcus et al., 2000). Interviewees identify how negative emotions make them inclined to further develop their knowledge, corroborating existing studies (Valentino et al., 2008; Verplanken & Roy, 2013; Yang & Kahlor, 2013) as well as to deliberate over alternative behaviours and lifestyles, as suggested by Amsler (2011) and Zembylas (2015). Yet, positive emotions and hope in particular are perceived as absolute necessities, and positive re-appraisal almost as a survival strategy to be nurtured in parallel. This not only indicates the value of hope to foster meaning-focused coping strategies among students, but it also emphasises the importance of explicit communication about the potential of combining emotions to cope constructively with knowledge on sensitive subjects.

More specifically, proactive students perceive hope as essential to support individual emotionally-sustainable responses during the process of knowledge acquisition. Indeed, hope buffers the detrimental consequences of worry upon psychological and physical well-being (Billings et al., 2000; Fredrickson & Levenson, 1998; Pettit, 2004; Smart Richman et al., 2005). Students explicitly recognise the importance of hope, but also the difficulty of cultivating it with stability, given the various internal (e.g. other emotions) and external influencing factors (e.g. media, peers, context, knowledge), confirming Gillham and Reivich's findings (2004). Furthermore, proactive students appear aware of the distinction between naïve optimism and hope. They are able to dismiss a blind belief in a positive outcome to rely instead on the belief in the potentiality of a desired outcome, imbued with anxiety about the simultaneous possibility for an undesired outcome (Lazarus, 1999). Therefore, one might

argue that providing students the opportunities and the tools to understand and discuss collectively their emotional processes and inner transformation is vital to promote constructive hope in the long-term.

## 5.1.2 Hope as a path to action … and conversely

This study primarily confirms the promising potential of hope to facilitate proactive meaning-focused coping strategies in the face of climate change, and to lead to both individual and collective environmental engagement, supporting existing literature (Hicks, 2014; Li & Monroe, 2019; Lueck, 2007; Ojala, 2007b: 2015; Stevenson & Peterson, 2016). However, my findings further suggest that awareness of the potential of hope to turn negative emotions into constructive energy (e.g. motivation for learning process, proactive engagement) is important for students to sustain constructive hope. Therefore, explicitly fostering proactive attitude towards climate change mitigation might be required to educate students to a form of constructive hope (see section 5.2.1), consistently with the literature (Head, 2016; Ojala, 2007a).

However, this study also reveals students' awareness of the bidirectional causality between hope and proactive engagement, since taking part in active contribution to climate change mitigation nurtures hope in a mutually reinforcing process. This reverse relationship between hope and action supports Ojala's (2007b) outcomes on how pro-environmental behaviours strengthen hope concerning global environmental problems among young proactive adults. Moreover, the idea that pro-environmental engagement leads itself to a form of embodied hope is embraced by several authors (De Cock et al., 2019; Gough, 2002; Macy & Johnstone, 2012; O'Brien, 2018; Ojala, 2012a, 2012b). Mangabeira Unger highlights that "it is a common mistake to suppose that hope is the cause of action. Hope is the consequence of action: you act, and then, as a result, you begin to hope" (Rippberger, 2013).

Besides, my findings build on Ojala's (2007a) study on proactive engagement providing a form of appeasement to students, who then live in accordance with their conscience. Interviewees' engagement lead to the activation of positive emotions, such as a sense of empowerment, a sense of usefulness, and a sense of meaning. These findings are consistent with existing theories claiming that engaging towards a goal that transcends oneself results in positive emotions (Kerret et al., 2016), and more specifically a sense of existential meaning and purpose (Baumeister & Vohs, 2001; Damon et al., 2003 in Ojala, 2007a). Therefore, proactive engagement appears to also lead to personal positive outcomes for one self. Promoting students' awareness of the bidirectional character of hope and the inner benefits of personal engagement could provide additional incentives to adopt a proactive attitude towards sustainability challenges in general.

## 5.2 The characteristics of a form of hope fostering proactive engagement among students

According to Snyder et al. (2002), if one has more hope, their capability to proactively motivate one-self to use identified pathway to a desirable goal is nurtured. Reversely, we can explore the characteristics of hope among proactive students to understand how to promote constructive hope. In a nutshell, my findings suggest that educational programs should foster a form of hope inspired by *critical* and *utopian hope*, driven by the view of desirable futures (goal), illustrated by concrete and heterogenous pathways towards these futures (pathway thinking), personally embodied by students (agency thinking), and imbued with positive emotional reinforcement processes.

### 5.2.1 Goal

In this study, *resolute hope* appears as a mode of hoping embodied by students demonstrating outstanding proactive engagement. However, maintaining agency with no faith in the possibility of goal attainment is energy-draining, and at risk of instability for personal well-being of subjects. Besides, *resolute hope* is characterised by a future-oriented objective of significance to the hoper and driving strong agency (Webb, 2007). Since these conditions correspond to the sampling criteria of this study (i.e. objective of climate change mitigation, devotion of students to this topic through their studies, selection of most proactive students), one might argue that the research process itself orients the emergence of *resolute hope* in the data collection.

Nevertheless, the study reveals the potential of combining desirable future (Hicks, 2014) with critical reflections concerning the scale or timeframe ensuring its 'possibility', as suggested by Torbjörnsson and Molin (2015) and Voros (2003). Indeed, *utopian hope* serves the creation of projections and collective narratives of a future we feel hope for and a longstanding openness towards the future (McManus, 2003; Ojala, 2017; Saunders & Jenkins, 2012), whereas c*ritical hope* informs the subjects about the material limits imposed by the current system (Burton, 1983) and the obstacles in the way of a desired future (Ojala, 2017). The outcomes of this combination are tangible, reachable, positive goals, which appear adequate to anchor constructive hope (Lazarus, 2006; Snyder, 2000a). In addition, *critical* and *utopian hope* are particularly relevant in the academic context since *critical hope* appears prevalent in educational settings and *utopian hope* is driven by a sense of community (Webb, 2007).

### 5.2.2 Pathway thinking

This study reveals the importance of trust in collective potential (e.g. social movements, environmental organisations, academia) as pathways to constructive hope in the face of climate change. On the other

side, trust in political change and science appears more contentious among this specific sample than it is for young adults in general (Fløttum et al., 2016; Ojala, 2012c; Pettersson, 2014). This finding suggests the potential need for interventions, since trust in others is an absolute prerequisite for trust in one's own capability and therefore agency (Ainsworth, 1989; McGeer, 2008), and a substantial support when one does not have the personal resources to reach independently the goal (Head, 2016; Sagy & Adwan, 2006). Indeed, cynicism and extreme mistrust towards some external actors are clearly perceptible among interviews, and can lead to a sense of frustration and helplessness (Colby et al., 2010, p. 153). Since trust is in essence a relational concept (Flanagan, 2003) that arises from concrete interactions with society (Ainsworth, 1989), this finding underlines the need for practical collaborations between students and societal actors, which is identified by interviewees themselves. Moreover, since trust in humanity and forms of existential hope appear uncommon among the sample, boundless optimism does not appear as a fundamental precondition to develop a proactive attitude.

### 5.2.3 Agency thinking

The analysis suggests that proactive students strongly envision a professional contribution to reaching a desirable future. To my knowledge, no previous studies have investigated hope in relation to the projection of agency through professional engagement among students. Given its role in proactive engagement, the potential of this form of agency thinking should be further researched and emphasised in education and communication (Stoknes, 2015). However, the current difficulty for participants to articulate their academic experiences with professional involvement is a hurdle to overcome. Additionally, proactive students demonstrate some form of agency at the individual level, through individual actions, the ability to influence others, and to a minor extent, through staying informed and creating a new social norm. By doing so, these students illustrate their awareness of the individual-structural continuum and the mutually constitutive relations between individuals and large socio-economic structures (Grund & Brock, 2019). Therefore, raising awareness about the potential impacts of individual engagement on global challenges could further develop constructive hope.

On the other side, participants of this study demonstrate their awareness of the existence of forces beyond their control and the limitations of their own agency. They deal constructively with this major realisation by relying massively on agency through collective actions, supporting Miceli and Castelfranchi's (2010) findings. This result challenges existing literature that identify collective engagement as under-exploited by young people (Ojala, 2017). Therefore, it seems essential to stress that individual responsibilities for mitigating climate change are not a sufficient and personally sustainable solution (Stoknes, 2015), and to encourage involvement in collective actions.

At this point, the limitations of Snyder's theory for the case of hope in the face of climate change should be recognised. Indeed, it was originally not developed in relation to global sustainability challenges and has primarily an individualistic focus (Ojala, 2012c; Snyder & Feldman, 2000). However, individual agency thinking is insufficient when it comes to global environmental challenges since those require collective intervention (Courville & Piper, 2004; McGeer, 2004), as well as shared vision for the pathway of change (Bar-Tal, 2001; Braithwaite, 2004).

### 5.2.4 Emotional reinforcement of hope

Even though Snyder's theory of hope is widely used to explore agency and pathway thinking regarding environmental challenges (Li & Monroe, 2019; Ojala, 2012c; Stevenson & Peterson, 2016), the emotional reinforcement of hope is rarely investigated among existing studies. Since proactive students perceive the motivational force of positive emotions as stronger to spark and maintain proactive engagement in comparison with negative emotions, this research highlights the benefits of nurturing positive emotional reinforcement of hope. The perception of success in terms of goal pursuits brings over emotions reinforcing the feeling of hope (e.g. sense of empowerment, usefulness, and interest) and being beneficial for one's well-being (e.g. sense of meaning), substantiating Snyder's theory (1996). Therefore, it is crucial to ensure students' capability to develop intermediary, realistic sub-goals or objectives at a local scale, so they experience tangible contributions of their engagement, as already discussed by Arbuthnott (2010) and Polivy and Herman (2000). The findings also draw attention to the influence of students' environment on their emotional processes in the face of climate change, such as peers (Li & Monroe, 2019; Stoknes, 2015), media communication (Höijer, 2010; Nisbet, 2009), collective actions (Ojala, 2007b), knowledge (Almers, 2013; Ojala, 2007b; Ruiter et al., 2003; Whitmarsh, 2009), and academic educators (Ojala, 2015; Wolf & Moser, 2011).

Furthermore, the expression of the need for combining both positive and negative emotions to encourage students' proactive stance towards global environmental challenges while ensuring their well-being is far from common in the literature (Larsen et al., 2003). Ordinarily, some studies focus on the importance of painful emotions to motivate engagement (Head, 2016; Ojala, 2005), whereas others independently highlight the need for positive emotions for one to take an active stance towards climate change (Höijer, 2010; Stevenson & Peterson, 2016), sustain involvement (Ojala, 2012c), and maintain a personal emotional balance (Anderson, 2006). However, my findings suggest that the emotional processes impacting engagement and hope should not be considered separately, since they intrinsically relate to and influence each other through complex mechanisms and factors (e.g. goal-setting, pathway thinking, and sense of agency) (Kollmuss & Agyeman, 2002). In addition, the major

outcome concerning students' demand to acknowledge negative emotions and its co-evolution with hope is a significant contribution to literature on hope.

## 5.3 Implications for educational methods and academic communication

### 5.3.1 General recommendations for educational methods

The results of this empirical study indicate the need for academic consideration for the evolution of the inner dimensions, such as hope, among students enrolled in university programme related to global environmental challenges. Concomitantly, scholars emphasise the urgent need for pedagogical innovations in regards to the countless global environmental and societal challenges that humanity is facing (Johnston, 2009; Lotz-Sisitka et al., 2015; Sterling, 2004; Wals, 2007). Educational methods certainly have a key role to play in encouraging their students to develop a proactive engagement towards sustainability challenges in general. Given the increasing enrolment rate in university degrees related to the environmental crisis and climate change (Vincent & Focht, 2011), the potential of a paradigm shift in academia towards a more transformative and transgressive learning is huge (Lotz-Sisitka et al., 2015; Wals, 2010).

The analysis provides three important insights for academic institutions. Firstly, pathway thinking could be strengthened through the reinforcement of trust in different sources outside oneself among students. Secondly, agency thinking could be nurtured through the academic promotion of proactive engagement, as stated by Wals (2010), and the articulation of university background with potential professional career of students, as supported by Ojala (2016a). Thirdly, the acknowledgement of emotions in academia and the consideration of critical emotional awareness as an essential learning outcome would empower university students of any programme to make adequate use of the motivational force of emotions in the face of climate change, as suggested by Lotz-Sisitka et al. (2015).

### 5.3.2 Concrete suggestions implementable in academic institutions

Some suggestions, often derived from ideas evoked by interviewees themselves (see Appendix T), are made to transform the implications of this study on constructive hope in academia into potential innovative practices and pedagogies in concrete university educational settings. However, this section has no authoritative legitimacy, and these practical guidelines should be adjusted to unique and concrete educational contexts.

***Structural level of university***

Practically, reinforcing students' trust in academia could be implemented through aligning universities' attitude with their students' values and interest on the long-run (e.g. divestment from fossil fuels). Additionally, the universities could undertake research to explore the phenomenon of emotions in the face of environmental challenges to learn how to deal with anxiety triggered by education (Stevenson & Peterson, 2016), to promote hope at a micro-level among students (Cunningham et al., 2002; Gillham & Reivich, 2004), and to teach students from various faculties how to handle negative emotions induced by environmental threats (Ojala, 2013b).

***University programme level***

University programmes related to global environmental challenges could also implement measures independently from the rest of the university. Firstly, students' trust in different societal actors could be fostered by interactions with students enrolled in different programmes and external actors, as suggested by Ojala (2016a). Practically, the programme could propose an introductory course clarifying how the different university fields have the potential to contribute to mitigating climate change. It could also facilitate field trips, internships, and expert's interventions, and encourage partnerships with concrete stakeholders for the thesis process.

Secondly, the balance of a critical perspective upon sustainability challenges, which is never sufficient to transform our system (Amsler, 2015; North, 2011), with the celebration of small victories could be necessary to encourage students to develop attainable sub-goals and promote a sense of personal agency, reinforcing Ojala's (2017) standpoint. Critical thinking and hope should not be perceived as opposite learning outcomes (Daly, 2013; McManus, 2003). My findings corroborate existing studies indicating how *critical hope* is prone to lead to proactive engagement, if attention is directed in parallel to rising negative emotions and coping strategies (Hermans, 2016; Ojala, 2012c; Pettersson, 2014).

Thirdly, students appear self-conscious of the benefits of linking their theoretical learning with practical implications to foster constructive hope. Disrupting usual thinking and developing a concrete sense of agency require critical discussions about what exists for one to perceive potential tangible contributions (Ojala, 2016b). For example, students could benefit from working more on specific case studies and real-world projects to apply their gained knowledge, as suggested by Hutchinson (2017). Furthermore, a practical and solution-oriented perspective could contribute to articulate the course content with ideas of possible professional involvement.

Additionally, implementing a module teaching how to deal with the emotional implication of knowledge and developing a plan to face anxiety among students would contribute to the verbalisation of emotions in university programmes and confront the risks of education (Biesta, 2015). Indeed, teaching usually occurs at a fast pace and is missing proper training on how to cope with emotions in healthier ways. Academic members should be taught how to disrupt personally unsustainable (i.e. emotion-focused) coping strategies among their students and to transition towards alternative strategies (Ojala, 2016b; Ojala & Rikner, 2010). Another vital component would be the existence of internal supporting structures for students facing climate anxiety, such as seminars, an office or climate coach services.

Lastly, the course content could provide further opportunities to reflect upon probable, preferable, and desirable futures (Hicks, 2014), and to engage in collective discussions to understand how critical consideration of the present can help the envisioning of a desirable future (Ojala, 2016b). These visioning exercises are essential tools to broaden one's perceptions of reality (Saunders & Jenkins, 2012) and develop one's creativity and open-mindfulness (Fredrickson, 2001; Fredrickson & Branigan, 2005; Fredrickson & Joiner, 2002). They could be facilitated by a focus on local scale, since students tend to view global future more negatively (Threadgold, 2012). Overall, envisioning 'preferable' futures help students to approach the future in a forward-looking way (Wiek et al., 2011), develop anticipatory thinking (Ojala, 2017), and learn to deal constructively with uncertainties (Wals & Schwarzin, 2012).

### *Teaching methods level*

Teaching methods could be adapted based on the findings of this study, even if teachers should not shy away from the harsh reality and are responsible for exposing the global environmental challenges in all its complexities. Firstly, university educators should be conscious of their influence on students' hope (Eisenberg, 2000) and ponder their view on desirable goals, pathway and agency thinking when teaching (Hermans, 2016; Ojala, 2015). However, they could encourage students to reflect and engage proactively, ensuring that one's agency is based on appropriate knowledge and derived from one's own decision, as suggested by Persson et al. (2011). Another teaching component inspiring hope for students could be the explicit expression of teachers' personal engagement, already discussed by Ojala and Rikner (2010). Facilitated interactions between teachers and students also play a key role in hope promotion, and could be practically implemented through the minimisation of hierarchical structures, opportunities for more personal conversations, and the assignment of full professors. Overall, educators' ways of communicating profoundly matter to instil hope and enthusiasm, and to reinstate that students are future key actors of change.

Secondly, my findings reinforce Ojala's (2012b, 2013a) argument that emotions should be perceived as key implications of learning, be given structural space, and be discussed openly in class. Making these implicit aspects of knowledge more visible could contribute to raising students' awareness of the generative potential of their emotions (Ojala, 2017) and the different regulating strategies to bear with emotions associated with complexity and uncertainty (Ojala, 2012b; Ojala & Lidskog, 2011). Teachers could promote constructive coping, and deactivate unsustainable and debilitating strategies through critical discussions occurring in small groups to facilitate expression, consistently with a pluralistic approach of education (Sandell & Öhman, 2010). Teachers could also encourage peer-to-peer emotional expression among students, as long as they do not rely exclusively on peers to handle their feelings. Finally, teachers could facilitate the expression of negative emotions and acknowledge their legitimacy. They could highlight the complexity and entanglement of positive and negative emotional processes, as suggested by Oettingen (2012) and be empowered to help students balancing these emotions with their own well-being (Ojala, 2016a). However, educators should prioritise the process of confronting and handling negative emotions rather than distancing defensively from them.

### *Students' interactions level*

Practical recommendations concerning students' interactions can also be formulated. Firstly, reinforcing the social cohesion and fellowship between students could lead to the reinforcement of mutual emotional and agency support (Fielding, 2014). A certain degree of interpersonal trust is essential for education to be personally transformative (Wals, 2007, 2015), and interconnectedness with peers is a relational teaching tactic to invite but not impose change on students (Keating, 2016; Ojala, 2017). Besides, community spirit among students develops other learning outcomes, such as the ability to constructively discuss about conflicting views and the transgression of one's behaviour, which in turn foster hope (Ojala, 2017). This sense of community reinforces itself through positive inspirations and peer-to-peer influences, and might contribute to balance the exhausting nature of these studies, and the invasion of educational setting in private life. In practice, cooperation between students and supportive community could be facilitated by the optimal size of student group, organised class trips, regular group activities, and encouraged socialisation process from the beginning.

In addition, students should be given the opportunity to engage outside the classroom and to practice transformative learning during extracurricular time, not only through breaking personal unsustainable norms, but also through getting involved in collective actions and practical projects, as Ojala claims it (2016a). Indeed, agency at the level of individual consumer behaviours is not sufficient to sustain long-term constructive hope and, therefore, engagement (Amsler, 2011; Ojala, 2017).

## 5.4 Methodological limitations and strengths

### 5.4.1 Limitations

Firstly, the sample for the quantitative survey is limited to 61 respondents, leading to limitations for the purposive sampling. Likewise, the exploratory research on hope has to be taken with cautious due to the reduced number of interviews, the overrepresentation of females, and the predominance of interviewees enrolled in the similar university programme at Lund university in Sweden.

Secondly, hope is essentially approached as an individual coping strategy in this study. More attention should be given to the influence of various social processes (e.g. peer-pressure, social interactions with other global issues) (Folkman, 2009). Moreover, it is utopian to explore hope in the face of climate change independently from the variety of society and sustainability challenges entangled to it.

A third limitation is the impossibility to draw causality relationship between hope and proactive engagement with certainty in this study. Indeed, a variety of theoretical models linking hope to action coexist (Gottman et al., 1996; Magnusson & Stattin, 1998) and these could not be empirically tested. Although the data analysis is strongly theoretically-grounded, alternative theories would probably lead to different interpretations of the results (Ojala, 2007a).

### 5.4.2 Strengths

On the other hand, this thesis has strengths that should be underlined. Firstly, the study draws a broad picture of answers due to the various backgrounds, nationalities, and ages of the survey respondents and interviewees. Hopefully, the anonymity of the online survey has also encouraged the survey respondents to answer independently from social influence.

Secondly, unlike most related explorative studies so far, this research considers both private-sphere pro-environmental behaviours, and a more collective and political form of environmental engagement (Courtenay-Hall & Rogers, 2002). Therefore, this study does not fall into the common trap of depoliticising the environmental crisis (Sandilands, 1993). Quite the contrary, it acknowledges that hope in relation to climate change is not an isolated but a collective process, involving interactions with actors of society (Doetsch-Kidder, 2012; Folkman, 2009).

Thirdly, the study contributes to the emerging debates on the importance of a positive inner dimension, namely hope, instead of complementing the ever-growing literature around negative emotions in the face of climate change (Homburg et al., 2007).

Additionally, the theoretical outcomes of this study are adequately articulated to practical implications for educational methods and academic communication of climate change and sustainability challenges in general. These ramifications are consistent with the sample choice, and with the true nature of sustainability science. Besides, the study has an unprecedented focus on university students particularly exposed to hopelessness and with high-potential for future engagement towards global environmental challenges in reason of their studies.

Finally, another methodological strength of this study is the combination of complementary quantitative and qualitative data collection (Folkman & Moskowitz, 2000): an online survey revealing the differences in behavioural patterns among students enrolled in university programmes related to global environmental problems, used as a purposive sampling to undertake an exploratory qualitative data collection through in-depth interviews.

## 5.5 Further research

Further research should be conducted to explore more specifically how environmental engagement contributes to strengthen hope in the face of global environmental challenges. Secondly, this study could be complemented by long-term research on the evolution of the perception of hope among students who become more proactive over time. On the other side, research could be conducted to understand the potential of hope in breaking thinking patterns among the people less inclined to engage in the environmental cause. Given the importance of the socialisation process for young adults (Gottman et al., 1996; Magnusson & Stattin, 1998), further investigation is also needed concerning students' mutual influence, reactions to teacher-induced emotions, and influence of educators' communication of hope, through classroom studies (Swim & Fraser, 2013). Finally, the main findings of this study could be incorporated into a more heuristic theoretical model, integrating hope with other factors impacting human motivation to adopt pro-environmental behaviours. This would link the outcomes to broader implications for communication of climate change and the educational system as a whole.

## 6. Conclusion

This research study approaches the multifaceted concept of hope in its whole complexity, recognising the cognitive, emotional, behavioural, and existential dimensions of hope. It provides an overview of the various pathway and agency components of hope among proactive students in university programmes related to global environmental challenges. Through the identification of the performative potential of a certain form of hope, this study sheds light on positive psychology interventions and practical implications, such as communication and education purposes. The outcomes of this thesis aim at being extrapolated and applied to any type of societal or environmental threats, since the focus is not on climate change, but on how human beings respond to global challenges through individual and collective constructive hope.

The standpoint adopted in this thesis is twofold. First of all, constructive hope is considered as a positive emotion and an existential necessity to navigate the waters of uncertainties and global environmental threats. It gives students the strength to face the future and it prevents them from falling into cynicism or passivity. Furthermore, hope is a coping mechanism in the face of negative emotions triggered by the knowledge of delicate nature they are exposed to on a daily basis. In brief, it helps them to deal individually more sustainably with their emotions. Secondly, constructive hope is presented as a path to proactive engagement, a concept that underlies a constructive motivational potential. It is a tangible, embodied, and practiced form of hope, grounded in the vision of desirable, yet possible, futures, and collectively reflected pathways to reach these futures. In a sense, being hopeful is way more demanding because then, you have no excuse for not acting.

The results of the study suggest that a form of constructive hope could be cultivated in the university context at multiple levels, by opening and discussing collectively the possibilities of the future, fostering trust towards external actors, developing trust in peers and sense of community within the university programme, supporting students' sense of agency at an individual, collective, and professional level, and bringing emotions at the surface. Indeed, the students enrolled in programmes related to global environmental challenges will be the next generation engaging in climate change mitigation actions and providing solutions to other sustainability challenges. Therefore, it is vital to ensure the sustainable proactive attitude of these future actors of change, who will in turn drive the societal responses to these threats to human and non-human life.

*"Without the stubborn optimism, the action doesn't sustain itself; without the action, the stubborn optimism is just an attitude. The two together can transform an entire issue and change the world."*

**Tom Rivett-Carnatt**

# 7. References

Ahmed, S. (2010). *The promise of happiness*. Duke University Press.

Ainsworth, M. D. S. (1989). Attachments Beyond Infancy. *American Psychologist*, *44*(4), 709–716.

    https://doi.org/10.1037/0003-066X.44.4.709

Albert, M., Hurrelmann, K., Quenzel, G., & Schneekloth, U. (2011). Jugend 2010: Die 16. Shell

    Jugendstudie. *Diskurs Kindheits- und Jugendforschung / Discourse. Journal of Childhood and*

    *Adolescence Research*, *6*(2), 199–205.

Alhakami, A. S., & Slovic, P. (1994). A Psychological Study of the Inverse Relationship Between

    Perceived Risk and Perceived Benefit. *Risk Analysis*, *14*(6), 1085–1096.

    https://doi.org/10.1111/j.1539-6924.1994.tb00080.x

Almers, E. (2013). Pathways to Action Competence for Sustainability—Six Themes. *The Journal of*

    *Environmental Education*, *44(2), pp. 116-127*.

    https://doi.org/10.1080/00958964.2012.719939

Amsler, S. S. (2011). From therapeutic to political education: The centrality of affective sensibility in

    critical pedagogy. *Critical Studies in Education*, *52*(1), 47–63.

    https://doi.org/10.1080/17508487.2011.536512

Amsler, S. S. (2015). *The Education of Radical Democracy*. Routledge.

Anderson, B. (2006). Becoming and Being Hopeful: Towards a Theory of Affect. *Environment and*

    *Planning D: Society and Space*, *24*(5), 733–752. https://doi.org/10.1068/d393t

Arbuthnott, K. D. (2010). Taking the Long View: Environmental Sustainability and Delay of

    Gratification. *Analyses of Social Issues and Public Policy*, *10*(1), 4–22.

    https://doi.org/10.1111/j.1530-2415.2009.01196.x

Averill, J. R., Catlin, G., & Chon, K. K. (2012). *Rules of Hope*. Springer Science & Business Media.

Bar-Tal, D. (2001). Why Does Fear Override Hope in Societies Engulfed by Intractable Conflict, as It Does in the Israeli Society? *Political Psychology*, *22*(3), 601–627. https://doi.org/10.1111/0162-895X.00255

Barr, S. (2004). What we buy, what we throw away and how we use our voice. Sustainable household waste management in the UK. *Sustainable Development*, *12*(1), 32–44. https://doi.org/10.1002/sd.226

Baumeister, R. F., & Vohs, K. D. (2001). The pursuit of meaningfulness in life. In Snyder, C. R. & Lopez, S. J. (Eds.), *Handbook of positive psychology* (pp. 608-618). New York, NY: Oxford University Press.

Bell, W., & Olick, J. K. (1989). An epistemology for the futures field: Problems and possibilities of prediction. *Futures*, *21*(2), 115–135. https://doi.org/10.1016/0016-3287(89)90001-3

Benzein, E., & Saveman, B. -I. (1998). One step towards the understanding of hope: A concept analysis. *International Journal of Nursing Studies*, *35*(6), 322–329. https://doi.org/10.1016/S0020-7489(98)00045-5

Bernard, H. R. (2012). *Social Research Methods: Qualitative and Quantitative Approaches*. SAGE Publications.

Biesta, G. (2015). Teaching, Teacher Education, and the Humanities: Reconsidering Education as a Geisteswissenschaft. *Educational Theory*, *65*(6), 665–679. https://doi.org/10.1111/edth.12141

Billings, D., Folkman, S., Acree, M., & Moskowitz, J. T. (2000). Coping and physical health during caregiving: The roles of positive and negative affect. *Journal of Personality and Social Psychology*, *79*(1), 131–142. https://doi.org/10.1037/0022-3514.79.1.131

Bolier, L., Haverman, M., Westerhof, G. J., Riper, H., Smit, F., & Bohlmeijer, E. (2013). Positive

psychology interventions: A meta-analysis of randomized controlled studies. *BMC Public*

*Health*, *13*(1), 119–139. https://doi.org/10.1186/1471-2458-13-119

Bovens, L. (1999). The Value of Hope. *Philosophy and Phenomenological Research*, *59*(3), 667–681.

JSTOR. https://doi.org/10.2307/2653787

Braithwaite, J. (2004). Emancipation and Hope. *The ANNALS of the American Academy of Political and*

*Social Science*, *592*(1), 79–98. https://doi.org/10.1177/0002716203261741

Brunstein, J. (1993). Personal Goals and Subjective Well-Being: A Longitudinal Study. *Journal of*

*Personality and Social Psychology*, *65*(5), 1061–1070. https://doi.org/10.1037/0022-

3514.65.5.1061

Burton, M. (1983). Understanding mental health services: Theory and practice. *Critical Social Policy*,

*3*(7), 54–74. https://doi.org/10.1177/026101838300300706

Bushman, B. J. (2002). Does Venting Anger Feed or Extinguish the Flame? Catharsis, Rumination,

Distraction, Anger, and Aggressive Responding. *Personality and Social Psychology Bulletin*,

*28*(6), 724–731. https://doi.org/10.1177/0146167202289002

Candy, S. (2010). *The Futures of Everyday Life: Politics and the Design of Experimental Scenarios*.

University of Hawai'i.

Charmaz, K. (2006). *Constructing Grounded Theory: A Practical Guide through Qualitative Analysis*.

SAGE.

Chiras, D. D. (2004). *Environmental Science: Creating a Sustainable Future*. Jones & Bartlett Learning.

Clarke, A. E. (2003). Situational Analyses: Grounded Theory Mapping After the Postmodern Turn.

*Symbolic Interaction*, *26*(4), 553–576. https://doi.org/10.1525/si.2003.26.4.553

Colby, A., Beaumont, E., Ehrlich, T., & Corngold, J. (2010). *Educating for Democracy: Preparing Undergraduates for Responsible Political Engagement*. John Wiley & Sons.

Connell, S., Fien, J., Lee, J., Sykes, H., & Yencken, D. (1999). If It Doesn't Directly Affect You, You Don't Think About It': A qualitative study of young people's environmental attitudes in two Australian cities. *Environmental Education Research*, *5*(1), 95–113. https://doi.org/10.1080/1350462990050106

Cook, J., Nuccitelli, D., Green, S. A., Richardson, M., Winkler, B., Painting, R., Way, R., Jacobs, P., & Skuce, A. (2013). Quantifying the consensus on anthropogenic global warming in the scientific literature. *Environmental Research Letters*, *8*(2), 024024. https://doi.org/10.1088/1748-9326/8/2/024024

Corbin, J. M. (1998). Alternative Interpretations: Valid or not? *Theory & Psychology*, *8*(1), 121–128. https://doi.org/10.1177/0959354398081007

Costello, A., Maslin, M., Montgomery, H., Johnson, A. M., & Ekins, P. (2011). Global health and climate change: Moving from denial and catastrophic fatalism to positive action. *Philosophical Transactions of the Royal Society A: Mathematical, Physical and Engineering Sciences*, *369*(1942), 1866–1882. https://doi.org/10.1098/rsta.2011.0007

Courtenay-Hall, P., & Rogers, L. (2002). Gaps in Mind: Problems in environmental knowledge-behaviour modelling research. *Environmental Education Research*, *8*(3), 283–297. https://doi.org/10.1080/13504620220145438

Courville, S., & Piper, N. (2004). Harnessing Hope through NGO Activism. *The ANNALS of the American Academy of Political and Social Science*, *592*(1), 39–61. https://doi.org/10.1177/0002716203261940

Cunningham, E. G., Brandon, C. M., & Frydenberg, E. (2002). Enhancing Coping Resources in Early Adolescence Through a School-based Program Teaching Optimistic Thinking skills. *Anxiety, Stress, & Coping*, *15*(4), 369–381. https://doi.org/10.1080/1061580021000056528

Daffara, P. (2011). Rethinking tomorrow's cities: Emerging issues on city foresight. *Futures*, *43*(7), 680–689. https://doi.org/10.1016/j.futures.2011.05.009

Daly, F. (2013). The zero-point: Encountering the dark emptiness of nothingness. In Thompson, P. & Zizek, S. (Eds.), *The privatization of hope: Ernst Bloch and the future of utopia* (pp. 164-202). United Kingdom, London: Duke University Press.

Damon, W., Menon, J., & Bronk, K. C. (2003). The Development of Purpose During Adolescence. *Applied Developmental Science*, *7*(3), 119–128. https://doi.org/10.1207/S1532480XADS0703_2

De Cock, C., Nyberg, D., & Wright, C. (2019). Disrupting climate change futures: Conceptual tools for lost histories. *Organization, 20*(5), 647–658. https://doi.org/10.1177/1350508419883377

Dean, B. (2008). Pakistani children want a better future. *Citizenship Teaching and Learning*, *4*(2), 43–57.

Debaise, D., & Stengers, I. (2016). The Insistence of the Possible: Towards a Speculative Pragmatism. *Multitudes*, *65*(4), 82–89. https://doi.org/10.3917/mult.065.0082

Dhiman, S., & Marques, J. (2016). *Spirituality and Sustainability: New Horizons and Exemplary Approaches*. Springer.

Doetsch-Kidder, S. (2012). *Social Change and Intersectional Activism: The Spirit of Social Movement*. Springer.

Dostie-Goulet, E. (2009). Social networks and the development of political interest. *Journal of Youth Studies*, *12*(4), 405–421. https://doi.org/10.1080/13676260902866512

Dunlap, R. E., Liere, K. D. V., Mertig, A. G., & Jones, R. E. (2000). New Trends in Measuring Environmental Attitudes: Measuring Endorsement of the New Ecological Paradigm: A Revised NEP Scale. *Journal of Social Issues*, *56*(3), 425–442. https://doi.org/10.1111/0022-4537.00176

Eckersley, R. (1999). Dreams and expectations: Young people's expected and preferred futures and their significance for education. *Futures*, *31*(1), 73–90. https://doi.org/10.1016/S0016-3287(98)00111-6

Edwards, A. R. (2015). *The Heart of Sustainability: Restoring Ecological Balance from the Inside Out*. New Society Publishers.

Eigner, S. (2001). The relationship between ''protecting the environment'' as a dominant life goal and subjective well-being. In: Schmuck, P. & Sheldon, K.M (Eds.), *Life Goals and Well-being. Towards a Positive Psychology of Human Striving* (pp. 182-201). Washington, Seattle: Hogrefe & Huber Publishers.

Eisenberg, N. (2000). Emotion, Regulation, and Moral Development. *Annual Review of Psychology*, *51*(1), 665–697. https://doi.org/10.1146/annurev.psych.51.1.665

Ellis, S. J. (2004). Young people and political action: Who is taking responsibility for positive social change? *Journal of Youth Studies*, *7*(1), 89–102. https://doi.org/10.1080/1367626042000209976

Emmons, R. (1986). Personal Strivings: An Approach to Personality and Subjective Well-Being. *Journal of Personality and Social Psychology*, *51*(5), 1058–1068. https://doi.org/10.1037/0022-3514.51.5.1058

Esbjörn-Hargens, S., & Zimmerman, M. E. Z. (2011). *Integral Ecology: Uniting Multiple Perspectives on the Natural World*. Shambhala Publications.

Fielding, M. (2014). Democratic fellowship and the practice of human possibility. In R. Marples, R., Suissa, J. & Winstanely, C. *(Eds.), Education, philosophy, and wellbeing: New perspective on the work of john white* (pp. 54-69). United Kingdom, London: Routledge.

Fien, J., Neil, C., & Bentley, M. (2008). Youth Can Lead the Way to Sustainable Consumption. *Journal of Education for Sustainable Development*, *2*(1), 51–60. https://doi.org/10.1177/097340820800200111

Flanagan, C. (2003). Trust, Identity, and Civic Hope. *Applied Developmental Science*, *7*(3), 165–171. https://doi.org/10.1207/S1532480XADS0703_7

Fleer, M. (2002). Curriculum Compartmentalisation?: A futures perspective on environmental education. *Environmental Education Research*, *8*(2), 137–154. https://doi.org/10.1080/13504620220128211

Fløttum, K., Dahl, T., & Rivenes, V. (2016). Young Norwegians and their views on climate change and the future: Findings from a climate concerned and oil-rich nation. *Journal of Youth Studies*, *19*(8), 1128–1143. https://doi.org/10.1080/13676261.2016.1145633

Folkman, S. (2008). The case for positive emotions in the stress process. *Anxiety, Stress, & Coping*, *21*(1), 3–14. https://doi.org/10.1080/10615800701740457

Folkman, S. (2009). Commentary on the Special Section "Theory-Based Approaches to Stress and Coping". *European Psychologist*, *14*(1), 72–77. https://doi.org/10.1027/1016-9040.14.1.72

Folkman, S., & Lazarus, R. S. (1980). An Analysis of Coping in a Middle-Aged Community Sample. *Journal of Health and Social Behavior*, *21*(3), 219–239. https://doi.org/10.2307/2136617

Folkman, S., & Moskowitz, J. T. (2000). Positive Affect and the Other Side of Coping. *American Psychologist*, *55*(6), 647-654. https://doi.org/10.1037/0003-066X.55.6.647

Frawley, D. (2005). *Yoga and the Sacred Fire: Self-Realization and Planetary Transformation*. Lotus Press.

Fredrickson, B. L. (2001). The Role of Positive Emotions in Positive Psychology. *The American Psychologist*, *56*(3), 218–226. https://doi.org/10.1037/0003-066X.56.3.218

Fredrickson, B. L., & Branigan, C. (2005). Positive emotions broaden the scope of attention and thought-action repertoires. *Cognition and Emotion*, *19*(3), 313–332. https://doi.org/10.1080/02699930441000238

Fredrickson, B. L., & Joiner, T. (2002). Positive Emotions Trigger Upward Spirals Toward Emotional Well-Being. *Psychological Science*, *13*(2), 172–175. https://doi.org/10.1111/1467-9280.00431

Fredrickson, B. L., & Levenson, R. W. (1998). Positive Emotions Speed Recovery from the Cardiovascular Sequelae of Negative Emotions. *Cognition and Emotion*, *12*(2), 191–220. https://doi.org/10.1080/026999398379718

Gidley, J. (2007). The evolution of consciousness as a planetary imperative: An integration of integral views. *Integral Review: A Transdisciplinary and Transcultural Journal for New Thought, Research and Praxis*, *5(4)*, 4–226.

Gifford, R. (2011). The dragons of inaction: Psychological barriers that limit climate change mitigation and adaptation. *The American Psychologist*, *66*(4), 290–302. https://doi.org/10.1037/a0023566

Gillham, J., & Reivich, K. (2004). Cultivating Optimism in Childhood and Adolescence. *The ANNALS of the American Academy of Political and Social Science*, *591*(1), 146–163. https://doi.org/10.1177/0002716203260095

Göckeritz, S., Schultz, P. W., Rendón, T., Cialdini, R. B., Goldstein, N. J., & Griskevicius, V. (2010).

    Descriptive normative beliefs and conservation behavior: The moderating roles of personal

    involvement and injunctive normative beliefs. *European Journal of Social Psychology*, *40*(3),

    514–523. https://doi.org/10.1002/ejsp.643

Gottman, J. M., Katz, L. F., & Hooven, C. (1996). Parental meta-emotion philosophy and the

    emotional life of families: Theoretical models and preliminary data. *Journal of Family*

    *Psychology*, *10*(3), 243–268. https://doi.org/10.1037/0893-3200.10.3.243

Gough, S. (2002). Whose Gap? Whose Mind? Plural Rationalities and Disappearing Academics.

    *Environmental Education Research*, *8*(3), 273–282.

    https://doi.org/10.1080/13504620220145429

Greenglass, E. R., & Letterman, E. (2002). Proactive Coping. *In E. Frydenberg (Ed.), Beyond coping:*

    *meeting goals, visions, and challenges (pp. 39-62).* Oxford University Press.

Grønhøj, A., & Thøgersen, J. (2009). Like father, like son? Intergenerational transmission of values,

    attitudes, and behaviours in the environmental domain. *Journal of Environmental*

    *Psychology*, *29*(4), 414–421. https://doi.org/10.1016/j.jenvp.2009.05.002

Grund, J., & Brock, A. (2019). Why We Should Empty Pandora's Box to Create a Sustainable Future:

    Hope, Sustainability and Its Implications for Education. *Sustainability*, *11*(3), 893–913.

    https://doi.org/10.3390/su11030893

Hamilton, M. (2009). *Integral City: Evolutionary Intelligences for the Human Hive*. New Society

    Publishers.

Head, L., & Stenseke, M. (2014). *Seven contributions of cultural research to the challenges of*

    *sustainability and climate change. Conversations with ACCESS (formely AUSCCER)*.

www.uowblogs.com/ausccer/2014/11/13/seven- contributions-of-cultural-research-to-the-

challenges-of-sustainability-and-climate- change/#more-2533.

Head, L. (2016). *Hope and Grief in the Anthropocene: Re-conceptualising human–nature relations*.

Routledge.

Hermans, M. (2016). Geography Teachers and Climate Change: Emotions about Consequences,

Coping Strategies, and Views on Mitigation. *International Journal of Environmental and

Science Education*, *11*(4), 389–408. https://dx.doi.org/10.12973/ijese.2016.326a

Hicks, D. (1996). A lesson for the future: Young people's hopes and fears for tomorrow. *Futures*,

*28*(1), 1–13. https://doi.org/10.1016/0016-3287(95)00078-X

Hicks, D. (1998). Stories of Hope: A response to the 'psychology of despair'. *Environmental Education

Research*, *4*(2), 165–176. https://doi.org/10.1080/1350462980040204

Hicks, D. (2001). Re-examining the Future: The challenge for citizenship education. *Educational

Review*, *53*(3), 229–240. https://doi.org/10.1080/00131910120085838

Hicks, D. (2010, July). *The Long Transition: Educating for optimism and hope in troubled times*. 3rd

Annual Conference of the UK Teacher Education Network for Education for Sustainable

Development/Global Citizenship.

http://www.teaching4abetterworld.co.uk/docs/download13.pdf

Hicks, D. (2014). *Educating for Hope in Troubled Times: Climate Change and the transition to a Post-

Carbon Future*. Trentham Books.

Hicks, D., & Bord, A. (2001). Learning about Global Issues: Why most educators only make things

worse. *Environmental Education Research*, *7*(4), 413–425.

https://doi.org/10.1080/13504620120081287

Hicks, D., & Holden, C. (2007). *Teaching the Global Dimension: Key Principles and Effective Practice*. Routledge.

Höijer, B. (1990). Studying Viewers' Reception of Television Programmes: Theoretical and Methodological Considerations. *European Journal of Communication*, *5*(1), 29–56. https://doi.org/10.1177/0267323190005001003

Höijer, B. (2010). Emotional anchoring and objectification in the media reporting on climate change. *Public Understanding of Science*, *19*(6), 717–731. https://doi.org/10.1177/0963662509348863

Holden, C. (2006). Concerned citizens: Children and the future. *Education, Citizenship and Social Justice*, *1*(3), 231–247. https://doi.org/10.1177/1746197906068122

Homburg, A., Stolberg, A., & Wagner, U. (2007). Coping With Global Environmental Problems: Development and First Validation of Scales. *Environment and Behavior*, *39*(6), 754–778. https://doi.org/10.1177/0013916506297215

Hornsey, M. J., & Fielding, K. S. (2016). A cautionary note about messages of hope: Focusing on progress in reducing carbon emissions weakens mitigation motivation. *Global Environmental Change*, *39*, 26–34. https://doi.org/10.1016/j.gloenvcha.2016.04.003

Hutchinson, F. (2017). Educating for hope in troubled times: Climate change and the transition to a post-carbon future. *Journal of Peace Education*, *14*(2), 253–255. https://doi.org/10.1080/17400201.2017.1341069

Inayatullah, S. (2011). City futures in transformation: Emerging issues and case studies. *Futures*, *43*(7), 654–661. https://doi.org/10.1016/j.futures.2011.05.006

Inglis, J. (2008). How then do we choose to live? Facing the climate crisis and seeking "the meta response". *Integral Review*, *4*(1), 100–107.

IPCC (2014). *Climate Change 2013: The Physical Science Basis: Working Group I Contribution to the Fifth Assessment Report of the Intergovernmental Panel on Climate Change*. Cambridge University Press.

Jameson, F. (2005). *Archaeologies of the Future: The Desire Called Utopia and Other Science Fictions*. Verso.

Jensen, B. B., & Schnack, K. (1997). The Action Competence Approach in Environmental Education. *Environmental Education Research*, *3*(2), 163–178. https://doi.org/10.1080/1350462970030205

Johnson, L. R., Johnson-Pynn, J. S., Sweeney, S. S., & Williams, C. T. (2009). Youth Civic Action: Going Green, Going Global. *Ecopsychology*, *1*(2), 75–84. https://doi.org/10.1089/eco.2009.0007

Johnston, J. (2009). Transformative Environmental Education: Stepping Outside the Curriculum Box. *Canadian Journal of Environmental Education (CJEE)*, *14*(1), 149–157.

Keating, A. (2016). Post-Oppositional Pedagogies. *Transformations: The Journal of Inclusive Scholarship and Pedagogy*, *26*(1), 24–26. https://doi.org/10.1353/tnf.2016.0006

Kerret, D., Orkibi, H., & Ronen, T. (2016). Testing a model linking environmental hope and self-control with students' positive emotions and environmental behavior. *The Journal of Environmental Education*, *47*(4), 307–317. https://doi.org/10.1080/00958964.2016.1182886

Kevorkian, K. A. (2004). *Environmental Grief: Hope and Healing*. PhD Dissertation, Union Institute and University, Cincinatti, Ohio.

Koger, S. M. (2015). A Burgeoning Ecopsychological Recovery Movement. *Ecopsychology*, *7*(4), 245–250. https://doi.org/10.1089/eco.2015.0021

Koger, S. M., Leslie, K. E., & Hayes, E. D. (2011). Climate Change: Psychological Solutions and

Strategies for Change. *Ecopsychology*, *3*(4), 227–235. https://doi.org/10.1089/eco.2011.0041

Kollmuss, A., & Agyeman, J. (2002). Mind the Gap: Why do people act environmentally and what are

the barriers to pro-environmental behavior? *Environmental Education Research*, *8*(3), 239–

260. https://doi.org/10.1080/13504620220145401

Kronlid, D. O. (2009). Sigtuna Think Piece 2: Climate Capabilities and Climate Change Education

Research. *Southern African Journal of Environmental Education*, 27–37.

https://doi.org/10.4314/sajee.v26i0.122788

Larsen, J. T., Hemenover, S. H., Norris, C. J., & Cacioppo, J. T. (2003). Turning adversity to advantage:

On the virtues of the coactivation of positive and negative emotions. In L. G. Aspinwall & U.

M. Staudinger (Eds.), *A psychology of human strengths. Fundamental questions and future

directions for a positive psychology* (pp. 211-226). American Psychological Association.

Lazarus, R. S. (1999). Hope: An Emotion and a Vital Coping Resource Against Despair. *Social Research*,

*66*(2), 653–678. JSTOR. https://www.jstor.org/stable/40971343

Lazarus, R. S. (2006). *Stress and Emotion: A New Synthesis*. Springer Publishing Company.

Lazarus, R. S., & Folkman, S. (1984). *Stress, Appraisal, and Coping*. Springer Publishing Company.

Lazo, J. K., Kinnell, J. C., & Fisher, A. (2000). Expert and Layperson Perceptions of Ecosystem Risk. *Risk

Analysis*, *20*(2), 179–194. https://doi.org/10.1111/0272-4332.202019

Li, C. J., & Monroe, M. C. (2018). Development and Validation of the Climate Change Hope Scale for

High School Students. *Environment and Behavior*, *50*(4), 454–479.

https://doi.org/10.1177/0013916517708325

Li, C. J., & Monroe, M. C. (2019). Exploring the essential psychological factors in fostering hope

concerning climate change. *Environmental Education Research*, *25*(6), 936–954.

https://doi.org/10.1080/13504622.2017.1367916

Liarakou, G., Athanasiadis, I., & Gavrilakis, C. (2011). What Greek Secondary School Students Believe

about Climate Change? *International Journal of Environmental and Science Education*, *6*(1),

79–98. https://eric.ed.gov/?id=EJ930283

Lindén, A.-L. (2004). Miljömedvetna medborgare och grön politik. In *T7:2004*. Formas.

http://lup.lub.lu.se/record/630734

Little, B. R. (1983). Personal Projects: A Rationale and Method for Investigation. *Environment and

Behavior*, *15*(3), 273–309. https://doi.org/10.1177/0013916583153002

Lofland, J., & Lofland, L. H. (1995). *Analyzing social settings: A guide to qualitative observation and

analysis*. Belmont.

Lopez, S. J., Snyder, C. R., & Pedrotti, J. T. (2003). Hope: Many definitions, many measures. In Lopez,

S.J., Lawrence, K.S., & Snyder, U.S. *Positive psychological assessment: A handbook of models

and measures* (pp. 91–106). American Psychological Association.

https://doi.org/10.1037/10612-006

Lorenzoni, I., Nicholson-Cole, S., & Whitmarsh, L. (2007). Barriers perceived to engaging with climate

change among the UK public and their policy implications. *Global Environmental Change*,

*17*(3), 445–459. https://doi.org/10.1016/j.gloenvcha.2007.01.004

Lotz-Sisitka, H., Wals, A. E., Kronlid, D., & McGarry, D. (2015). Transformative, transgressive social

learning: Rethinking higher education pedagogy in times of systemic global dysfunction.

*Current Opinion in Environmental Sustainability*, *16*, 73–80.

https://doi.org/10.1016/j.cosust.2015.07.018

Lueck, M. A. (2007). Hope for a Cause as Cause for Hope: The Need for Hope in Environmental Sociology. *The American Sociologist*, *38*(3), 250–261. https://doi.org/10.1007/s12108-007-9017-7

Macy, J., & Johnstone, C. (2012). *Active Hope: How to Face the Mess We're in Without Going Crazy*. New World Library.

Magnusson, D., & Stattin, H. (1998). Person-context interaction theories. In *Damon, W. & Lerner, R. M. (Eds.), Handbook of child psychology: Theoretical models of human development* (pp. 685-759). Wiley.

Marcus, G. E. (2002). *The sentimental citizen: Emotion in democratic politics*. Pennsylvania State University Press.

Marcus, G. E., Neuman, W. R., & MacKuen, M. (2000). *Affective Intelligence and Political Judgment*. University of Chicago Press.

Marlon, J. R., Bloodhart, B., Ballew, M. T., Rolfe-Redding, J., Roser-Renouf, C., Leiserowitz, A., & Maibach, E. (2019). How Hope and Doubt Affect Climate Change Mobilization. *Frontiers in Communication*, *4*(20). https://doi.org/10.3389/fcomm.2019.00020

McGeer, V. (2004). The Art of Good Hope. *The ANNALS of the American Academy of Political and Social Science*, *592*(1), 100–127. https://doi.org/10.1177/0002716203261781

McGeer, V. (2008). Trust, hope and empowerment. *Australasian Journal of Philosophy*, *86*(2), 237–254. https://doi.org/10.1080/00048400801886413

McManus, S. (2003). Fabricating the Future: Becoming Bloch's Utopians. *Utopian Studies*, *14*(2), 1–22.

Meinhold, J. L., & Malkus, A. J. (2005). Adolescent Environmental Behaviors: Can Knowledge,

    Attitudes, and Self-Efficacy Make a Difference? *Environment and Behavior*, *37*(4), 511–532.

    https://doi.org/10.1177/0013916504269665

Miceli, M., & Castelfranchi, C. (2010). Hope: The Power of Wish and Possibility. *Theory & Psychology*,

    *20*(2), 251–276. https://doi.org/10.1177/0959354309354393

Mogensen, F., & Schnack, K. (2010). The action competence approach and the 'new' discourses of

    education for sustainable development, competence and quality criteria. *Environmental*

    *Education Research*, *16*(1), 59–74. https://doi.org/10.1080/13504620903504032

Naval-Duran, C., & Reparaz-Abaitua, C. (2008). Spanish children's concerns for the future. *Citizenship*

    *Teaching and Learning, 4*(2), 31–42. https://dadun.unav.edu/handle/10171/20641

Nisbet, C. M. (2009). Communicating Climate Change: Why Frames Matter for Public Engagement.

    *Environment: Science and Policy for Sustainable Development*, *51*(2), 12–23.

    https://doi.org/10.3200/ENVT.51.2.12-23

Nolan, J. M., Schultz, P. W., Cialdini, R. B., Goldstein, N. J., & Griskevicius, V. (2008). Normative Social

    Influence is Underdetected. *Personality and Social Psychology Bulletin*, *34*(7), 913–923.

    https://doi.org/10.1177/0146167208316691

Nolen-Hoeksema, S. (2000). The role of rumination in depressive disorders and mixed

    anxiety/depressive symptoms. *Journal of Abnormal Psychology*, *109*(3), 504–511.

    https://doi.org/10.1037/0021-843X.109.3.504

Nord, M., Luloff, A. E., & Bridger, J. C. (1998). The Association of Forest Recreation with

    Environmentalism. *Environment and Behavior*, *30*(2), 235–246.

    https://doi.org/10.1177/0013916598302006

Nordensvard, J. (2014). Dystopia and disutopia: Hope and hopelessness in German pupils' future

   narratives. *Journal of Educational Change*, *15*(4), 443–465. https://doi.org/10.1007/s10833-

   014-9237-x

Norgaard, K. M. (2006). "People Want to Protect Themselves a Little Bit": Emotions, Denial, and

   Social Movement Nonparticipation. *Sociological Inquiry*, *76*(3), 372–396.

   https://doi.org/10.1111/j.1475-682X.2006.00160.x

North, P. (2011). The Politics of Climate Activism in the UK: A Social Movement Analysis. *Environment*

   *and Planning A: Economy and Space*, *43*(7), 1581–1598. https://doi.org/10.1068/a43534

O'Brien, K. (2018). Is the 1.5°C target possible? Exploring the three spheres of transformation.

   *Current Opinion in Environmental Sustainability*, *31*(1), 153–160.

   https://doi.org/10.1016/j.cosust.2018.04.010

O'Brien, K., & Hochachka, G. (2010). Integral Adaptation to Climate Change. *Journal of Integral*

   *Theory & Practice*, *5*(1), 89–102.

   http://ludwig.lub.lu.se/login?url=https://search.ebscohost.com/login.aspx?direct=true&db=

   hlh&AN=49192973&site=eds-live&scope=site

O'Brien, K. L., & Selboe, E. (2015). *The Adaptive Challenge of Climate Change*. Cambridge University

   Press.

O'Riordan, T. & Timmerman, P. (2001). Risk and imagining alternative futures. In Kasperson, J. X. & R.

   Kasperson, R. (Eds) *Global Environmental Risk* (pp. 429-451). Earthscan.

Oettingen, G. (2012). Future thought and behaviour change. *European Review of Social Psychology*,

   *23*(1), 1–63. https://doi.org/10.1080/10463283.2011.643698

Ojala, M. (2005). Adolescents' Worries about Environmental Risks: Subjective Well-being, Values, and

Existential Dimensions. *Journal of Youth Studies*, *8*(3), 331–347.

https://doi.org/10.1080/13676260500261934

Ojala, M. (2007a). *Hope and worry: Exploring young people & ados values, emotions, and behavior

regarding global environmental problems* (Doctoral dissertation). Örebro University,

Department of Behavioural, Social and Legal Sciences.

Ojala, M. (2007b). Confronting macrosocial worries: Worry about environmental problems and

proactive coping among a group of young volunteers. *Futures*, *39*(6), 729–745.

https://doi.org/10.1016/j.futures.2006.11.007

Ojala, M. (2008). Recycling and Ambivalence: Quantitative and Qualitative Analyses of Household

Recycling Among Young Adults. *Environment and Behavior*, *40*(6), 777–797.

https://doi.org/10.1177/0013916507308787

Ojala, M. (2010). *Barns känslor och tankar om klimatproblematiken*. Energimyndigheten.

http://webbshop.cm.se/System/ViewResource.aspx?p=Energimyndigheten&rl=default:/Reso

urces/Permanent/Static/26cdea5b93d94cc582c0a3fe93637f83/ER2010 31W.pdf

Ojala, M. (2012a). How do children cope with global climate change? Coping strategies, engagement,

and well-being. *Journal of Environmental Psychology*, *32*(3), 225–233.

https://doi.org/10.1016/j.jenvp.2012.02.004

Ojala, M. (2012b). Regulating Worry, Promoting Hope: How Do Children, Adolescents, and Young

Adults Cope with Climate Change? *International Journal of Environmental and Science

Education*, *7*(4), 537–561. https://eric.ed.gov/?id=EJ997146

Ojala, M. (2012c). Hope and climate change: The importance of hope for environmental engagement

among young people. *Environmental Education Research*, *18*(5), 625–642.

https://doi.org/10.1080/13504622.2011.637157

Ojala, M. (2013a). Coping with Climate Change among Adolescents: Implications for Subjective Well-

Being and Environmental Engagement. *Sustainability*, *5*(5), 2191–2209.

https://doi.org/10.3390/su5052191

Ojala, M. (2013b). Emotional Awareness: On the Importance of Including Emotional Aspects in

Education for Sustainable Development (ESD). *Journal of Education for Sustainable*

*Development*, *7*(2), 167–182. https://doi.org/10.1177/0973408214526488

Ojala, M. (2015). Hope in the Face of Climate Change: Associations With Environmental Engagement

and Student Perceptions of Teachers' Emotion Communication Style and Future Orientation.

*The Journal of Environmental Education*, *46*(3), 133–148.

https://doi.org/10.1080/00958964.2015.1021662

Ojala, M. (2016a). Facing Anxiety in Climate Change Education: From Therapeutic Practice to Hopeful

Transgressive Learning. *Canadian Journal of Environmental Education*, *21*(0), 41–56.

Ojala, M. (2016b). Young People and Global Climate Change: Emotions, Coping, and Engagement in

Everyday Life. *Geographies of Global Issues: Change and Threat, 8*(1), 1-19.

https://doi.org/10.1007/978-981-4585-95-8_3-1

Ojala, M. (2017). Hope and anticipation in education for a sustainable future. *Futures*, *94*(1), 76–84.

https://doi.org/10.1016/j.futures.2016.10.004

Ojala, M., & Lidskog, R. (2011). What Lies Beneath the Surface? A Case Study of Citizens' Moral

Reasoning with Regard to Biodiversity. *Environmental Values*, *20*(2), 217–237.

https://doi.org/10.3197/096327111X12997574391760

Ojala, M., & Rikner, A. (2010). *Att hantera det ambivalenta. Unga vuxnas attityder och beteende gällande energieffektivisering i hemmet.* Örebro Universitet. http://urn.kb.se/resolve?urn=urn:nbn:se:uu:diva-166794

Olausson, U. (2011). "We're the Ones to Blame": Citizens' Representations of Climate Change and the Role of the Media. *Environmental Communication*, *5*(3), 281–299. https://doi.org/10.1080/17524032.2011.585026

Omodei, M., & Wearing, A. (1990). Need Satisfaction and Involvement in Personal Projects: Toward an Integrative Model of Subjective Well-Being. *Journal of Personality and Social Psychology*, *59*(4), 762–769. https://doi.org/10.1037/0022-3514.59.4.762

Orr, D. W. (2011). *Hope Is an Imperative: The Essential David Orr*. Island Press.

Pancer, S. M., Pratt, M., Hunsberger, B., & Alisat, S. (2007). Community and political involvement in adolescence: What distinguishes the activists from the uninvolved? *Journal of Community Psychology*, *35*(6), 741–759. https://doi.org/10.1002/jcop.20176

Park, C. L., & Folkman, S. (1997). Meaning in the Context of Stress and Coping. *Review of General Psychology*, *1*(2), 115–144. https://doi.org/10.1037/1089-2680.1.2.115

Parodi, O., & Tamm, K. (2018). *Personal Sustainability: Exploring the Far Side of Sustainable Development*. Routledge.

Persson, L., Lundegård, I., & Wickman, P.-O. (2011). Worry becomes hope in education for sustainable development. An action research study at secondary school. *Utbildning & Demokrati*, *20*(1), 123–144.

Pettersson, A. (2014). *De som inte kan simma kommer nog att dö! : En studie om barns tankar och känslor rörande klimatförändringarna*. Sweden, Uppsala: Uppsala Universitet, Forskarskolan i Geografi. http://urn.kb.se/resolve?urn=urn:nbn:se:uu:diva-229197

Pettit, P. (2004). Hope and Its Place in Mind. *The ANNALS of the American Academy of Political and Social Science*, *592*(1), 152–165. https://doi.org/10.1177/0002716203261798

Polivy, J., & Herman, C. P. (2000). The False-Hope Syndrome: Unfulfilled Expectations of Self-Change. *Current Directions in Psychological Science*, *9*(4), 128–131. https://doi.org/10.1111/1467-8721.00076

Putnam, R. D., & Putnam, P. (2000). *Bowling Alone: The Collapse and Revival of American Community*. Simon and Schuster.

Reser, J. P., & Swim, J. K. (2011). Adapting to and Coping with the Threat and Impacts of Climate Change. *American Psychologist*, *66*(4), 277–289. https://doi.org/10.1037/a0023412

Rickinson, M. (2001). Learners and Learning in Environmental Education: A critical review of the evidence. *Environmental Education Research*, *7*(3), 207–320. https://doi.org/10.1080/13504620120065230

Rippberger, R. (2013, Mai). *The life and Work of Roberto Mangabeira Unger*. https://www.youtube.com/playlist?list=PLNdEBvVYMvsD_DNRn8e7k917bqPSR41Ei

Rogers, M., & Tough, A. (1996). Facing the future is not for wimps. *Futures*, *28*(5), 491–496. https://doi.org/10.1016/0016-3287(96)00021-3

Ruehlman, L. S., & Wolchik, S. (1988). Personal Goals and Interpersonal Support and Hindrance as Factors in Psychological Distress and Well-Being. *Journal of Personality and Social Psychology*, *55*(2), 293–301. https://doi.org/10.1037/0022-3514.55.2.293

Ruiter, R. A. C., Verplanken, B., Kok, G., & Werrij, M. Q. (2003). The Role of Coping Appraisal in Reactions to Fear Appeals: Do We Need Threat Information? *Journal of Health Psychology*, *8*(4), 465–474. https://doi.org/10.1177/13591053030084006

Sagy, S., & Adwan, S. (2006). Hope in Times of Threat: The Case of Israeli and Palestinian Youth. *American Journal of Orthopsychiatry*, *76*(1), 128–133. https://doi.org/10.1037/0002-9432.76.1.128

Sandell, K., & Öhman, J. (2010). Educational potentials of encounters with nature: Reflections from a Swedish outdoor perspective. *Environmental Education Research*, *16*(1), 113–132. https://doi.org/10.1080/13504620903504065

Sandercock, L. & Senbel, M. (2011). Spirituality, urban life and the urban professions. In: Beaumont, J. & Baker, C. (Eds) *Postsecular cities: religious space, theory and practice* (pp. 86-103). Continuum.

Sandilands, C. (1993). On 'green consumerism': Environmental privatization and 'family values'. *Canadian Women Studies*, *13*(3), 45–47.

Saunders, A., & Jenkins, S. (2012). 'Absent fear': Re-envisioning a future geography. *Futures*, *44*(5), 494–503. https://doi.org/10.1016/j.futures.2012.02.002

Skinner, E. A., Edge, K., Altman, J., & Sherwood, H. (2003). Searching for the structure of coping: A review and critique of category systems for classifying ways of coping. *Psychological Bulletin*, *129*(2), 216–269. https://doi.org/10.1037/0033-2909.129.2.216

Smart Richman, L., Kubzansky, L., Maselko, J., Kawachi, I., Choo, P., & Bauer, M. (2005). Positive emotions and health: Going beyond the negative. *Health Psychology*, *24*(4), 422–429. https://doi.org/10.1037/0278-6133.24.4.422

Smetana, J. G., & Metzger, A. (2005). Family and Religious Antecedents of Civic Involvement In Middle Class African American Late Adolescents. *Journal of Research on Adolescence*, *15*(3), 325–352. https://doi.org/10.1111/j.1532-7795.2005.00099.x

Smith, C., & Ellsworth, P. (1985). Patterns of Cognitive Appraisal in Emotion. *Journal of Personality and Social Psychology*, *48*(4), 813–838. https://doi.org/10.1037/0022-3514.48.4.813

Smith, N., & Leiserowitz, A. (2014). The Role of Emotion in Global Warming Policy Support and Opposition. *Risk Analysis*, *34*(5), 937–948. https://doi.org/10.1111/risa.12140

Snyder, C. R. (1989). Reality Negotiation: From Excuses to Hope and Beyond. *Journal of Social and Clinical Psychology*, *8*(2), 130–157. https://doi.org/10.1521/jscp.1989.8.2.130

Snyder, C. R. (1996). To hope, to lose, and to hope again. *Journal of Personal and Interpersonal Loss*, *1*(1), 1–16. https://doi.org/10.1080/15325029608415455

Snyder, C. R. (2000a). Genesis: The Birth and Growth of Hope. In C. R. Snyder (Ed.), *Handbook of Hope* (pp. 25–38). Academic Press. https://doi.org/10.1016/B978-012654050-5/50004-X

Snyder, C. R. (2000b). The Past and Possible Futures of Hope. *Journal of Social and Clinical Psychology*, *19*(1), 11–28. https://doi.org/10.1521/jscp.2000.19.1.11

Snyder, C. R. (2002). Hope Theory: Rainbows in the Mind. *Psychological Inquiry*, *13*(4), 249–275. https://doi.org/10.1207/S15327965PLI1304_01

Snyder, C. R., Cheavens, J., & Sympson, S. C. (1997). Hope: An individual motive for social commerce. *Group Dynamics: Theory, Research, and Practice*, *1*(2), pp 107-118. https://doi.org/10.1037/1089-2699.1.2.107

Snyder, C. R., & Feldman, D. B. (2000). Hope for the Many: An Empowering Social Agenda. In C. R. Snyder (Ed.), *Handbook of Hope* (pp. 389–412). Academic Press. https://doi.org/10.1016/B978-012654050-5/50023-3

Snyder, C. R., Irving, L. M., & Anderson, J. (1991). Hope and Health. In C. R. Snyder and D. R. Forsyth

(Eds.)*, Handbook of Social and Clinical Psychology: The Health Perspective* (pp. 285-305).

Pergamon Press.

Snyder, C. R., Rand, K. L., King, E. A., Feldman, D. B., & Woodward, J. T. (2002). "False" hope. *Journal

of Clinical Psychology*, *58*(9), 1003–1022. https://doi.org/10.1002/jclp.10096

Steffen, W., Richardson, K., Rockström, J., Cornell, S. E., Fetzer, I., Bennett, E. M., Biggs, R., Carpenter,

S. R., Vries, W. de, Wit, C. A. de, Folke, C., Gerten, D., Heinke, J., Mace, G. M., Persson, L. M.,

Ramanathan, V., Reyers, B., & Sörlin, S. (2015). Planetary boundaries: Guiding human

development on a changing planet. *Science*, *347*(6223), 737-747.

https://doi.org/10.1126/science.1259855

Sterling, S. (2004). Higher education, sustainability, and the role of systemic learning. In Corcoran, P.

B.  & Wals, A. J. (Eds.), *Higher education and the challenge of sustainability: Problematics,

promise and practice* (pp. 47-70). Kluwer Academic Press.

Stern, P. C. (2012). Fear and hope in climate messages. *Nature Climate Change*, *2*(8), 572–573.

https://doi.org/10.1038/nclimate1610

Stevenson, T. K., & Peterson, M. N. (2016). Motivating Action through Fostering Climate Change

Hope and Concern and Avoiding Despair among Adolescents. *Sustainability*, *8*(6).

https://doi.org/10.3390/su8010006

Stevenson, T. K., Peterson, M. N., Bondell, H. D., Moore, S. E., & Carrier, S. J. (2014). Overcoming

skepticism with education: Interacting influences of worldview and climate change

knowledge on perceived climate change risk among adolescents. *Climatic Change*, *126*(3),

293–304. https://doi.org/10.1007/s10584-014-1228-7

Stoknes, P. E. (2015). *What We Think About When We Try Not To Think About Global Warming: Toward a New Psychology of Climate Action*. Chelsea Green Publishing.

Stoll-Kleemann, S., O'Riordan, T., & Jaeger, C. C. (2001). The psychology of denial concerning climate mitigation measures: Evidence from Swiss focus groups. *Global Environmental Change*, *11*(2), 107–117. https://doi.org/10.1016/S0959-3780(00)00061-3

Strauss, A. L. (1987). *Qualitative Analysis for Social Scientists*. Cambridge University Press.

Stroebe, M., Boelen, P. A., van den Hout, M., Stroebe, W., Salemink, E., & van den Bout, J. (2007). Ruminative coping as avoidance. *European Archives of Psychiatry and Clinical Neuroscience*, *257*(8), 462–472. https://doi.org/10.1007/s00406-007-0746-y

Sundblad, E.-L., Biel, A., & Gärling, T. (2007). Cognitive and affective risk judgements related to climate change. *Journal of Environmental Psychology*, *27*(2), 97–106. https://doi.org/10.1016/j.jenvp.2007.01.003

Swim, J. K., & Fraser, J. (2013). Fostering Hope in Climate Change Educators. *Journal of Museum Education*, *38*(3), 286–297. https://doi.org/10.1080/10598650.2013.11510781

Swim, J., Clayton, S., Doherty, T., Gifford, R., Howard, G., Reser, J., Stern, P., & Weber, E. (2009). Psychology and global climate change: Addressing a multi-faceted phenomenon and set of challenges. A report by the American Psychological Association's task force on the interface between psychology and global climate change. *American Psychologist*, *66*(1), 241–250.

Taber, F., & Taylor, N. (2009). Climate of concern—A search for effective strategies for teaching children about global warming. *International Journal of Environmental &amp; Science Education*, *4*(2), 97–116. https://www.cabdirect.org/cabdirect/abstract/20103229490

Threadgold, S. (2012). 'I reckon my life will be easy, but my kids will be buggered': Ambivalence in young people's positive perceptions of individual futures and their visions of environmental

collapse. *Journal of Youth Studies*, *15*(1), 17–32.

https://doi.org/10.1080/13676261.2011.618490

Tobler, C., Visschers, V. M., & Siegrist, M. (2012). Consumers' knowledge about climate change.

*Climatic Change*, *114*(2), 189–209. https://doi.org/10.1007/s10584-011-0393-1

Torbjörnsson, T., & Molin, L. (2015). In school we have not time for the future: Voices of Swedish

upper secondary school students about solidarity and the future. *International Research in*

*Geographical and Environmental Education*, *24*(4), 338–354.

https://doi.org/10.1080/10382046.2015.1086105

Tucci, J., Mitchell, J., & Goddard, C. (2007). *Children's fears, hopes and heroes. Modern Childhood in*

*Australia*. Monash University: National Research Centre for the Prevention of Child Abuse.

UNEP (1992). *United Nations Conference on Environment & Development: Agenda 21.*

https://sustainabledevelopment.un.org/content/documents/Agenda21.pdf.

Valentino, N. A., Hutchings, V. L., Banks, A. J., & Davis, A. K. (2008). Is a Worried Citizen a Good

Citizen? Emotions, Political Information Seeking, and Learning via the Internet. *Political*

*Psychology*, *29*(2), 247–273. https://doi.org/10.1111/j.1467-9221.2008.00625.x

van Zomeren, M., Spears, R., & Leach, C. W. (2010). Experimental evidence for a dual pathway model

analysis of coping with the climate crisis. *Journal of Environmental Psychology*, *30*(4), 339–

346. https://doi.org/10.1016/j.jenvp.2010.02.006

Verplanken, B., & Roy, D. (2013). "My Worries Are Rational, Climate Change Is Not": Habitual

Ecological Worrying Is an Adaptive Response. *PLoS ONE*, *8*(9).

https://doi.org/10.1371/journal.pone.0074708

Vincent, S., & Focht, W. (2011). Interdisciplinary environmental education: Elements of field identity

and curriculum design. *Journal of Environmental Studies and Sciences*, *1*(1), 14–35.

https://doi.org/10.1007/s13412-011-0007-2

Voros, J. (2003). A generic foresight process framework. *Foresight*, *5*(3), 10–21.

https://doi.org/10.1108/14636680310698379

Wals, A. J. (2007). Learning in a changing world and changing in al learning world: Reflexively

fumbling towards sustainability. *Southern African Journal of Environmental Education*, *24*(1),

35–45. https://research.wur.nl/en/publications/learning-in-a-changing-world-and-changing-

in-al-learning-world-re

Wals, A. J. (2010). Mirroring, Gestaltswitching and transformative social learning: Stepping stones for

developing sustainability competence. *International Journal of Sustainability in Higher

Education*, *11*(4), 380–390. https://doi.org/10.1108/14676371011077595

Wals, A. J. (2015). *Beyond unreasonable doubt: Education and learning for socio-ecological

sustainability in the anthropocene*. Wageningen University.

Wals, A. J., & Schwarzin, L. (2012). Fostering organizational sustainability through dialogic interaction.

*The Learning Organization*, *19*(1), 11–27. https://doi.org/10.1108/09696471211190338

Wamsler, C. (2018). Mind the gap: The role of mindfulness in adapting to increasing risk and climate

change. *Sustainability Science*, *13*(4), 1121–1135. https://doi.org/10.1007/s11625-017-0524-

3

Wamsler, C. (2019). Contemplative Sustainable Futures: The Role of Individual Inner Dimensions and

Transformation in Sustainability Research and Education. Sustainability and the Humanities.

In: Leal Filho W. & Consorte McCrea A. (Eds) *Sustainability and the Humanities* (pp. 359-373).

Springer.

Wamsler, C., Brossmann, J., Hendersson, H., Kristjansdottir, R., McDonald, C., & Scarampi, P. (2018). Mindfulness in sustainability science, practice, and teaching. *Sustainability Science*, *13*(1), 143–162. https://doi.org/10.1007/s11625-017-0428-2

Wamsler, C., Wickenberg, B., Hanson, H., Alkan Olsson, J., Stålhammar, S., Björn, H., Falck, H., Gerell, D., Oskarsson, T., Simonsson, E., Torffvit, F., & Zelmerlow, F. (2020). Environmental and climate policy integration: Targeted strategies for overcoming barriers to nature-based solutions and climate change adaptation. *Journal of Cleaner Production*, *247*, 119154. https://doi.org/10.1016/j.jclepro.2019.119154

Webb, D. (2007). Modes of hoping. *History of the Human Sciences*, *20*(3), 65–83. https://doi.org/10.1177/0952695107079335

Whitmarsh, L. (2009). Behavioural responses to climate change: Asymmetry of intentions and impacts. *Journal of Environmental Psychology*, *29*(1), 13–23. https://doi.org/10.1016/j.jenvp.2008.05.003

Wiek, A., Withycombe, L., & Redman, C. L. (2011). Key competencies in sustainability: A reference framework for academic program development. *Sustainability Science*, *6*(2), 203–218. https://doi.org/10.1007/s11625-011-0132-6

Williams, G. (2004). Towards a Re-politicisation of Participatory Development: political capabilities and spaces of empowerment. In Hickey, S. & Mohan, G. (Eds) *From Tyranny to Transformation? Exploring new approaches to participation* (pp. 92-108). Zed Books.

Woiwode, C. (2016). Off the beaten tracks: The neglected significance of interiority for sustainable urban development. *Futures*, *84*(1), 82–97. https://doi.org/10.1016/j.futures.2016.10.002

Wolf, J., & Moser, S. C. (2011). Individual understandings, perceptions, and engagement with climate change: Insights from in-depth studies across the world. *WIREs Climate Change*, *2*(4), 547–569. https://doi.org/10.1002/wcc.120

Wynes, S., & Nicholas, K. A. (2017). The climate mitigation gap: Education and government recommendations miss the most effective individual actions. *Environmental Research Letters*, *12*(7), 074024. https://doi.org/10.1088/1748-9326/aa7541

Yang, Z. J., & Kahlor, L. (2013). What, Me Worry? The Role of Affect in Information Seeking and Avoidance. *Science Communication*, *35*(2), 189–212. https://doi.org/10.1177/1075547012441873

Young, W., Hwang, K., McDonald, S., & Oates, C. J. (2010). Sustainable consumption: Green consumer behaviour when purchasing products. *Sustainable Development*, *18*(1), 20–31. https://doi.org/10.1002/sd.394

Zaff, J. F., Malanchuk, O., & Eccles, J. S. (2008). Predicting Positive Citizenship from Adolescence to Young Adulthood: The Effects of a Civic Context. *Applied Developmental Science*, *12*(1), 38–53. https://doi.org/10.1080/10888690801910567

Zembylas, M. (2015). 'Pedagogy of discomfort' and its ethical implications: The tensions of ethical violence in social justice education. *Ethics and Education*, *10*(2), 163–174. https://doi.org/10.1080/17449642.2015.1039274

# Appendices

## Appendix A: Interview guide

| | Questions | Data extracted |
|---|---|---|
| <u>Introductory questions</u> | **1. Can you summarise your academic background please?** | This question aims at identifying if the interviewee has had various experiences of university programmes related to global environmental challenges or not. |
| | **2. When did you start the academic programme you are currently enrolled in?** | Does the start of proactive engagement correspond with the beginning of the university programme? |
| | **3. Would you consider yourself as a proactive citizen in the face of climate change?** | This question sheds light on the degree of self-awareness of proactive engagement of the interviewee. |
| | **4. How are you active in the face of climate change, what are you involved in?** | This question gives the opportunity to dive into the nature of the proactive engagement, in terms of individual and collective pro-environmental behaviours. |
| | **5. When did you start to consider the impacts of your actions and lifestyle's choices upon the global environmental crisis, and more precisely the climate crisis?** | Does the start of proactive engagement correspond with the beginning of the university programme? |

| Core questions of the interview | | | | |
|---|---|---|---|---|
| **Themes** | **Questions** | **Related research question** | **Potential sub-questions** | **Data extracted** |
| <u>Emotions in the face of climate change</u> | **1. What main emotions emerge in you when you think about climate change?** | RQ1: How do proactive students in university programmes related to global environmental problems experience and reflect upon hope in the face of climate change? | - How do you look at it (ashamed, acceptable)? <br> - How do the feelings emerge? <br> - Do you have them a lot? <br> - How does it affect your overall physical and mental well-being? | This question sheds light on the psychological dimension of climate change (see Introduction)? What is the first emotion coming to their mind? <br><br> Is it link to hopelessness? The question explores if students perceive the emotional component of hope and if it is a recurrent emotion considering climate change. Number of interviewees mention it? |

| | | | | |
|---|---|---|---|---|
| | **2. How do you see the potential of turning negative emotions in the face of climate change into something constructive?**<br><br>How do you think we can transform negative emotions into something constructive? | RQ1: How do proactive students in university programmes related to global environmental problems experience and reflect upon hope in the face of climate change? | - Whose responsibility is it to shed light on this potential? (link to RQ3) | This question investigates if students reflect on hope as a way to transform their worry into actions. Do they perceive a form of constructive hope? Do they see any utility in hope?<br><br>Theory of coping strategies: hope makes meaning and help to foster actions. |
| | **3. What is hope for you?** | RQ1: How do proactive students in university programmes related to global environmental problems experience and reflect upon hope in the face of climate change? | How would you define hope? | This question investigates if and how students reflect on hope in an open way. Do they see it as an emotion (link to question 10). |
| Hope: dimension of goal | **4. Can you describe what sort of future you feel hope for, in terms of society and environmental situation?** (not probable, but desirable) | RQ2: What type of hope is fostering a proactive engagement among students in university programmes related to global environmental problems? | - Would you consider your hope for the future as open or focused on a clear objective? | Test of hypothesis: This question helps me to navigate Webb's framework, determining if interviewee's hope in the face of climate change is open-ended or goal-focused.<br>+ Snyder (clear goal in mind?) |
| | **5. How likely is this future to occur/come true to your understanding?** | RQ2: What type of hope is fostering a proactive engagement among students in university programmes related to global environmental problems? | You can think in terms of probability. | Test of hypothesis: The question makes the distinction between *estimative* and *resolute hope* (Webb's framework): clearer to determine for me → confirm Snyder's theory of answer is unlikely. |
| Hope: dimension of pathway thinking | **6. What activates hope for you in the face of climate change?** | RQ2: What type of hope is fostering a proactive engagement among students in university programmes related to global environmental problems? | - Can you share with me a moment in your life in which you felt more hopeful in the face of climate change?<br>- What sources of hope come to your mind? | Clear idea of how to reach the goal?<br>Sources of hope spread/common in academic world.<br>Snyder's theory: pathway thinking. |

| | | | | |
|---|---|---|---|---|
| | | | - What gives you the motivation to stay active and committed to this cause? | |
| | **7. What or who do you have trust in to transform our world towards the vision you depicted previously?** Why these factors/actors? | RQ2: What type of hope is fostering a proactive engagement among students in university programmes related to global environmental problems? | - To what extent do you think the individuals are responsible for solving environmental problems?<br><br>- For example, trust in technology, everyday actions, | Pathway thinking (Snyder) = trust in sources outside oneself (Ojala).<br>What actors are depicted as promising in climate crisis?<br>Ojala: Hope based on trust in… |
| Hope: dimension of agency thinking | **8. To what extent do you trust that you can have an influence in the face of climate change? How do you feel about this?** | RQ2: What type of hope is fostering a proactive engagement among students in university programmes related to global environmental problems? | - To what extent do you feel that you are personally responsible for taking actions?<br><br>- Who are you responsible for? | Agency thinking (Snyder)= Trust in one's own ability to influence environmental problems in a positive direction (Ojala).<br>Feeling of guilt? |
| | **9. How do you imagine yourself being active in the face of climate change in 10 years from now?** | RQ2: What type of hope is fostering a proactive engagement among students in university programmes related to global environmental problems? | - Do you imagine being professionally involved into climate change mitigation?<br><br>- What individual or collective actions do you imagine perpetuating or committing to? | Projections of agency: potential feeling of empowerment on the long-term inoculated by university studies. Extension of engagement from individual/collective actions to professional career? (Snyder) |
| Hope: emotional character | **10. Tell me about your thoughts and emotions before and after you started to be proactive in the face of climate change?** | RQ2: What type of hope is fostering a proactive engagement among students in university programmes related to global environmental problems? | - Is your perception of the future in the face of climate change aligned with your normal personality?<br><br>- Do emotions have a role to play in your engagement to climate change and other environmental issues? How? | This question analyses if emotions have a role to play in the engagement to climate change and other environmental issues and how, and if interviewees are conscious of it.<br>Snyder + theory of bidirectionality: positive aspects of being actively engaged. |
| | **11. Could you compare the emotional force of both hope and hopelessness** | RQ2: What type of hope is fostering a proactive engagement among students in university programmes | - Is there one that is stronger than the other?<br>- Is one of these emotional harder to get out? | This question explores the positive feedback loops of positive and |

| | | | | negative emotions as motivational force. Snyder's theory: emotional reinforcement of hope. |
|---|---|---|---|---|
| | **when you think about climate change?** | related to global environmental problems? | - What external or internal factors have the potential to make you shift from feedback loops? | |
| Hope in academic environment | **12. If you compare with before starting your university programme, how has evolved your perception of hope in the face of climate change? Why?** | RQ3: What does this imply for educational methods and support of students in university programmes that relates to sustainability? | - Tell me about your thoughts and feelings when you started your university programme and start learning more about climate change? And now? | This question investigates the academic influence on hope: decrease, increase, why? Spot current pitfalls of university programmes regarding hope and perceived areas for improvements. |
| | **13. If you had a recommendation for your university regarding hope in the face of climate change, what would that be? If any?** Should hope be promoted at university? | RQ3: What does this imply for educational methods and support of students in university programmes that relates to sustainability? | - Does hope have an effect on your learning process? - Do you talk about what the future could look like in class? - Do you discuss how to reach this hypothetical future in class? - How did university make you aware of how you could be active in the climate crisis? - Do you feel welcome to express emotions in class? | Students ideas and reflections upon "is hope useful to promote action/well-being/anything that is positive for me?" → If yes: practical recommendations according to current perception of educational methods and academic communication. |

| | Questions | Data extracted |
|---|---|---|
| Conclusive questions | **1. What advice would you give to someone who feels a high degree of hopelessness?** | This question helps the interviewees to transition towards the end of the interview, allowing them to take a step back and maybe consider their advice for a peer as potentially beneficial for themselves. |
| | **2. Is there anything that you might not have thought about before that occurred to you during this interview?** | This question aims at encouraging the interviewees to reflect on their own introspective inquiry, emerging thoughts or uncovered emotions. |
| | **3. Is there anything else you think I should know to understand how you experience hope better?** | This open question gives interviewees the opportunity to complement the interview if they feel like one aspect is missing. |
| | **4. Is there anything you would like to ask me? Please do not hesitate to contact me for further questions if they come to your mind.** | / |

## Appendix B: Interviewees' profile

| Pseudonyms | Location of university programme | Bachelor's degree | Master's degree |
|---|---|---|---|
| Nina | Lund, Sweden | Mechanical Engineering | International Master Programme in Environmental Studies and Sustainability Science |
| Sylvia | Lund, Sweden | Global Challenges (focus on environmental challenges, but also gender inequalities and class inequalities) | International Master Programme in Environmental Studies and Sustainability Science |
| Clara | Lund, Sweden | Science: Agricultural and Environmental Education (natural science courses, and a class on global climate change) | International Master Programme in Environmental Studies and Sustainability Science |
| Phillip | Lund, Sweden | Unrelated to global environmental challenges (Economic Sciences, Business) | International Master Programme in Environmental Studies and Sustainability Science |
| Angela | Lund, Sweden | International Business | International Master Programme in Environmental Studies and Sustainability Science |
| Livia | Lisbon, Portugal | Biology | Master's in Ecology and Environmental Management |
| Christian | Aalto, Finland | Chemical Engineering | Fibre and Polymer engineering (focusing on the environment and environmental performance) |
| Jane | Lund, Sweden | Biology | International Master Programme in Environmental Studies and Sustainability Science |
| Romane | Lund, Sweden | Science: Marine Biology | Post-grad year: Marine Biology (reproductive biology of specific species) Bio-Inspired Innovation |
| Hannah | Lund, Sweden | Political Sciences | International Master Programme in Environmental Studies and Sustainability Science |
| Nancy | Lund, Sweden | Environmental Chemistry (third-year course of Ecological Economics) | International Master Programme in Environmental Studies and Sustainability Science |
| Camille | Lund, Sweden | Environmental Science (minor during that programme on Systems and Society) | International Master Programme in Environmental Studies and Sustainability Science |
| Gabrielle | Lund, Sweden | Biology and Environmental Science | International Master Programme in Environmental Studies and Sustainability Science |

| Field of engagement | N | Illustrative quotes |
|---|---|---|
| Transportation | 8 | *"I've been trying to reduce flying, but that's definitely the new challenge I'm working on."* **Camille** <br><br> *"(…) always walking and biking."* **Philipp** |
| Diet | 7 | *"(…) I try to be as vegan as possible."* **Gabrielle** <br><br> *"(…) not eating meat, just trying to eat more seasonal organic products."* **Hannah** <br><br> *"I try as much as I can to eat local produces from farms"* **Nancy** |
| Consumerism patterns | 7 | *"So, I take care to have a sustainable lifestyle, or at least to be more aware of the kinds of things that I purchase (…) and things that I surround myself with in terms of clothing, or upcycling as much as I can. I'm also very resourceful in terms of making sure that I'm sharing things and not necessarily owning them."* **Romane** <br><br> *"And I pretty much don't buy anything that's not food."* **Gabrielle** <br><br> *"Trying to reuse things as much as possible, and buying second hand clothes"* **Camille** |
| Professional engagement | 6 | *"(…) for example, the internship I have is related to environmental concerns. So, trying to focus on that as well in my working time."* **Hannah** <br><br> *"Of course, I think as a private citizen, there's only so much we can do because, of course, we have this consumer blame in general, but that's why I've personally chosen to dedicate (…) my work life to something that's more of a societal change."* **Gabrielle** |

| Field of engagement | N | Illustrative quotes |
|---|---|---|
| Participation in social movements | 7 | *"I started XR (Extinction Rebellion), so then I get, I guess I got a bit more collective engaged (…)"* **Sylvia**<br><br>*"I've been a bit involved in the Fridays for future. I think I go about every other week, and we did organise a flash mob, which was really exciting and kind of my first time organising a collective action event."* **Clara**<br><br>*"I'm probably gonna go to the Shall must fall protests in May as well. So, I've done a bit of activism stuff, but I'm not heavily into it."* **Jane**<br><br>*"(…) I've gone to climate marches and (…) the Gothenburg Baltic pipeline thing"* **Nancy** |
| Awareness promotion | 5 | *"(…) I also spread the word amongst my family and do as much as I can, in terms of just helping people understand."* **Romane**<br><br>*"(…) trying to raise awareness while having discussions with people."* **Hannah**<br><br>*"I think I talk a lot about climate things with friends and family, and try to start the conversation."* **Jane** |
| Involvement in organisations | 5 | *"(…) for me, the key or the main engagement is different organisations that are based, in my hometown, and in this case would be Lund, (…) bringing together people, especially students, from different study fields, to get to know more about environmental issues, climate change, but also to learn about how to act against it."* **Angela**<br><br>*"So, I also do a lot of innovative challenges where we work in small teams to come up with solutions to climate change' challenges, problems."* **Romane** |
| Academic involvement | 3 | *"And my thesis for example, that I'm writing, is on the topic is on climate change mitigation (…)"* **Christian**<br><br>*"And through my studies here, I've been lucky to get into this industry, both the industry and academia, which is trusted (….)"* **Christian** |
| Use of democratic potential | 2 | *"(…) always making sure I vote when given the opportunity."* **Clara**<br><br>*"(…) sometimes signing petitions, even though I don't think it's the more efficient way to solve problems."* **Hannah**<br><br>*"(…) maybe writing letters to companies"* **Clara** |

| Degree of self-awareness of proactive engagement | N | Illustrative quotes as answers to the question "Would you consider yourself as a proactive citizen in the face of climate change?" |
|---|---|---|
| Pronounced | 7 | *"I think I am really doing my best"* **Nina** <br> *"Yes, I would consider that I am."* **Sylvia** <br> *"Yes, I try to be."* **Clara** <br> *"Yes, I would say so."* **Angela** <br> *"Yes, I consider myself."* **Livia** <br> *"Yes, I would at least consider myself aware. And active in any possible way that I can be."* **Romane** <br> *"I think I managed to dedicate pretty much all of both my public and private life, almost all of it in some way towards a more sustainable future, as far as I can tell."* **Gabrielle** |
| Mixed | 5 | *"Yes, I think maybe more individually then collectively."* **Philipp** <br> *"So, I would say it goes in phases."* **Hannah** <br> *"Yes, maybe."* **Jane** <br> *"Yes, I mean, I think I am more on a local scale, less so on a broader scale."* **Nancy** <br> *"Through my studies and work yes, not through my private life."* **Christian** |
| Mitigated | 1 | *"I think I am not as proactive as I could be (…)"* **Camille** |

| Characteristics of emotions in the face of climate change | N | Illustrative quotes |
|---|---|---|
| Variation in emotions (temporal and contextual influence) | 6 | *"(…) it depends, it varies a lot based on my day or the context."* **Nina** <br> *"I guess it also depends on the environment I'm in."* <br> *"It can, one day it can be very frustrating, but then the other day, I'm still hopeful."* **Angela** <br> *"A lot of emotions (…) I think it's a mix, it depends on the day, it depends on what's happening."* **Gabrielle** |
| Effects of the emotions upon mental well-being | 6 | *"(…) it is not only that I am being mentally pressured by climate change and this whole phenomenon, but also it is that being in an environment that people are stressed because of that, (…) I see more and more people that they are facing climate anxiety, and (…) sometimes even if I am not pressured mentally, I get the pressure from them, and then this stressed me a lot."* **Nina** <br> *"(…) definitely, it kind of impacts my mood and my well-being"* **Jane** <br> *"(…) it is challenging mentally to work on something that you think is very important and it is also difficult to not let that affect your day to day feelings. I think it's difficult to compartmentalise. So, I think it does affect me somewhat."* **Camille** |
| Importance of emotions in the face of climate change | 3 | *"(…) because it's such an emotional topic, seeing what's happening to the world, to animals and to people and everything."* **Gabrielle** <br> *"I think it's important to talk about how we feel about climate change as we work on it."* **Camille** <br> *"When everything kind of pieced together (…) I felt like I was just so, I don't know, there were so many emotions. I was upset. I was shocked. I was confused. I was, you know, really frustrated and annoyed. But then at the same time, I thought it was fascinating."* **Nancy** |
| Effects of the emotions upon physical health | 3 | *"(…) maybe not directly on my physical well-being, maybe indirectly through my mental health, sometimes."* **Nina** <br> *"It affects my physical well-being because I work more because I think it's more urgent to work more."* **Christian** |
| Short-termism of negative emotions | 2 | *"(…) it's not like I go around and feel hopelessness all the time or anything. Absolutely not. But in moments it can hit me kind of, and then I'm sad for a little while and feel down."* **Sylvia** <br> *"I can see that none of them last long (…), because it is just, you know, fluctuating a lot. So, I know that I won't stay in that phase for so long."* **Nina** |
| Distancing from negative emotions | 1 | *"I think it's all overwhelming. But at the same time, I don't always see the point in fretting about something that's so big (…) then I take a step back and look at the bigger picture."* **Nancy** |

## Appendix G: Overview of the various emotions in the face of climate change

| Nature of emotions mentioned in the face of climate change | | N | Illustrative quotes |
|---|---|---|---|
| Negative emotions | Anger | 6 | *"I have at times just been quite angry as well, being just surrounded by maybe things or people that just don't seem to care. That makes me quite upset."* **Romane**<br><br>*"I would say anger mainly."* **Jane**<br><br>*"A lot of times I feel angry. Because I know, because it's so many things to do when people do not care (…)"* **Livia** |
| | Frustration | 5 | *"I feel impotent at the same time"* **Livia**<br><br>*"(…) this is emotionally exhausting, knowing that the thing you work for are not going to have a big change"* **Hannah** |
| | Anxiety | 4 | *"(…) this kind of perpetual anxiety."* **Jane**<br><br>*"I sometimes find really shocking and frightening, especially when we get to see terrifying future podcast for the future."* **Angela**<br><br>*"(…) a lot of the time it's overwhelming and I feel quite anxious."* **Romane** |
| | Disillusion | 4 | *"(…) I worry that we're not going to be able to do enough, soon enough."* **Camille**<br><br>*"(…) sometimes disappointment."* **Nina**<br><br>*"(…) almost a bit apathy, like disregard."* **Sylvia** |
| | Sadness | 3 | *"It makes me very sad to see (…) how much ignorance there is."* **Angela** |
| | Hopelessness | 3 | *"(…) it feels a bit hopeless, in a sense, maybe."* **Clara**<br><br>*"(…) right now, it's more a sense of despair."* **Hannah** |
| | Sense of responsibility and guilt | 2 | *"I think guilt has quite a big impact for me because (…) I'm super privileged and I've been able to emit so much in my life and I've been able to contribute so much to environmental problems (…), while ignoring what affect my life had."* **Sylvia**<br><br>*"(…) kind of sense of responsibility."* **Jane** |
| | Sense of injustice | 2 | *"Also, a lot of sense of injustice"* **Hannah**<br><br>*"(…) those of us that have more control, unfortunately, or those that then can kind of turn a blind eye (…)"* **Gabrielle** |
| Positive emotions | Hope | 5 | *"I have to be hopeful and positive about it because I don't know what else to do besides that. Because I just feel like we don't really have another choice but to be (…), if you allow everything to beat you down then you probably aren't going to get over those obstacles (…)."* **Nancy**<br><br>*"But actually, on the other side, I'm also quite hopeful when I see how things can change if people get together, who really care about the topic how they can bring about change and I think that's a very different side of my feelings towards climate change. That differs a lot."* **Angela**<br><br>*"I would say there's actually a lot of hope surrounding it, especially given steps that are taken, have been taken more recently."* **Gabrielle** |
| | Excitement | 1 | *"(…) excitement, because there are so many new companies, initiatives by governments to try to put sustainability (…). So that's exciting and a place in time that I didn't remember happening a couple of years ago"* **Clara** |

| Potential of transforming negative emotions into proactive engagement | N | Illustrative quotes |
|---|---|---|
| Through hope | 5 | *"(…) I think you need the anger or the negative emotions as the engine starter and the positivity is the thing that makes the car move."* **Livia**<br><br>*"I think, basically, the most important thing to always generate hope and be trying to be hopeful. I think that's one of the key drivers that can bring about change."* **Angela**<br><br>*"I think that our emotion makes us take action and when you feel hope, you feel more empowered to take action (…)"* **Hannah**<br><br>*"(…) in terms of the emotions, I think I've been able to channel them much more positively, once I decided to kind of do what I could more. I think it's very empowering."* **Gabrielle** |
| Through willingness to escape negative feelings | 4 | *"in the sense that it makes me feel better to do something, yes, to get rid of these negative emotions can be a driver."* **Sylvia**<br><br>*"So, to make people willing to change, maybe they even need this kind of negative emotion. So that they don't only do it for the environment, but also for themselves, kind of."* **Angela**<br><br>*"And I feel a sense of obligation because I know that it would make me sad if I didn't work against this."* **Jane** |
| Through a feeling of responsibility | 4 | *"(…) I just feel morally that I need to be the one to do it."* **Clara**<br><br>*"I can't justify not engage because I have the time and the possibilities, because I study at university and I have my student's salary."* **Sylvia**<br><br>*"(…) fairly responsible, I feel I do these actions, because I think it's the right thing to do and the thing you should be doing (…). But I think it's everyone's responsibility. And if I want other people to live, more sustainably, then I have to kind of practice what I preach."* **Jane**<br><br>*"I feel the pressure sometimes of "Oh, it's a collective responsibility that I'm a part of, and if some people aren't pulling their weight, then I have to make sure that they do". Almost so I have a responsibility to myself and others."* **Romane** |
| Through a change in the way we communicate it | 3 | *"(…) more publications like that (Project Drawdown) that take a very practical approach can be helpful in just feeling like "Oh, yes, I can't do everything, but here's a piece of the puzzle that I can work on"."* **Camille**<br><br>*"(…) our thoughts about it can really influence other people. If we approach it in a more uplifting way."* **Nancy**<br><br>*"(…) when you talk about it in a concrete way (…) people care about. So, I think it does have to make that connection, it has to become relevant to people in order for them to feel engaged."* **Camille** |
| Through mobilisation into collective potential | 2 | *"I think collective action, it can be really empowering. And like do things together."* **Sylvia**<br><br>*"(…) it is easier for me to mobilise my individual potential into something more collective."* **Nina** |

| Through rationality | 2 | *"Because I'm an engineering student, (…) I try to make rational decisions, that looks better at least (…). So, of course I try to minimise my own emissions (…)"* **Christian** |
| | | *"(…) I also think about it as logical"* **Sylvia** |
| | | *"(…) just by having more knowledge and more information about the thing, this helps already and then they (people) will find comfort in this information and they will change."* **Christian** |
| Use of emotions to attest our conviction (potential leverage to convince others to engage actively) | 2 | *"(…) the things that I'm feeling about the climate change crisis, they give an indication of what kind of person I am and then what kind of ability I have within this realm to use that for good, basically."* **Romane** |
| | | *"(…) if you're upset by something, it shows a real drive there and a passion that I think is reminding yourself of that kind of fire: This is why we do it. But it also is quite draining I think to do that. But (…) it shows the signs of kind of your conviction, I guess."* **Jane** |
| Use of academic context | 1 | *"I see a lot of potential in myself. (…) now I am in a bubble, that maybe it is easier for me to find these kinds of platforms, or these kinds of groups that I can mobilise energy in me in form of actions."* **Nina** |

## Appendix I: Comments upon the potential of turning negative emotions into proactive engagement

| Additional comments upon the potential of turning negative emotions into proactive engagement | N | Illustrative quotes |
|---|---|---|
| Recognition of emotions in general as a major motivator for proactive engagement | 5 | *"I feel like in general, in life, emotion is what is driving you to act."* **Hannah**<br><br>*"(…) understand that those feelings could be channelled towards something and that they could actually fuel better outcome."* **Romane**<br><br>*"The emotional reaction is what gets people to make it to take action"* **Gabrielle** |
| Potential of anger in particular as a powerful catalyst for action | 5 | *"I think when I feel angry, I tend to be more communicative and more "I don't believe this is happening" and I started to (…) try to do something (…)"* **Livia**<br><br>*"(…) if you feel a lot of injustice, a lot of anger, that is also making you think "Okay, what can I do to change this?". So, it definitely has an impact."* **Hannah**<br><br>*"(…) anger also makes me passionate to do something."* **Camille** |
| Existence of negative feelings preventing proactive engagement | 3 | *"They (negative emotions in the face of climate change) just kind of stopped me from functioning in a way that was progressive and I was kind of shutting down a bit."* **Romane**<br><br>*"I guess you can go so far down the rabbit hole of feeling really sad that you can't do anything productive."* **Jane**<br><br>*"(…) this whole climate anxiety feeling makes people very paralysed and feel like their individual actions don't make a difference."* **Gabrielle** |
| Difficulty to exploit this potential | 2 | *"I would like to (use the potential of turning negative emotions into something more constructive) but it's hard. I think it's a bit challenging to figure out how to channel those emotions. Of course, I would like to find more constructive ways, but also just trying to find ways that I feel is most comfortable for me and maybe my personality (…). I think I'm still going through that process and trying to find ways to cope with these negative emotions and energy."* **Phillip** |
| Potential to turn negative emotions into more positive emotions | 1 | *"I see potential in that, so into turning those negative emotions into more positive feelings (…) I heard a lot about, for example, mindfulness for activists"* **Hannah** |

## Appendix J: Interviewees' reflection on the nature and characteristics of hope

| Participants' reflection on nature and characteristics of hope | N | Illustrative quotes |
|---|---|---|
| Importance of hope to develop agency | 5 | *"I think, basically, the most important thing is to always generate hope and be trying to be hopeful. I think that's one of the key drivers that can bring about change."* **Angela** <br><br> *"I deeply think that hope should be something we focus on (…)"* **Hannah** |
| Importance of hope for learning process | 2 | *"In myself, I can totally see the influence of it (hope), like today I had the experience, today I was more hopeful, more positive (…) about life and future and then I could get some part of my thesis done that I was procrastinating (…)"* **Nina** |
| Distinction between passive optimism and constructive hope | 2 | *"(…) I put hope in specific things and I understand that hope is less of just this emptiness and almost naive optimism, and it's more of an active pursuit. And so, I can hope for things (…) they're not just (…) a way to appease the bad feelings, it's actually a functional and productive way forward."* **Romane** <br><br> *"I think, basically, the most important thing to always generate hope and be trying to be hopeful. I think that's one of the key drivers that can bring about change. And it's not naive. So many people say that it's nice to be hopeful, but I don't think so."* **Angela** |
| Contextual nature of hope | 2 | *"I think this is a very actual question because with the whole for Corona virus thing right now (…)."* **Hannah** <br><br> *"(…) this is very circumstantial, but with everything happening with Corona virus, I think it's giving people to an extent, a very different outlook. I'm curious about how it will affect your data because and (…), how long of a long-term effect it will have, but I think that it will affect people in terms of their values of what's important in life."* **Gabrielle** |
| Bidirectional character of hope and actions | 2 | *"(…) the more active and more proactive I became (…), it does give you a sense of purpose, which really resonated quite strongly with me when I was doing things where I felt like I was having an impact, things that I was involved in could be making a difference. It did make me feel I was in the right place, and I was a really warming feeling and a hopeful feeling."* **Romane** <br><br> *"I'm hopeful when it comes to doing things."* **Christian** |
| Singular character of hope | 1 | *"I guess hope (…) so differently affects people, not only just because of who you are as a person, but also just in your own situation."* **Gabrielle** |

## Appendix K: Illustration of the different modes of hoping apparent in the interviews

| Mode of hoping | Illustrative quotes |
|---|---|
| Patient hope | *"(…) the process rather than the end, that the way we are gonna get there is more important than the end itself, because it is just being present, being at the moment (…)"* **Nina** |
| Critical hope | *"I guess my nightmare (…) I think kind of the opposite of that would be my vision."* **Clara** <br><br> *"(…) many of our issues that we have today stems from kind of this simplification of problems and solutions, dealing with problems and finding solutions."* **Phillip** <br><br> *"(…) that kind of extends to our understanding of, especially from a European perspective, (…) "Oh, colonialism is finished", and all those kinds of things, when it's so sort of apparent today."* **Jane** |
| Estimative hope | *"I don't think all of that could come true necessarily in one place. But (…) many of these ideas come from something that aren't necessarily unimaginable (…) a lot of these things exist in real life and just many different places."* **Nancy** |
| Utopian hope | *"I think, within these design challenges that I've been a part of, seeing the diversity and the creativity of people in the face of all of these challenges is definitely something that gives me hope. Because I think human creativity (…) really has a big role in changing things, too."* **Romane** |
| Resolute hope | *"I would say it is very unlikely to happen, the way that I picture it, but I think still it's a very powerful tool to do so and at least have something to strive for."* **Angela** <br><br> *"I think it's entirely possible, but it will take a lot of work (…) and change, and I think that is the hard part."* **Camille** |
| Existential hope | *"I would say hope is this feeling that you have when you feel that (…) something positive will happen (…), just that things will be alright."* **Hannah** <br><br> *"(…) that ultimately, in the end, it's going to be okay, I guess that's what hope is to me."* **Nancy** |

## Appendix L: Interviewees' references to characteristics of Snyder's theory

| Characteristics of Snyder's theory | Illustrating quotes |
|---|---|
| Goal-oriented hope | *"I would say it is very unlikely to happen, the way that I picture it, but I think still it's a very powerful tool to do so and at least have something to strive for."* **Angela**<br><br>*"I feel like there's so many different aspects of that vision or dream (…)"* **Nancy**<br><br>*"I have a world in my head already, that I would love to be possible to happen. (…) I can go on and on about this"* **Livia** |
| Possibility of the vision of hopeful future to occur | *"But I just think I do feel positively about it because a lot of these things exist in many places. I think it's just a matter of time and a matter of effort from a lot of people."* **Nancy**<br><br>*"The possibility of something better"* **Jane**<br><br>*"I think in very small bubbles in the world, it could happen. And I think it's already kind of starting to pop up in different places (…)"* **Clara**<br><br>*"I think it's entirely possible, but it will take a lot of work (…)"* **Camille** |
| Estimated low likelihood of the vision to be achieved | *"(…) even if there is a very small percentage of hope and likelihood, I put all my energy into it."* **Nina**<br><br>*"It's pretty probably not all going to happen within the coming 10 years, 20 years."* **Romane**<br><br>*"(…) not (likely) in the way I described it. And in the near future or in the timeframe that's relevant for stopping climate change (…)"* **Christian** |
| Goal | *"(…) it's like having a dream or a vision, (…) that things can be different or better."* **Camille**<br><br>*"(…) having a vision and believing in that vision and knowing I guess from the bottom of your heart or your gut that either that vision is going to come true (…)"* **Nancy**<br><br>*"(…) so much of the long-term outcome is pretty negative, it's kind of trying to steer away from the absolute worst-case scenario. And I think I personally managed to not focus on that because I don't think that's productive."* **Gabrielle** |
| Pathway thinking | *"I guess hope to me is a feeling that something can happen even if it doesn't seem easy"* **Camille**<br><br>*"(…) when you see the potential for change to come"* **Hannah**<br><br>*"I don't know exactly what this future is like (…) the process is very important for me, that how we make decisions in society (…) this is to me a part of that future."* **Nina** |
| Agency thinking | *"It is when I feel agency, or when I feel I can contribute to change."* **Nina**<br><br>*"(…) I can't just sit down and wait for everything to be okay. I have to do something (…)"* **Angela**<br><br>*"I would say a reason to keep going, keep moving forward."* **Clara**<br><br>*"(…) hope as more of an active act of positivism not so much just an empty optimism."* **Romane**<br><br>*"(…) people can feel that (…) they can do something so they have more control over the issue, because I think ultimately (…) people get that kind of anxiety over it (climate change) because they lack control over the issue."* **Nancy** |
| Emotional reinforcement of hope | *"Hope is a positive feeling about the future"* **Nina**<br><br>*"So, one needs to be very careful on how one sets one goal (…), so the goals are not too unrealistic, because then you won't reach them and then you will feel hopelessness."* **Sylvia**<br><br>*"(…) being able to stay positive is very important, because otherwise you'd never get as much done when you're feeling negative, and (…) disenchanted and everything's pointless."* **Gabrielle** |

## Appendix M: Overview of the different hope themes for pathway thinking among interviewees

| Different hope themes for pathway thinking | Sub-themes | N | Illustrative quotes |
|---|---|---|---|
| Cognitive restructuring | Positive re-appraisal of the situation | 3 | *"(…) the change of perspective towards the process rather than the end, that the way we are gonna get there is more important than the end itself (…) what I am doing now matters and the way that we manage to deal with it, through compassion and teamwork, and these gives our society at the end some sort of quality that even if climate change is there, this society will be a different society if we manage to value the process as much as it needs."* **Nina** <br><br>*"(…) to switch and to kind of reframe the situation and show the more positive sides and show reasons why we can be hopeful."* **Angela** <br><br>*"I am not sure if we will survive this or not, (…), we should just do what we have to, as much as we can. So, and that should be enough for us to feel positive and to feel happy about our lives."* **Nina** |
| | Motivation by beauty of our environment | 2 | *"(…) just feeling so sad that we're like losing all this amazing nature."* **Jane** <br><br>*"I just think the beauty of the world I'm very inspired by it in every kind of form. And it makes me very happy and inspired to preserve that (…)"* **Gabrielle** |
| | Uncertainties | 1 | *"(…) there things that are hidden on side that we have not yet discovered maybe, so I cannot say, and thinking of these different ideas, it gives me hope."* **Nina** |
| Trust in sources outside oneself | Trust in collective potential of human beings | 13 | *"I realised having a strong team of passionate individuals can really make something that seemed impossible become possible."* **Philipp** <br><br>*"But if I and everyone else is going to act then we'll be fine eventually."* **Angela** <br><br>*"(…) we are under-estimating this collective potential"* **Nina** <br><br>*"(…) for example, being surrounded by all the people in my Master's programme and seeing them all willing to act on those issues, invest their time in that, creating a sense of community among us."* **Hannah** <br><br>*"I'm hopeful when it comes to doing things. And I know that it's possible to change, to adapt and to mitigate climate change but at the same time I'm sceptical because of the resistance of some people (…)"* **Christian** <br><br>*"(…) generally speaking, I personally have trust because of values."* **Nancy** |
| | Trust in political actors | 10 | *"I think honestly, the policymakers can make a huge difference (…) I do have the most trust in the government because that's, I think how change happens across all nine billion people, you know."* **Clara** <br><br>*"I'm not sure if I really want to trust politicians, but there's definitely a couple of individual politicians that I would say have a lot of power that I trust in bringing about change for the better."* **Angela** <br><br>*"But I have a lot more trust and hope in local government and local decision-makers, just I mean, community level and how like that can trickle upwards as well. So, when local jurisdiction influencing their neighbour (…)"* **Camille** <br><br>*"I don't really trust in politics to kind of make this structural change."* **Philipp** |

| | Trust in social movements | 9 | "(…) it needs to become more of like a mass movement, more than it is now. But I guess this could be a start." **Sylvia** |
| | | | "I trust environmental movements, if we can be organised enough to enter governments, and to influence governments." **Livia** |
| | | | "(…) when there was the big XR (Extinction Rebellion) protest in London a few months ago, and seeing how many people are on board with it. After that, just before the election, there was a poll that was released showing that people really valued environmental issues and looked at more concerned about them politically than before." **Jane** |
| | | | "I mean, I guess seeing all of the different climate movements around the world, especially with young people, I thought that was really inspirational and exciting." **Nancy** |
| | | | "I had hope last year. I was very hopeful that it (Fridays for Future) will have a real impact also, because we had elections right after that, but in the end, the impact for the Green Parties and the government that has still to be formed was not very seen." **Hannah** |
| | Trust in science and academia | 8 | "I've trust in science very much so but I do not trust in science being carried over." **Gabrielle** |
| | | | "The time though, when I don't trust science, it's when it comes in with technology, because I don't trust technology because I, like have a fear of it, kind of dehumanising us and I really fear for geoengineering (…)" **Nancy** |
| | | | "I trust studies that are done across different fields more than I do studies that are done just in their own silo, and I guess, I think siloed research isn't as useful (…)" **Camille** |
| | | | "I have trust in science. I think that is also a really big role player in, in deciding what we do and how we do it, because the scientists will have the best or most accurate idea of what's going on and how we, how we need to change things." **Romane** |
| | | | "(…) (the scientists) always have to be kind of a bit reserved and a bit kind of cautious, because they don't want to seem too radical. And I think the time for not being radical is passed, because we're now in this situation." **Jane** |
| | | | "I think academia is driving a change (…)" **Christian** |
| | Trust in young generation | 6 | "So right now, I think I see the main hope in the young generation doing such collective actions, events and activities. So, bring awareness into the broader society, also, reaching out to the older generations" |
| | | | "I just I think that it's, it's going to be the younger generation to make change happen." **Nancy** |
| | | | "I think young people are good inspiration for hope." **Camille** |
| | | | "(…) people who are young right now they will eventually grow into decision-making positions and then bring about change there." **Angela** |
| | | | "I think it's almost too late to wait until we get into becoming the leaders." **Clara** |
| | Trust in rise of awareness | 5 | "Yes, this gives me hope to see that you are not alone and that people are getting more and more awareness." **Nina** |

| | | | |
|---|---|---|---|
| | | | *"There's much more debate and also political action and inaction but still at least debate and that there's an open discourse. Such things give me hope."* **Angela**<br><br>*"And I just think over the past few years, how much more of a conversation it is like how much more of a dialogue is, I just don't think that, that dialogue necessarily translating always into action."* **Nancy** |
| | Trust in business actors | 5 | *"I don't believe in companies"* **Sylvia**<br><br>*"(…) there are solutions, of course, in terms of individuals that we can do. But I think he's just putting sand in our eyes in a way, because companies have so much more power to change"* **Livia**<br><br>*"(…) they might have good (…) but they're still selling them and (…), they just fuelling a machine that's kind of fuelling climate change."* **Hannah**<br><br>*"I find it really hard to not be sceptical at least of them, that doesn't mean I necessarily don't trust them, but there's like a high possibility that I will lack it, compared to somebody else."* **Nancy** |
| | Trust in environmental organisations | 4 | *"The problem I also see with these actors (NGOs), I'm looking at is the impact they can have because they're outside of the decision-making process in general. And so, they're trying to influence it from the outside. But it has not so far been super successful. So, I would say I identified with actor as having some potential to change stuffs, but I also see barriers to their achievements."* **Hannah**<br><br>*"(…) some really active organisations, they reminded the government of their commitments."* **Romane** |
| | Trust in humanity | 3 | *"But at the same time, just thinking about human history, we have been through a lot and it is not the first crisis that human beings are facing and of course it is gonna be a long-lasting crisis, but we have been through a lot and that gives me hope also."* **Nina**<br><br>*"(…) all the instances of people doing wonderful things for each other in the face of a crisis like this (the Corona virus). I do have very much hope for humans"* **Gabrielle**<br><br>*"I think, within these design challenges that I've been a part of, seeing the diversity and the creativity of people in the face of all of these challenges is definitely something that gives me hope. Because they, I think, human creativity is, it really has a big role in in changing things, too."* **Romane** |
| | Trust in representatives and powerful figures | 1 | *"I think powerful figures and individuals that we are presented, such as our lovely Greta from Sweden"* **Angela** |
| | Trust in art | 1 | *"I think art has agency, in the sense that it helps individuals to explore complexity and to see things through different trips. And I think kind of this (…), trying to view the world or see problems outside of one's normal frame is very important in addressing any of the problems that we have today."* **Philipp** |

| Different hope themes for agency thinking | N | Illustrative quotes |
|---|---|---|
| Trust in one's own ability to contribute to climate change mitigation through (future) professional engagement | 13 | *"(…) definitely I see myself as part of an initiative, maybe with others, maybe creating, creating one, that addresses some kind of social and environmental issue."* **Philipp**<br><br>*"And, but also now thinking about graduating from (my Master programme) and taking on a job maybe I think that's where, in the future we will have, I will have, hopefully have, an influence and a positive influence regarding climate change (…)"* **Angela**<br><br>*"Yes, yes, absolutely. I mean, I do think I can make a difference also by choices in how I consume (…) but compared to the effects that I can have to my work, I don't think they are that big."* **Christian**<br><br>*"(…) in the work that I do, in furthering the progress of science even but now as I'm doing quite an interdisciplinary study, also trying to, I guess, just get my work to align with goals toward a better future."* **Romane**<br><br>*"I mean, for me personally, I'm very lucky that I found a job that (…) I'm really passionate about. So that I'm really grateful for my own, I guess, motivation and my own feeling of, I guess, fulfilment, and like I'm positively impacting the world, more so than I ever would have expected, which is amazing."* **Gabrielle** |
| Trust in one's own ability to contribute to climate change mitigation through collective actions | 11 | *"(…) to do activism in a broad sense, feeling like you're doing something to make the world a little better together with other people (…), that gives me hope."* **Sylvia**<br><br>*"It's very vulnerable to do it as an individual and therefore we need to we need to be a collective movement."* **Sylvia**<br><br>*"I'm not very active, politically active. I just basically vote. But I think more of us need to, including myself, need to be engaged much more politically and maybe just any community in trying to make some kind of change."*<br><br>*"(…) sometimes hope, when I'm in the middle of a protest, and I see all this energy coming from the people around me"* **Hannah**<br><br>*"I want to be more proactive in terms of activism."* **Livia** |
| Trust in one's own ability to contribute to climate change mitigation by influencing other people | 11 | *"And I think, because I am just one person, but then I influence you. And then we're two people and then you influence two people, and then, you know, that's how it spreads really fast."* **Clara**<br><br>*"I think the main impact that I could have personally is by reaching out to my private networks and individuals, (…) if we think about rather long-term change, I have the hope that bringing, spreading awareness now will also influence their future actions."* **Angela**<br><br>*"I feel like people come to me, especially my family, or when I talk about environment with people that know that I'm from biology or from ecology, and I work with environment, and I work with climate change. I think they validate, that my background validates my opinion, in a way because of the knowledge of course."* **Livia**<br><br>*"I'm hopeful when I talk to people myself because it's always easier to convince someone talking to them"* **Christian** |

| | | |
|---|---|---|
| | | *"I think, looking at hope, (…) a lot of what I am driven by is the impact I have on other people, just by them seeing me living up to my principles, and hoping that has an impact somehow."* **Jane** |
| Trust in one's own ability to contribute to climate change mitigation through individual actions | 10 | *"I am 100%, like, I need to be fully dedicated to this. And, and I have to have the hope that my action will make a difference. Or then that's really hopeless. So, I think I've decided really, that I will just be the change you wish to see in the world. I know sounds very cheesy, but I think it's true."* **Clara** <br><br> *"So, I know that I can't, I can't solve it alone. (…) But I do feel that by changing our behaviour and by acting consciously as citizens, we, we will influence higher up so we have more of like a bottom-up influence."* **Romane** <br><br> *"(…) your individual actions, of course, are important, and we have to practice what we preach but it's on the large scale not a huge tipping point."* **Gabrielle** |
| Trust in one's own ability to contribute to climate change mitigation by staying informed | 5 | *"I think I am really doing my best, to be conscious, to raise my awareness and to do as much as I can, I mean to the level of my knowledge (…)"* **Nina** <br><br> *"I feel, kind of, maybe hopeful in the sense that maybe with this knowledge that I do have maybe the initiatives that I maybe take part in, I will be able to contribute much more useful or effective knowledge or perspectives and addressing challenges."* **Philipp** |
| Trust in one's own ability to contribute to climate change mitigation by creating a new social norm | 2 | *"It's kind of creating a new norm and just being that in the in the presence of others I think kind of affects, have effect."* **Sylvia** <br><br> *"And that gives me hope, because then I say, okay, these people can do it, like, I can do it. And then more and more people. You know, that's how you start a revolution is like a few people do it more and more people join and then it becomes a new norm."* **Clara** |

## Appendix O: External influencing factors on interviewees' feeling of hope

| External influence upon feeling of hope | N | Illustrative quotes |
|---|---|---|
| Peers | 6 | *"I was very much influenced by my peers (…)"* **Nina** <br><br> *"I've been hopeful since I started working with this, it changes every now and then because there are some really sceptical people, in the industry especially but also in academia, that really do not see that the world will change."* **Christian** <br><br> *"(…) just surround myself with other people that are doing things and that would be a definite pull out of that hopelessness feeling and more into the hopefulness side."* **Romane** |
| Media communication | 5 | *"(…) just reading the news is one of the most depressing things because I think the news is quite alarmist (…)"* **Phillip** <br><br> *"(…) that gives me hope and also hearing about good solutions or things that people are doing, and hearing (…) positive stories is always helpful. I think they (these stories) do come across in maybe local media more so than national or international media."* **Camille** |
| Collective actions | 4 | *"There may be more active people in some organisation and be in contact with them, because really the group's energy will also make you more energetic and, you know, see some ideas from different paths to take to think about all those issues."* **Hannah** <br><br> *"So perhaps if I'm like participating in some kind of collective action, where I'm surrounded by people who are, you know so passionate about making some kind of change, I feel energised and a bit hopeful because I am able to see and be surrounded by individuals in that moment (…)"* **Phillip** |
| Knowledge | 4 | *"In a way, because I have more tools, I feel more hopeful because "Okay, I can do this" (…). But at the same time, the more knowledge I have, the more I see and I get less hopeful. So, in a way, knowledge is heartache at the same time. Ignorance is bliss, in a way. It's very unbalanced."* **Livia** <br><br> *"And I think as I've learned more about climate change and society, it gets more and more complicated. And I think even though it's more complicated, I don't necessarily think it's discouraging, but I think it also makes taking action more complicated."* **Camille** <br><br> *"(…) once I really understood more about climate change (…) I think just with all those feelings and confusions, I think that's when I became more hopeful."* **Nancy** |
| Teachers | 2 | *"I mean, people, students look up to teachers."* **Christian** <br><br> *"(…) every teacher that you have has a paper on climate change, and they are always talking about it, and it is a big part of every course that you take (…)"* **Nina** |

## Appendix P: Comparison of the motivational force of negative and positive emotions

| Comparison of negative and positive emotions | N | Illustrative quotes |
|---|---|---|
| Motivational force from positive emotions | 5 | *"(…) isn't there research on the fact that positive emotions (…) are much stronger in terms of making a change than negative (…)?"* **Sylvia**<br><br>*"But then, once I learned about it and started to act upon it, I would also say there are two different kinds of feelings, the ones that are positive and are, I think definitely the stronger ones. (…) It was actually mostly the positive emotions and the positive experiences that I made that made me want to continue and even become more proactive."* **Angela**<br><br>*"Definitely easier to get energy from the positive ones. So, I think the negative ones drag me down and then that means I just want to ignore the problem. (…) Whereas if I'm with positive emotions, it's kind of driven more sane: "Okay, we can make the changes and they don't have to be awful and we can do it together". Rather than being dragged into yourself. It's more the positive ones, I think, draw yourself out to others."* **Jane**<br><br>*"(…) the positive emotions would drive me to keep going and keep putting myself in places to keep going. The negative emotions would sometimes feel like a really heavy pulling down."* **Romane**<br><br>*"I think the positive emotions almost entirely are more productive. (…) I think if you feel despair and hopelessness, it's very demotivating, though, of course, it can be motivating too. So, I think the positive ones are good to be able to focus on if possible, but I think of course, sometimes it's just very hard to do that."* **Gabrielle** |
| Motivational force from the combination of positive and negative emotions | 3 | *"(..) the frustration (…) drives that passion to continue to go on because I want to see a change. But also, I think, the positive energy that comes along with it, the people who are appreciative of the initiative and find it useful and want to see it, grow and succeed. That positive energy is for sure motivating, so I think both is necessary."* **Phillip**<br><br>*"I think you need both in a way. So, I think you need the anger or the negative emotions as the engine starter and the positivity is the thing that makes the car move."* **Livia**<br><br>*"(…) there's always going to be some kind of negative emotion involved in talking about a problem that has a huge impact on people and their lives. And you have to balance it with positive emotions of feeling empowered to do something about it, or to feel like there's manageable tasks that can be done, and a plan that can be followed, and that makes people feel reassured."* **Camille** |
| Paralysis in negative loop reinforcement | 3 | *"(…) for me personally, it is harder to get out of disappointment and frustration (…)"* **Nina**<br><br>*"(…) sometimes I just have to ride through that helplessness and just feel it and let it soak in for a bit (…) I can try to pull myself out of a hopelessness and try to give myself hope, but then it just feels like disingenuous and makes me feel a bit more helpless."* **Romane**<br><br>*"(…) I think that it's too late for a lot of things to avoid the consequences. So, hopelessness might be a bit bigger than hope, in that sense. It doesn't mean that I will stop acting, it just means that I think we are fucked anyway (…)"* **Hannah**<br><br>*"(…) it is just a reinforcing loop so we have to really intervene in order to stop disappointment and frustration, because it can just get you down with everything."* **Nina** |
| Motivational force from negative emotions | 1 | *"I don't think one should underestimate also the emotions of guilt or anger. Anger can be constructive too and sadness can also be constructive in the sense that making a change or provoking you to try to make changes."* **Sylvia** |

## Appendix Q: Emotions resulting from a perceived agency contributing to goal attainment

| Emotions resulting from a perceived agency contributing to goal attainment | N | Illustrative quotes |
|---|---|---|
| Sense of empowerment | 4 | *"I felt empowered, I felt "Okay I can do this".* **Clara** <br><br> *"(…) definitely empowered (…) there's been a few strikes I have gone to in Lund that felt empowering because you are all coming together and I think there is a bit of hope there."* **Nancy** <br><br> *"So, I think it's very invigorating and very inspiring (…) to feel part of something and, especially a part of something that I think of as positive change and making positive change for the Earth and for others and everything."* **Gabrielle** |
| Sense of meaning | 3 | *"I feel a sense of meaning."* **Hannah** <br><br> *"(…) would you rather be ignorant and rather just be happily living your life without making these decisions? And I don't think so. It would be completely different (…) and there wouldn't have enough gravity to it, that kind of lifestyle of just not caring and not knowing. Even if it does come with these heavier emotions and feelings, at least it feels a little bit more deliberate and intentional, the way that we live."* **Romane** |
| Sense of usefulness | 2 | *"I feel more useful. I feel like I'm not in this world just to exist."* **Livia** <br><br> *"(…) working on any project, even if it's small, as you accomplish things within that project, you get more passionate about what you're doing, and I think it makes you feel like what you're doing is important (…)"* **Camille** |
| Interest | 2 | *"I realised that of course, it's possible to change and maybe it goes back to being interested, just. I got hope from being interested in."* **Christian** <br><br> *"And I wasn't necessarily that interested in it, but when I started working on it, I became much more interested in it. So, I think also you find passion through the work that you do."* **Camille** |

## Appendix R: Lack of or inadequacies concerning hope in the academic context

| Level | Identified lack or inadequacy | N | Illustrative quotes |
|---|---|---|---|
| University level | Space to express emotions in the academic context | 8 | *"I think that (the freedom to express negative emotions) is kind of missing. It's kind of just "here's the information". And then it's kind of closed, and then maybe we're all sitting at lunch together afterwards, and we can kind of discuss, but it's not formally within the lecture, I would say."* **Clara**<br><br>*"I feel like with classmates, we are in very similar moods and have similar feelings about the state of the planets and the state of our societies. And we tend to be very critical and are unable to find these kinds of more positive perspectives. And I think this is what is lacking in (my Master programme), where I am typically a person who draws energy from others (…), with so many others in my close circle feeling anxiety around this situation, it's been hard to find ways to find hope."* **Philipp**<br><br>*"I think maybe it (space to express emotions in the academic context) is more initiated by the individuals. I don't know if it's as much in the programme so much."* **Gabrielle** |
| | Inclusiveness of sustainability in all university's programmes | 3 | *"I think the hardest part is they get stuck in the sustainability people."* **Clara**<br><br>*"The studies are quite limited, I think, to the field that you're in."* **Christian**<br><br>*"(…) the studies that I did focus very much on the technical solution itself. So, any impacts of this specific solution were not really taught in the lecture hall. So, any impact on the ecosystem and sort of the other implications, you had to learn yourself. But it's also an essential part."* **Christian** |
| University programme level | Teach students how to personally deal with emotions, and stabilise hope over time | 5 | *"I am not affected that much, but I am affected by my friends that are experiencing anxiety and I have no idea on how to deal with it, and we are not skilled enough, we don't have the capabilities to know how to deal with anxiety. I think that there are some personal skills that we have to learn and (…) it is definitely missing from our (Master programme) (…) there is very little emphasis, I can't say that even one programme was about this, just giving students the skills to deal with their anxiety, or to get more hopeful about it."* **Nina**<br><br>*"And I think in the Master programme that I study, there aren't many spaces (…) where they teach the students how to cope with this information, this knowledge that they're receiving, because it's very heavy stuff."* **Philipp**<br><br>*"And then during the programme, I would say it (hope) was very much of an up and down."* **Angela**<br><br>*"(…) I just don't think that kind of concept has been brought up enough like, "Oh, how are you guys feeling about this so far? Like what are your thoughts on (the Master programme) in general?" "Like what are your thoughts on everything on how this world is?" (…) I just don't think there's enough reflection time in that programme. I just don't think that they've made space for that."* **Nancy** |
| | Teach how to communicate climate change | 3 | *"(…) it's also important that you are relatable. (…) I found this when I would talk to other people who don't feel very motivated to make change"* **Camille**<br><br>*"(…) to continue the education, to pass it on to others (…) in a constructive way because again, talking down to people and belittling them and blaming them for not having the same expertise level as someone is not productive at all (…) you're never going to get people on your side by sitting there and criticising them and* |

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| | | | *making them feel small and wrong, because humans just don't react positively to that.”* **Gabrielle** |
| | | | *“You should show people the science, or the evidence of things would make them care. They have to care for a different reason, (…) to make it personal.”* **Clara** |
| Teachers level | Articulation of knowledge and practical actions | 5 | *“What gives me hope is other individuals, and to see people really fighting for some kind of system change and I think perhaps in academia where we're just mostly focused on studying, it's maybe having the side projects on our own lives. I think, it's not enough for me to draw energy from and to find hope in.”* **Philipp** |
| | | | *“(…) something I've been thinking but that's being more hands on, practical during the programme could bring more hope as well.”* **Hannah** |
| | Ability to develop and express the pursuit goal | 2 | *“I'm more of a visual person, so I have this picture in my mind, but then it's hard for me to express it in words.”* **Angela** |
| | | | *“I feel like there's so many different aspects of that vision or dream, (…) but it's hard to just say it in words.”* **Nancy** |
| | Emphasis of the role of emotions in knowledge | 2 | *“So, I think the emotions behind climate change are something that I've not been learning a lot about and would not have previously (thought about) in getting people to change.”* **Clara** |
| Students' level | Learn how to deal with peers' hopelessness | 3 | *“I think most of us have had this happen to us, or it will happen to us that we have a colleague or a classmate that is feeling very hopeless or down, and right now I don't feel prepared necessarily to offer them support. But I'd like to, so I should maybe think about ways that I can do that.”* **Camille** |
| | | | *“(…) my peers, we maybe self-organise in talking about how we feel (…), we often have sessions where we just express our feelings and emotions. And we just speculate on how to support our friends in dealing with the emotions. We don't have any special training in how to deal with these emotions. We just try to support each other in the ways we know how to maybe comfort or support our friends. And maybe the feelings that we have at times, maybe the negative emotions, we reinforce them amongst each other. But I think that can be quite counterproductive.”* **Philipp** |
| | | | *“(recomforting a friend) I was looking for that missing point that if there would be somewhere some sources that I can just tell him go and read this, or go and ask this person because I am not an expert in this. But I was missing this.”* **Nina** |
| | Learn how to personally handle ethical dilemmas | 3 | *“So, I try to be aware of that in my daily life, but I also try to balance that with not feeling guilty for everything I do, because I think that's actually harmful and not very sustainable for myself, emotionally.”* **Hannah** |
| | | | *“(…) element of guilt because now, when you know that you're doing things wrong or you could be doing things better, which is sometimes hard to deal with.”* **Romane** |
| | Learn how to take care of oneself | 1 | *“(…) before Christmas (…), everything was just felt really awful. And I think I was seeing just the worst in everything, I wasn't really seeing any solutions. And I was really experiencing ecological grief (…) But then I went home for Christmas. I think I spent time a family and that made me feel a bit more hopeful.”* **Jane** |
| | | | *“(…) in order to be an activist and do something, you need to stay healthy, mentally I mean, and then it's important to take care of yourself and take the time to rest (…)”* **Sylvia** |

| Degree of expectation of sense of empowerment at the end of the university programme | Illustrative quotes: answers to the question "Do you expect to feel a sense of empowerment when you will be completed your university programme?" |
|---|---|
| Pronounced | *"I think I will get out of it (my Master programme) with a sense of usefulness, being a useful person for future of humanity because I am more aware of what I am doing and the path that I choose."* **Nina**<br><br>*"I think I feel empowered already (…), just making the comparison from before I started the programme and now, I feel so much more empowered than I had before. Because I'm able to understand and now analyse problems much more deeply and much more critically. But I think finishing this programme, I would naturally feel more empowered"* **Philipp**<br><br>*"I think I did feel some empowerment completing the master programme. Also, because we've learned about actions that are already being taken, but also, I feel like we have discovered areas or fields where we could focus on (…) and a big sense of community made me empowered."* **Hannah** |
| Mixed | *"Definitely. I think a confusion at a higher level, maybe? That the answers aren't so simple, but that doesn't mean they are not possible. And that there may not be the perfect solution, but it may be better, and you can implement it and try to work continuously to improve it."* **Clara**<br><br>*"I don't know if having another degree necessarily makes me feel empowered. But I guess it makes me feel like I have a higher position to work on different issues. I'm hoping that when I graduate, I can get a job doing something that I feel is meaningful and trust that the work that I'm doing is meaningful."* **Camille** |
| Mitigated | *"I hope that I will, but realistically I would expect a small phase of disempowerment because then, the very close network that we have, this group feeling of "we are all together fighting for the same", will not be present anymore because the students are going to go different directions and have to try to find their own and different positions, (…) with much more confrontation with people who might not have the same kind of idealistic goals."* **Angela**<br><br>*"I mean, I'll be happy that I'll be completed my Master's (…), but I think I'll also feel a bit disempowered going out into the real world into trying to get a job of just any kind of experience"* **Nancy** |

## Appendix T: Interviewees' recommendations for academic institutions

| Level | Identified suggestions in terms of academic hope promotion | N | Illustrative quotes |
|---|---|---|---|
| Structural level of university | Alignment with students' values | 4 | *"But I think there could be a lot even for the university to lead and say (…) "Look at how we're trying to improve the sustainability of our university", which I think then instils and inspires hope."* **Clara"** <br><br> *"(…) for universities, I think it would be a really big step if they actually prove that they (…) were investing in positive social and environmental and positive economic things. And I think if they actually made a stance saying "we're actually going to invest in your future", then I think that would (…) be really positive. And that would be really hopeful."* **Nancy** |
| | Research upon the phenomenon of climate anxiety among their students | 1 | *"(…) they have to study this, there should be more investments on that, even from a financial perspective, or to study more this area of climate anxiety and hope in the face of climate change, what you doing actually, and they have to be founded, so to figure out what should be done."* **Nina** |
| | Teaching programmes about emotions in the face of climate change | 1 | *"(…) even if it's only for a couple of days or one seminar in each and every programme that university has, that just deals with as well, what emotions are, how powerful they are, what hope is. And I think that can not only be useful in terms of environmental issues and in the face of climate change, but also for maybe the students studying psychology who want to, or medicine students (…) So, I think in general, it could be very empowering concept to have such seminars that talk about emotions (…)"* **Angela** |
| University programme level | Development of interactions with other university programmes or external actors | 5 | *"But I think it is also very much a bubble. And it's (…) very easy to feel empowered to do something within the university climate because everyone's kind of working on something. But then when you have to leave that environment and you take it to the real-world level where I think things are still much … it may seem theoretically easy to do in the classroom, but then in real life, it's much harder. So, I think it's maybe an unrealistic optimism that can build within (…) the social environment inside the university programme."* **Camille** <br><br> *"I feel like we should be given the challenge and the responsibility as master students and the university students to say "Okay, how can you do business more sustainable? How can you do engineering more sustainable? How can you do these things?" instead of saying "this is how you should be" just challenging these departments or students, you know, to try to think a bit differently and to contribute from their perspective. I think that's important as well."* **Clara** |

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| | | | *"I sometimes felt we were such an enclosed bubble that wasn't really part of the outside world. So maybe having more interactions with actors from other fields or even giving students the chance to go out and do some consultancy work with the municipality or engaging more with external actors."* **Angela**<br><br>*"I think in (my Master programme) we have kind of the opposite problem where we have a lot of internal community but because the university structure is so decentralised, we don't actually have a lot of influence on the rest of campus. (…) that kind of structural support is lacking here, where we might have a lot of really good ideas within (the Master programme) about local things that can happen in Lund, urge the university in a way to actually take them to the university. (…) I think it's very challenging to engage with our local community here."* **Camille** |
| | Balance the critical perspective with the celebration of successful cases for sustainability. | 5 | *"So, I think the programme (…) wanted to be critical and is critical. And that's a good thing. But I also feel that sometimes being super critical makes us just think. "Okay, so all those actions that are taken, they're kind of going green-washing". And so, there's nothing for real happening. And that makes me, made me feel hopeless sometimes."* **Hannah**<br><br>*"I think that gives a sense of hope again, because you kind of understand something deeper than just critiquing it. (…) Because having a critical eye, I understand the value in it, because it's to make things better, but also, at the same time, it just takes good things and makes them bad. (…) there should be more celebration of the small wins in academia. Definitely."* **Jane**<br><br>*"I think it's important to still take the little victories in that, you know, positive change is still positive change."* **Gabrielle** |
| | Link theoretical learning to practical implications | 5 | *"(…) lot of the courses we looked at, would see a problem, see the solution and then critique, but their critique was (…), there was missing the final step that was "after incorporations critique, how can we make it better?" And I think that would be a really important step because that was an indication that we would then make the final step on our own to be "Okay, this is bad this how you make it better", but I think to really concrete and bring it all together that's really required."* **Jane**<br><br>*"(…) we work so much in a more theoretical or large-scale lens within (my Master programme), it makes it feel very difficult to actually apply what we're learning. And I think that's what's most important is that we're really learning how to apply these things to actual projects and actions. And that would give me more hope."* **Camille**<br><br>*"I think it is about the content. So, the knowledge base, but then, also, for me personally, it was about seeing practical actions, not only theories but also actually seeing something happen for real and ideally also being involved in it. So, making something happened. I think that's for me something that triggers hope."* **Angela** |

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|---|---|---|---|
| | Additional module to teach students how to deal with their emotions | 4 | *"I really think they should have breakout sessions and just reflect on what we've learned so far. Because otherwise it feels like go-go-go and you're just moving on to the next thing and learning the next thing. And so, I don't think there's reflection enough o, just how you feel as an individual on this programme so far, I think that would be really beneficial. (…) I think it would just make so much more purpose out of it."* **Nancy** <br><br> *"(…) having even just a lecture on how to transmit it and to your state, ideas of staying positive without being unrealistic and naive or whatever, in the face of a lot of scary stuff. I think that'd be extra really good idea, a good tool. Because I think a lot of people are at a loss of "how do you balance that?" because it is a very heavy material."* **Gabrielle** |
| | Internal supporting structure to deal with climate anxiety among students | 3 | *"I actually communicated this once with the management in (the university programme), that they have to think about a plan to deal with people anxiety, the student's anxiety in the face of climate change. (…) I think they should be an office or something for dealing with these kinds of issues."* **Nina** <br><br> *"Maybe just a advertise that the sorts of services are available, if they (students) needed to, if someone needed to speak to a climate coach, that they would be one. And I think in the coming years it will become more and more useful, and maybe something that most students would take advantage of."* **Romane** |
| | Content of the courses | 3 | *"I think just making sure that there are a lot of examples of the good things going on and making sure that in our lectures, for instance, that it's not so doomy gloomy all the time. And I'm not saying it is. I'm just saying that, I think it's really important to incorporate those things, because those positive things motivate people, and that's what gives them hope."* **Nancy** <br><br> *"(…) some random lectures from some teachers that end with some hope speech, a case that is hopeful, but I think that it is totally missing (…)"* **Nina** |
| | Link content of the course with professional contributions | 1 | *"(…) by learning you feel like you're getting all this knowledge, but then once you get out into the real world, it's like "How do I use those things, how do I influence people, how do I get a job that stands by my values?""* **Nancy** |
| Teaching methods level | Provided space for expression of emotions in class | 9 | *"Maybe, facilitating conversations like this, in the classroom, and talking about our feelings and emotions and (…) from the beginning and through until the end of the programme to have this resource for students. (…) oftentimes we have to speak through theories and scientific knowledge but there isn't much space given to our own voice and our own emotions. And just making it compulsory to sit together and to give voice to our own emotions and finding ways to deal with the knowledge that we (…) learn or gain in that moment in time and how to cope with it."* **Philipp** <br><br> *"(…) I would implement in, even in lower education, like in CES, when you start school, I would put these emotions, education on emotions (…)"* **Livia** |

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| | | | *"(…) it was quite hard to actually express an opinion, or doubt, or hope or something, without it being (…) felt like it wasn't valid in a way."* **Jane** |
| | | | *"(…) that would be really interesting to have some kind of actual structured ability to have that, and even just raise it as a question because I think it came about organically to an extent, at least for us, but I think to actually have a more structured way to discuss it would be interesting."* **Gabrielle** |
| | | | *"I feel like exchanging ideas, if you really want to get people to talk and to go more in depth with the reflection, it should happen in smaller groups. And I feel that a lot of times, we were in such a big group that, for example, myself, I wouldn't dare speaking even if I am quite comfortable with the people around me. (…) So, more time for reflection in smaller groups, more seminars (…)"* **Hannah** |
| | Interactions between teachers and students | 7 | *"I felt like there was no hierarchical between the teacher and the students, and there was quite subspace for exchanges."* **Hannah** |
| | | | *"I think it's a way of communicating. Like a small example, during my bachelor's, I had a professor of soil science. And he was talking about this problem of soil erosion. And he said "There's no solution, so, it's up to you to figure that out and be the leaders in this area". And that was kind of "Oh, wow, this is my role of student". I think that there could be a huge role that people, teachers and even the department plays and trying to instil hope in us and enthusiasm and our ideas moving forward and telling it, like reinstating, that we can be the leaders of this movement."* **Clara** |
| | | | *"I mean, people, students look up to teachers."* **Christian** |
| | | | *"I think it is important in academic realms to have and instil hope. And I think it just really has to be (…) a constructive hope. I don't think people need to be giving people fake hope. Even if they don't have it, they shouldn't try to give it, but at least not be on the other end of that scale taking away people's hope. It's definitely important in academia to at least be neutral."* **Romane** |
| | | | *"(…) it's really important that we have many different professors coming in and sharing their expert knowledge, but I think because of that, there's a bit of disconnect with how you feel about a professor. (…) it makes everything very fragmented."* **Nancy** |
| | | | *"I think because we know our lecturers better, you can actually go and have a personal conversation with them, which is something that didn't exist my bachelor's degree at all."* **Camille** |
| | Personal engagement of teachers into individual and collective actions | 4 | *"(…) when people (teachers) kind of express that they're radical and even better when they actually participate in the struggle, that's really inspiring (…) and hope-giving to me."* **Sylvia** |
| | | | *"That will give you more hope and I remember the teacher was like "Oh, I was in this group and we did this and we did that" and I thought "Okay, this person is more involved or they can do something."* **Livia** |

| Student's level | Reinforcement of the community spirit and encouragement for emotional expression among students | 9 | *"So, I think there is more community within our (university programme) that supports more emotional expression"* **Camille**<br><br>*"I think it (developing a community spirit) is harder unfortunately, because of the size (of the batch of students), I think that it's unheard-of to have an overall consensus as a one entity in a way."* **Gabrielle**<br><br>*"I think the community brings a lot of hope. And I do think that the programme already is trying to implement this sense of communities, so I think that's something that they do well, to instil this idea of cooperation of working together. So that's something I would stress."* **Hannah**<br><br>*"I think having some confidence and that comes also from having a supportive community. So, knowing where people who are also working on these issues and who can support you in your development is really important to feeling like you can trust your own work (…)"* **Camille** |
|---|---|---|---|
| | Consideration for peer-to-peer influence among students | 6 | *"I also was exposed to these cool people who were engaging (…) which was a new thing for me. So that kind of gave me more hope."* **Sylvia**<br><br>*"I would say it got harder to be hopeful. (after I joined the Master's programme) (…) I would say it got harder to be hopeful in the rest of the world but it got easier to be hopeful in my peers and the people that I was living and interacting with in Sweden."* **Clara**<br><br>*"I think the overall feeling of the people then inspired positively the rest of the people (…)"* **Gabrielle** |
| | Acknowledgement of negative emotions and balance with students' personal well-being | 5 | *"(…) maybe talk about how in this very situation, the feeling of hopelessness can be empowering because maybe they can't even be hope without sometimes being hopeless."* **Angela**<br><br>*"(…) taking a step back, reminding yourself of the hopeful things that bring you joy, and then renewing yourself in that energy and going in."* **Jane**<br><br>*"(…) since I dedicate so much of my public time to it, it's really exhausting."* **Gabrielle**<br><br>*"(…) just trying to disconnect from the bigger problem because I think it's too much for one individual to put on themselves."* **Nancy** |
| | Encouragement for students' personal proactive engagement | 3 | *"(…) it's super inspiring with teachers who are also activists. It makes you as an activist feel really seen and confirm that what you do is important."* **Sylvia**<br><br>*"(…) your individual actions, of course, are important, and we have to practice what we preach (…)"* **Gabrielle**<br><br>*"(…) it's not inherently in the curriculum, but just the way that throughout (my Master programme) we are given the chance to build our own networks and get engaged in projects and organisations."* **Angela** |