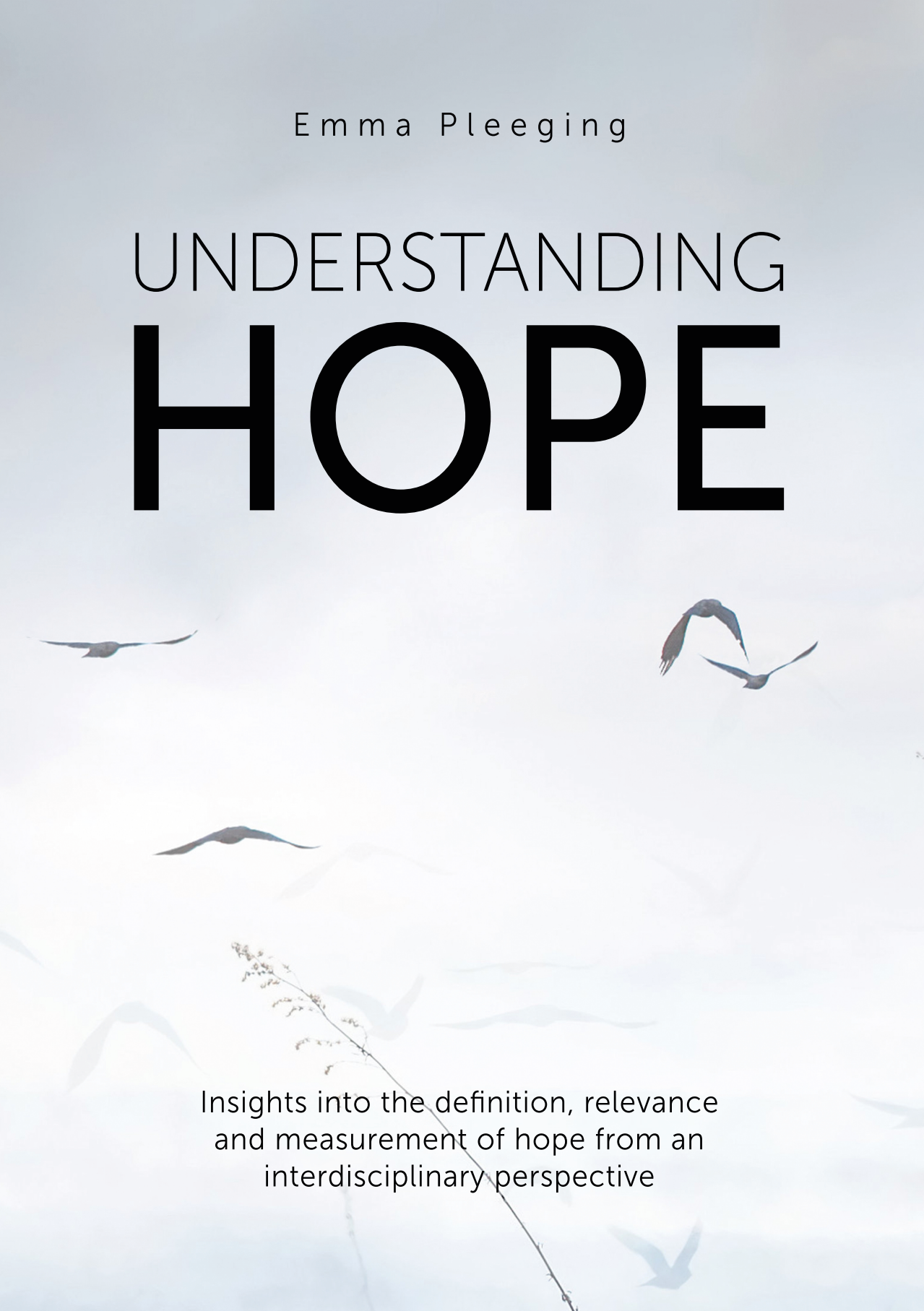
Emma Pleeging

UNDERSTANDING HOPE



Insights into the definition, relevance and measurement of hope from an interdisciplinary perspective

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Understanding hope

Insights into the definition, relevance and measurement of hope from an interdisciplinary perspective

Inzicht in hoop

Verkenningen van de definitie, relevantie en meetbaarheid van hoop vanuit een interdisciplinair perspectief

Thesis

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1 Introduction

Hope gives us, as a species and as individuals, what we otherwise wouldn't have: a chance.

– John Green

1.1 BACKGROUND

There is a lot in our world to make us feel worried about the future. During the 21st century, rapid developments such as globalization, growing inequality, automatization and climate change have been causes for concern. However, there are also endless examples to be found of hope. And, often, the pessimistic and the hopeful go hand in hand.

In June 2020, the highest ever recorded concentration of CO^2 in the air broke the previous record of 2019, the same year in which an estimated 150,000 people died from the consequences of climate change (GML, 2021; WHO, 2021). Also in that year, energy generation from renewables exceeded that of fossil fuels in the EU for the first time in history (Ember, 2020).

Since the outbreak of the COVD-19 pandemic, around 3 million people died from the disease, while economies have been struggling worldwide, with poverty again on the rise for the first time in years (ECDC, 2020; Jones, Palumbo & Brown, 2020; World Bank 2020). And, by building on years of previous research, international scientific collaboration and unprecedented public and private financial support, a vaccine was developed faster than ever before (Ball, 2020).

On 5 August 2010, thirty-three men got trapped 700 meters underground after a collapse at the San José copper–gold mine, Chile. Seventeen days later, a note taped to a drill-bit was pulled back to the surface reading "Estamos bien en el refugio los 33"; "We are all well in the shelter, the 33 of us". Not knowing whether anyone was looking for them, the trapped miners had lived on rations meant for two or three days, hoping they would survive long enough to be rescued. On 13 October 2010, two months after the collapse, all men set foot on the surface again.

All of us will inevitably encounter hardship in our lives, and mainly due to modern media, we are increasingly aware of the hardship of others and the many wrongs in society. In the face of such adversity, how do we manage to hold on to hope? Luckily, pessimism and hopelessness are not the same thing. And the distinction between the two shows us why hope is now, and

always has been, an incredibly important force. In its simplest sense, *hope is about desire for a better but uncertain future*. We want something to happen, but at the same time understand that we don't have complete control over the future. Optimism, on the other hand, refers to the tendency to assume positive things will happen, regardless of our actions. While optimism is thus about expectations, hope is about what we are willing to work for, even if we don't know whether we will get there. Therefore, hope can survive, and become even more important, during bleak times. We don't fight for what is right because we expect it will happen anyway, but because we find it valuable, even if the odds are against us. As such, hope keeps us going when we don't know whether our efforts will pay off. Sometimes these efforts yield surprising wins, sometimes they don't. But without hope we might not have even tried. 'Hope gives us, as a species and as individuals, what we otherwise wouldn't have: a chance' (Green, 2010).

Perhaps not surprisingly, hope has become an increasingly important topic in scientific research during the past decades. This interest has followed from, and yielded, new insights into the mostly positive correlates of hope. Hopeful people tend to be healthier, happier, more creative and invest more in the future. False hope based on denial, however, can erode trust and lead to disappointment and cynicism. Research is paramount to be able to navigate how hope impacts our lives and to guide us away from false or naïve hopes and towards resilient, constructive hopes. Although the amount of scientific research on hope has been steadily increasing in the past decades, current research tends to stay within the confines of specific disciplines, meaning that the insights of one field do not easily translate to or enrich those of another. For example, research in the field of psychology generally regards hope as cognitive goal-pursuit; while health sciences focus on interconnectivity and resilience; in economics the emphasis is on aspirations and expectations; within philosophy uncertainty and virtuousness are important topics; and in sociology, hope is all about power and history. However, reality does not adhere to these distinctions. Hope in practical contexts is about personality as well as about genetics, societal power structures, trust, history and economic opportunity. To truly understand how hope influences our lives and societies, we therefore need interdisciplinary research on the topic. And that is exactly what this dissertation focuses on; an interdisciplinary understanding of hope. In the following chapters, I will try to answer the main question of this work *"How can we understand the meaning and role of hope from an interdisciplinary perspective?"* But, first, in this introduction I will discuss current scientific knowledge concerning hope, the objective and scope of this dissertation, its relevance and an outline of the dissertation.

1.2 CURRENT KNOWLEDGE

Since hope is such a broad concept, with which we deal in many aspects of our lives, the topic has been discussed in a wide range of (mainly social) scientific fields, most prominently in philosophy, theology, (positive) psychology, health sciences, sociology and economics. Each of these fields has its own specific approach and history, but most research is relatively new. Up until the 20th century, hope rarely figured as the main topic of any inquiry, but was discussed as part of broader worldviews (see Chapter 2 for a broader overview of current research).

Philosophical inquiries into hope trace back the furthest in history. Initially, evaluations of hope focused mainly on the question whether hope is a good or a bad thing, the answer to which tended to depend on philosophers' wider beliefs about the malleability of the future and the usefulness of pondering our desires for it. Early Greek accounts, for example, mainly portrayed hope as a naïve distraction from dealing with reality as it is, whereas the later Judeo-Christian tradition actually viewed it as a virtuous trait and as a motive to do good, and Enlightenment thinkers later on maintained a more neutral stance, seeing hope as a passion which could motivate both rational and irrational behaviour (Bloeser & Stahl, 2017). Throughout history, politically embedded philosophies moreover explored the role of hope as a precondition for societal change and stability, generally stating that hope and trust are necessary for societies to function properly. More contemporary inquiries focus on the definition rather than the value of hope. These tend to start with the 'orthodox definition' or 'standard account' which states that hope is *desire* combined with *uncertainty*. Discussions here focus for example on the question whether hope is always focused on the future and whether some kind of active engagement through fantasizing or behaviour is necessary to call an experience hope (Bloeser & Stahl, 2017; Milona, 2020).

As one of the three theological virtues in Judeo-Christian thinking, hope has been an important topic in western theology. Juxtaposed against the sin of despair, Christian hope is usually described as an expectancy for a bright future for Christians due to the resurrection of Christ or heavenly afterlife, which motivates believers to do good. According to thinkers such as Aquinas, contrary to 'earthly hopes', this divine hope does not need to rely on evidence and is not a passion but rather a habit of the will, which fundamentally depends on faith. As such, hope is often seen as part of rational faith due to its "capacity to justify action in a way which is not bound to knowledge" (Bloeser & Stahl, 2017). More recent theological discussions of hope focus on the types of action that should be motivated by it, insisting that divine hope should guide us not only towards divine goals, but also towards a better and more just life on earth in the present (Nullens et al., 2016).

When the human psyche became a more common topic of rigorous scientific scrutiny during the 19th and 20th century, hope became the focus point of varying theories and empirical study, especially within the field of psychology. Here, hope has historically been viewed as an

expression of expectation, trust and as a basic force of human psychology (Ludema, Wilmot & Srivastva, 1997). Discussions on the nature of hope within this field largely focus on the question whether hope is emotional or cognitive, a stable trait or fleeting state, and how it relates to similar states such as optimism, locus of control, trust and subjective well-being. The currently most dominant approach comes from Snyder's 'Hope theory', which defines hope as a positive motivational state based on a sense of agency, i.e. the idea that we can achieve our goals, and a sense of pathways, i.e. being able to come up with different roads towards our goals when faced with obstacles or setbacks (Snyder, 2000). However, there has been criticism of this approach from within the field, stating that it focuses too much on the individual, motivation and cognition, at the expense of more social, passive, emotional or transcendental components. Consequently, several theories have been developed focusing on spiritual, social and open-ended hope (Scioli et al., 2011; Du & King, 2013)

When our health is threatened, hope becomes especially significant, and consequently, hope has been an important topic in health sciences in the past few decades. Definitions of hope in this field largely focus on the expectation of desired (but often unlikely) health outcomes, resilience in the face of adversity and interconnectivity and support in shared hopes (Herth, 1992; Olsman, 2020). The currently most dominant approach in empirical research comes from Herth, who defines hope as "a multi-dimensional dynamic life force characterized by a confident yet uncertain expectation of achieving good, which to the hoping person, is realistically possible and personally significant" (Herth, 1992:1253). This approach defines three factors to hope, namely temporality and future, positive readiness and expectancy, and interconnectedness. Current discussions within the field tend to focus on the question what hope means for people faced with extreme experiences, such as being terminally ill, having chronic pain or caring for others; how hope builds resilience; and what to do when hope and truth are at odds with each other.

Sociology, anthropology and political science are discussed simultaneously here, since their perspectives on hope are more akin to each other compared to other scientific fields, even though there are of course still some differences between them. In these fields, much attention has been given to how discourses of hope relate to history, power and inequality. A first strand of research for example focuses on sources of hope, maintaining that hope is not equally distributed in society. Some groups structurally experience less hope, not only through diminished expectations, but also through a lack of trust and as a consequence of being largely outside the societal dialogue concerning what we consider progress. A second strand of research investigates how hope is used (and abused) for political gain. As hope is such a strong motivation for people, several political players use it to frame and sell their ideologies, or to create divisions between groups, juxtaposing a certain group's 'rightful' hopes against the false, undeserved or dangerous hopes of another group. A third strand of research focuses more on the individual agency that lies in hope, and how marginalized people use hope to imagine a better future, to mobilize or to offer resilience in times of adversity. A

fourth strand of study explores how culture influences how we perceive hope, for example; whether we think hope is a good thing, what should be the object of our hope, and whether hope is individual or social. Overall, hope research in these scientific fields emphasizes how hope is embedded in cultural, societal, historical and political structures and warns against perceiving hope as something that exists in a social vacuum (Kleist & Jansen, 2016).

Until recently, hope has not been a common topic in the field of economics (see Chapter 7 for a full discussion of hope in economics). This can largely be explained by the idea that the traditional neo-classical paradigm focusing on rationality, self-interest and universals, which has been dominant in the field, did not fit well with the subjective, uncertain and often very personal experience that hope comprises. However, with the development of heterodox economic approaches, such as behavioural economics, which use insights from other fields such as psychology to explain economic behaviour, experiences such as hope became more common topics of research. During the 20th and 21st century, related concepts such as consumer confidence, expectations and aspirations became relatively well integrated in economic thinking. Studies in this field tend to focus on the determinants and consequences of hope-like states, and by-and-large finds positive correlates, such as innovation, pro-active behaviour, well-being and even longevity. However, there are also some indications that overly optimistic hopes which cannot come to fruition can lead to disappointment, envy and frustration. Although the field has started to pay attention to general 'future-focused' experiences, further definitional clarification would allow for more precise analyses in future research.

Several other scientific fields have been (sporadically) concerned with hope. For example, as sustainability requires a great deal of forward thinking and preparedness to invest in the future at the expense of the present, several studies have been conducted on how hope and sustainable behaviour are related, generally indicating that realistic hopes combined with concern foster sustainability (see Chapter 4). These studies therefore often remark on the importance of hope in education, and several other pedagogical inquiries have similarly discussed the importance of fostering hope among youngsters, as a prerequisite to raise pro-active, motivated adults. Moreover, hope has been discussed in relation to the arts, literary studies, marketing, law and several other fields.

Overall, we can see that each scientific field has quite a different approach, resulting in differing definitions, ways of measuring hope and contexts which are deemed relevant for research. In the last decade or two, a few attempts have been made to develop multidisciplinary theories of hope bridging (some of) these differences. Schrank (2010) and colleagues for example developed a scale to assess hope, which combines instruments from psychology (the Adult Trait Hope Scale developed by Snyder) and health sciences (the Herth Hope index and the Miller Hope Scale). Scioli and colleagues (2011) developed their own instrument, based on the idea that hope entails "a future-directed, four-channel emotion network, constructed from biological, psychological, and social resources" (2011:79), thus focusing

on different components of the hopeful experience. Moreover, although grounded within psychological research, Krafft and colleagues (2019) developed an instrument to measure hope based on how people themselves define hope. Lastly, Webb (2007) developed a broader interdisciplinary theory of hope, which starts with the observation that there are indeed many different and sometimes even contradictory descriptions of hope. However, as Webb states, these contradictions do not mean that one definition is correct, and another is not, but merely that hope is a multidimensional experience, and that different components of it come to the foreground depending on the context. As Webb states; "we may each of us at different times and in different circumstances experience hope in the manner described by Marcel or Dauenhauer or Bloch or Snyder or Rorty. Our hopes may be active or passive, patient or critical, private or collective, grounded in the evidence or resolute in spite of it, socially conservative or socially transformative. We all hope, but we experience this most human of all mental feelings in a variety of modes" (2007:80). In this dissertation, I build upon this idea, assuming that hope does not conform to one static definition, but rather can comprise a variety of states depending on the context, which are nonetheless all linked through a shared definitional core captured in the standard account of hope as desire for an uncertain event.

1.3 RESEARCH OBJECTIVE AND SCOPE

Even though the amount of research on hope has increased, especially over the past decades, important knowledge is still missing about the definition, role, measurement and adaptability of hope. Although the 'standard account' of hope as desire plus uncertainty is not incorrect in most (if not all) contexts, it also lacks a lot of depth and detail. And although there is quite a lot of knowledge about the characteristics of hope in specific scientific fields, there are few structured descriptions of how these approaches are related to each other. Also, there is no gold standard for how to measure hope; since each scientific field has a different definition, instruments to measure hope vary according to specific approaches and we know little about how these instruments compare. Moreover, although insight into the relevance of hope is increasing, it is not yet a common topic for policymakers, professionals in organisations and (social) scientists. Therefore, a lot is still unknown about how hope influences our behaviour and well-being in context, and with that our society at large.

This dissertation therefore focuses on the question *"How can we understand the meaning and role of hope from an interdisciplinary perspective?".* To answer this question, the papers in this dissertation focus on four fundamental questions when it comes to hope; What is hope? (Part I) Why should we care about hope? (Part II) What do we already know about hope? (Part III) And, how can we measure hope? (Part IV). More specifically, I look at these questions from an interdisciplinary perspective, adopting the idea that hope is multifaceted

and exhibits different dimensions in different contexts. As such, I analyse the definition of hope by comparing the different characterizations attached to hope in different disciplines; I study how hope affects us in a number of practical contexts, from sustainable behaviour to income and consumption; investigate in depth how two fields, namely economics and happiness research look at hope; and study how instruments from different fields compare. The overall aim is to *develop an interdisciplinary characterization of hope, which can be validly and reliably measured and applied in a variety of contexts.*

Considering this variety of questions, several mixed-methods methodologies are adopted. I make use of both qualitative methods, such as phenomenography and literature review; and quantitative methods to analyse survey data, such as regression models and factor analysis. Since hope is a relatively new topic in many scientific disciplines, the scope of this work is relatively broad. Although some more specific and practical topics are discussed, the focus is mostly on the overarching questions regarding the definition, relevance and measurement of hope. Moreover, although I make some attempts to include perspectives from different cultures, the main focus on the role of hope in contemporary, western culture.

1.4 RELEVANCE

The timeliness and relevance of research on hope lies in several recent developments. First, societal pessimism and unrest are on the rise, and hope could comprise an important antidote in this regard. The past decades saw many quick and fundamental changes, such as globalization and digitalization, migration, military conflicts and terrorism, and climate change. Polls show that people increasingly worry about the future when it comes to these societal developments, even when they remain relatively hopeful about their personal resilience (de Vries & Hoffman, 2019; Hope Barometer, 2020). Worry, fear and pessimism can greatly influence behaviour, usually leading to conservatism and myopia. Hope can help us in times of pessimism. Both on macro-scale, for example when faced with climate change, and on a smaller scale, such as within an organisation or in our personal lives, previous research has shown us that hope can help us define goals and motivate us to become more innovative and future minded (Snyder 2000; Ojala, 2012). However, and secondly, more hope is not always better. When based on denial, falsehoods or used as manipulation, hope can have many detrimental effects and further erode trust in others and in the future. Many political players appeal to their electorate's hopes for a better future, while the exact content of these hopes varies substantially. For example, the slogans of the two former US presidents - Obama's "Yes we can" and Trump's "Make America great again" - both appeal to hope, but entail completely different policies. Such an appeal can greatly motivate people, but when portions of the population are (inevitably) disappointed, it can also engender passionate and sometimes volatile societal emotions. Social groups and society at large need to deal with such disap-

pointments and false hopes, in part because they can lead to much civil unrest, protests and even violence, and understanding how hope works will also help to better understand such societal questions in the future.

On an academic level, interest in hope has been increasing over the past decades, yet interdisciplinary theories that bridge the divides between research fields is still largely lacking, especially in applied research. Previous studies have shown how hope plays an important role in a myriad of practical contexts. The papers in this dissertation add to this literature by further examining hope in different contexts, for example when it comes to sustainable behaviour, income and consumption; but also looking at how we can understand hope from an interdisciplinary perspective, and by studying how we can measure hope.

1.5 OUTLINE OF THE DISSERTATION

This dissertation consists of several academic papers and book chapters, organised in four parts, each answering a specific question. Part I asks the question 'What is hope?' by looking at the traits that are ascribed to hope in a wide array of articles from ten different scientific disciplines. In Chapter 2, I find that in its simplest sense hope does indeed boil down to 'desire + uncertainty', but that beyond this very succinct definition, there is a much richer elaboration within disciplines, with each strand of research focusing on other parts of the hopeful experience. I conclude that hope can be defined as the specific individual experience of uncertain desire, but underscore that we can also look more broadly at hope as a socially embedded process. Part II delves into the relevance of hope. Why should we care about hope, either personally or on a societal level? Three empirical papers show that hope plays an important role in explaining behaviour and the degree to which our circumstances lead us to be happier. Chapter 3 looks at the mediating role of hope in the relation between income and life satisfaction, and finds that better objective circumstances partly make us happier because they make us feel more hopeful about the future. In Chapter 4, I investigate the relation between hope and sustainable behaviour, and find that hopeful people are more willing to contribute to the green energy transition, so long as their hope is not based on denying the issue at hand and combined with a realistic sense of worry and understanding. Chapter 5 investigates the importance of hope in economic behaviour through procedural utility, as we analyse how positive anticipatory feelings can explain the seemingly irrational but popular economic pastime of lottery play. Overall, I find in this part that hope, at least partly, determines what we are willing to invest in, and how we experience our surroundings. Part III of the dissertation offers an overview of current knowledge on the topic of hope within two specific scientific fields, in which hope-research is relatively novel, namely economics (Chapter 6) and happiness research (Chapter 7). Here, I find that a lot is already known about the role of hope, but that there are also still considerable gaps in our knowledge. Following

the insight that hope plays an important role both for individuals and for society at large; that a lot is still unknown about hope; and that hope comprises a multifaceted experience; in part IV, I ask the question how we can get further insights into this complex experience. In chapter 8, I look at four existing instruments by validating short versions of these instruments; inspecting how well each instrument performs on different forms of validity and reliability and investigate how these instruments are related to similar instruments such as expectations or a single-item hope question. Chapter 9 subsequently discusses the overall dissertation by summarizing its conclusions, strengths and weaknesses, practical and theoretical recommendations, and sketches possible new avenues for future research.

What is hope?

2 Characterizing hope

Emma Pleeging, Job N.J.A. van Exel and Martijn J. Burger

Based on the paper: Pleeging, E., van Exel, N.J.A. & Burger, M.J. (in press). *Characterizing Hope: An Interdisciplinary Systematic Review of the Characteristics of Hope*. Applied Research in Quality Of Life.

2.1 INTRODUCTION

Emotions are increasingly recognized within academia and policy as important drivers of individual behaviour and societal change. This has resulted in a burgeoning literature on emotions in the social sciences and humanities, as insights into the affective dimension of human life can clarify many hitherto unexplained, 'irrational' behaviours (Bruni & Sugden, 2007; Kahneman, 2013; Webb, 2007; Schwartz, 2010; De Waal, 2019). Hope is one such emotion that has proven to be a very relevant incentive for human behaviour, and the concept has received increased attention over the past decades from varying disciplines, such as positive psychology, nursing, environmental studies, anthropology and organizational studies (Kleist & Jansen, 2016; Luthans & Jensen, 2002; Snyder, 2000a; Webb, 2007). Hope can entice people to invest in their future, for example through a business, an education, in living healthily, accepting treatment for a disease, or in collaborating with others in solving societal problems (Snyder, 2000a; Duflo 2012; Elliot, 2007; Lybbert & Wydick, 2015; Ojala, 2012). Such a hopeful motivation for behaviour requires belief in and the imagination of a certain good or desire. Additionally, it is based on a belief in someone's capabilities to achieve this goal or trust in the abilities of others to do so, such as societal institutes, government, science or a God. As a form of imagination, hope can allow people to transcend their current situation and, as such, battle apathy and provide a 'renewed zest for life' in times of hardship, such as during sickness, poverty or societal injustice (Benzein & Saveman, 1998; Ludema et al., 1997; Schwartz & Post, 2002).

Despite an increased recognition of the importance of hope in understanding behaviour, there seems to be no sufficiently comprehensive overlapping definition or framework of the concept that is applicable across disciplines (Webb, 2007). Some succinct definitions seem to be valid across approaches, such as what is called the 'orthodox definition' of hope, i.e., a desire for a possible but uncertain goal. This definition thus entails two necessary and sufficient components of hope: desire and uncertainty (Day, 1969; Martin, 2013). Few, if any, scholars concerned with hope would have issue with the claim that hope *at least* involves a desire for something and some form of uncertainty. However, such a description is so brief that it does not capture the much more detailed and elaborate descriptions used within different disciplines and consequently offers little help in linking research across disciplines. Therefore, research on hope within, for example, anthropology, has little or no connection to research on hope within psychology, apart from the very abstract definitional 'core' represented by the orthodox definition, which has little descriptive power. As such, research on hope is largely performed within the confines of different disciplines or 'clusters of meaning'.

Consequently, definitions and characterizations of hope can differ widely, from 'an affirmative form of social discourse' (Ludema, Wilmot & Srivastva, 1997), to 'the anticipation of achieving a personally significant future good' (Leung et al., 2009), 'an emotion network' (Scioli et al., 2011), a cognitive process involving agency and pathways to goals (Snyder,

2000a), 'an emotion that occurs when an individual is focused on an important positive future outcome' (Bruiniks & Malle, 2005), positive psychological capital (Luthans & Jensen, 2002), or 'an inner power directed toward a new awareness and enrichment of "being"' (Herth, 1993). Although often divergent and sometimes even contradictory, it is likely that most of these definitions of hope have some truth to them. Different dimensions of hope can be elicited in different situations, and since scientific disciplines each have their own scope and focus, all come up with different interpretations of the concept. As Webb (2007:80) states, different contexts can elucidate different 'modes of hoping':

> *'We may each of us at different times and in different circumstances experience hope in the manner described by Marcel or Dauenhauer or Bloch or Snyder or Rorty. Our hopes may be active or passive, patient or critical, private or collective, grounded in the evidence or resolute in spite of it, socially conservative or socially transformative. We all hope, but we experience this most human of all mental feelings in a variety of modes.'*

Almost all approaches to defining hope regard it as a multifaceted concept but focus mainly or solely on one or a few 'modes of hoping'. Since interdisciplinary meta-analyses of the concept are scarce, we rarely see how these different modes are connected. This hinders research on the role of hope in context since we know little about the interplay between different characteristics of a hopeful feeling. This paper aims to contribute to the research field by providing an overview of the central characteristics of hope from an interdisciplinary perspective. Building on Webb's (2007) description of hope as 'a human universal that can be experienced in different modes', we aim to disentangle the building blocks that make up these different modes of hoping. This will not only help to understand the meaning and role of hope in real-life contexts but also to put focused, mono-disciplinary approaches in a broader context. Using a systematic phenomenographic review of articles on hope within several disciplines, such as economics, environmental studies, health science, history, humanities and social sciences, we aim to offer a comprehensive interdisciplinary framework that can be easily used to disentangle what components a specific approach or definition is focusing on.

The paper is structured as follows. The second chapter gives a short overview of the current state of affairs, asking which characteristics are regarded as being central to hope in current influential theories, how our understanding of hope has changed over time and what topics are under debate. The third chapter discusses the methodology of the phenomenographic analysis of this study. The results are discussed in chapter four, where we will show how two general approaches to defining hope can be used to structure an interdisciplinary 'classification matrix' of the characteristics of hope. Moreover, we discuss seven domains and several subthemes related to the characteristics of hope. Chapter five starts with a recap of the complete classification-matrix and uses it to elucidate some of the differences between

disciplines in studying hope. Chapter six offers a discussion of the results and some limitations.

2.2 THEORY

Hope is certainly not a new topic of research. It has been studied within several disciplines throughout history. However, until the twentieth century, hope was usually merely considered as a 'secondary' part of a larger philosophical or academic project. Only after this period did structured and empirical investigations specifically focused on hope itself became more prevalent (Bloeser & Stahl, 2017; Webb, 2007).

2.2.1 Hope throughout history

Over time, hope has had many different connotations and has been portrayed as both good and evil. Early Greek accounts of hope focus mostly on the latter by equating hope to wishful thinking based largely on ignorance that keeps people from courageously facing reality (Bloeser & Stahl, 2017; Ludema, Wilmot & Srivastva, 1997). Although several Greek thinkers such as Aristotle and Plato also recognize the motivating power of hope and the possibility of courageous hope, by and large, hope was seen as irrational, generally naïve, easily used for the wrong goals, and sometimes overly eager, while at other times, it was seen as a cause for apathy (Gravlee, 2020). In contrast, Judeo-Christian interpretations of hope actually ascribe a virtuous character to hope since it can motivate behaviour in the absence of direct, rational evidence, instead relying on faith in the possibility of good[1]. During the 17th and 18th centuries, thinkers of the Enlightenment mostly defined hope as a neutral passion, which can motivate both rational and irrational behaviour. Although also comprising cognitive beliefs about reality and the probability of attaining one's goals, descriptions of hope focused on its emotional characteristics. In addition, hope was increasingly seen as a political power by thinkers such as Hobbes and Spinoza, since it can motivate people towards societal progress and solidarity through, for example, laws and the social contract (Boukala & Dimitrakopoulou, 2017; Bloeser & Stahl, 2017). In philosophical discussions since Enlightenment, hope is again portrayed as both good and evil. Immanuel Kant describes reasonable hope as a rational imperative, seeing it as a bridge between reason and existential questions that cannot be answered by experience (Insole, 2016; Bloeser & Stahl, 2017). Authors such as Kierkengaard and Marcel similarly discuss hope as transcending the limitations of (empirical) understanding and as an inherently human trait pulling people towards progress. Thinkers such as Schopenhauer and

1 Moreover, in recent years, Christian theologists have highlighted hope as a possible force for social transformation and justice, stressing that solely hoping for a place in heaven is no virtue (Ludema, Wilmot & Srivastva, 1997; Nullens et al., 2016).

Nietzsche, on the other hand, condemn hope as a misguided understanding of reality that mostly distracts people from addressing injustice. Nietzsche went so far as to label hope 'the greatest of all evils for it lengthens the ordeal of man' (1996:32). With the rise of psychoanalysis at the beginning of the twentieth century, attention again swayed to the more positive side of hope as an expression of fundamental trust in others and a basic force of human psychology (Ludema, Wilmot & Srivastva, 1997). Similarly, pragmatic philosophers such as Dewey and Rorty regard hope and trust in the goodness of others as a rational choice even in the absence of proof, since it offers the energy to work towards progress and improvement (Ludema, Wilmot & Srivastva, 1997; Webb, 2013). Here, the societal impact of hope again comes into play, as hope is seen as a potential force for social transformation. Political thinkers such as Bloch elucidate the pivotal role that hope can play in societal progress due to its potential to spark the imagination of possible new futures, which can help challenge the status quo (Ludema, Wilmot & Srivastva, 1997; Mandel, 2002; Nullens et al., 2016). In the second half of the twentieth century, hope as a research topic gained popularity, especially within the fields of psychology and nursing, where the focus shifted to the cognitive, emotional and behavioural components, determinants and effects of hope.

2.2.2 Current theories

In recent decades, a large body of empirical research has developed on the causes and effects of hope, for example, with regard to performance and wellbeing. Since these studies largely focus on the application of existing theories rather than definitional clarification, they largely build upon existing theories. Consequently, a handful of theories have become very influential in hope research. Perhaps the most well-known theory comes from psychologist Snyder, who defines hope as 'a positive motivational state that is based on an interactively derived sense of successful (a) agency (goal-directed energy) and (b) pathways (planning to meet goals)' (2000b:8). To Snyder, hope is predominantly an individual and cognitive experience. Although he recognizes that other people can be a source of hope, Snyder defines the experience itself as individualistic. Moreover, even though he sees emotions as an important part of the hoping process, Snyder regards them as secondary to cognitive processes and therefore as less central. Based on this theory, Snyder has developed several instruments that are widely used for research on hope (Snyder, 2000a). Nonetheless, there has also been substantial criticism on this theory, for example, for being too individualistic (Du, 2015), for focusing too much on personal control and agency and too little on trust (Tennen et al., 2002), for not sufficiently differentiating hope from optimism (Aspinwall & Leaf, 2002), for dismissing the role of emotion and for deviating substantially from how people experience hope in daily life (Tong et al., 2010). Another theory that has been influential in many other studies comes from Herth, a professor in nursing studies (1992). She defines hope as 'a multidimensional dynamic life-force characterized by a confident yet uncertain expectation of achieving good, which to the hoping person, is realistically possible and personally significant' (Herth, 1992:1253). The

tool based on this theory, the Herth Hope Index, focuses on expectations, a positive feeling about the future and the social context of hope and is specifically designed to measure hope among patients during periods of illness. Furthermore, the Beck Hopelessness Scale developed by psychiatrist Beck (1974) has been used extensively within several academic fields and defines the absence of hope as 'a system of negative expectancies concerning [ourselves] and [our] future' (Beck et al., 1974:861). One last instrument that has gained importance over the past years is the Values in Action Inventory of Strengths, based on the work of Peterson and Seligman. Here, hope is mainly defined as positive psychological capital that helps people to transcend difficult circumstances. The measuring instrument developed to study hope in this context is very similar to those developed by Snyder (Peterson et al., 2007).

2.2.3 Existing meta-studies

The increasing number of theories and studies on hope have motivated several researchers to perform meta-analyses or reviews of hope research. A large proportion of these reviews focuses on research within health sciences. For example, Hammer and others (2008) investigate several studies on the experience of hope among sick and healthy people, yielding metaphors of hope such as specific hope, hope seen as a light on the horizon and hope seen as weathering a storm. Focusing on the experience of hope among family caregivers of persons with a chronic illness, Duggleby and others (2010) offer a conceptual framework with the following four themes: transitional refocusing from a difficult present to a positive future, dynamic possibilities within uncertainty, pathways of hope, and hope outcomes. Schrank and others (2008) conduct a similar meta-analysis on the definition and effects of hope within psychiatry and categorize the 49 definitions they find in the following seven dimensions: time, an undesirable starting point, goals, likelihood of success, locus of control, relations, and personal characteristics. Several studies have also been conducted within the field of psychology. For example, Alarcon and others (2013) analyse research on hope and optimism and show that the two are related but distinct concepts if they are measured empirically. Reichard and others (2013) systematically review studies on the effects of hope at work and indicate several positive work-outcomes related to hope. Within the field of anthropology, Kleist and Jansen (2016) identify two trends in the literature on hope: 'an emphasis on hopefulness against all odds and one on specific formations of hope and temporal reasoning'. Although there are several meta-analyses within the confines of a discipline, relatively few focus on multiple disciplines. One notable expectation is a study by Webb (2007), which attempts to disentangle the myriad of competing conceptions of hope from the twentieth century. Webb describes how different conceptions of hope can come to the forefront of different 'modes of hoping', including patient hope, critical hope, estimative hope, resolute hope and utopian hope.

2.2.4 The standard account of hope

Thus far, we have seen that there are many divergent approaches to defining hope. Several 'core elements', however, seem to be recurrent and can therefore be taken as a starting point in defining hope. The orthodox definition (Martin, 2013) or standard account (Meirav 2009) of hope states that there are two dimensions to hope: a *desire* combined with a belief about the *possibility of attaining* this desire (Day, 1969). According to this definition, the expected probability of attaining what one hopes for should range between what we believe to be highly improbable to highly likely but cannot contain something that is logically impossible or certain to happen[2]. Although most, if not all, theories of hope would agree that the orthodox definition offers two *necessary* conditions for hope, it is much more questionable whether they are also *sufficient* to describe what hope is. Certainly, when considering the complex experience of hope, the standard account seems to be quite scant. Although it fits within virtually all theories, it also leaves out many elaborations, nuances and discussions, for example, whether hope is experienced individually or socially, whether hope feels positive or negative, whether the object of hope should be important or not, whether hope focuses on a specific goal or is a more general feeling, whether hope is focused on the immediate future or not, whether hope is active or passive, or whether hope mainly manifests as emotion, cognition or behaviour.

2.2.5 The current study

Adopting the premise put forth by Webb (2007) that hope can be experienced in different modes and that different (and sometimes even contradictory) characteristics of a hopeful state will be experienced in different contexts, this study aims to offer an overview of these characteristics and how they are related, without assuming that one characterization is necessarily better than another. We assume that all descriptions of hope that are at least somewhat prevalent within at least one scientific discipline have relevance to them and should therefore be considered when giving an overview of the central domains of hope from an interdisciplinary perspective. Even if not all characteristics of hope are obvious in each and every context or study, it is important for those interested in the topic to be aware of perspectives besides of their own. This method will not only help to develop a broader understanding through an awareness of the differences and similarities between perspectives but will also help to position the specific approach adopted relative to others.

2 It is important to note that this concerns a hoper's perception of reality, rather than reality per se. We can certainly hope for something we think is possible, until we discover that actually, it isn't (Bloeser & Stahl, 2017).

2.3 METHODS

To analyse how hope is characterized in different disciplines, a phenomenographic approach is adopted. Phenomenography is a relatively new research method that aims to explore different ways of experiencing or understanding a particular phenomenon (Åkerlind, 2015). The approach is based on a non-dualistic ontology that assumes that a phenomenon neither exists solely as an objective, universal concept in the outside world nor is solely constructed by people's interpretations in specific contexts. Rather, the phenomenographic approach assumes that a phenomenon is constituted by the relation between the object and different experiences of that object. Thus, although each experience of hope is different from another, these interpretations are related through the commonality in the object. As such, a phenomenon such as hope can be represented by different but logically related categories of description. The aim of phenomenography is to offer not only a set of different interpretations but also a 'logically inclusive structure relating the different meanings' (Åkerlind, 2012:323). The approach is particularly appropriate in this study because it can elucidate the characteristics attributed to hope in different disciplines and offer an overview of how these different perspectives are related.

2.3.1 Data selection

To provide a rich, interdisciplinary overview of perspectives, the sources for this study were checked according to eligibility criteria in four stages, as depicted in figure 2.1[3]. First, in Web of Science, all articles that had the term 'hope' listed as an author keyword were selected, which yielded 1,936 documents[4]. To this, three seminal studies that are very influential in the current research on hope, were added (Beck, 1975; Herth, 1992; Snyder, 2002), resulting in 1,939 sources. Subsequently, the twenty most-cited articles within the fields of economics and business studies, environmental studies, health studies, history, humanities, philosophy, political science, psychology, social science, theology and youth studies were chosen[5]. These fields were selected because they included many articles on hope, offered diversity in perspectives and were expected to be most relevant concerning the topic. This yielded 652

3 The full PRISMA protocol for systematic reviews is available upon request from the first author. See Appendix 2.2 for a recap of the selection process.

4 These sources were collected in December 2017.

5 These more general fields were comprised of several more specific categories. The search strategy comprised a search for any publication in the English language that has the author keyword hope, within one or the related fields, similar to the search string '(AK=(hope)) AND LANGUAGE: (English)
Refined by: WEB OF SCIENCE CATEGORIES: (PSYCHOLOGY MULTIDISCIPLINARY OR PSYCHOLOGY CLINICAL OR PSYCHOLOGY SOCIAL OR PSYCHOLOGY APPLIED OR PSYCHOLOGY EXPERIMENTAL OR PSYCHOLOGY OR PSYCHOLOGY PSYCHOANALYSIS OR PSYCHOLOGY DEVELOPMENTAL OR PSYCHOLOGY EDUCATIONAL)'. The complete search string can be found in the PRISMA protocol, which is available upon request from the first author.

articles in total[6]. Then, articles were selected if they had a substantial focus on the concept of hope, were scientifically rigorous, and did not solely make use of existing instruments without adding any new interpretation to the theories they were derived from (i.e., the Adult Trait Hope Scale (Snyder et al., 1991), the Values In Action Inventory of Strengths (Peterson & Seligman, 2004), the Herth Hope Index (Herth, 1992), the Beck Hopelessness Scale (Beck et al., 1974), and the Goal Specific Hope Scale (Feldman et al., 2009)). A substantial focus on hope means that articles were excluded if hope was only mentioned a few times or if the article focused on a different type of hope, such as 'the Cape of Good Hope' or the 'the HOPE housing project'. Scientifically rigorous means that opinion articles without references, bachelor's and master's theses and articles that were not peer-reviewed were excluded. The reason for excluding articles that solely used existing scales is that these articles would not offer substantial new perspectives in addition to the seminal theories on which they are based, which were already included in the analyses. This process of exclusion yielded a total of 259 articles. At this stage, none of the articles from the field of history could be retained; therefore, this discipline was dropped from the analysis, and ten disciplines remained. Last, the most relevant articles were selected based on the scope of the article and the relevance of the topic (i.e., the characteristics of hope). Here, scope means that the articles that covered more information, such as reviews or meta-analyses, were prioritized. Articles with a very specific population or location were excluded. Relevant topics were considered those that focused explicitly on the definition or characteristics of hope. Altogether, 66 articles on the topic of hope from ten different disciplines were included in the overview[7]. Of these articles, 4 are from the field of economics and business, 7 are from environmental studies, 12 are from health science, 3 are from humanities, 8 are from philosophy, 5 are from political science, 10 are from psychology, 8 are from social sciences, 3 are from theology, 3 are from youth studies and 3 are the seminal studies by Beck (1975) Herth (1992) and Snyder (2002).

Despite including 66 articles on hope in this analysis, potentially important and insightful documents might have been overlooked. However, in addition to the unfeasibility of analysing all articles, books and other outlets ever written on hope, the selection of articles for this study was not designed to be exhaustive within disciplines but to incorporate a sufficient diversity of perspectives across disciplines to offer a reasonably representative interdisciplinary overview.

6 The high number of documents is due to the fact that if the least-cited article of the twenty was cited as often as the subsequent, article, then all articles with the same number of citations were selected.

7 A full list of the used articles can be found in appendix 2.1.

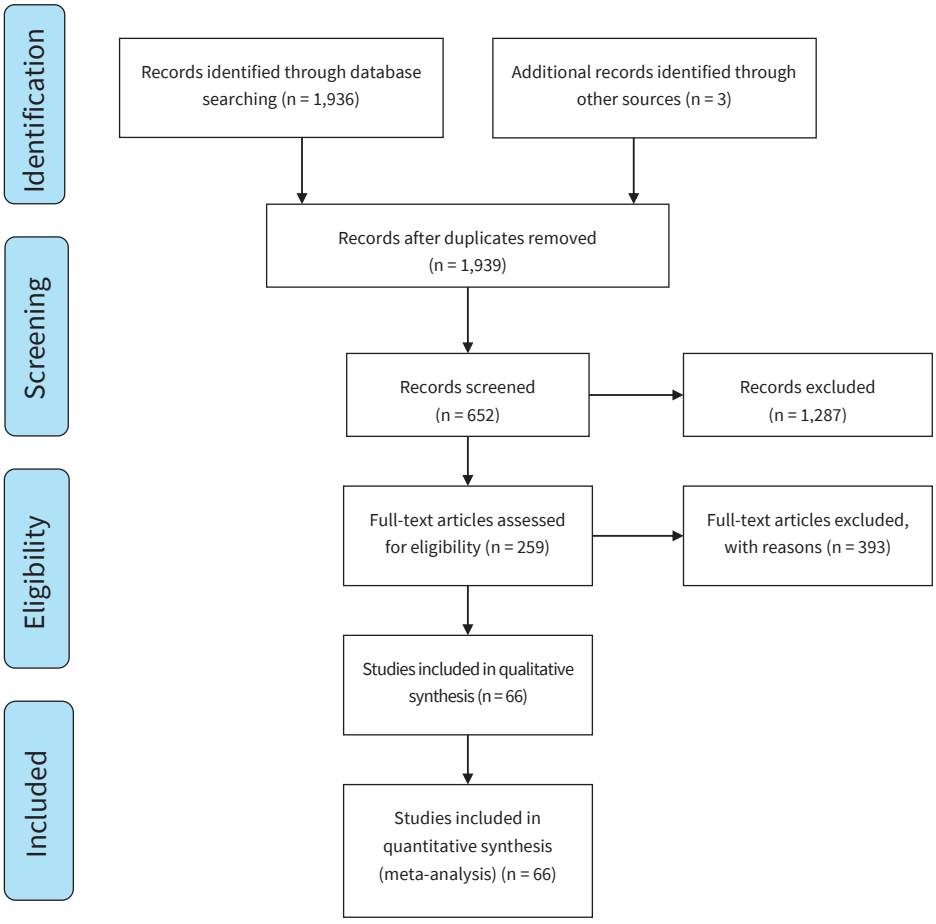


Figure 2.1 | PRISMA 2009 Flow Diagram

2.3.2 Data management & analysis

The initial analysis was performed using Atlas.ti (8.2.32.0) (2018), a workbench for the qualitative analysis of large bodies of textual data. Using this program, all parts of the texts were noted that offered either a definition of hope, descriptions of the characteristics of the concept, or clear assumptions about the author's interpretation of the definition or characteristics of hope. These quotes were all described with several central themes. After an initial trial round of coding using ten randomly chosen articles, the first coding themes were

established[8]. Subsequently, all articles were analysed using the same themes. In total, 1,814 pieces of text were coded[9]. Any citations that did not match an existing theme were coded as 'other'. After the first round of analyses was completed, all citations coded as 'other' were again analysed and assigned to new themes if the same theme was mentioned in at least three separate documents. Out of 322 quotes labelled as 'other', 68 could not be matched to a sufficient number of similar quotes to create a new theme. These quotes were therefore not included in the analysis.

2.3.3 Reliability

Up to this point, all analyses were performed by one researcher. To assess the reliability of the analyses, two checks were performed. First, two researchers, who had not seen or read the articles before, defined themes for lists of five quotes that were deemed to be related to one theme by the first researcher. No major differences arose between these themes. Any minor differences were discussed, and if necessary, adjustments were made to the theme description. Second, the second and third researchers were offered a list of quotes from five articles and asked to assign themes to these quotes. In 69% of the cases, at least one of the themes assigned to a quote overlapped between researchers, whereas in only 14% of the cases, multiple themes overlapped. Although this may seem a relatively low amount of overlap, we should keep in mind that at this point, 28 different themes were used to label sometimes very complex pieces of text. Moreover, discussion between researchers showed that most, if not all, discrepancies followed from a different focus within the text, rather than disagreement about the content of the text. Furthermore, since these themes were used to describe one concept, they naturally shared some overlap. Even though the themes appeared not to reflect all topics discussed perfectly, the topics that were coded were reflected accurately by the themes. Additionally, the labelling of quotes was not aimed at perfectly or exhaustively reflecting all themes present in the text but at offering a wide variety of common interpretations of hope and the themes that bind these interpretations. For these reasons, we would say that the coding reflected the different themes in these texts relatively well.

2.3.4 Synthesis

To analyse how different characteristics and experiences of hope are related, the 43 themes were listed and then clustered according to shared meaning and combined in an initial scheme by the first researcher. This scheme was evaluated by two other researchers by trying

8 The coding themes at this point were the following: Active/passive; Desire/wishing versus acceptance; Emotion/cognition; Future/past; General/specific; Goals; Good/bad; Hopelessness/despair; Individual/social/societal; Meaning/value; Motivation; Multidimensional; Nature/nurture; Object of hope; Other; Pathways; Politics/power; Process/context; Reality/expectations; Religion; Spirituality/transcendence; Trust; Unpredictability; Virtue/vice; Functions of hope; Measuring hope; Related terms; Sources of hope

9 The number of citations per source can be found in Appendix 2.2.

to correctly identify where they thought all themes should fit within the scheme. This discussion led to some adjustments. Several new schemes were proposed and discussed until a consensus was reached about the best way to portray the general relations between the clusters of description. To do so, several new subcategories were created within the themes, and others were combined or somewhat revised. Subsequently, the quotes related to the themes within a cluster were reread to come to a thorough description of each cluster. Finally, all the themes within the clusters were re-evaluated and combined or further categorized if necessary until only several central themes remained within each cluster. The complete classification matrix contains 7 clusters, 39 themes and 6 subthemes and will be discussed in detail in paragraph 5.1.

2.4 RESULTS

The results of this study are based on extensive literature but can be presented in a relatively simple classification matrix, which will be discussed in its entirety in chapter 5. In this chapter, we will explain step-by-step how this matrix is constructed.

2.4.1 Two approaches

A first and overarching categorization that can be made regarding the literature on hope is based on a differentiation between two approaches: one is understanding hope as an *individual experience* and the other is understanding it as a comprehensive *context-dependent process*. The first approach aims to offer a concise definition of what a person is experiencing when she is hopeful and describes only the most necessary characteristics of this experience. The second approach is based on the assumption that hope is a process without a clear start or end, which is inherently tied to its (social) context. Therefore, the followers of this approach assume that to understand what hope is, we also need to know what gave rise to it, what its objective is, how it affects us, and in which context it exists. These two approaches are not mutually exclusive, and many thinkers offer a theory of hope that is a combination of the two. However, in defining the characteristics of hope, the distinction is valuable, especially since these perspectives can lead to quite different conclusions; for example, when discussing whether hope is individual or social, active or passive, and virtuous or not, while followers of the first approach will state that related issues to hope, such as trust or action tendencies, are not truly part of the hoping experience and should therefore not be taken into consideration, the followers of the second approach would consider these issues as being fundamental to our understanding of what hope truly means to us.

2.4.2 The first approach: Hope as an individual experience

Since the first approach to defining hope is interested in isolating the most essential characteristics of the individual experience of hope, these theories usually look for the smallest amount of necessary and sufficient building blocks. Although perspectives vary, most centre on the themes of *desire*, an *estimate of the probability* of attaining this desire and a *response to the uncertainty* in attaining what we want[10].

Desire

Although hoping can be distinguished from wishing, a wish or *desire* is usually considered as a prerequisite for hope (Day, 1969; Eaves et al., 2014). This desire can be either positively or negatively formulated, i.e., as something that we want to achieve or a currently negative situation that we want to leave (Webb, 2010). Imagining possible futures and the mental act of anticipating desired outcomes are important characteristics in this respect and are often taken understood to distinguish hope from simple wishing (Drahos, 2004; Eaves et al., 2014). Hope is about creating a narrative, a plot that makes sense of our developments by creating a link between our current situation and the future (Smith & Sparkes, 2005). This 'active desiring' is a creative process that allows us to envision alternative futures, set goals and brace for possible negative outcomes (Ludema, Wilmot & Srivastva, 1997; Elliot, 2007). Hope is about choosing to focus on the possible good that might happen, despite uncertainties (Kadlac, 2015; Stevenson & Peterson, 2016; Hornsey & Fielding, 2016). Imagination allows us to explore possible future developments and to place our desires within a broader context of possibilities[11].

Probability estimate

Although most, if not all, descriptions of hope include an *estimation of the probability* of attaining one's desires, there are quite contradictory ideas about how these probability estimates function, i.e., whether a hoped-for goal should be perceived as being likely or unlikely to happen. On the one hand, there are theories that state that hope is likely to arise when expectations are positive (Schwartz & Post, 2002; Schrank, Stanghellini & Slade, 2008; Hobbs, 2013). In this case, it is assumed that realism differentiates hope from mere wishing or optimism and that hope should be focused on achievable goals (Benzein & Saveman, 1998; Bland & Darlington, 2002; Weingarten, 2010; Edera, 2015). Here, it can be stressed that unrealistic or false hopes are at best useless and at worst dangerous since they increase the likelihood of disappointment and distress when hopes are not realized, and they are easy to take advan-

10 Perhaps not surprisingly, these descriptions have much overlap with the standard account of hope, i.e. hope as desire for an uncertain goal.

11 It is important to note that desire is not the same as the object of hope; the former is the experience of wanting, while the latter the thing that we desire and exists in the outside world. The object of hope will be discussed in more detail in paragraph 4.4.

tage of (Wiles, Cott & Gibson, 2008, Webb, 2010). Moreover, it can be assumed that positive expectations should lead to a higher 'goal commitment', whereas unrealistic hopes will be more passive[12] (Hornsey & Fielding, 2016). On the other hand, some theories posit that hope actually flourishes when it is 'against all odds' (Kadlac, 2015; Kleist & Jansen, 2016). People can be quite unrealistic in their hopes, sometimes even deliberately, because this helps them to deal with reality, for example, during illness or other misfortune (Benzein, Norberg & Saveman, 2001; Eaves et al., 2014). It could even be assumed that hope is a logical consequence of relatively low expectations, since it 'arises in situations where we understand our own agency to be limited with respect to the things or conditions that we desire. If our own agencies were not so limited, we would not hope for what we desire; we would simply plan or act so as to achieve it' (McGeer, 2004). Moreover, some theories posit that hope *should* be against all evidence, as hope can be a transformative power in cases where outlooks on the future are grim, for example, in repressive or unjust societal contexts (Drahos, 2004; Webb, 2010). However, most theories seem to agree that hoping for something that is (virtually) certain (not) to happen does not make sense.

Experiencing uncertainty

Since hope is inherently about things that we cannot predict, dealing with *uncertainty* is an important component of many theories of hope (Webb, 2007; Ojala, 2012; Kadlac, 2015). This means that hope is not about mere wishing or wanting but about choosing to focus on the possibility of attaining one's desire while acknowledging that it might not happen (Kadlac, 2015). Following this line of thought, expressing hope becomes a way of expressing awareness of this uncertainty; that is, saying that you hope for an event implies that you realize it might not happen (Elliot, 2007). Several theories centre on the idea that cultivating constructive hope is about finding the 'right' balance between belief in desired possibilities and an understanding of the chance of failure (Schrank, 2002; Cantor, 2006; Elliot, 2007; Leung et al., 2009). Such a balance should allow individuals to be motivated to pursue their goals while remaining realistic enough to overcome disappointment and resist manipulation by others (Snyder, 2000a; Eaves, Nichter & Ritenbaugh, 2016; Kleist & Jansen, 2016; McCormick, 2017).

At times when uncertainty plays a large role in the hoping experience, hope appears to become much more process-focused. For example, when hope transcends our current understanding of reality, i.e. when we hope for some kind of positive future without knowing exactly how this future will look, it requires a fundamental openness to the future (Webb, 2010). Quite often, this means that the hoper experiences that being in the process of moving towards some kind of positive state makes sense and has meaning in and of itself, even if they do not know the exact goal (Webb, 2007; Eaves et al., 2014). Taking such a stance grants a

12 Since hope depends on a subjective understanding of reality, it could also comprise what is deemed unattainable by others (Benzein, 2001; Pechenino, 2015).

certain flexibility to hoping, since it means that disappointment on one specific goal does not imply that hope is lost completely. Rather, hope can focus on new goals that fit within a larger project or on finding new meaning within the current situation (Hammer, Mogensen & Hall, 2009; Eaves et al., 2014). It is only when one loses a sense of openness to the future, when no possibilities seem to exist at all, that one comes to despair (Antelius, 2007).

Layers of hope: Emotion, cognition and behaviour

Most theories state that hope is a multidimensional concept, comprised of, for example, emotional, cognitive, motivational, social and identity-related components (Snyder, 2000; Folkman 2010; Ojala, 2012; Webb, 2013). The existence of such a '*multi-layered' hopeful experience* could explain why it is possible in some instances to maintain hope on one level while simultaneously experiencing decreasing hope or even despair on another level or to have contradictory hopes (Weingarten, 2010; Eaves et al., 2014; Jansen, 2016). For example, even when hearing bad news about the chances of attaining one's goals and while fully understanding how this affects us, we might still *feel* hopeful. In practice, different degrees and expressions of these components of hope can generate quite various and very specific types of hope[13] (Kleist & Jansen, 2016). Considering this diversity of ways in which hope can be experienced, some thinkers question whether hope is truly one experience or whether it is actually a complex 'syndrome' or a collection of thoughts, feelings, actions and expressions (Ojala, 2012, Eaves, Nichter & Ritenbaugh, 2016). However, there is little agreement about which components exactly make up the 'hopeful syndrome'. Here, we consider the three components that are, by far, mentioned most often, namely, cognition, emotion and motivation.

Cognition is an important part of many theories of hope. Mentioned often in this regard is that hope comprises an assessment of the future and our chances of attaining our desires (Drahos, 2004; Kadlac, 2015; Luthans & Youssef, 2007; Snyder, 2000). Here, hope is regarded as the mental act of anticipating and imagining a future situation and as such serves as a psychological resource, as it helps us prepare for and address changes in our lives (Luthans, 1997; Drahos, 2004; Webb, 2010). Moreover, it can be stressed that hope usually does not come and go without our conscious deliberation. Contrary to strong physiological emotions such as fear, which can be processed rather unconsciously, it could be said that hope virtually always requires at least some conscious cognitive activity, such as creativity and flexibility in dealing with the information at hand (Bar-Tal, 2001). Additionally, the cognitive component of hope surfaces in its problem-solving focus. Hope is at least partly about constructive thinking, i.e., taking in information and actively using it to achieve our goals (Ojala, 2012). It is

13 That is, hoping for good weather during a picnic, to obtain a diploma, to recover from illness, or that a violent societal conflict will end, are very dissimilar experiences because they score quite differently on the components that make up hope.

therefore perhaps not surprising that strongly cognitive hopes are often seen as being more realistic than mostly emotional ones (Hobbs, 2013).

However, there are also several arguments to be made that indicate that hope is mostly an *emotion*. First, some writers stress that thoughts about achieving a desired goal are merely sources of hope and not part of hope itself. According to them, hope is about the positive emotion that accompanies these thoughts (Boukala & Dimitrakopoulou, 2017; Hornsey & Fielding, 2016). Others do not preclude hopeful thoughts as part of the experience but do state that the way in which hope is usually expressed indicates that the emotional component is much more important (Leung et al., 2009). These writers, for example, stress that hope can be hard to control, has a feeling tone, involves appraisal and often motivates behaviour, which are all characteristics of emotion (Cohen-Chen et al., 2014; Poels & Dewitte, 2008; Scioli et al., 2011). Moreover, it is sometimes stressed that hope cannot be purely or even mainly cognitive, since it often covers issues that cannot be fully known and require a great deal of faith in things that stretch beyond the strictly rational (Ludema, Wilmot & Srivastva, 1997).

Another component of hope that is often mentioned is its *motivational force*. Some thinkers state that hope is fundamentally active, since it involves thinking about possible pathways to achieving one's goals and how to sustain this action (Snyder, 2000; Schwartz & Post, 2002; Stevenson & Peterson, 2016; Kleist & Jansen, 2016). Others stress that hope can and sometimes even should be quite passive. The things we hope for are uncertain and not always within our control, so it is sometimes wiser to adopt a stance of humility and wait and see (Halpin, 2001; Braithwaite, 2004; Edera, 2015). However, most theories are somewhere in between; they state that although hope is not necessarily active, it does imply a 'readiness' to act (Benzein & Saveman, 1998; Webb, 2007; Poels & Dewitte, 2008; Pechenino, 2015). Hope indicates that 'our interests, our concerns, our desires, our passions-all of these continue to be engaged by what can be; hence, we lean into the future ready to act when actions can do some good' (McGeer, 2004). This motivational force is especially apparent when it helps people to persevere in difficult circumstances or in the absence of certainties (Smith & Sparkes, 2005; Zigon, 2009; Ojala, 2012; Reichard et al., 2013; Webb, 2013; Hornsey & Fielding, 2016).

Therefore, it is quite plausible that the 'hopeful syndrome' entails at least cognitive, emotional and motivational components. Moreover, there are several other components that are perhaps not always present but can still be important in understanding some expressions of hope. For example, hope can have a strong spiritual component, can be a virtuous act, and can be about mastery or social interaction (Ludema, Wilmot & Srivastva, 1997; Hammer, Mogensen & Hall, 2009; Scioli et al., 2011; Ojala, 2012; Kadlac, 2015; Griggs & Walker, 2016). There is probably no way to definitely determine which components of our experience truly are part of hope, but it seems plausible that it is never just one of these. Thus, hope is the complete process of interwoven moments of thinking and feeling, or a 'unifying and grounding force of human agency' (Drahos, 2004; McGeer, 2004; Webb, 2010).

2.4.3 The second approach: Hope as a context-dependent process

While the first overarching approach to defining hope puts much effort in delineating what is and is not hope, the second approach seems to be based on the idea that it is practically impossible to pinpoint where hope starts and ends since it is a *process* without a clear beginning or end, and because it is inherently tied to its *social context*. The aim of this approach is to understand which parts of the context and process of hope fundamentally alter its meaning.

Hope as a process

Similar to general emotion in appraisal theories, hope can be perceived as a process, i.e., as an episode involving several changing components, such as appraisal, motivation, physiological responses, behaviour and feelings. Moreover, each such change can provide feedback to the other components (Moors et al., 2013). As such, hope becomes a cyclical process; how we evaluate our circumstances might affect how we feel, which in turn can spark motivation, which again changes how we perceive our situation. Rather than an emotional state, which is relatively static, defining hope as a process means that what hope entails changes over time, that the experience of hope can influence itself, and that it is therefore very difficult to mark a start and end to it (Elliot & Olver, 2007).

In the literature on hope, we do indeed find several mentions of the cyclical character of the experience. For example, when followed over time, people report decreases and increases in different dimensions of hope. Since hope involves a process of the 'appraisal of possible outcomes, cognitive analysis for maintaining and achieving hopes, and goal pursuit' (Leung et al., 2009), we constantly adjust our hopes to our perceived chances of success (Luthans & Youssef, 2007). This is especially apparent among patients with long-term illnesses such as cancer or chronic pain; here, hope can change from being wishful, small and utopian to realistic, large and practical in a relatively short time frame, based on experiences, expectations and the possibility of a cure (Benzein, Norberg & Saveman, 2001; Eaves et al., 2014; Eaves, Nichter & Ritenbaugh, 2016). Additionally, hope depends on the amount of time that people have had to assess and cope with their situation (Folkman, 2010; Wiles, Cott & Gibson, 2008) and on the amount of time that people have had to better understand their own desires (Kadlac, 2015). Especially during difficult times, people can intentionally maintain hopes that they know are unrealistic because they need something to hold on to. Given enough time, such wishful hoping can transform into accepting reality, if people can come to terms with it or if they start to get attached to different, more attainable hopes (Eaves et al., 2014). Moreover, what we hope for is strongly influenced by the stories or narratives people construct about themselves, their surroundings and their hopes (Antelius, 2007). Similarly, such developments can occur on a social or societal level. The stories we tell about our (shared) history can instil discontent about our current situation and a shared longing for a better future. Politicians, for example, often use these types of narratives to spark societal change by appealing to shared hopes (Bar-Tal, 2001; Duggleby et al., 2010; Cohen-Chen et al., 2014;

Kleist & Jansen, 2016). As such, our constantly changing history influences how we perceive ourselves and what we hope for (Esteves et al., 2013; Hammer, Mogensen & Hall, 2009).

Hope in context

Although hope can often be a highly personal experience centred around personal responsibility and convictions about the world and our chances of attaining what we want (Drahos, 2004; Hammer, Mogensen & Hall, 2009; McGeer, 2004; Snyder, 2000a), hope literature also often discusses the impact of our direct social surroundings, such as friends and family, but also more distant influences, such as institutional, political, cultural and economic contexts. Such social contexts appear to play a role in different parts of the hope process. Other contexts can be a *source* of hope, for example, by teaching us to be hopeful, by helping us achieve our goals, or by ensuring a sense of meaning, trust and self-worth (Benzein & Saveman, 1998; Elliot, 2007; Du & King, 2013). Our sense of hope can have many *effects* on others, for example, in giving others hope or comfort (Ludema, Wilmot & Srivastva, 1997; Boukala & Dimitrakopoulou, 2017). However, we can also *experience* shared hopes when goals are shared and people engage with these hopes together (Weingarten, 2010; Torres & Tayne, 2017). Moreover, when asked about their hopes, a substantial portion of people report that others, or their relation to others, are the *object* of their hopes (Bland & Darlington, 2002; Howell, Bailie & Buro, 2015).

Nonetheless, hope is often not regarded as a purely 'social emotion', in the sense that its primary function is not always to serve a social function (Hareli & Parkinson, 2008). However, the reason the social dimension is often deemed to be so important in understanding what hope is seems to lie in the understanding that the process we go through is inherently connected to others; others influence what we deem possible, desirable, how we define ourselves and our future, and therefore how we hope. This indicates that, even if hope itself might often be experienced individually, we would have only a limited understanding of hope if we were to disregard this social context completely.

The classification matrix

How do we synthesize the idea that hope can encompass a broad, context-dependent process, while some theories choose to focus on the individual experience? In our classification matrix, we assume that the process of hope, i.e., the development of different components of a hopeful experience, and the context of hope, i.e., the individual or internal and social or external developments, make up two axes along which we can classify different characteristics of hopeful experiences.

First, regarding the process component, we differentiate between the *sources* of hope, the *experience* of hope and the *effects* of hope. The distinction between these stages is not always completely clear-cut; as discussed previously, there are many relations and feedback loops between these phases, leading to border cases and cross-categories. However, here, we try to make a distinction between the experience of hope itself on one side and the events that cause hope to develop and the effects that hope have on the other. We include these sources

and effects because we assume that they fundamentally affect how we understand the hope process that they become part of.

Second, we divide the social-context component into *external* and *internal* processes of hope. While the internal component here refers only to the individual[14], the external component is much more comprehensive; it comprises a wide range of contexts such as friends and family, society at large, politics, culture, etcetera[15]. The reason for combining these contexts into one category is that, on top of the unfeasibility of creating different categories for each context we live in, these external processes often share important commonalities compared to individual experiences, in that they are usually less within our control, cannot always be fully comprehended, can be much more abstract, and to a greater degree, require trust in some unknown.

We combine these two categorizations since the different stages of the hoping process take place in all types of social contexts and, conversely, different social contexts go through several stages of the hoping process. Together, this results in both *internal* and *external sources* of hope, *internal* and *external experiences* of hope, and *internal* and *external effects* of hope. We therefore take the *individual experience* of hope, which is the main focus of the first approach to defining hope, to be one part of this classification matrix, since it relates only to one moment in the hoping process and one social context (see Table 2.1).

Last, one important component of hope falls outside of these descriptions, namely, the *object* of hope, i.e., what we hope for[16]. Since this object lies outside the experience of the hoper themselves, it does not lend itself to be analysed as a lived experience and is therefore placed outside of the axes. However, since it is often regarded as fundamentally affecting how we can define hope, it is still included in the classification matrix.

Table 2.1 | First step in the classification matrix of hope. Two approaches: hope as an individual experience (1) and hope as a context-dependent process (2)

		Hope as context-dependent	
		External	Internal
Hope as a process	Sources of hope		
	The experience of hope		*The individual experience of hope*
	Effects of hope		
The object of hope			

14 In this article, we refer to this category as either internal, individual or personal. Although these terms have slightly different connotations, we use them to refer to the same category.

15 Similarly, in this article, we refer to this category as external, social or shared hope.

16 Although the experience of hope itself entails desire (as will be discussed in more detail in paragraph 4.3.1), we differentiate between the feeling of desire and the object of that desire as something that can be analysed by itself.

2.4.4 In detail: Sources & effects of hope and social experience

Thus far, we have discussed the two overarching approaches to defining hope. On the one hand, there are theories that try to discern hope's most central elements, and on the other hand, there are theories that treat hope as a broad, contextualized process. One approach is not necessarily better than the other, but if we take the second approach seriously, then solely focusing on the individual experience of hope at all times would limit our understanding. Here, we will therefore further focus on the elements of hope that follow from defining hope as a context-dependent process, i.e., *internal* and *external sources*, *external experience*, and *internal* and *external effects*. We will give several examples of these categories and cover the themes that are discussed most often in the literature on hope, but we do not aim to be exhaustive; there are many possible sources, experiences and effects of hope. However, we aim to discuss only those components that fundamentally alter what it means to hope.

Internal sources

Under the category 'internal sources' of hope, we gather all feelings, traits and circumstances that take place within and originate from an individual's personal experience that can cause someone to be hopeful or increase the strength of their hope.

First, several theories state that hope is an inherent, *biological* human tendency, since humans are always searching for improvements to their circumstances (McGeer, 2004; Webb, 2010; Scioli et al., 2011). *Dissatisfaction* plays an important role in this regard, as it signifies that things are not (yet) how we want them to be, leading to action or at least hope for change (Webb, 2010). Nonetheless, it seems that this innate tendency to hope can be thwarted, especially when *previous experiences* have led to (repeated) disillusionments, thereby making people less prone to be hopeful (Edara, 2015). Experiencing repeated success, on the other hand, can encourage hope (Ojala, 2012; Pecchenino, 2015).

Since hope is about achieving possible but not certain events, assumptions about our own abilities are very important. Indeed, several writers state that confidence, self-worth and personal control are important, perhaps even necessary, for developing hope (Folkman, 2010; Krause & Hayward, 2015; Pechenino, 2015). Moreover, other *personal traits* can influence how likely a person is to be hopeful. What is deemed possible to achieve, for example, depends on personal characteristics, such as age, gender, health, disability, etc. (Leung et al., 2009; Pecchenino, 2015). Also mentioned particularly often in this regard is one's personality, specifically traits such as courage, humility, modesty, serenity, security, humour, malleability belief (i.e., the belief that reality can be influenced) and locus of control (i.e., the belief that we have personal control over our environment) (Benzein & Saveman, 1998; Vilaythong et al., 2003; Webb, 2010; Du & King, 2013; Cohen-Chen et al., 2014; Kadlac, 2015).

Although some writers state that hope can be sparked by temporary positive emotions or mood (Bland & Darlington, 2002), others stress that hope is a complex and at least partially cognitive phenomenon, meaning that hope requires creative, conscious and rational

thinking (Ludema, Wilmot & Srivastva, 1997; Bar-Tal, 2001; Weingarten, 2010; Cohen-Chen et al., 2014) and that hope therefore can be a deliberate *choice*, i.e., choosing to focus on the possibility of a positive outcome rather than that of a negative outcome (Bland & Darlington, 2002; Weingarten, 2010). Hoping itself can be considered a *virtuous* act if people choose to 'equip' themselves with it as a resource to keep them pursuing what is right, even in the presence of uncertainties and disappointment (Zigon, 2009; Weingarten, 2010; Insole, 2015).

Table 2.2 | Internal sources of hope in the classification matrix

		Hope as context-dependent	
		External	Internal
Hope as a process	Sources of hope		*Biology* *Dissatisfaction* *Personal traits* *Choice* *Past experiences* *Virtuousness*
	The experience of hope		
	Effects of hope		
The object of hope			

External sources

External sources of hope can encompass all types of events, circumstances and influences that exist outside of an individual. This domain can thus refer either to a close friend or family member, a work environment, societal institutes, a god or a worldwide development such as globalization or climate change. Here, we discuss some components that are mentioned particularly often in the literature.

Our direct *social circle* can be very important in determining our hopes, for example, by teaching us to and 'infecting' us with hope, especially during childhood (Schwartz & Post, 2002; Snyder, 2000a; Webb, 2013), by providing a constructive and safe environment in which hope can develop (Benzein & Saveman, 1998; Leung et al., 2009; McGeer, 2004; Schwartz & Post, 2002) and by providing feedback on how we are functioning and how worthwhile our hopes are (Eaves et al., 2014; Ludema, Wilmot & Srivastva, 1997; Pecchenino, 2015). It is therefore perhaps not surprising that *education* is often mentioned as an important source of hope. During youth, we can learn that our agency may be limited but that it is still worthwhile to pursue what we deem to be valuable (McGeer, 2004; Webb, 2007; Kerret, Orkibi & Ronen, 2016). Moreover, similar to having trust in ourselves, hope can originate from *trust in others* and their abilities to help us achieve our hopes, as this trust offers support, safety and confidence, even in times of disillusionment or lack of personal control (Ludema, Wilmot & Srivastva, 1997; Stevenson & Peterson, 2016), and as it undergirds the fundamental feeling that life can be positive (Benzein & Saveman, 1998; Hammer, Mogensen & Hall, 2009).

Culture also plays an important role in this regard, as hope is valued differently in varying cultures and children thus learn different ideas about the importance of hope (Smith & Sparkes, 2005). For example, in Catholic contexts, maintaining hope is considered very important, sometimes even more important than conveying a sad (but real) truth (Toscani & Maestroni, 2006). In Asian cultures, hope is often about what is attainable or reasonable rather than what is ideal (Wang, Joy & Sherry, 2013). Western cultures, on the other hand, seem to value optimism and hope a great deal by making hopeful expressions very infectious and sometimes even somewhat mandatory (Eaves, Nichter & Ritenbaugh, 2016).

Furthermore, well-functioning *societal institutes* such as judicial systems, police forces, national governments or scientific institutes can be important prerequisites for developing as well as maintaining hope, as they offer the required safety and societal structure to live a good life and attain personal and societal progress (Braithwaite, 2004; Drahos, 2004; Stevenson & Peterson, 2016). *History* plays an important role in this regard. Experiencing repeated disappointment of hopes, for example, during intractable conflict, can create apathy, hopelessness and distrust (Cohen-Chen et al., 2014). Moreover, this is also a matter of *politics*, since hope is usually not equally distributed in society, i.e., some groups, such as minorities or disadvantaged groups, are offered less hope by their surroundings (Kleist & Jansen, 2016). At the same time, poverty or deprivation means that solutions that claim to offer hope are in great demand (Drahos, 2004).

Additionally, as *work* is an important part of most people's lives, the organizations we work in can greatly impact the hopes that we experience. By offering opportunities to grow and uphold a corporate culture of fairness, employees are more likely to develop hopes for themselves and the company at large, which will in turn affect their performance (Reichard et al., 2013; Schwartz & Post, 2002).

Especially in cases where the answer to one's hopes cannot easily be found in either oneself or in one's direct or indirect environment, a *personal faith system* can become an important source of hope (Eaves, Nichter & Ritenbaugh, 2016). Such a faith can be but does not need to be religious (Scioli et al., 2011). Rather, such faith is about having 'affective, normative, spiritual, and relational resources that are typically excluded from the process of knowing' and therefore creating a deep trust that things might work out well in the future without requiring direct proof (Ludema, Wilmot & Srivastva, 1997; Bland & Darlington, 2002; Toscani & Maestroni, 2006).

Table 2.3 | External sources of hope in the classification matrix

		Hope as context-dependent	
		External	Internal
Hope as a process	Sources of hope	*Social network* *Education* *Trust* *Culture* *Societal institutes* *Politics* *History* *Work* *Faith system*	
	The experience of hope		
	Effects of hope		
The object of hope			

Social experience of hope

When individual hopes are shared by a number of people, often in response to societal or political developments, they can become a 'public', 'social' or 'shared' hope (Bar-Tal, 2001; Drahos, 2004; Atwater, 2007; Elliot & Olver, 2007; Weingarten, 2010; Kleist & Jansen, 2016). Such social hopes often rely on the same components as the individual experience of hope, i.e., desire, a probability estimate and uncertainty, although there are also some differences.

First, *shared desire*, which is based on collective visions and imaginations of what makes a meaningful and dignified life, can arise within a small group of people, such as a family, but can also arise at a societal level when a shared (national) history of images, ideals, values and 'ultimate concerns' affect how we think about life and progress (Kleist & Jansen, 2016; Ludema, Wilmot & Srivastva, 1997). For example, metanarratives, which cover recurring themes in political, philosophical, cultural discussions, can greatly influence what large groups of people strive for. This is illustrated by modernist metanarratives of the twentieth century, which attached great value to progress, agency and control over our own lives. This way of thinking greatly influenced how we now think about hope for wealth, health and wellbeing, i.e., things that are within our control as long as we put our minds to them (Snyder, 2002; Antelius, 2007; Kleist & Jansen, 2016; Singh, 2016; Smith & Sparkes, 2005). Second, a *shared probability estimate* is an important component of the social experience of hope. We can only hope for the things we assume to be possible, which in turn largely depends on societal expectations and assumptions (Benzein & Saveman, 1998; Pecchenino, 2015). Since these ideas can be highly 'infectious', they can become a shared sense of pessimism or optimism and thus become the core of social hope (Bar-Tal, 2001; Schwartz & Post, 2002). Moreover, in regard to societal issues such as climate change, hope can be displayed by placing trust in societal institutes and technical and scientific developments (Ojala, 2012; Eaves et al., 2014; Stevenson & Peterson, 2016). Conversely, societal institutes such as the state can also dis-

tribute hope unequally among different groups of people due to the different opportunities that are offered to them (Schwartz & Post, 2002; Kleist & Jansen, 2016). As such, marginalized groups can structurally experience less hope than other groups. Third, because social hope depends upon the behaviour and solidarity of others, *uncertainty and trust* are specifically important. The role of uncertainty is twofold; on the one hand, uncertainty can create suspicion and anxiety, while on the other hand, uncertainty can also be the main driver of hope. Especially in times of great adversity, the possibility that things might change and get better can imply greater hope (Ludema, Wilmot & Srivastva, 1997; Scioli et al., 2011; Kadlac, 2015). During intractable conflict, for example, people need to believe that things can change to remain hopeful (Cohen-Chen et al., 2014). Fourth, similar to individual hope, social hope involves many different *layers of experience*, such as beliefs and assumptions, emotions, mobilization and values. For example, there are many shared narratives surrounding social hope, i.e., stories that we share to depict what a positive or alternative future could look like (Smith, 2015; Torres & Tayne, 2017). Moreover, the tendency to develop hopeful thoughts and assumptions can be taught, especially during childhood (Snyder, 2002; Webb, 2010). Similarly, groups of people can share the same hopeful emotions, i.e., a feeling of transcendence, belonging, trust and possibility (Bar-Tal, 2001; Benzein, Norberg & Saveman, 2001; Boukala & Dimitrakopoulou, 2017). Moreover, shared hope can imply a strong motivation for the mobilization of large groups of people, for example, during social conflict or in addressing societal issues (Ludema, Wilmot & Srivastva, 1997; Pecchenino, 2015; Stevenson & Peterson, 2016).

Although individual and social hope share important components, social hope usually functions somewhat differently. In the experience of social hope, hopers usually do not receive feedback on their progress as often, easily or quickly as compared with individual hopers. As a result, social hope can have unexpected effects and remain influential long after the initial 'hopers' have moved on (Drahos, 2004). Moreover, shared hope can be somewhat more stable or long-term, as temporary or individual doubts and fears are less likely to translate to hopelessness, since the hope is shared across individuals and people can 'infect' each other with optimism (Wang, Joy & Sherry, 2013). Moreover, this means that trust is even more important, since people need to believe that others will align with their attempts to achieve shared goals (Braithwaite, 2004).

Table 2.4 | The social experience of hope in the classification matrix

		Hope as context-dependent	
		External	Internal
Hope as a process	Sources of hope		
	The experience of hope	*Shared desire* *Societal optimism/pessimism* *Uncertainty & trust* *Layers of hope* • *Shared mood* • *Shared knowledge* • *Motivation*	
	Effects of hope		
The object of hope			

Internal effects

There are many possible effects of a hopeful stance for an individual. For example, hope can be an important *activating force* (Schrank, 2002; Snyder, 2002; Aspinwall, 2005; Poels & Dewitte, 2008; Kadlac, 2015; McCormick, 2017) and can help people stay committed, even in times of adversity or in the absence of certainties (Benzein & Saveman, 1998; Zigon, 2009; Scioli et al., 2011; Ojala, 2012; Reichard et al., 2013). Many reasons have been mentioned explaining this motivational force. For example, hope is believed to usually entail an increased belief in our own and other people's capacities to create change, thereby making action seem more fruitful (Alarcon, Bowling & Khazon, 2013; Hornsey & Fielding, 2016; Stevenson & Peterson, 2016). Others stress that hope gives a 'zest for life', thereby helping a person to take action (Benzein & Saveman, 1998; Hammer, Mogensen & Hall, 2009). Additionally, the creative aspects of hope are assumed to open up non-conformist thoughts and behaviours (Kleist & Jansen, 2016). Likewise, the uncertainty of hope is believed to demand that the hoper remain active and thus prevents apathy (Ludema, Wilmot & Srivastva, 1997; Alarcon, Bowling & Khazon, 2013; Cohen-Chen et al., 2014). Again, others state that the positive feeling that accompanies hopefulness increases the 'thoroughness, efficiency and flexibility of problem solving' (Leung et al., 2009; Ojala, 2012). Finally, people who are hopeful are usually more focused on their goals and on information that might help them achieve those goals (Snyder, 2000; Hammer, Mogensen & Hall, 2009 Webb, 2010; Ojala, 2012 Cohen-Chen et al., 2014). As such, hope generally makes people more inclined to reach goals that are important to them. Nonetheless, hope can also be quite passive (Hobbs, 2013). Generally, writers on hope assume that hopes based on denial or unrealistic fantasy are more likely to lead to apathy and to turn out to be counterproductive (Leung et al., 2009; Ojala, 2012; Hornsey & Fielding, 2016).

However, even unrealistic hope can help people by offering a chance for *personal development* and by offering *positive feelings and comfort* to get through difficult times (Folkman, 2010; Weingarten, 2010; Eaves, Nichter & Ritenbaugh, 2016). Hope has been linked to positive

moods, physical and psychosocial well-being, coping, adjustment, self-esteem, resilience, trust, feelings of safety and a willingness to live (Benzein & Saveman, 1998; Webb, 2007; Duggleby et al., 2010; Folkman, 2010; Stevenson & Peterson, 2016; Griggs & Walker, 2016; McCormick, 2017). Alternately, hopelessness has been identified as an important feature of depression (Beck et al., 1974). However, hope can also make people prone to *disappointment*, thereby leading to feelings of loss and hurt if one's goals are not achieved (Kadlac, 2015).

Moreover, by linking our current personal situation to larger developments and possible future scenarios, hope can create a sense of *meaning and purpose* in life (Ludema, Wilmot & Srivastva, 1997; Nekolaichuk, Jerne & Maguire, 1999; Antelius, 2007; Griggs & Walker, 2016; Kleist & Jansen, 2016). A general sense of hopefulness can imply that someone believes that 'being en route makes sense and has meaning' (Webb, 2010). As such, hope can enrich people and help them transcend their current situation since it creates a feeling of being part of something larger than oneself in that moment (Benzein, Norberg & Saveman, 2001; Bland & Darlington, 2002; Hammer, Mogensen & Hall, 2009; Coulehan, 2011; Scioli et al., 2011; Eaves, Nichter & Ritenbaugh, 2016). Alternately, without hope, people can become indifferent to all options and lose their sense of purpose in life (Pecchenino, 2015). By creating a sense of transcendence, humility and openness to the future, hope can also instil faith in people and even lead to *spiritual experiences* (Halpin, 2001; Zigon, 2009; Eaves et al., 2014; Edera, 2015; Eaves, Nichter & Ritenbaugh, 2016).

Table 2.5 | Internal effects of hope in the classification matrix

		Hope as context-dependent	
		External	Internal
Hope as a process	Sources of hope		
	The experience of hope		
	Effects of hope		*Behaviour/action tendencies* *Personal development* *Comfort* *Disappointment* *Meaning* *Spirituality*
The object of hope			

External effects

Both individual and social hope can have many effects that take place outside of the individual. For example, hope can help *smooth social interactions*, since hopefulness often goes hand in hand with outgoingness and an openness towards one's environment, which makes people more likely to forge relationships and get along with others (Halpin, 2001). Moreover, it is generally assumed that hope can help us deal with disagreement and conflict, which are inevitable in any relation (Bland & Darlington, 2002; Zigon, 2009). Furthermore, understand-

ing and appreciating the hopes of others can increase empathy and thus create solidarity (Kadlac, 2015). This means that if social hope is effective, people will most likely be willing to collaborate to achieve their shared hopes or even to sacrifice part of their own wellbeing in the interest of the larger community (Braithwaite, 2004). Additionally, hope can function as a *socially shared capital* that infects others and thus creates a culture of hope (Wang, Joy & Sherry, 2013). It is therefore perhaps not surprising that hopeful pedagogies and education have been advocated to counter pessimistic or fatalistic sentiments within society (Halpin, 2001; Webb, 2010).

As a possible source for solidarity and understanding, hope can also be an incentive for *virtuous or ethical behaviour*. Of course, nothing stops people from hoping for unvirtuous goals, and hoping in and of itself does not need to be virtuous; however, hope can be used to maintain ethical (and often difficult) behaviour. Additionally, by resisting the idea that things cannot be different, hope can instil the desire to challenge and improve the status quo (Ludema, Wilmot & Srivastva, 1997). For example, sharing and talking about hope can help people create a 'counter-story', i.e., an imagination of possible alternatives to current circumstances (Kleist & Jansen, 2016; Torres & Tayne, 2017). Moreover, hope can 'place immediate circumstances in the context of broader and deeper possibilities', which can help us transcend our personal needs and create a desire to help others (Ludema, Wilmot & Srivastva, 1997; Eaves et al., 2014).

By creating trust in our collective ability, hope can *mobilize large groups of people*, for example, in the case of political protests or in addressing societal problems such as climate change (Bar-Tal, 2001; Braithwaite, 2004; Webb, 2010; Weingarten, 2010; Cohen-Chen et al., 2014; Kadlac, 2015; Hornsey & Fielding, 2016; Kleist 2016; Singh, 2016). Over time, such hopes can accumulate to become a form of cultural capital and create a shared feeling of *identity*. One example of this is the reference to the 'audacity of hope' in Barack Obama's rhetoric, i.e., 'a rhetoric of hope as the use of symbols to get Americans to care about this 'country' (Atwater, 2007:123). As such, hope can become a type of 'social imagining' that brings people together and guides collective action, often towards what is assumed to be a moral image of a better world (Ludema, Wilmot & Srivastva, 1997).

However, the effects of hope on a societal scale are not always positive, since it can also be abused to manipulate people. By attributing hope or hopelessness to specific groups or developments, politicians can, for example, discursively create and strengthen divides within society (Boukala & Dimitrakopoulou, 2017). Moreover, by creating vague hopes of 'greatness' without exactly explicating what this should look like, people can be mobilized towards goals that will hurt them on the long run (Sleat, 2013). Furthermore, if collective hope is systematically disappointed, this can result in 'a widespread sense of affective malaise' or *societal disillusionment* (Kleist & Jansen, 2016).

Table 2.6 | External effects of hope in the classification matrix

		Hope as context-dependent	
		External	Internal
Hope as a process	Sources of hope		
	The experience of hope		
	Effects of hope	*Smoothing social interaction* *Social capital* *Virtuous behaviour* *Mobilization* *Identity* *Societal disillusionment*	
The object of hope			

2.4.5 The object of hope

The object of hope has quite a peculiar place in the hoping process; although it is what hope is ultimately aimed at, we often do not need to know exactly what someone is hoping for to understand their general hopeful feeling. However, there are some general distinctions to be made, which also affect how we characterize the overall experience.

A first important remark is that there does not always need to be a clear, explicit object to hope. Many theories differentiate between *particularized hope*, which is focused on a specific goal, and *generalized hope*, which is more a global feeling that there is some positive future we long for without exactly knowing what that future will look like (Benzein & Saveman, 1998; Elliot, 2007; Kadlac, 2015). In French, this is the difference between individual, specific 'espoir' and a more general, fundamental 'espérance' (Webb, 2010). While the first is usually short-term and bounded by real-life limitations and conditions, the second is a more underlying, robust feeling (Halpin, 2001; Hammer, Mogensen & Hall, 2009).

Having an object to our hope does not necessarily require much involvement or engagement. One might hope to contribute to mitigating climate change, but as long as one does not attach any consequences to this hope, it remains largely abstract and passive. It is only once one starts to translate hopes into goals that the object becomes a tangible and engaged part of hoping. *Goal-setting*, i.e., translating desires into tangible outcomes to be pursued, is therefore an important part of many hope theories (Snyder, 2000; Schwartz & Post, 2002; Leung et al., 2009; Griggs & Walker, 2016). Practising with goalsetting is an important part of learning to be reasonable in one's hopes (Snyder, 2000; Webb, 2010; Kerrett, 2016). Functioning as tangible and concrete benchmarks, goals allow people to test their abilities and control, thereby providing them with important information about what they can realistically hope for and helping them to maintain hope in the future (Luthans & Youssef, 2007; Leung et al., 2009; Pecchenino, 2015). Moreover, goalsetting can help individuals and groups of people clarify what their desires truly are and whether their hopes are still aligned (Ludema, Wilmot & Srivastva, 1997; Kadlac, 2015).

Theoretically, just about anything we can imagine could be an object of hope. However, some writers draw attention to specific types of objects that might otherwise be overlooked. For example, an object of hope can be both *individual, shared or of someone else* (Benzein, Norberg & Saveman, 2001; Du & King, 2013); lies most often in the *future* but can also be in the *present or past* (Benzein & Saveman, 1998; Hammer, Mogensen & Hall, 2009; Webb, 2010; Ojala, 2012; Hornsey & Fielding, 2016; Griggs & Walker, 2016); and can be categorized into a *prevention* goal, i.e., something we want to avoid, or a *promotion* goal, i.e., something we want to achieve (Poels & Dewitte, 2008; Leung et al., 2009; Hornsey & Fielding, 2016).

In addition to ideas about what the object of hope can be, there are also many ideas about what the object of hope should be. Mentioned most often in this regard is that the object of hope should be *realistic*, i.e., sensible and attainable (Weingarten, 2010; Hobbs, 2013), and *significant* to the hoper (Webb, 2013; Griggs & Walker, 2016). Moreover, to count as a *virtuous* hope, it is claimed that the object should be about virtuous objects such as moral progress, humanization, salvation, or a more just society (Webb, 2010; Edara, 2015; Insole, 2015; Kadlac, 2015; Torres & Tayne, 2017).

Moreover, the mere possibility of attaining a hoped-for object can exert a *normative* influence on our behaviour (Ludema, Wilmot & Srivastva, 1997; Elliot, 2007; Torres & Tayne, 2017). For example, even the possibility of a cure for a disease can be used to tell people they ought to seek treatment as soon as possible (Cantor, 2006), or the imagination of a peaceful, prospering society can be used to persuade people to vote or become politically mobilized (Drahos, 2004). Here, the possibility of the object of hope seems to put people in a position where they are deemed responsible to act on it, even if perhaps they themselves feel reluctant to do so.

Table 2.7 | The object of hope in the classification matrix

		Hope as context-dependent	
		External	Internal
Hope as a process	Sources of hope		
	The experience of hope		
	Effects of hope		
The object of hope *General / specific* *Goalsetting* *Individual / shared* *Future, present, past* *Promotion / prevention* *Significant & realistic* *Virtuousness* *Normativity*			

2.5 CONCLUSION

2.5.1 The complete classification matrix

In this study, we have discussed two different approaches to characterizing hope, which together elucidate seven important domains of the hoping phenomenon. The first approach focuses on what thinkers in this tradition assume is the most essential part of hope: the individual experience. This approach aims to distil the most necessary elements of this individual feeling. The second approach defines hope as a context-dependent process and assumes that to understand what hope is, we also need to know its sources and outcomes, understand the interplay between the internal and external dimensions, and know what object it is focused on.

The seven components that follow from our classification matrix (see Table 2.8) are internal and external sources, the individual and social experience of hope, internal and external effects, and the object of hope. There are numerous examples of these components, and herein we have discussed some of the most-often mentioned examples. This overview is not exhaustive but aims to offer a structured overview of the characteristics ascribed to hope in the current literature.

All in all, we can understand hope as a broad phenomenon comprising a process from source to experience and outcome, which has both individual and social aspects and is affected by its object. The individual experience of hope is an important part of this process and might often feel more central and essential to the individual hoper. However, to fully understand what hope can be, it is important to be aware of the context in which it arises.

Table 2.8 | The complete classification matrix of hope

		Hope as context-dependent	
		External	Internal
Hope as a process	Sources of hope	*Social network* *Education* *Trust* *Culture* *Societal institutes* *Politics* *History* *Work* *Faith system*	*Biology* *Dissatisfaction* *Personal traits* *Choice* *Past experiences* *Virtuousness*
	The experience of hope	*Shared desire* *Societal optimism/pessimism* *Uncertainty & trust* *Layers of hope* • *Shared mood* • *Shared knowledge* • *Motivation*	*Desire* *Probability estimate* *Uncertainty* *Layers of hope* • *Emotion* • *Cognition* • *Motivation*
	Effects of hope	*Smoothing social interaction* *Social capital* *Virtuous behaviour* *Mobilization* *Identity* *Societal disillusionment*	*Behaviour/action tendencies* *Personal development* *Comfort* *Disappointment* *Meaning* *Spirituality*
The object of hope *General / specific* *Goalsetting* *Individual / shared goals* *Promotion / prevention* *Significance* *Virtuous objects* *Normativity*			

2.5.2 Existing theories and the classification matrix

How can this classification matrix be used to inform research on hope? Of course, each study and discipline has its specific focus, and not all dimensions of this classification matrix are immediately relevant in each context; however, being aware of a broader understanding can show which dimensions might be overlooked. Here, we will briefly discuss a few well-known theories on hope and how they relate to our classification matrix.

Positive Psychology: Snyder's hope theory

The hope theory posited by psychologist Snyder is well known and often used, especially within the field of positive psychology. Defining hope as 'a positive motivational state that is based on an interactively derived sense of successful (a) agency (goal-directed energy) and (b) pathways (planning to meet goals)'' (2000b:8), this theory focuses mostly on the internal sources, experience and effects of hope. Concerning the internal experience, Snyder's theory assumes that hope involves a positive probability estimate, i.e., high agency, and a positive response to uncertainty, i.e., finding different pathways in the event of setbacks. Snyder also focuses on different layers of hope and favours the influence of cognition and motivation over that of emotion. In regard to internal effects, this theory focuses on action tendencies, and less so on for example, meaning, personal development and comfort. Moreover, this theory offers openings for research on internal sources of hope, especially those focusing on previous experiences. Although external sources of hope are recognized as being possibly important, they are not recognized as inherently affecting what it means to hope. All and all, there are several parts of the broader hope phenomenon that attract less attention in this theory. First, the social components of hope are either rarely mentioned or not mentioned at all. Additionally, the object of hope is not explicitly mentioned as being important in this theory. Additionally, several elements of the individual process, such as different sources and effects and the experience of desire, are not elaborated upon.

Table 2.9 | Themes in Snyder's hope theory

		Context	
		External	Internal
Process	Sources		*Past experiences*
	Experience		*Probability* *Uncertainty* *Cognition* *Motivation*
	Effects		*Behaviour*
Object			

Herth's hope theory

The theory that is most often used within nursing comes from Herth. She defines hope as 'a multidimensional dynamic life-force characterized by a confident yet uncertain expectation of achieving good, which to the hoping person, is realistically possible and personally significant' (Herth, 1992:1253). This theory, as well as important works within nursing, has a strong focus on expectations (i.e., probability estimate of the internal experience); on behaviour and comfort, such as healthy living and medicine adherence (i.e., internal effects); and on external sources of hope, for example, on the support that is provided

Table 2.10 | Themes in Herth's hope theory

		Context	
		External	Internal
Process	Sources	*Social network* *Institutes* *Science* *Spirituality*	
	Experience		*Probability*
	Effects		*Behaviour* *Comfort*
Object *Specific / generalized* *Significance*			

by friends and family, health care providers, scientific advancements and some form of transcendence or spirituality. In some instances, there is also attention given to the object of hope, for example, concerning the question of whether people hope for something specific or have a more general sense of hopefulness and how large and significant the object of hope is to the hoper. The theory opens up the possibility for research on other dimensions of the hope phenomenon, such as internal sources, social experiences and external effects, yet these are not inherently embedded within Herth's theory.

Social sciences

Within the social sciences, there is much more heterogeneity in how hope is defined, perhaps partly because the topic is less common, and the research therefore somewhat more fragmented. Within political science and anthropology, the focus is, perhaps unsurprisingly, on the external side of the hoping phenomenon, i.e., external sources, such as social unrest, politics, culture and history; the social experience of hope; and external effects, such as societal mobilization, solidarity through social bonding and social identity through shared meaning. To a lesser extent, there is a focus on the object of hope, specifically as it relates to being aware of the normative effects of goalsetting.

Table 2.11 | Themes in social sciences

		Context	
		External	Internal
Process	Sources	*Culture* *Politics* *History* *Social unrest*	
	Experience	*Shared desire* *Shared optimism* *Shared uncertainty* *Layers of hope*	
	Effects	*Mobilization* *Shared meaning* *Social bonding*	
Object			
Normativity of goals			

2.6 DISCUSSION

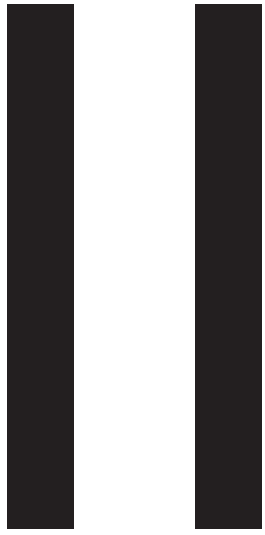
Across disciplines, awareness is growing that emotions such as hope have a strong explanatory power in regard to individual and social behaviours. Consequently, the number of studies on hope is quickly growing. However, an interdisciplinary framework was hitherto lacking, which hindered interdisciplinary and practical research on the meaning and role of hope in context. In this study, phenomenographic analyses were used to understand how different disciplines characterize hope and how these different approaches are related. The results show that we can differentiate two approaches, which together elucidate the following seven important components to the hoping phenomenon: internal and external sources of hope, the social and individual experience of hope, internal and external effects, and the object of hope. Each of these components in turn covers several themes, subthemes and examples. This classification matrix can be used to increase the awareness of the broader meaning of hope across scientific disciplines and perhaps even more importantly, the awareness of how

people experience hope in their daily lives. Not all components will be (equally) important in all inquiries into hope; however, someone interested in the topic will understand the parts better when being aware of the whole. Moreover, this overview will hopefully support and ease collaboration as well as comparisons between and within different disciplines. As such, it can be used to amplify their value for understanding and tackling practical societal issues.

Although we have tried to be as thorough, concise and inclusive as possible, there are several limitations to this study. First, and most importantly, creating a classification matrix to reflect an increasingly vast and complex body of literature necessarily requires simplification and some degree of subjectivity. This classification is by no means the only possible way to portray how different characteristics of hope are related. However, the aim of this study was not to definitively state what hope *is* but to offer a comprehensive but clear overview of which characteristics are ascribed to the concept by different people and how these perspectives are related. This overview might change over time and with progressive insights, yet it hopefully offers one step towards a fuller and more integrated understanding of hope.

There are also some methodological issues that should be taken into consideration. For example, in collecting the sources for this study, we have tried to systematically select the most relevant works; however, in the process, we had to rely both on the previously determined categories of, for example, Web of Science, as well as on our personal evaluation of these works. Moreover, it should be kept in mind that in our selection, we did not aim to be exhaustive but to be sufficiently representative of the current literature on hope and to offer a sufficient amount of diversity. Considering that we have included 66 works from ten different disciplines, we conclude that the variety of included works is comprehensive. Moreover, in analysing the texts and subsequent themes, some degree of subjective interpretation was inevitable. We have tried to increase the reliability of this study through triangulation, i.e., by combining multiple observers and methods. Last, by only including academic articles, we might have missed theories that have been discussed only in books as well as lay-people's experiences of hope. However, since many of the included articles contain reviews of existing literature, including books and studies on people's experiences of hope, we still consider these perspectives.

All in all, it is a tricky business to try to give a clear and structured overview of something as complex, elusive and human as hope. Nonetheless, the academic and societal value of understanding one of the most powerful incentives of human behaviour is simply too large to forego an attempt at a better understanding.



Why is hope relevant?

3 Income, hope and life satisfaction

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3.1 INTRODUCTION

Do favourable life circumstances increase subjective well-being (SWB) because they increase positive expectations for the future? Or, in other words; would positive circumstances, such as a good income, a nice house or good friends, make us happy, if they did not give us the feeling that the future will be positive as well? Intuitively, it seems that we need at least some grounds to believe in a bright future in order to feel happy. People are forward-looking creatures, and very well capable and inclined to form prospects of their future, based on their current situation (Tversky & Kahneman, 1979; Snyder, 2000). If we define SWB as enjoyment of 'life-as-a-whole' (Diener et al., 1999; Veenhoven, 2011), this evaluation should be affected by how we expect our future to unfold (Bailey & Snyder, 2007).

Positive life circumstances generally lead us to expect more of our future, whilst negative circumstances make us more pessimistic (Sweeny & Shepperd, 2006; Stutzer, 2004; Senik, 2008; Foster & Frijters, 2014). Hence, we tend to be more hopeful about the future when life is going well at the present. Furthermore, how our circumstances affect SWB seems to depend at least partly on how we perceive our future. That is, negative circumstances can be deemed less detrimental if we expect improvement in the future; negative shocks will have a less profound effect if people are more optimistic; and optimists can cope with stressors more efficiently then pessimists (Scheier & Carver, 1992; Clark et al., 2008; Fredrickson, 2001; Green, 2011; Arampatzi et al., 2020)[17]. This begs the question whether a part of the SWB created by our current circumstances is due to the positive hopes that they engender.

A specific point of interest in this respect, is income; although there appears to be a positive association between income and SWB (see e.g., Clark et al., 2008; Kahneman & Deaton, 2010; Stevenson & Wolfers, 2013; Jebb et al., 2018), it not one of simple cause and effect, partly due to the many societal and psychological factors that moderate and mediate this relationship (Diener, et al., 2013). Although most studies have pointed at increased consumption and status as mechanisms behind the income-SWB relationship (Clark et al., 2008), future expectations could also play an important role in this regard. Previous studies have shown that debt, income expectations and financial security matter strongly for our SWB, arguably even more than our income per se (Brown et al., 2005; Frijters, Liu & Meng, 2012; Arampatzi et al., 2015)[18]. In addition, our feelings and thoughts about the future seem to be affected by our current financial situation (Sweeny & Shepperd 2006; Stutzer, 2004; Senik, 2008; Foster &

17 This thus is something different from the more widely known 'Broaden and Build Theory' (Fredrickson, 2001), which posits that people who experience positive emotions broaden their thought-action repertoires, making them more resilient. Here, we posit that people perceive their life more positively if they experience positive thoughts and feelings about their future.

18 Also, the importance of the 'sustainability' of income might partly explain the apparent paradox of the relatively limited predictive power of income on happiness (Easterlin, 1973; Diener et al., 2013), since income might not add to happiness greatly if it does not bring with it a sense of security and improved future prospects, due to other factors such as a changing economic landscape or job-insecurity.

Frijters, 2014). Hence, there are reasons to believe that a higher income increases SWB partly because it generates positive expectations of the future.

At the same time, previous studies have shown that overly optimistic financial expectations generally lead to disillusionment once people realize their expectations can't be met in reality, leading them to be unhappier in the long run. In this study, we therefore focus on the slightly different concept of 'hope', defined by Martin (2011: 8) as endorsed desire plus uncertainty: "*. . . to hope for an outcome is to desire (be attracted to) it, to assign a probability somewhere between 0 and 1 to it, and to judge that there are sufficient reasons to engage in certain feelings and activities directed toward it*" (Martin, 2011:8). Accordingly, hope is about desire, pathways and agency (Snyder et al., 1991). Although the concept of hope incorporates aspirations and expectations (Lybbert & Wydick, 2018), hope is more active and process-focused than aspirations and expectations and includes the ability to make and carry out plans for the future (Bailey et al., 2007).

More specifically, we examine whether hope mediates the relationship between income increases and SWB using three-wave panel data from a sample from the US population. Our study adds to the existing literature in two distinct ways. First, we contribute to the academic work that has examined how rising income can affect SWB by further investigating the role of psychological changes following increased financial security (Frey & Stutzer, 2002; Diener et al., 2013; Tay et al., 2017). To the best of our knowledge, this is the first study that examines whether hope mediates the relationship between income and SWB[19]. Second, our research contributes to a myriad of studies, mostly within the field of psychology, on the mediating role of hope between SWB and individual, societal and psychosocial factors, such as personality (Halama, 2010), secure attachment (Shorey et al., 2003; Blake et al., 2017), psychological vulnerability (Satici, 2016), stress (Ong et al., 2006; Rustøen et al., 2010), meaning in life and purpose (Cotton Bronk et al., 2009; Yalçin & Malkoç, 2015), self-compassion (Yang et al., 2016), and religious and scientific attitudes (Wnuk & Marcinkowski, 2014; Aghababaei et al., 2016). Most of this research has focused on subjective circumstances and personality characteristics, and only limitedly on objective circumstances such as income.[20]

19 Our study bears most resemblance to the work of Diener et al. (2013), who found that – next to increasing material possessions and financial satisfaction – optimistic expectations partly mediate the relationship between income and SWB. Apart from focusing on positive expectations instead of hope, the work of Diener et al. (2013) is, however, mostly exploratory in nature and does not contain an elaborate discussion of why this is the case.

20 An exception in this regard is the study of Cheung (2016), which examined how hope mediates the relationship between income inequality and SWB.

3.2 RELATED LITERATURE

In this study, we look at the link between income and SWB, and investigate whether this relation is mediated by hope, assuming that income adds to SWB at least partly because it helps people feel more hopeful about the future. There are several indications in previous research for both parts of the mediating relation: from income to hope and from hope to SWB.

3.2.1 Income and hope

With regard to the first relation, between income and hope, previous research elucidates three possible mechanisms through which higher income could increase hope. First, financial security strengthens our inclination to think about and desire positive future events. For example, there is some empirical evidence that an income rise increases aspirations (Easterlin, 2001; Stutzer, 2004) and expectations (Foster et al., 2012). As such, having a sufficiently high income seems to offer people room to think about and anticipate positive things in the future. Second, a rise in income can increase people's agency and their conviction that they have the ability to pursue their hopes. Various studies have found that higher income is related to increased feelings of autonomy, control, competence and self-efficacy[21] (Downey & Moen, 1987; Ward & King, 2019) whereas prolonged poverty has been found to often go hand in hand with depression, anxiety and passivity[22] (Belle & Doucet, 2003; Santiago et al., 2011; Duflo, 2012). Thus, it seems that financial security also offers people the confidence that they are able to pursue their hopes. Third, increased income strengthens the capacity to find pathways to materialize our hopes. Previous research for example indicates that higher income is often accompanied by increased creativity, innovation, resourcefulness and entrepreneurship (Lee et al., 2004; Squalli & Wilson, 2014; Tongchaiprasit, & Ariyabuddhiphongs, 2016). Conversely, in the development studies literature it has been shown that poverty can induce internal constraints to progress, which withhold the poor from engaging in future-oriented behaviours. In a recent study, Lybbert and Wydick (2018) argue that the belief that some form of action will positively affect our future is pivotal for pro-active behaviour. So, there are good reasons to believe that increased income will go together with resourcefulness when it comes to following our hopes.

Although there is no research yet showing that income increases hope specifically, there are overall strong indications that higher income goes together with higher desires, expectations and resourcefulness when it comes to our future.

21 Self-efficacy here refers to 'people's judgements of their capabilities to organize and execute courses of action required to attain designated types of performances' (Bandura, 1986:391).

22 Along these lines, a lack of seeing pathways out of a difficult situation may be associated with enduring poverty, i.e. a 'poverty trap' (Duflo, 2012).

3.2.2 Subjective Well-Being

The concept of SWB concerns the appreciation of one's life as a whole, and that it comprises affective experiences (e.g., moods, emotions, affectivity) and cognitive comparisons (e.g., life satisfaction, Diener, 1984; Diener et al., 1999; Veenhoven, 2011). Moreover, SWB can be considered in general and within specific life domains (e.g., relationship satisfaction and job affect). Although all SWB constructs are highly dependent on each other (Diener et al., 1999), the different components can function quite differently. For example, while positive emotions have been found to be correlated to the fulfilment of psychological needs, such as safety and autonomy, the more cognitive evaluation of life satisfaction is much more closely related to economic matters such as income (Veenhoven, 2011; Diener et al., 2010). Since we will be focusing on the mechanisms relating SWB to income, we therefore choose to primarily focus on life satisfaction in this study. However, we will also examine whether other components of SWB (i.e. affect and overall happiness) are affected by income and hope in a similar way.

3.2.3 Three different types of views of the future

In this study, we assume that hope is related to higher SWB. However, previous research on the relation between 'perspectives of the future' and SWB has yielded mixed and sometimes even contradictory findings; while some state that more hope is pretty much always better, others warn for disappointment and disillusionment. This can largely be explained by the difference in concepts used when talking about 'perspectives on the future'; aspiration, expectation or hope.

Aspirations

A first strand of research focuses on *aspirations*, the strong desire or ambition to reach certain goals. It has been posited that higher aspirations decrease SWB because they cause people to be disappointed about their current situation (Easterlin, 2001). Moreover, it is assumed that aspirations increase in proportion to income due to adaptation to a certain level of welfare and social comparisons to others, thus meaning that the more we have, the more we want, and the unhappier we become (Van Praag & Kapteyn, 1973; Easterlin, 1995). This hedonic treadmill would in turn explain why income would be a somewhat limited predictor of SWB, especially the affective component (Kahneman & Deaton, 2010). And indeed, some empirical evidence seems to indicate that increased income is associated with higher aspirations, dampening at least some of its positive effect on wellbeing (Stutzer, 2004; Van Praag, Van Praag & Ferrer-i-Carbonell., 2004). Conversely, a lack of resources is found to induce 'aspirations failure'; as people live in prolonged poverty, they start to lose their ambitions, partly because they lose hope and partly because their resources simply run short of being used as a meaningful investment (Dalton et al., 2015; Banerjee et al., 2015). Thus, in general, when focusing on aspiration, research finds that both very low and very high aspirations can be harmful for SWB.

Expectations

A second branch of research focuses on *expectations*; the belief that the future will be positive. Although aspirations and expectations both involve assessments of one's future state, there are also important differences between the two concepts. Aspirations are standards of living that individuals want to achieve and are not dependent on the likelihood of it actually happening. Expectations relate to future states that individuals imagine they are likely to achieve, taking into account their current capabilities, constraints and opportunities (Hanson, 1994; Greenaway et al., 2015). It is often assumed that, in order to form expectations, people rationally compute the probabilities of a positive future event happening (Tversky & Kahneman, 1979). However, more recent studies indicate that expectations also directly serve a psychological need and offer utility benefit in the form of positive feelings of anticipation (Foster & Frijters, 2014). Such (moderate) optimistic expectations are usually found to be related to higher SWB. Previous studies, for example, show that optimistic (financial) expectations predict life satisfaction better than actual income (Frijters et al., 2012; Ekici & Koydemir, 2016); that moderately optimistic people can cope better with exogenous shocks (Arampatzi et al., 2020); and that the effect of unemployment on SWB considerably depends on someone's perceived future employability (Green, 2011). However, these studies also warn about expectations that are too high, since subjective wellbeing seems to decrease if an outcome is worse than expected due to disappointment (Tversky & Kahneman, 1979; Bell, 1985; Schwartz, 2003; Gollier, & Muermann, 2010; Sweeny & Shepperd, 2006; Arampatzi et al., 2020).

Hope

A third and somewhat different strand of research, which takes centre stage in this study, is rooted mainly in the field of psychology. Here, the central focus is on *hope*. In its most elementary sense, hope can be defined as an *endorsed desire* for an *uncertain* but *possible* event (Martin, 2011). Although the concept of hope incorporates aspirations and expectations, in the sense that it is about desire (aspiration) that is possible (expectation) (Lybbert & Wydick, 2018), the construct differs from these concepts in two important ways, both related to uncertainty. First, hope is inherently agentic, active. When we expect something to happen, there is no need to do anything about it, since we think it will happen anyway. But when we hope for something, it is uncertain whether we will reach this goal and we will therefore have to take action if possible. Second, hope is process-oriented; while expectations and aspirations mainly relate to the goals we like to achieve, hope also relates to the pathways we come up with to get there and the inherent uncertainty of this process (Snyder, 2000). So, the concept of hope thus encompasses both aspirations and expectations, but extends beyond them and therefore offers unique insights into how people perceive the future.

Hope plays a complex role in our daily lives and society at large, and as such, many different definitional theories have been developed over time, each highlighting (slightly) different

dimensions of the concept. Some theories have, for example, underscored its social or (early) attachment components (Erikson, 1950; Marcel, 2010; Du & King, 2013); its emotional traits (Averill, Catlin, & Chon, 1990; Fredrickson, 2001); or its relation to goal-directed behaviour (Snyder, 1991; Stotland, 1969). Other theories aim to offer a comprehensive overview of all traits of hope, and how these traits are generally related (Herth, 1991; Webb, 2007; Schrank et al, 2010; Krafft et al., 2017). Scioli and colleagues, for example, define hope as a future-oriented emotion network, comprising mastery, attachment, survival and spirituality, constructed from biological, psychological and social resources (Scioli et al., 2011; Magnano et al., 2019). Since hope can manifest itself in many different forms, dependent on the specific context, all these theories seem to have some merit. In this study, we focus on the most widely used hope theory within psychology, developed by Snyder and colleagues, which posits that hope contains three main characteristics: *desire*; something we want; *agency*; the conviction that it is possible to attain our hope; and *pathways*; our creative ability to come up with different pathways or behaviours to attain our hopes even if we face adversity (Snyder et al., 1991).

With regard to the relationship between hope and SWB, there have been several studies that found a positive association (Bailey, et al., 2007; Bailey and Snyder, 2007; Alarcon, Bowling & Khazon., 2013) or even a direct, causal effect of hope on future SWB (Ciarrochi et al., 2015). This relation is often explained with regard to behaviour as well as perception. On the one hand, people who have higher hopes are supposedly more inclined to invest in their future and therefore exhibit constructive behaviours that will lead to more favourable outcomes (for example studying for exams or working for a promotion). On the other hand, these hopeful people will also immediately incorporate their positive view into their SWB evaluation; i.e. they simply enjoy feeling hopeful. Along these lines, an income increase does not only increase SWB by increasing current consumption, but also through the savouring of positive feelings of anticipation of future standards of living (Loewenstein, 1987).

All in all, there are good reasons to assume that hope, similar to expectations and aspirations, follows from increased income. Moreover, a (moderately) hopeful disposition is most likely related to higher SWB. However, contrary to the research fields on aspirations and expectations, little is known about the possible disappointment that may follow from being extremely hopeful. Because hope is active and process-oriented, it can be argued that, contrary to expectations and aspirations, hope is less prone to disillusionment. However, if this isn't the case, it is important to know that more hope isn't always better. In this study, we will therefore first analyse whether hope mediates the relation between income and SWB, and then compare hope to often used measures of expectation in relation to SWB, to see whether they exhibit a non-linear relation, suggesting a 'disappointment effect'.

3.3 DATA AND METHODS

3.3.1 Participants

Three-wave panel data was collected in the US in 2016, 2017 and 2018 using Prolific. Similar to Amazon's Mechanical Turk, Prolific is a virtual crowdsourcing platform where people can complete tasks for a small compensation. Specifically aimed at collecting high quality responses for scientific research, Prolific monitors participants closely with several checks to make sure only trustworthy responses are collected. The platform has been used in many empirical studies in the social sciences (Sheehan, 2017), and data provided by Prolific respondents has proven to be of good quality (Peer et al., 2017). Overall, 515 respondents completed the first wave of this study. Of these respondents, 341 also completed all relevant questions in the second wave and 199 in the third. A comparison with US census information, which can be found in Table 3.1, shows that the sample is relatively well representative of the population, although single-households, males, young people and Asians are somewhat over-represented in the sample, while African Americans are somewhat underrepresented (U.S. Census Bureau, 2017; The Demographic Statistical Atlas, n.d.). The sample does differ significantly from the US population on religiosity; the respondents score religion as much less important. Although the sample is thus representative of the US population on some important demographic characteristics, it is not representative on all traits.

Table 3.1 | Demographics

	Year 1	Year 2	Year 3	US census
Number of participants	511	340	205	327.2 mln
Age	33	34	38	38
Gender				
Male	58%	56%	56%	49%
Female	42%	44%	44%	51%
Household composition				
Single	44%	39%	36%	28%
Single parent	5%	6%	4%	9%
Couple without children	22%	27%	26%	29%
Couple with children	23%	21%	27%	19%
Other	6%	7%	6%	15%
Ethnicity				
White	74%	79%	83%	73%
Black/African American	10%	11%	8%	13%
Asian	3%	6%	5%	5%
Other	10%	5%	5%	9%
Religion				
Very important	10%	12%	12%	53%
Important	14%	14%	16%	24%
Slightly important	20%	15%	15%	11%
Not at all important	56%	59%	55%	11%

Along with personal characteristics, in each of the three waves respondents reported their life satisfaction, overall happiness, experience of positive and negative emotions (affect), hope, expectations for the next year with regard to their standard of living, and monthly income (see Table 3.2). It is difficult to assess to what degree the values on some of these main variables compare to those found in the U.S. population, since we have no census information on, for example, SWB, hope or expectations. On a whole, however, this sample appears to experience somewhat fewer positive states, which could be linked to the lower level of religiosity of respondents, a personal trait usually linked to positive experiences in the U.S. (Okulicz-Kozaryn, 2010). The mean score of 6.25 for life satisfaction is somewhat lower than the mean score of 6.89 that the U.S. scores in the World Happiness Report (Helliwell, Layard & Sachs, 2019). Moreover, the respondents in this sample appear to be more cautious in their expectations compared to those studied in the Gallup U.S. Daily survey; while a relatively comparable group of around 20% of the Gallup survey think their standard of living will get worse, around 60% percent expects an improvement, almost twice the number in our sample (Norman, 2017). Although somewhat on the low side, the mean hope scores fall well within the range of expected scores (Lopez et al., 2000). Lastly, the scores on income are quite low compared to the population, with over half scoring below the U.S. median income of $4,900 (U.S. Census Bureau, 2017). It is important to note, however, that respondents were asked for base income, excluding any bonuses, holiday pay or benefits, which somewhat increases the plausibility of these results. Moreover, although respondents could also pick income categories over $3,200 a month, these higher income categories weren't asked consistently over the years, meaning that we had to merge them, and can only analyse the data for the income distribution up to $3,200[23].

The Cronbach's alpha for the full hope scale was 0.88, 0.91 and 0.93 for year 1, 2 and 3; while the agency subscale yielded a 0.84, 0.87 and 0.88; and the pathways subscale a 0.79, 0.85 and 0.88. Hence, all scales appear to have acceptable, and with the exception of the pathways subscale in year 1, even good internal consistency.

To examine whether people who participated in all years are significantly different from those who dropped out at one point, we performed a t-test on hope and life satisfaction for these groups and calculated a chi^2 for the relation between retention, i.e. the chance to keep participating and income. Respondents who participated all years scored a 6.18 (SD=0.17) on life satisfaction and 4.91 (SD=0.08) on hope, whereas respondents who participated multiple years scored a 6.39 (SD=0.12) and 4.80 (SD=0.06) respectively. The difference between the groups of respondents is not significant both when it comes to life satisfaction (t=1.05, p=0.29, two-tailed) and hope (t=-1.25, p=0.21, two-tailed). Moreover, differences in the levels of income between the two groups are not significant either (chi^2 (5) = 6.09, p=0.30) [24].

23 Sensitivity analyses using only the two waves with consistent income categories up to $5,000 a month however indicate that our findings also apply to higher income categories.

24 A comparison between the different years can be found in Appendix 3.2.

Table 3.2 | Variables of interest

	Year 1	Year 2	Year 3
Life satisfaction (0-10)	6.30	6.28	6.16
Happiness (0-10)	6.37	6.38	6.26
Affect (0-10)	5.84	5.98	6.17
Hope (1-7)	4.84	4.94	5.12
Agency	4.68	4.82	4.97
Pathways	5.00	5.05	5.27
Expectations living standards			
Better	37%	33%	27%
The same	50%	53%	48%
Worse	13%	15%	24%
Monthly income			
Less than $900	6%	6%	6%
$900-$1,300	10%	11%	8%
$1,300-$1,800	13%	10%	8%
$1,800-$2,700	26%	16%	15%
$2,700-$3,200	16%	15%	13%
More than $3,200	29%	42%	51%

Similarly, we checked whether the groups differ in terms of any other personal characteristics. We do not find a significant relation of retention with gender (chi^2 (1) = 1.27 p = 0.26), household composition (chi^2 (4) = 0.90 p = 0.92), religiosity (chi^2 (3) = 4.82 p = 0.19) or ethnicity (chi^2 (3) = 3.82 p = 0.28). However, there is a relation with age (30.2 versus 36.2 years, t=-6.03, p < 0.01, two-tailed) that is, younger people are more likely to drop out of the sample.

3.3.2 Materials

Demographics. Respondents reported their age, gender, household composition, religiosity and ethnicity. These characteristics were included as covariates. Demographics for the sample can be found in Table 3.1.

Subjective Well-being. In the main analyses in this study, we focus on life satisfaction, using a single item life satisfaction question, which asked respondents how satisfied they are with their life as a whole, ranging from 0 (very dissatisfied) to 10 (very satisfied) (Cheung & Lucas, 2014). Please note that although psychological studies frequently use the Satisfaction with Life Scale (Diener et al., 1985), several studies have by now found that single-item happiness measures have acceptable validity (Cheung & Lucas 2014; Schimmack & Oishi, 2005). Respondents reported a 6.3 in year 1 and 2, and a 6.2 in year 3 for average life satisfaction, which is lower than the American average of 6.9 (Veenhoven, 2018a). In addition, the survey included two measures that addressed the more emotional components of SWB. First, we included a measure for overall happiness, also measured with a single item, asking respondents when

taking all things together to assess how happy they are (Abdel-Khalek, 2006). Scores ranged from 0 (very unhappy) to 10 (very happy), the average score was a 6.4 in the first and second wave and 6.3 in the third wave. Finally, the affective component of subjective well-being was assessed using the short version of the Positive and Negative Affect Schedule (PANAS; see Watson et al., 1988). This scale represents the balance of positive and negative emotions that participants experienced in the past month and scores range from 1 (only negative emotions) to 7 (only positive emotions). For the first, second and third wave, respondents scored a 5.8, 6.0 and 6.2 respectively.

***Hope*.** Hope was measured using the Adult Trait Hope Scale by Snyder et al. (1991). The scale contains 12 items (of which 4 are used as distracters), where participants have to rate statements such as 'I can think of many ways to get out of a jam' and 'My past experiences have prepared me well for my future'. Possible answers ranged from 1 (Definitely false) to 7 (Definitely true) and the scale can be subdivided into two subscales: one for agency (indicating someone believes she or he is capable of achieving their hopes) and one for pathways (meaning someone can come up with several pathways towards hoped for goals). Individuals that score high on the Snyder scale are regarded as more hopeful, more motivated to achieve their goals, and better able to think of ways to reach their goals. Previous research has found this scale to be valid in measuring hope and its two subscales agency and pathways (Alarcon et al., 2013). A full list of the items of the Adult Trait Hope Scale, including how these items fall into the two subscales can be found in Appendix 3.1.

***Economic expectations*.** Economic expectations were measured using a single-item question asking whether respondents expected their living standards to get better, stay the same or get worse over the next year.

***Income*.** Respondents were asked to report their net household income in categories, ranging from less than $900, between $900 and $1,300, $1,300 to $1800, $1800 to $2700, $2700 to $3200, and more than $3200.

3.3.3 Analysis

Using a fixed effects regression model, the relation between change in income, hope and life satisfaction is estimated. This type of model uses the variation within respondent's scores to calculate the relation between variables, meaning that time-invariant personal characteristics, such as personality, are controlled for. We use the following model:

$$SWB_{it} = \beta_0 + Income * \chi_{it} + Hope * \chi_{it} + CV_{it} + \alpha_i + u_{it}$$

Where i denotes a person at time t, SWB refers to the different dimensions of Subjective Well-Being (i.e. life satisfaction, happiness or affect), Hope represents the hope-score of the respondent, CV represents a set of control variables, α_i captures all unobserved, time-constant factors that affect SWB_{it}, and u_{it} represents factors affecting SWB_{it} that change over time. To investigate whether hope mediates the relation between income and SWB, several models are used. First, we investigate the relation between income and SWB in a model with-

out hope; then, hope is included and we check whether the difference in regression coefficients is significant. Lastly, we replace SWB with hope as the dependent variable, and check whether income predicts hope. To further investigate the mediation effect, a bootstrapped mediation test for categorical independent variables is used. Lastly, to see whether there is linear or curvilinear relation of SWB with hope and expectations, a squared term is included in a fixed effects regression of SWB on hope and expectation.

3.4 RESULTS

Since the fixed effects model we use, analyzes the relation between changes in life satisfaction, income and hope, we first examine whether the respondents actually experienced changes in these variables over the years. As can be seen in Table 3.3, there is quite some variability when it comes to life satisfaction; about a third of the sample experiences more than 1-point change compared to the previous year. Income and hope are more stable; about half of the sample experiences no change in these variables over the years. However, since

Table 3.3 | Changes over the years in variables of interest[1]

	Year 1 – year 2	Year 2 – year 3
Life satisfaction (0-10)		
4 points or more down	3%	4%
1-3.9 points down	35%	32%
No change	26%	28%
1-3.9 points up	32%	32%
4 points or more up	4%	3%
Income (1-6)		
3 categories or more down	7%	8%
1-2 categories down	12%	11%
No change	44%	57%
1-2 categories up	26%	15%
3 or more categories up	12%	9%
Hope (1-7)		
1.5 points or more down	4%	3%
0.5-1.4 points down	21%	17%
Less than 0.5 change	48%	48%
0.5-1.4 points up	22%	27%
1.5 points or more up	4%	5%

1 The categories in this table are created with the aim to represent the distribution of respondents who experienced no change; versus a small; or larger change. Please note that this categorization is solely used to describe the sample and is not used in further analyses.

also about half of the sample does experience a change, we assume to have enough variability in the variables of interest to perform a fixed effects analysis.

3.4.1 Hope as a mediator

The results from the baseline model (1) presented in Table 3.4 show that there is a moderately strong and positive relationship between income and life satisfaction. Compared to a monthly income of less than $900, all higher income categories are significantly related to a higher level of life satisfaction. The effect sizes range from 0.7 points (on a 0 to 10 scale) for people earning between $900 and $1,300 and 1.2 points for people earning over $3,200 a month. When hope is included in the model (model 2), the effects remain significant, but the effect sizes are reduced slightly, now ranging between 0.6 (for $900 to $1,299) and 0.8 (for those earning more than $3,200). When comparing the two models, only the difference for the higher income categories, i.e. $1,800 or higher, are significant (column 3, difference between model 1 and 2) and only with 90% certainty for incomes between $1,800 and 3,199, indicating that correcting for hope significantly alters the relation between income and life satisfaction, but only for people with a higher income. Moreover, we find that the relation between hope and life satisfaction is moderately strong and positive and hardly changes between the models with or without income (model 2 and 3). On average, a one-point increase in hope (on a scale of 1 to 7), generally leads to a 1.2-point increase in life satisfaction (on a scale of 0 to 10), signalling a strong positive relation. Also, the predictive value of the overall model more than doubled by incorporating hope. Lastly, we test whether a higher income is related to higher hopes, which is the case for incomes over $1,800, with effect sizes ranging from 0.2 to 0.4 points on a 7-point scale for people earning between $1,800 and $2,699, and over $3,200 respectively. The relation between hope and income is not significant for people with an income lower than $1,800.

Table 3.4 | Fixed effects regression model on life satisfaction and hope

	(1) LS	(2) LS	(1-2) Difference	(3) LS	(4) Hope
Income					
<$900	Reference	Reference			Reference
$900 - $1,299	0.739** (0.335)	0.609** (0.302)	0.130		0.115 (0.144)
$1,300 - $1,799	0.793** (0.327)	0.673** (0.293)	0.120		0.139 (0.140)
$1,800 - $2,699	0.924*** (0.335)	0.628** (0.302)	0.296*		0.245* (0.143)
$2,700 - $3,199	0.997*** (0.341)	0.704** (0.307)	0.293*		0.273* (0.146)
More than $3,200	1.194*** (0.350)	0.750** (0.319)	0.440***		0.408*** (0.151)
Hope		1.126*** (0.100)		1.159*** (0.090)	
Constant	8.874*** (2.694)	2.870 (2.475)		3.208 (2.256)	5.047*** (1.153)
R^2 (within)	0.077	0.283		0.298	0.072
N (groups)	327	327		339	327

Robust standard errors in parenthesis

* significant at the 0.1 level ** significant the 0.05 level *** significant at the 0.01 level

All models are corrected for age, age squared, gender, household composition, religiosity and year-dummies

To sum up, for incomes over $1,800 our hypothesized independent variable, income, is related to our mediator, hope, which is in turn related to our dependent variable, life satisfaction; and including our mediator significantly reduces the relation between the independent and dependent variable for higher income; thus meeting the criteria for mediation for this subgroup of people.

To further study the size of the mediating effect of hope, we calculate the total indirect effect of income on life satisfaction through hope (1.30, p<0.01 SE=0.49); and the total direct effect, i.e. the relation between income and life satisfaction that is not affected by controlling for hope (3.36, p=<0.01, SE=0.90). These analyses indicate that there is both a significant and positive indirect effect from income via hope and a significant positive direct effect, indicating that hope only partially mediates the relation between income and life satisfaction. About 28% of the relation between income and life satisfaction appears to be mediated by hope. More specifically, it indicates that there is a significant mediating effect for the income categories over $1,800, but not for those with lower incomes.

3.4.2 Components of hope

Hope as measured in this study is a two-dimensional concept, comprising *agency*, i.e. a sense that someone is capable of reaching important goals, and *pathways*, i.e. being inventive in coming up with different routes towards a desired goal. To test whether these dimensions are equally important in mediating the relation between income and life satisfaction, we run the same analysis as before for each dimension. The results are reported in Table 3.5. Here we can see that the agency component seems to reduce the relation between income and life satisfaction more strongly (column 2 and 5, representing the difference between the uncorrected model 1 in Table 3.4 and the corrected models 1 and 3 in Table 3.5) and that this component is more strongly related to life satisfaction (regression-coefficient 1.1 for agency versus 0.7 for pathways), indicating that agency is responsible for a larger portion of the mediation.

Altogether, the overall mediating effect is stronger for agency; about 27% of the total effect is mediated by this component (total indirect effect = 1.28, p = 0.02, SE = 0.54) while this only is about 14% for pathways (total indirect effect = 0.66, p < 0.05, SE = 0.33). So, we can conclude that the agency component is a stronger mediator for the relation between income and life satisfaction.

Previous studies have also found that agency is more strongly related to life satisfaction, indicating that to be content with our lives, it is especially important to feel motivated and able to achieve ones goals (see Chapter 7; Bailey et al., 2007). Also, agency appears to be the stronger mediator between a sense of purpose in life and life satisfaction, implying that the feeling that we are able to progress towards meaningful ‘ultimate aims’ specifically makes us feel satisfied with life (Cotton Bronk et al., 2009). A similar process may apply to income; having more money might make us more satisfied, insofar as it gives us the idea that we can

Table 3.5 | Fixed effects regression model on life satisfaction and hope

	Agency			Pathways		
	(1) LS	(T4.1-1) Difference	(2) Hope – agency	(3) LS	(T4.1-3) Difference	(4) Hope – pathways
Income						
<$900	Reference		Reference	Reference		Reference
$900 - $1,300	0.597**	0.142	0.132	0.671**	0.068	0.099
	(0.294)		(0.134)	(0.325)		(0.161)
$1,300 - $1,800	0.658**	0.135	0.137	0.738**	0.055	0.098
	(0.285)		(0.159)	(0.315)		(0.156)
$1,800 - $2,700	0.624**	0.300*	0.260	0.746**	0.178*	0.230
	(0.294)		(0.163)	(0.324)		(0.160)
$2,700 - $3,200	0.631**	0.366**	0.354**	0.880***	0.117	0.192
	(0.299)		(0.166)	(0.329)		(0.163)
More than $3,200	0.707**	0.487***	0.467***	0.971***	0.223**	0.349**
	(0.310)		(0.171)	(0.342)		(0.169)
Hope – agency	1.075***					
	(0.085)					
Hope – pathways				0.683***		
				(0.096)		
Constant	3.341 (2.394)		4.845***	4.969* (2.652)		5.248***
			(1.313)			(1.291)
R^2 (within)	0.321		0.063	0.310		0.050
N (groups)	327		327	327		327

Robust standard errors in parenthesis
* significant at the 0.1 level ** significant the 0.05 level *** significant at the 0.01 level
All models are corrected for age, age squared, gender, household composition, religiosity and year-dummies

achieve more of what we want. Pathways, i.e. coming up with different ways to get to our goals, on the other hand, might be a more complex, secondary experience, which might play an important role in actual goal-achievement, but less so in our perception of and satisfaction with life (Cotton Bronk et al., 2009).

3.4.3 Components of SWB

As discussed before in paragraph 2.1, SWB comprises both cognitive evaluations and affective experiences. To investigate whether the mediating effect of hope arises for different dimensions of SWB, the analyses are also performed using overall happiness and affect.

Overall happiness

Firstly, as can be seen in Table 3.6, the relation between income and overall happiness is moderately strong and positive, similar to life satisfaction. Moreover, including hope in the model has a comparable effect: the regression coefficients of income predicting happiness are reduced considerably, but again only for people with an income over $1,800.

Table 3.6 | Fixed effects regression model on overall happiness and hope

	(1) Happiness	(2) Happiness	(1-2) Difference	(3) Happiness
Income				
<$900	Reference	Reference		
$900 - $1,300	0.648* (0.351)	0.512 (0.321)	0.136	
$1,300 - $1,800	0.693** (0.342)	0.523* (0.312)	0.170	
$1,800 - $2,700	0.751** (0.351)	0.446 (0.321)	0.305**	
$2,700 - $3,200	0.795** (0.357)	0.486 (0.327)	0.309**	
More than $3,200	0.892** (0.366)	0.424 (0.339)	0.468***	
Hope		1.096*** (0.106)		1.121*** (0.097)
Constant	6.059 (2.821)	0.190 (2.631)		2.296 (0.2448)
R^2 (within)	0.069	0.428		0.437
N (groups)	327	327		327

Robust standard errors in parenthesis
* significant at the 0.1 level ** significant the 0.05 level *** significant at the 0.01 level
All models are corrected for age, age squared, gender, household composition and year-dummies

An analysis of direct (2.33, p = 0.02, SE=0.96) and indirect effects (1.15, p = 0.02, SE=0.48) shows that about 33% of the total relation between income and happiness is mediated by hope, indicating that the relation between income and happiness is mediated by hope in a similar fashion to life satisfaction. This finding is perhaps not surprising, given that, although overall happiness theoretically refers to a wider concept than life satisfaction, in practice both measures generally yield similar results (OECD, 2013).

Affect

When we regress income on affect, i.e. the emotional component of SWB, we find virtually no significant relation, with the exception of a small relation (regression coefficient 0.3 with 90% certainty) for the highest income category. This corroborates previous findings that income is more closely related to the cognitive rather than the emotional component of SWB (Kahneman & Deaton, 2010; Diener et al., 2010). Considering that life satisfaction and overall happiness both encompass an evaluation of life compared to some ideal, whereas affect mainly relates to specific emotions and experiences (Luhmann et al., 2012), this finding is perhaps not surprising. Income most likely affects how we perceive our global life circumstances as it is something that we often consider when judging how our overall life is going, while its impact on what we experience on a daily basis may be more limited, especially if we take hedonic adaptation into account, i.e. the human tendency to easily get used to new situations and standards of living (Yu & Chen, 2016). Moreover, income can be assumed to increase

life's comforts and to help us fulfil our desires, but may be less efficient in fulfilling our fundamental psychological needs such as connectedness, autonomy and competence, whereas the latter has been found to be more closely related to emotional wellbeing (Scitovsky, 1978; Diener et al., 2010). Lastly, although higher income has been found to help avoid negative emotions following from deprivation, it appears that it does not necessarily increase positive emotion (Kushlev, Dunn & Lucas, 2015), however, in this sample neither positive nor negative affect appear to be affected by income. So, although income is generally found to have some positive impact on emotional wellbeing, the relation is generally small, which could explain why in this study, with a relatively small timeframe and sample size, we do not find a significant relation. Although a mediation analysis is still possible with a non-significant main effect, it becomes redundant to our research question aimed at explaining the relation between income and SWB, so no further analyses are included (see Appendix 3.3 for the full results).

3.4.4 Expectations as a mediator

In many large-scale studies, economic expectations are used as a measure of optimism or hope. However, it has never been investigated whether expectations are similar to hope in their relation to income and SWB. Here, we therefore test whether an often-used single item measure of economic expectations, i.e. a single item question on expectations regarding the participant's standard of living for the following year, indeed plays the same mediating role as hope.

As can be seen in Table 3.8, including expectations regarding future living standards does significantly reduce the relation between income and life satisfaction. The difference between the uncorrected (Table 4, model 1) and the corrected model (Table 8 model 1) is quite similar to that of hope, but while hope seemed to only mediate the relation between life satisfaction and income over $1,800, this is not the case for expectations; more positive expectations go together with higher income throughout the distribution. Moreover, there is a positive and significant relation between income and expectations. The total indirect effect (0.538 p = 0.03 SE = 0.242) indicates that about 14% of the total relation between income and life satisfaction is mediated by expectations. These findings corroborate the growing number of studies which find that positive expectations matter significantly for our wellbeing, even when controlling for objective life-circumstances (Frijters et al., 2012; Ekici, & Koydemir, 2016; O'Connor & Graham, 2019).

Table 3.8 | Fixed effects regression model on life satisfaction and expectations for living standards

	(1) LS	Difference (T4.1-1)	(3) LS	(4) Expectations[2]
Income				
<$900	Reference			Reference
$900 - $1,300	0.340	0.399**		0.756*
	(0.334)			(0.423)
$1,300 - $1,800	0.395	0.398**		0.886**
	(0.323)			(0.408)
$1,800 - $2,700	0.628*	0.296**		1.045***
	(0.328)			(0.386)
$2,700 - $3,200	0.743**	0.254*		0.960**
	(0.335)			(0.401)
More than $3,200	0.828**	0.366**		2.079***
	(0.345)			(0.391)
Expectations				
Getting better	Reference		Reference	
Staying the same	-0.425***		-0.427***	
	(0.155)		(0.147)	
Getting worse	-1.088***		-1.189***	
	(0.222)		(0.213)	
Constant	8.738***		10.025***	
	(2.649)		(2.560)	
R^2 (within)	0.189		0.167	
N (groups)	327		339	327

Robust standard errors in parenthesis

* significant at the 0.1 level ** significant the 0.05 level *** significant at the 0.01 level

All models are corrected for age, age squared, household composition, religiosity and year-dummies

2 These results are based on an order logistic regression for panel data, meaning that only the direction and significance of the relation can be incurred, while the strength of the relation cannot be derived from the regression coefficients in this analysis.

3.4.5 The question of diminishing returns on hope and life satisfaction

Previous studies have hypothesized that (financial) expectations increase SWB only up to a certain point, after which overly optimistic expectations are deemed to become 'false hopes' that actually decrease SWB due to disappointment (Bell, 1985; Schwartz, 2003; Gao & Smyth, 2011; Arampatzi et al., 2020). Theoretically, it could be argued that this might not be the case for hope, since hope is focused more on the process of goal-attainment, and is inherently imbued with uncertainty. Therefore, we could expect to find diminishing returns on SWB from expectations but not from hope. To test this hypothesis, we ran two fixed effects regression models including a quadratic transformation of hope and expectations and plotted the predicted values for life satisfaction against hope and expectations.

As can be seen in Figure 3.1, hope displays a quite clear linear relation with life satisfaction; each additional point of hope translates in a relatively similar increase in life satisfaction. The same seems to apply to expectations. Although the difference between expecting changes for worse and expecting things to stay the same is slightly bigger than that between expecting no changes and expecting improvements (a score of 5.58, 6.23 and 6.80 respectively), this difference is too small to assume nonlinearity. Moreover, both quadratic transformations of hope and expectations were insignificant. These results suggest that both hope and expectations have a relatively linear relation to SWB and raise no indications that being too hopeful is actually harmful for our wellbeing due to disappointment.

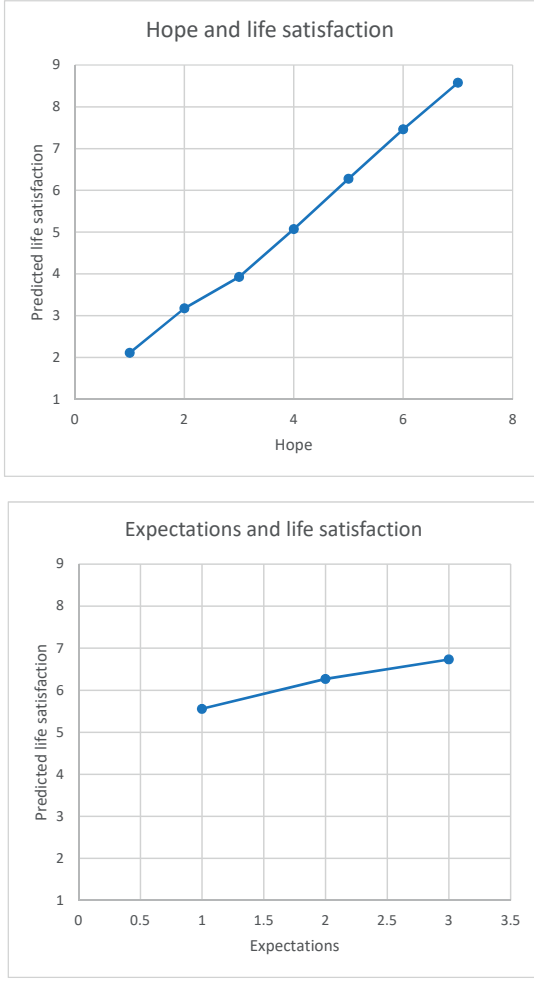

Figure 3.1 | Predicted life satisfaction based on expectations and hope

3.5 DISCUSSION

This study aimed to elucidate the mechanisms through which income increases SWB. In particular, we investigated whether an increase in income makes us happier because it makes us feel more hopeful about the future. The results indicate that income does indeed go hand-in-hand with more hope, and that this increased hope most likely explains part of the positive effect of income on SWB, but only for household-incomes over $1,800 a month. Increases to an income below this amount do not seem to translate into higher hopes. This could indicate that attaining a certain threshold of income is necessary in order to influence our hopefulness. This might be explained by the (lack of) capabilities that an income below $1,800 can offer. The poverty threshold in the US in 2018 ranged between $1,089; $1,407 and $1,684 for single households; two-person households without; or with children respectively (United States Census Bureau, 2019). Since the highest income-category for which we find no relation with hope ranges from $1,300 to $1,800 and the majority of the sample consists of households with more than one person, we can conclude that a large portion of people for whom we do not find a relation between income and hope, are living around or below the poverty threshold. For these people, an increase in income will still not allow them to rise above a situation of 'making ends meet'. More specifically, in these contexts it is still impossible to make the meaningful investments in a better future, that would allow for a more hopeful disposition. This is however not the case for expectations; each increase in income translates into more positive expectations for our future standard of living. This thus also indicates that having hope and having expectations relate to different concepts; while the former comprises the desire for an uncertain, positive future, the second encompasses an estimation of the likelihood that things will get better, regardless of whether we think about it and desire it (Day, 1969).

The component of agency, the assumption that we can achieve what we want in life, appears to be a stronger mediator than pathways, the resourcefulness in coming up with ways to achieve our goals. This appears to be because agency is more strongly related to both income and life satisfaction. Having money thus mainly allows us to believe we can achieve what we want, which in turn goes together with greater life satisfaction. Being resourceful in coming up with different routes towards our goals may be equally important for actual goal-pursuit but is less important in our perception of life. Hope furthermore plays a mediating role for two components of SWB, namely life satisfaction and happiness. In this study we find no relation between income and affect, which might indicate that income mainly raises our global judgment of life (i.e. life satisfaction), but not so much the specific emotions we experience on a day-to-day basis (i.e. emotional wellbeing).

Previous research is somewhat ambiguous about the question whether more hope or optimism is always good for our wellbeing. Although moderate optimism is generally regarded as positive, several thinkers warn against the possible negative effects of overly excited ex-

pectations due to disappointment, indicating that there might be diminishing returns on the relation between optimism and SWB, and the same could be expected of hope. In this study, however, we find no indications that this is the case; the relation between both hope and expectations with SWB appears to be stable and linear. With regards to hope, this finding was expected, but with regard to expectations it was not. There are several possible explanations for our findings. Firstly, it could be due to the relatively small sample in this study and because our expectations-question has only three answering-categories. Second, it could be the case that previously found 'disappointment effects' of overly enthusiastic expectations are mainly at play during times of societal turmoil, such as during an economic crisis (Arampatzi et al., 2020) or rapid economic development (Gao & Smyth, 2011). In such instances, expectations might more easily be disappointed due to the great volatility of societal change. In this study, however, we are following a group of people who live in a relatively stable context and might thus not experience such dramatic changes in expectations. Third, and related to the former point, the finding might be due to our methods of analysis. A fixed effects model focuses on changes within an individual, rather than on levels at a certain point in time. Hence, it could be the case that although having an extremely high level of expectations will result in disappointment, improving your expectations from for example very low to moderate will have a much more positive effect on SWB.

There are several limitations to this study. First and foremost; although we are able to control for time-invariant characteristics such as personality by studying how people change over time, we might have omitted important time-variant variables that affect both income, hope and life satisfaction (for example societal crises or unemployment rates). Also, in this study we measured life satisfaction, overall happiness and expectations using single-item questions, which, although shown to have acceptable validity (Cheung & Lucas 2014; Schimmack & Oishi, 2005), might yield different results compared to multi-items scales measuring SWB, such as the Satisfaction With Life Scale (Diener et al., 1985). Moreover, our sample seems to differ from the U.S. population on some of the main variables of this study, namely life satisfaction, expectations and income. In general, it appears that this sample is less satisfied and optimistic about the future, although the scores for hope are within the range of what could be expected. Moreover, since our income categories do not capture the US income distribution all that well, we have little information on how this mediating mechanism would work for the higher parts of the income distribution. However, a sensitivity analysis with only the two waves that have consistent information on higher income categories, indicates that the mediating relation of hope between income and life satisfaction also applies to these higher income categories. Overall, however, we still have to be very careful at extrapolating these findings to the U.S. at large. Furthermore, we cannot infer causality from our analyses; that is, we cannot claim with certainty that income causes us to be more hopeful, and that hope in turn is responsible for the changes in life satisfaction. All relations in our analyses could run in both directions, for example because hopeful people more easily find high pay-

ing jobs, or when happy persons become more hopeful. This could lead us to overestimate the real impact of the studied relations. Moreover, since the changes in our variables over time are relatively small, we can only make cautious claims based on our findings. However, the mediating role of hope in the relation between income and life satisfaction appears to be robust to changing methods and instruments, strengthening the credibility of our claims.

The findings of this study contribute to existing knowledge in several ways. First, by showing that hope is responsible for at least part of the relation between income and SWB, we can better predict in which circumstances higher income will have a meaningful influence on our wellbeing. That is, increased income might not have as much of an impact on our lives if it does not bring with it a sense of security and improved future prospects. This might for example be an important consideration when comparing the pros and cons of short-term contracts compared to longer-term employment-contracts. More generally, we find a robust and quite strong correlation between hope and life satisfaction, even when controlling for objective life-circumstances, indicating that hope really matters for our wellbeing. This would imply that people who lose hope, either because of low income, feelings of unsafety or lack of opportunities, are markedly less satisfied with their lives, with all its subsequent consequences (DeNeve et al., 2013). Second, by understanding the importance of the 'sustainability' of our income, i.e. the feeling that our future will be brighter because of it, we can better explain the apparent paradox of the relatively limited predictive power of income on happiness, the so-called 'Easterlin Paradox' (Easterlin, 1973; Diener et al., 2013). Income might not increase SWB as much as expected partly because it does not always improve our perspectives on the future. Third, by investigating the linearity of the relation of SWB with hope and expectations, we can better understand when positive perspectives of the future translate into higher SWB. Although future research is necessary to study the potential 'disappointment effects' of extremely optimistic views of the future in more detail and in different contexts, we find no evidence that being either too hopeful or having very high expectations is harmful for wellbeing. This indicates that attention to the important human emotion of hope could greatly improve our understanding of what makes us enjoy our lives.

3.6 CONCLUSION

In conclusion, hope does seem to partially mediate the relation between income and SWB, measured either as happiness or as life satisfaction. This is the case for people with a middle to higher income, while expectations mediate the relation for all levels of income. In addition, we do not find evidence for diminishing returns on the relation between hope and expectations with SWB, signaling there is no or only a limited disappointment effect of being overly optimistic. For economists and other scholars interested in studying the effects of people's perception of the future on wellbeing, hope might be an interesting topic of research. Our

findings signal that policy aimed at increasing wellbeing through higher wages should take into account that the stability of income matters, and that only over a certain threshold income can offer enough possibilities to invest in a better future and as such create more hopeful and happy lives. Future research could focus on the specific conditions under which income does engender hope for the future, specifically by conducting larger-scale panel analyses and by studying the causality of these relations through experiments. Moreover, more elaborate examinations of the relation between expectation and wellbeing could investigate if and under which circumstances overly optimistic expectations might diminish wellbeing through disappointment.

4 Hope and sustainable behaviour

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4.1 INTRODUCTION

Lowering emissions through changed household consumption patterns could have a substantial impact on mitigating climate change (IPCC, 2014). An important case in this regard is the use of green energy, i.e. electricity derived from renewable sources such as wind or solar power. Research has indicated that electricity and heat production are responsible for about a quarter of global greenhouse gas emissions; that a range of green-energy technologies can provide electricity with less than 5% of the greenhouse gas emissions of coal power; and that substantial or even complete transition to green energy sources is feasible in most western countries (IPCC, 2014; Hansen, Breyer, & Lund, 2019). However, moving towards greater use of green energy is not solely a matter of technical feasibility, but also of the willingness of individual households to invest in new technologies and to adopt new behaviours. Accordingly, it is important to understand under which circumstances people are willing to use and pay for renewable energy.

Previous research on Willingness To Pay (WTP) for green energy has mainly focused on objective characteristics of the context, for example the GDP or urbanity of a certain region, and of individual respondents, such as income, age, gender and education level. Moreover, there are strong indications that subjective experiences and attitudes towards environmental issues, such as worry, confidence or scepticism, influence sustainable behaviour and WTP for green energy (Kals & Maes, 2002; Rowlands, Scott & Parker, 2003; Arkesteijn & Oerlemans, 2005; Gerpott & Mahmudova, 2010; Amador, González & Ramos-Real, 2013).

Existing research has, however, not yet drawn attention to the possible impact of hope, while this experience could potentially be an important determinant of WTP. Hope redirects our focus to the future and our ability to change this future; and simultaneously offers a positive, activating emotion that generally motivates people to tackle their problems (Snyder, 2002; Martin, 2011; Ojala, 2015). Indeed, hope has been related to sustainable behaviour and is an emotion many of us associate strongly with our experience of climate change and other environmental issues (Stevenson & Peterson, 2016; Bury, Wenzel & Woodyatt, 2019; Grund & Brock, 2019; Verlie, 2019).

This study therefore focuses on hope as a potential predictor for people's preparedness to invest in a more sustainable future. Using cross-sectional data from 905 adult citizens of the Netherlands, we investigate whether generalized as well as climate-specific hope is related to peoples' WTP for electricity generated from windmills through a national tax, and whether the impact of other attitudes such as worry and understanding is increased if they are combined with hope. We find that hope, as well as worry about and understanding of climate change issues, is associated with people's WTP for green energy. Moreover, we find that hope is especially important for people who are worried about the issue or don't understand it very well. However, a combination of false hope (i.e. hope based on unrealistic assumptions or on denial of the severity or urgency of the problems) with a lack of worry or the feeling that

one understands the issue very well, conversely leads to a considerably lower commitment to sustainability. This indicates that people might be best mobilized towards sustainable behaviour through a combination of awareness of the urgency of climate change issues and an optimistic hope for the possibility of a better future, while it is important to steer away from false hopes merely based on ignoring the problems at hand, especially for people who already think they understand the issue very well or are not very worried about it.

This study contributes to the existing literature in several ways. First, it helps us to better understand under which circumstances people may be willing to invest in green energy, and as such offers possible strategies to improve policies aimed at developing a more sustainable energy-system. Second, within the fields of positive psychology and behavioural economics, this study creates insights into possible practical implications of positive emotions such as hope in their relation to intended behaviour. If hope is indeed correlated with the intention to invest in sustainability, this would beg the ensuing questions of what 'types' of hope have the strongest relation with sustainable behaviour and attitudes. By also examining the effects of false hope, this study signals the risks of merely striving for more hope, rather than focussing on the 'right' kind of hope. Also, we study whether hope is more strongly related to WTP if combined with other attitudes, such as understanding and worry. Third, to environmental researchers, this study shows how attitudes and emotions could play a role in sustainable behaviour. Although no conclusions can be drawn about causality based on this study, and we cannot know to what degree the intention to act will translate to actual behaviour in a real-life scenario, we can infer that emotions are related to intentions to behave sustainably, indicating that it can be worthwhile to take emotions such as hope into consideration, on top of common objective predictors, when studying sustainable behaviour.

4.2 THEORY

4.2.1 Correlates of WTP

Existing meta-analyses on WTP for renewable energy indicate that, in general, consumers are willing to pay more for green energy[25], but that the exact amount of this premium varies widely. Soon and Ahmad (2015) for example find that the mean WTP estimate for renewable energy in 30 different studies ranges from -13.80 to 53.06 USD per month, depending on the specific circumstances of the study, such as the level of urbanity of the region where the study is conducted. In a meta-analysis on 43 studies, Sundt and Rehdanz (2014) furthermore report that WTP for renewable energy is significantly related to individual characteristics such as

25 Please note that WTP for green energy can refer to a premium people pay on top of their electricity bill, or to another payment vehicle, such as a tax for the development of green-energy options, such as the specific focus of this study, the construction of windmills.

knowledge about renewables, price, household characteristics, income and education[26]. So, the context of the study as well as objective, personal characteristics can lead to relatively large variations in WTP.

In addition to objective determinants, Oerlemans, Chan and Volschenk (2016) find that attitudinal beliefs are an increasingly important topic in recent studies on WTP for green energy. WTP for renewable energy has, for example, been linked to environmental concern; awareness of the consequences of climate change (Hansla, Gamble, Juliusson & Gärling, 2008; Amador, González & Ramos-Real, 2013); positive attitudes towards environmental protection (Gerpott & Mahmudova, 2010); awareness of the importance of renewable energy (Soon & Ahmad, 2015; Sundt & Rehdanz 2014) and exposure to information about energy resource issues (Zarnikau, 2003). These studies generally focus on cognitive attitudes, i.e. conscious and controlled beliefs about the world. Only recently, more emotional or affective attitudes have also been recognized as important drivers of sustainable behaviour (Kals & Maes, 2002). For example, willingness to invest in sustainability and green energy have been related to positive affect (Hsee & Rottenstreich, 2004; Sangroya & Nayak, 2017); emotional affinity toward nature (Müller, Kals & Pansa, 2009; Perkins, 2010); the 'warm glow' from contributing to a common good (Hartmann & Apaolaza-Ibáñez, 2012); moral emotions such as responsibility and anger; and worry about ecological risks and damages (Kals & Maes, 2002).

4.2.2 Hope and WTP

This study focuses on an experience which (to our knowledge) has not yet been studied in relation to WTP for green energy, namely hope. Previous studies have suggested that (constructive) hope is an important predictor for sustainable behaviour and environmental engagement (Ojala, 2012; Ojala, 2015; Stevenson & Peterson, 2016; Bury, Wenzel & Woodyatt, 2019); that climate change is an area of life where people specifically experience a lot of hope (Verlie, 2019); while this hope is often strongly contrasted to generally grim expectations (Grund & Brock, 2019). Hence, people are usually quite pessimistic about future developments concerning the environment, while they do hope for better outcomes, and these hopes generally translate into a willingness to change behaviour. This leads us to hypothesize that generalized hope, as well as hope aimed specifically at climate change, will go together with higher WTP for green energy.

Although there is no consensus on how to exactly define hope, there are some core characteristics which are deemed essential to the experience. In its most elementary form, hope comprises a *desire* for some future state of which we are *uncertain* whether we will be able to achieve it (see Chapter 2; Day, 1969; Martin, 2011). It can be either aimed at a specific object

26 Ma et al. (2015) find that factors related to study design could affect WTP scores even more than the actual factors under consideration in these studies, and therefore warn that it is important to take into consideration the specifics of studies under scrutiny of meta-analyses.

or comprise a more generalized affective focus on a desirable or better future (Cook & Cuervo, 2019). Alternatively, hope is about the belief that we can achieve what we want, and about creativity and persistence in our attempts to get there despite of obstacles (Snyder, 2002). This means that hope is a multi-dimensional phenomenon, comprising emotion, cognition and motivation, all aimed at trying to influence the future in our favour, all the while realizing that the future is uncertain and that persistent involvement is therefore necessary (see Chapter 2). As soon as we are certain whether our goals will or will not be achieved, our experience is no longer hope but rather expectation or hopelessness (Alarcon, Bowling & Khazon, 2013). Moreover, hope does not exist in isolation, but grows and is shared between people through social interaction (Cook & Cuervo, 2019). In this study, we focus both on generalized hope, defined as agency and resourcefulness in pursuing our goals; and on specific hope for a positive future concerning climate change issues.

We anticipate that hope has a particularly important role in motivating sustainable behaviour, because it shifts people's focus to their impact on the future, and offers a positive, constructive incentive that 'pulls' people in. First, while being aware of current climate change issues might make people feel more favourable towards sustainable alternatives, an understanding of one's ability to influence the future is essential to mobilize people towards more sustainable behaviour. Indeed, previous research has found that people who are focused on the future tend to exhibit more pro-environmental behaviour (Carmi & Arnon, 2014). Joireman and colleagues (2004), for example, report that understanding the negative impact of car-use only increases people's public transport-use if they are aware of the future consequences of their own behaviour. It thus seems that we not only need to believe that there is a problem, but also that we can influence how this problem will develop, both individually and within our social context (Cook & Cuervo, 2019). Moreover, the uncertain nature of hope, i.e. we want something to happen, but cannot be sure that it will, implies that our hopes demand our intentional effort, because we cannot otherwise be sure we will reach our goals. Indeed, in their willingness to invest in sustainability, people seem not to be deterred by the uncertainty of such investments (Torres, Faccioli & Font, 2017). Second, hope comprises a positive experience that generally helps people take on a pro-active stance and to address their problems (Snyder, 2002). Experiencing worry about the consequences of climate change might ignite the desire to help alleviate the issue, but in the absence of hope for alternative behaviours, negative emotions such as fear tend to paralyze and inhibit people from trying or sustaining new behaviours, whereas positive emotions tend to ignite open-mindedness, creativity and action-tendencies (Fredrickson, 2001; O'Neill & Nicholson-Cole, 2009).

All in all, we expect that hope is a strong catalyst for sustainable behaviour and WTP for renewable energy because it directs people's attention to their ability to change the future and because it offers a positive, motivating emotion regarding an otherwise generally grim topic. However, we do not presume that more hope is always better. Hope in the absence

of worry about or understanding of the urgency of climate change might indicate denial of the issue, which will most likely not motivate people towards investing in sustainability (Ojala, 2012). Therefore, it seems plausible that only realistic hope, which is not based on denial, will motivate people to invest in green energy. Moreover, we expect that it is most likely the *combination* between awareness of current climate problems and a positive view of possibilities for improvement in the future that is key to people's propensity to behave in a sustainable manner.

4.3 METHODOLOGY

4.3.1 Data

The data for this study was collected in November 2018[27] through a survey among respondents of the LISS-panel (Longitudinal Internet Studies for the Social sciences). This panel is maintained by CentER-data, a research institute affiliated with Tilburg University, and is representative for the population of the Netherlands. The Netherlands is a good case study because despite the fact the Netherlands has a long history with windmills and dams and the Dutch government wants to have almost 100% sustainable energy by 2050, the Netherlands is far behind other European countries regarding the adoption of green energy. In 2018, the share of energy from renewable resources in the Netherlands was just over 7%, which is far behind most European countries (Eurostat, 2020). Green energy is at the moment subsidized (resulting in a high willingness for households to buy green energy), but to move forward with the energy transition, more investments have to be made, resulting in a higher energy costs for households.

In total, 905 participants filled out the survey. Most questions included an 'I don't know/ Don't want to answer' option, meaning that we have some missing data for most variables, 706 of the respondents answered all the questions of the survey[28]. Demographic characteristics of the sample can be found in Table A4.1 in Appendix 4.1[29].

27 Some climate-related contextual factors are important to take into account for this period; at the start of this month, the Netherlands experienced some of the hottest days recorded in November, which led to some discussions on climate change in the media. Also, there was some media-coverage of upcoming climate-protests in the Netherlands and Belgium in December and about the Climate summit at Katowice planned for the start of December. These circumstances might have caused somewhat heightened public concern and engagement concerning climate issues.

28 For each specific model, cases with one of the variables missing was dropped, the number of cases therefore varies somewhat between models.

29 No weights were applied, as the sample was largely representative of the Dutch population (see Table A4.1 in Appendix 4.1).

4.3.2 Contingent valuation

To assess WTP for green energy, this study uses the contingent valuation (CV) method, a widely used stated preference approach in which respondents are asked to express the value they attach to non-use or nonmarket goods, such as environmental conservation or clear air and water. Since the use of windmills to generate electricity is a common practice in the Netherlands, it constitutes a relatively familiar good of which most, if not all, respondents will have some knowledge, making it a suitable topic for the CV method (MacMillan, Hanley & Lienhoop, 2006). However, since it is not a good for which most consumers are used to determine a value (as we do with common consumer goods), an anchor was provided by offering upper and lower boundaries from which to choose (Venkatachalam, 2004). The specific details of the method are discussed in the following paragraph and a further consideration of the CV method is included in the discussion.

4.3.3 Instruments

Willingness to pay in this study refers to the amount people are willing to pay as a monthly tax-raise for all taxpayers of the Netherlands for the duration of one year, considering their net household income, in order to construct enough windmills to offer electricity to one million households[30]. To help respondents frame their response, they were firstly asked withing a range from €0 to €100, what amount of tax they were certainly willing to pay[31]. Subsequently, they were asked what they were certainly not willing to pay because they thought it would be too expensive. Finally, we reported back to respondents and asked an open question: "*you have indicated that you are willing to pay between €X and €Y for the construction of one million windmills by the Dutch government. What amount comes closest to the maximum amount of money you are willing to pay per month to construct these windmills*?" (with €X as their answer to the first question and €Y as their answer to the second question). If people indicated they were willing to pay no more than €0, they were subsequently asked their reasons for choosing this option. Answering categories were "*Building these windmills is not worth more than €0 to me*", "*I cannot afford more than €0*", "*The government should pay for this*", or "*Other*". We regarded the first two options as a 'true zeros'[32] and the latter two as 'protest zeros', since respondents in the first category are prepared to contemplate the value of green energy and

30 Please note that this approach thus differs from other studies in which people are asked what premium they are willing to pay on their personal electricity bill, for a higher share of renewables in their energy mix.

31 In the development of this scale, we calculated that if every one of the 13.5 million Dutch taxpayers would contribute €25 per month, this would cover the costs of enough windmills to provide electricity to 1 million households. The scale included the following options: €5, €10, €15, €20, €25, €30, €40, €50, €75 and €100, with the option for €25 at the optical middle. After indicating the lower and upper boundaries of what they would pay on this scale, respondents could indicate their maximum WTP in a bounded open question.

32 We consider people who are unable to pay as true zeros, because they would also not pay for green energy in a real market-situation. However, in our analyses we studied both the option of including this group as 'true' and 'protest' zeros, and the overall results remained the same in both categorizations.

decide it has no additional value to them, whereas respondents in the latter categories for various reasons do not express a monetary value, but use the €0 option to opt-out of the experiment (Bobinac et al., 2014; Himmler et al., 2020). People who indicated they were willing to pay more than €100 in the first question were asked how much they were willing to pay on a monthly basis.

Hope was measured using two hope-scales. The first is the Adult Trait Hope Scale by Snyder and others (1991). This instrument defines hope as a combined sense of agency in reaching one's goals and the ability to come up with several pathways towards these goals. This twelve-item scale includes statements such as "*I can think of many ways to get out of a jam*" and "*I energetically pursue my goals*", which are rated by respondents on a seven-point scale[33]. The second scale is a climate change-specific hope scale developed by Ojala (2015), which asks how hopeful people are when they think about climate change and differentiates between sources of this hope, such as trust in others, trust in self, positive reappraisal and denial. Example statements are "*I feel hope concerning climate change because I believe that research and technical solutions will contribute to the improvement of the climate change problem*"; "*I feel hope concerning climate change because ultimately we will be forced to take climate problems seriously and to take our responsibility*" and "'*I feel hope concerning climate change because I do not think that climate change is as big of a problem as certain researchers claim*".

To measure *worry about climate change* respondents were asked whether they worry about climate change or global warming, with the following answering options: "Very worried", "Fairly worried", "Hardly worried" and a "Don't know" option.

Understanding of climate change issues was measured using a single-item asking respondents whether they felt they understood climate change, with four answering-categories ranging from "Very well" to "Not at all" (and an option 'Don't know'). These categories were condensed to two options "(Very) well" and "(Very) bad" for our analyses.

Several control variables were included in the analyses, namely age, gender, income, ethnicity, household composition, employment status and urbanity of living environment. The choice for these control variables is based on previous findings on the correlates of WTP for green energy, as they are likely to confound the relationship (Zarnikau, 2003; Sundt & Rehdanz, 2014; Soon & Ahmad, 2015). A full description of the control variables and their categories can be found in Table A4.1 in Appendix 4.1.

4.3.4 Descriptive Statistics

As can be seen in Table 4.1, participants in this sample are relatively hopeful, as they score a mean of 5.0 on a scale of 1 to 7. They are however a lot less hopeful when it comes to climate change specifically; here people score on average a 3.6 (on a scale of 1 to 7). People

33 Four of these items are fillers.

generally tend to disagree with the statements that portray hopefulness about the climate based on denial (average score 2.7) and score higher on statements related to trust in others, themselves or positive reappraisal (average score 4.5). The majority of people is "hardly worried" about climate change (59%) followed by "fairly worried" (31%), and the smallest group is "very worried" (10%). The majority of the sample feels they understand climate change either well or very well (71%), leaving less than a third that states they have a (very) bad understanding of climate change (29%).

Table 4.1 | Main variables

	N	Mean (SD) / Percentage	Min / max
Generalized hope (1-7)	902	5.0 (1.0)	1/7
How hopeful are you about the climate? (1-7)	900	3.6 (1.2)	1/7
Climate hope based on… (1-7)			
Denial	897	2.7 (1.2)	
Other reasons	897	4.5 (1.0)	
Worry about climate change			
Very worried	85	10%	
Fairly worried	264	31%	
Hardly worried	501	59%	
Understands climate change			
(Very) well	594	71%	
(Very) bad	247	29%	
Willing to pay no more than €0	223	25%	
Reason for WTP €0			
Not worth more ('true zeros')	43	19%	
Cannot afford more ('true zeros')	23	10%	
Government should pay ('protest zeros')	92	41%	
Other (protest zeros')	65	29%	
Willing to pay over €100	6	1%	
Average WTP		€192 (123)	125/400
WTP[3]	733	€22.0 (18.5)	0/100

3 With true zeros, without protest zeros and outliers over €100

When asked how much people are willing to pay for green energy, about a quarter of the sample is not willing to pay any money for the construction of windmills. Of this group, the majority states they don't want to pay because they think the national government should pay for it (41%) and about a third (29%) has other reasons for being unwilling to pay. A tenth (10%) cannot afford to pay and about one fifth (19%) don't think the construction of windmills is worth any money. The last two groups are what we consider the 'true zeros', since they are in a situation where they did truly consider the value of green energy, yet decide it is worth nothing to them (similar to Bobinac et al., 2013; Himmler et al., 2020). The other groups, i.e. the 'protest zeros' were not included in the WTP measure used in our analyses. Less than 1%

(i.e. six people) of the sample is willing to pay more than €100 per month, with an average of €192. Considering the small number, we regarded this group as outliers and therefore did not include them in the measure of WTP used in our regressions. The average WTP, including the true zeros and excluding protest zeros and outliers, was about €22. To account for the skewed distribution of WTP and the non-linear relation between WTP and other measures[34], similar to income and consumption, where each additional euro or dollar has decreasing marginal effects, we calculated a logarithmic transformation of WTP. For the same reasons, income was also included in log-transformed form.

4.3.5 Analysis

In our analyses we want to investigate whether attitudes such as hope are related to the height of people's WTP for renewable energy using Ordinary Least Squares estimation (OLS). However, our sample could be biased, since only a subset of the respondents provides their WTP, and the missing cases (i.e. the protest zeros and outliers) are very likely not missing at random, i.e. incidental truncation. Therefore, we will first test whether and, if so, how these excluded groups differ from our sample using a probit model on the likelihood someone gave a 'protest answer' and was thus excluded from the analyses. Moreover, our sample has a skewed distribution, with a large subset scoring a zero. Therefore, we use a Heckman selection model, which calculates OLS estimates of the relation between WTP and several independent variables conditional on the outcome of a probit regression on the probability that someone would be willing to pay at least some amount for renewable energy (as compared to someone who reported a 'true zero').

4.4 RESULTS

4.4.1 WTP in the current study

As reported in Table 4.1, respondents in this study were willing to pay an average of €22 per month for the duration of one year for the construction of enough windmills to offer electricity to 1 million households. In comparison, installing solar panels for a single-person household costs about €17 per month for a duration of 25 years (Consumentenbond, 2019a); switching from normal to organic groceries would cost a single-person household about €130 per month (Consumentenbond, 2019b; Nibud 2020); and residents of the Netherlands give an average of €12 per month to charities (Goede Doelen Nederland, 2018). If we follow the standardization procedure from Soon and Ahmad (2015) by adjusting this number to the 2013 base year USD value using the Consumer Price Index, this would yield an average of

34 Based on skewness and comparing R-squared of linear regressions on log-transformed and unaltered WTP. See Appendix 4.1, Table A4.6 for the results.

23.81 USD, which is quite a bit higher than the average of 7.16 USD that they found, but not as high as the highest WTP value in their meta-analyses of 52.38 USD[35,36]. Moreover, we find quite a high variability, with a standard deviation of €19 (equivalent to 22.50 USD) and as can be seen in figure 4.1, a distribution skewed to the right, with a median of €17 (20.13 USD).

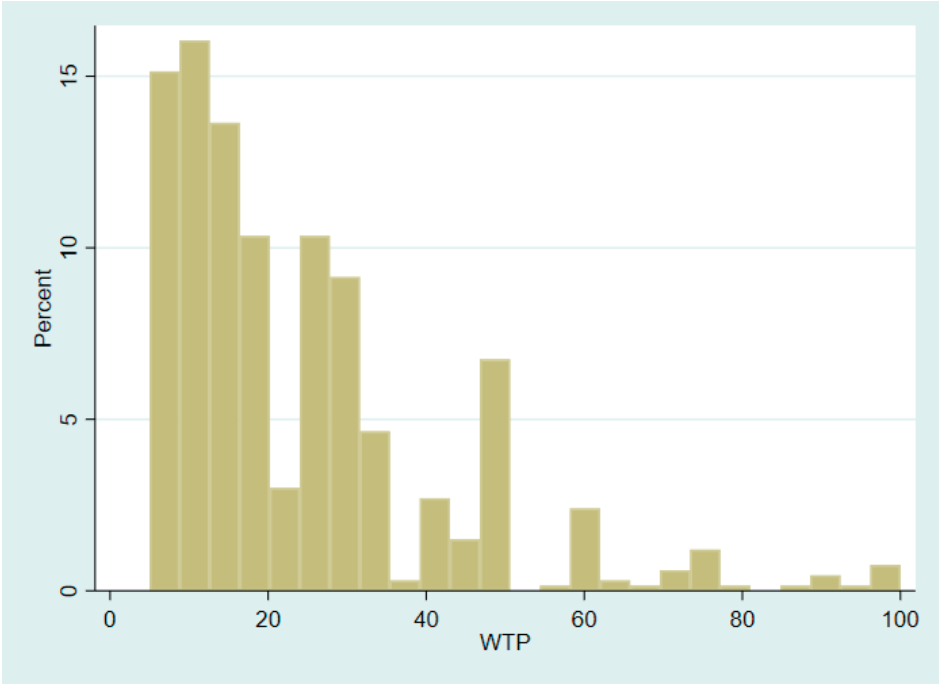

Figure 4.1 | Distribution of WTP

4.4.2 Correlates of WTP

Not all respondents are included in our analyses on WTP; people who reported that they did not want to pay for green energy because they thought the government should pay for it, or for other reasons did not want to attach any worth to it, were excluded since we consider these to be 'protest answers'.[37] These respondents are not willing or able to express the value they attach to green energy, and we can therefore not be certain whether they truly think it is worth nothing to them, or that they simply do not want to participate in the experiment.

35 It is important to note here that WTP in the current study was measured as peoples' preparedness to pay for green energy in the form of a tax payed for by all taxpayers in the Netherlands, not as a premium on their personal electricity bill.

36 It is also important to note that the meta-analyses by Soon & Ahmed was almost five years old by the time the current study was conducted, which would reflect quite a different context.

37 Including the protest zeros as 'normal' zeros yielded, however, no different conclusions regarding the relationships between hope and WTP. These results are available upon request.

We find that this group of respondents is not missing at random, but that certain personal traits are significantly related to the probability to give a 'protest answer'. In this sample, protest answers were more likely given by people with a low income; who are unemployed; or who base their hope for mitigating climate change on denial of the issue rather than other reasons; while people with a part-time job are less likely to give a protest answer (see Table A4.4 in Appendix 4.1 for full results). These results thus indicate that a specific part of the population has no interest in valuing green energy, in part because they don't believe climate change is a problem.

The likelihood that someone attaches no additional value to green energy (i.e. the true zeros) is higher for men, first generation non-western immigrants and people living in very strongly urban households. If someone is willing to pay some amount, analysis shows that this amount is lower for women and people with lower income (see Table A4.5 in Appendix 4.1 for full results).

4.4.3 Attitudes towards climate change and WTP

Different attitudes do appear to have a relation with people's WTP for green energy. As can be seen in Table 4.2, participants who are more generally hopeful are on average willing to pay more[38]. The effect size is relatively small; for each 1-point change in hope (on a scale of 1 to 7), WTP changes about 7%. Moreover, we find that hope specifically aimed at climate change has no relation to the size of WTP. When we differentiate between the reasons for feeling this specific type of hope, we can see that people who are hopeful about climate change because they do not think it is an important issue, i.e. those who deny its urgency, are willing to pay less (with each change in hope on a 1-7 scale related to a 10% change in WTP), whereas people who are hopeful about climate change for other reasons, i.e. trust in oneself or others, are not. Similarly, people who are hardly worried about climate change (with WTP 17% lower for those fairly worried and 34% lower for those hardly worried, compared to very worried) or do not understand the issue very well (12% lower than those who do), are also inclined to pay less than those who are worried or understand the issue well.

38 All models were checked for multicollinearity and heteroskedasticity, see Appendix 4.1. None of the models showed signs of multicollinearity or heteroskedasticity.

Table 4.2 | OLS regression of attitudes on a logarithmic transformation of WTP, conditional on the probability that someone is willing to pay some amount for green energy

	(1)	(2)	(3)	(4)	(5)	(6)
General hope	0.070*** (0.033)					
Hope about climate change		-0.068 (0.042)				
Climate-hope based on denial			-0.099*** (0.026)			
Climate-hope not denial				0.023 (0.032)		
Climate worry						
Very worried					Reference	
Fairly worried					-0.167* (0.100)	
Hardly worried					-0.341*** (0.096)	
Understands climate change						
(Very) well						Reference
(Very) bad						-0.121* (0.066)
Constant	1.457*** (0.438)	1.981*** (0.421)	1.966*** (0.393)	1.687*** (0.409)	2.040*** (0.424)	1.830*** (0.409)
N	636	636	636	636	621	612
Wald chi^2	35.49**	32.65**	47.54***	33.07**	53.37***	34.02**

Controlled for age, gender, income, ethnicity, household composition, employment status and urbanity of living environment. With robust standard errors.
* p<0.1 ** p<0.05 *** p<0.01

4.4.4 The combination of hope with other attitudes

When we investigate how the combination of hope with different attitudes affects WTP, we find some interesting results[39]. First, as can be seen in Table 4.3, we find that the relation of generalized hope with WTP depends on worry and understanding regarding climate change[40]. We find that for people who are very worried about climate change, hope has a more positive impact; for this group each change of one point in hopefulness is related with a change of about 24% of WTP, whereas this relation largely disappears for people who are only fairly or hardly worried. Conversely, hope appears to matter more for people with a poor understanding of climate change. For those with a (very) bad understanding, each one-point change in hope is related to about 14% higher WTP, whereas this relation largely

39 Please note that only significant findings are presented here. Non-significant interactions can be found in Table A4.7 in the Appendix 4.1.

40 Please note that this finding could also be reversed, i.e. that the impact of worry and understanding depends on generalized hope, a significant interaction indicates that the combination of the two variables determine the relation.

Table 4.3 | OLS regression with an interaction of hope, worry and understanding on a logarithmic transformation of WTP without zeros, conditional on the probability of respondent being willing to pay some amount

	(1)	(2)	(3)	(4)
General hope	0.238***	0.018		
	(0.092)	(0.037)		
Climate hope-denial			-0.394***	-0.126***
			(0.126)	(0.031)
Worry				
Very worried	Reference		Reference	
Fairly worried	1.035**		-0.733***	
	(0.524)		(0.247)	
Hardly worried	0.483		-0.728***	
	(0.507)		(0.244)	
Worry – General hope				
Very worried * hope	Reference			
Fairly worried * hope	-0.242**			
	(0.104)			
Hardly worried * hope	-0.166*			
	(0.100)			
Worry – Climate hope-denial				
Very worried * denial hope			Reference	
Fairly worried * denial hope			-0.370***	
			(0.136)	
Hardly worried * denial hope			-0.314**	
			(0.131)	
Understanding				
(Very) well		Reference		Reference
(Very) bad		-0.678**		-0.380**
		(0.329)		(0.182)
Understanding – General hope				
(Very) well * hope		Reference		
(Very) bad * hope		0.120*		
		(0.067)		
Understanding – Climate hope-denial				
(Very) well * denial hope				Reference
(Very) bad * denial hope				0.115*
				(0.063)
Constant	0.883	1.783	2.633	2.073
N	621	612	621	612
Wald chi^2	67.90***	46.67***	73.97***	58.00***

Controlled for age, age^2, gender, income, ethnicity, household composition, employment status and urbanity of living environment.

* p<0.1 ** p<0.05 *** p<0.01

disappears for people with a (very) good understanding. Second, the relation between hope based on denial and WTP also depends upon understanding and worry[41]. When hope based on denial is combined with a lack of worry, the negative relation with WTP becomes stronger. For people who are fairly or hardly worried, each change in hope based on denial is related to about 70% lower WTP, while this is 'only' about 40% for people who are very worried. Again, conversely, denial-based hope has a specifically negative relation with WTP for people who have a (very) good understanding of climate change. Those who indicate they have a (very) good understanding of climate change, hope based on denial is related to about 13% lower WTP, whereas this relation largely disappears for people with a (very) bad understanding of the issue.

So, generalized hope seems to play a specifically important role for people who are very worried about climate change and/or have a relatively poor understanding of the issue. This could be related to the finding that people who do not understand climate change very well are generally more moderate in their opinions on climate change (Stern, 2012) and that worry about climate change is generally related to emotional distress and anxiety (Fritze et al., 2008), meaning that in both cases, hope could offer a welcome, activating perspective, leading to more pro-active, sustainable behaviour. Denial-based hope, on the other hand, is especially harmful for WTP if it is combined with a lack of worry and when people feel they understand the issue very well. This indicates that hope can play an important role in attitudes towards green energy, but that more hope is not necessarily always better; realistic hope appears to be essential to motivate sustainable behaviour.

4.5 DISCUSSION AND CONCLUSION

When it comes to sustainable behaviours such as willingness to pay for green energy, it is important to know what influences people's choices. Previous research has shown that emotions matter in this regard. In this study we hypothesized that hope is an important motivator for sustainable behaviour. Hope directs our focus to how we can impact the future and offers a positive, activating experience when it comes to a generally challenging societal issue such as climate change. Our results show that generalized hope does indeed relate positively to people's WTP for the construction of electricity-generating windmills, as do worry about and understanding of climate change. Moreover, we find that hope is especially important for people who are very worried or have a relatively poor understanding of the issue. Focusing on hope could therefore be especially important for the group of people who indicate that they do not understand the issue very well or are very worried about it. False hope, however,

41 Again, this relation could also be interpreted in reverse, meaning that the impact of worry and understanding with WTP depends on denial-based hope.

is especially harmful for WTP if it is combined with a lack of worry or the feeling that someone understands the issue very well. Thus, although it is important to combine a realistic understanding of the dangers of climate change with a more optimistic hope, we should be wary about creating false hopes, especially for those who are not worried by the issue or think they understand it very well, as these are likely to corrode commitment to sustainability. This study contributes to the current literature by showing how positive emotions can help to create greater support for sustainability, but at the same time warns against a simple 'more is better' approach. Although feeling hopeful increases our commitment to sustainability, false hopes could actually worsen the situation.

There are several limitations to this study. First and foremost, our results are based on a cross-section, so we cannot infer causality. Although we find that hopefulness generally goes together with higher commitment to sustainability, we cannot conclude that increasing hope would necessarily cause greater commitment. Moreover, although our sample is representative for the Dutch society on personal traits such as age, gender, income and employment status and hence the findings may be generalizable to the Netherlands as a whole, we cannot infer that our conclusions also apply to other regions or populations, especially if the environmental, cultural or economic context is quite different from the Netherlands. Therefore, future research could further examine the possibility of fostering constructive hopes, and how this might affect environment-friendly behaviour, as well as study the same topic in different contexts. In addition, we focused on wind turbines, which are not uncontested in the Netherlands since they are often considered ugly marks on areas of natural beauty and tend to kill flying wildlife. In this regard, it would also be worthwhile to further study the relationship between WTP and hope for other types of renewable energy, and to examine hope in relation to Willingness To Accept (WTA) wind turbines in close proximity to one's living space. Moreover, although contingent valuation is regularly used to assess the value of environmental goods, the method is by no means free from criticism, mainly with regard to the validity and reliability of its results and the effects of several biases and errors in eliciting people's WTP (Venkatachalam, 2004; Van Exel et al, 2006). We have aimed to limit the effects of such biases as much as possible, by for example offering a broad and realistic anchor with upper and lower boundaries; using a realistic payment vehicle (national tax); using a payment vehicle which prevents (or at least greatly diminishes) free-riding; using an environmental good with which most or even all respondents have some familiarity; using a scenario which is realistic, plausible, can be clearly understood and entails little uncertainty; and using a large sample size (Bateman et al., 1995; Venkatachalam, 2004). This does however not mean that the data is completely without bias, so it should be kept in mind that when offered with a real-life opportunity to pay for green energy from windmills, people might act differently from how they stated in this study (Byrnes, Jones & Goodman, 1999). Lastly, although not necessarily a limitation, in this study we measure WTP as the willingness to pay a tax, that would also be paid by all other taxpayers in the Netherlands. This thus differs from studies which focus on

WTP for a premium on people's personal electricity bill for a greater share of renewables in their electricity mix. Contrary to such studies, in the current study, WTP is thus framed from a societal rather than individual perspective, which may influence the amount people are willing to pay (Wiser, 2007; Akcura, 2015). This is in line with some other studies valuing a good of common benefit, rather than private goods that can be acquired through a market (e.g. Bobinac, Van Exel, Rutten, & Brouwer, 2013; Himmler, Van Exel, Perry-Duxbury & Brouwer, 2020). Future research could examine whether our findings also apply to the premium people are willing to pay on their electricity bill for green energy.

In conclusion, we find that WTP for green energy is positively associated with generalized hope, and understanding of and worry about climate change. Hope based on denial, however, goes together with lower WTP. Moreover, generalized hope is specifically important for those who worry a lot about climate change, or do not understand the issue very well, while hope based on denial is especially harmful if people don't worry about the issue or feel they understand the issue quite well. A call for greater commitment to sustainability would thus be aided by fostering realistic hopes, but not naïve ones. These findings could help to frame sustainability policies and measures in a way that maximizes people's willingness to support and contribute to investments in climate change mitigation. Fostering realistic hopes could go together with increased sustainable behaviour, especially if people don't understand the issue very well, but are worried about its implications. However, spreading a hopeful message regarding climate change, without also addressing the seriousness and urgency of its risks, might actually go together with decreased commitment. Policies could foster such realistic hopes through educational programs and messages that underscore the uncertainty of future developments regarding climate change, which therefore require our ongoing interest and effort.

5 The joy of lottery play

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5.1 INTRODUCTION

The average return on lottery tickets is typically just over 50%, which is considerably lower than the average return on other gambling games, such as horse racing, blackjack and roulette (Clotfelter and Cook 1990). Although buying lottery tickets is not a rational investment from a financial point of view, lottery play is the most popular form of gambling and the majority of the population participates at least once a year in a lottery (Kearney 2005; Garvía 2007). In 2015, the sales in the European lottery sector amounted to approximately €80 billion (The European Lotteries 2015), with European citizens spending on average €100 per person per year on lottery tickets. To increase our understanding of lottery participation, we conducted a field experiment randomly providing free lottery tickets to some participants of an existing household panel survey.

In the economics literature, several explanations for widespread lottery play have been put forward. Already at the end of the 1940s, Friedman and Savage (1948) argued that lottery play offers an opportunity to win substantial amounts of money and improve one's socio-economic status at a relatively low stake. Following the Friedman–Savage hypothesis and its later extensions and modifications (e.g, Pryor 1976; Brunk 1981; Hartley and Farrell 2002; Nyman et al. 2008), lottery play is considered rational when it offers the opportunity to improve one's socioeconomic status or lifestyle when there are few or no other options to realize this otherwise. In prospect theory, widespread lottery play has been attributed to irrational beliefs that people uphold regarding their chances of winning a lottery since people tend to overweight the small chances of winning the lottery (Kahneman and Tversky 1979).

Although there is some empirical support for both the Friedman–Savage theory and prospect theory, several scholars (e.g., Conlisk 1993; Clotfelter and Cook 1990; Scott and Gulley 1995) argue that these theories only partly explain people's propensity to gamble. In particular, the Friedman–Savage theory suggests that lottery is predominantly played among the low and middle social classes. Poorer people indeed tend to spend a larger proportion of their income on lottery tickets (Beckert and Lutter 2013), but the theory cannot explain why people play the lottery also in those parts of the income distribution where additional wealth does not result in much additional expected utility (Walker 1998; Perez and Humphreys 2013). According to prospect theory, some people participate in lottery play because they largely overweight their small chances of winning. However, also this theory cannot explain widespread gambling because most lottery participants have quite rational expectations regarding the outcome of a draw (Forrest et al. 2000).

A different explanation for widespread lottery play that has received less empirical attention in the economics literature is that lottery play itself has a utility value (Hirshleifer 1966;

Eadington 1973; Loewenstein 1987; Conlisk 1993; Le Menestrel 2001).[42] In other words, there is a non-monetary or process utility of participating in a lottery. Lottery players may experience positive emotions before and after the draw. Positive emotions before the draw may result from one's hope for a happier life, from the fun and excitement of the game as well as from social bonding activities when the lottery is played together with family or friends (Forrest et al. 2000; Guillén et al. 2011; Kocher et al. 2014). Positive emotions after the draw may originate from winning a prize, even when the prize is only very small and lower than the purchasing price of the lottery ticket. In addition to the monetary utility of winning a prize, there may also be a non-monetary utility of winning unrelated to the magnitude of the prize (Sheremeta 2010). Since most lotteries have many small prizes and the chance of winning a prize is high (in the lottery in our experiment the probability to win a prize is 50%), this could explain the widespread popularity of lottery play, including (seemingly) irrational behaviour and the fact that lottery play takes place across the whole income distribution.

While this utility of gambling model has considerable appeal, there is limited empirical evidence in support of this model (Perez and Humphreys 2013). This is probably due to the difficulty of identifying an appropriate observable proxy for the procedural utility generated by playing the lottery (see also, Nyman et al. (2008)). Happiness measures, as suitable indicators of procedural utility measures, have been suggested and applied in economic research (Frey and Stutzer 2002; Frey et al. 2004). Burger et al. (2016), using the British Gambling Prevalence Survey 2010, found a small positive effect of lottery participation on happiness for individuals who engage in lottery play for fun. Bruyneel et al. (2005) reported that the purchase of lottery tickets is associated with reducing negative mood. Along similar lines, in a lab experiment Kocher et al. (2014) identified hope and thrill as determinants of the popularity of Lotto tickets. Other studies showed a positive relationship between the hope of winning and lottery participation (Forrest et al. 2000; Clarke 2005; Ariyabuddhiphongs and Chanchalermporn 2007). These findings are also echoed in studies that examined the motives for lottery play: people do not only play for the money, but also for social bonding and fun (Miyazaki et al. 1999; Burger et al. 2016).

In our study, we focus on understanding participation in lotteries. We investigate the utility of lottery play using a field experiment. Some randomly selected participants in a regular panel survey were provided with a free ticket of the Dutch State Lottery while others were

42 Another explanation for the popularity of different gambling games is that lottery play is not perceived as gambling and relatively free of social stigma (Ariyabuddhiphongs 2011), unlike for example horseracing betting and casino play. In addition, lotteries are more accessible compared to other forms of gambling (Felsher et al. 2004) and characterized by an extreme skewness of prizes (there is often only one extreme big prize), which is thought to make lotteries relatively attractive (Garrett and Sobel 1999). However, a further discussion on the popularity of the lottery compared to other forms of gambling is beyond the scope of this paper.

not.[43] We assess the procedural utility of lottery play by comparing the change in momentary happiness (i.e. happiness experienced today) of lottery players and non-lottery players at three points in time: (1) before receiving a (free) lottery ticket, (2) after receiving a lottery ticket but before the draw, and (3) after the draw. We examine both the procedural utility of lottery play before and after the draw. We hypothesize that before the draw, players may gain procedural utility from the excitement of playing the game, the hope of winning a large prize, as well as social bonding, while after the draw players may gain procedural utility from winning a small prize (which was in almost all cases smaller than the original retail price of the ticket). To rule out the possibility that the utility effect we observe is related to receiving a free lottery ticket, and to account for the fact that some people purchased a lottery ticket themselves, we compare four groups of people: with a free lottery ticket, with a purchased lottery ticket, with both a free and purchased lottery ticket, and without a lottery ticket.

Our paper contributes to the economics literature on lottery play and consumption in several ways. First, although many economic studies have addressed the utility gains of lottery wins, this is to the best of our knowledge the first paper to causally identify the procedural utility of lottery play using a large-scale field experiment. Second, in our study we take into account that lottery players may gain procedural utility before and after the draw. We find that lottery participation increases momentary happiness before the draw, but winning a small prize has no effect on momentary happiness. These results indicate that there is a procedural utility of gambling in the sense that people do not only care about winning prizes, but also enjoy the game. We conclude that lottery play has a utility value in itself. Third, and more generally, our article shows that consumption outcomes are not the only source of utility, but consumers also enjoy procedural utility, which is in turn a driving force behind consumer behavior (Frey and Stutzer 2002; Frey et al. 2004).

5.2 EXPERIMENTAL DESIGN AND DATA

For our field experiment we used the CentERpanel, a household panel that is maintained by CentERdata, a research institute affiliated with Tilburg University. The panel is representative of the Dutch population and exists since 1991. Currently, the CentERpanel contains well over 2000 households. Panel members use their computers or smartphones to participate in the study and complete questionnaires on a weekly basis. All CentER panel survey participants get compensated for filling out surveys by receiving CentERpanel points, which can be ex-

43 The State Lottery is the largest draw game lottery in the Netherlands. In contrast to other games in the lottery industry (e.g. Lotto, Toto, or scratch cards), a draw game lottery is passive since players cannot choose exact numbers and there is often a long time between draws. Furthermore, the revenues from the lottery are confiscated by the government. So, in comparison with other lotteries which use revenues to support good causes, the state lottery does generate less "warm glow".

changed for money or a gift certificate, or can be donated to charity. The number of points people received for filling out our survey was the same for people who received a free lottery ticket and people who did not receive a free lottery ticket.[44]

The initial objective of our field experiment was twofold: (1) investigate how people that infrequently play the lottery experience lottery play and (2) investigate the non-monetary utility effects of lottery play.[45] Participants in our experiment filled out a questionnaire at three moments in time. The first questionnaire, held between April 17–28, 2015 (T1) and filled out by 1611 panel members, was intended to obtain information about the participants' baseline level of subjective well-being, their gambling behavior—particularly with regard to lottery games—and their sociodemographic characteristics and personality. Subsequently, a large 1300 respondents (81%) were randomly invited to participate in the field experiment. Of the 1300 invitees, 1100 (85%) randomly received a free "full" lottery ticket (purchase price: €15) to participate in the State Lottery. Please note that the main reason why many people received a free ticket is that one of the objectives of the study was to investigate how people that infrequently play the lottery experience lottery play.[46] This ticket was sent approximately one week before the State Lottery draw of May 10, 2015.[47]

Next, all participants were asked to fill out a second questionnaire between May 8–10, 2015 (T2) with questions about their subjective well-being and thoughts about lottery play. After the draw of May 10, respondents were asked to complete a third questionnaire between May 10–12, 2015 (T3) about their subjective well-being, the outcome of the lottery draw (whether the participant won a prize or not), and thoughts about lottery play.[48] In total, 1299 participants finished the questionnaires at (T1) and (T2), while 1155 participants filled out all three

44 On average, CentERpanel participants receive 25 points per questionnaire, which has the value of 1 euro. Panelists who participate longer receive extra points. Specifically, after 40 weeks of participation a household receives 1.5 times the regular number of points, and after 100 weeks of participation households receive twice the regular number (Teppa and Vis 2012).

45 For this reason, we gave many people a free lottery ticket, resulting in the uneven group sizes for the four experimental conditions.

46 Individuals can participate in the State Lottery in the Netherlands by buying separate lottery tickets or through a subscription. About half of the individuals who bet in the State Lottery do so through a subscription. There are monthly draws of winning tickets and sometimes special draws are organized at the end of the year or on other occasions. There is also a Jackpot, an additional large prize of at least €7.5 million. The Jackpot is not guaranteed in each draw and, if there is no ticket that wins the Jackpot in a certain draw, the full amount is transferred to the next one. For participants, there is choice between "full" tickets of €15 and "partial" tickets of €3 which pays one fifth of the full amount if it is a winning ticket. Bigger prizes in each draw range from €1000 to €1 million. Each draw also has smaller prizes, ranging from €5 to €1000. In our experiment, at most one person per household could participate in the experiment. Total ticket spending on the project amounted to €16,500. It was fully clear to respondents that the free State Lottery ticket they received was related to their participation in the CentERpanel. Two respondents in our experiment returned the lottery ticket for religious reasons.

47 In May 2015 the Jackpot of €13.5 million was paid out; the expected earnings were €10.25 per ticket. In 2015 there were 16 draws of the State Lottery with a total revenue of €692 million and a net of lottery taxes prize money of €413 million which makes an average of €26 million of prize money per draw (see Nederlandse Staatsloterij 2016).

48 The possibility to fill out the questionnaire at T2 ended before the draw on May 10. The possibility to fill out the questionnaire at T3 started after the draw on May 10.

questionnaires. After deleting observations with missing data, the analysis sample includes 1142 participants in the T1–T2 comparison and 1097 respondents in the T1–T3 comparison. We base our analyses on these two groups. To examine the effect of lottery play on procedural utility, we distinguish four groups: (1) people without a ticket, (2) people with only a free lottery ticket, (3) people with only a purchased lottery ticket, and (4) people with both a free and purchased lottery ticket.[49] This distinction is important fortwo reasons. First, in our field experiment we cannot rule out that people purchase or have already purchased tickets for the lottery draw. By giving away free tickets for the lottery draw, we try to bypass the problem that our results could be distorted by a selection of happy people or thrill-seekers into lottery play. Second, having only participants with a free ticket and no purchased tickets would also have been a problem, since the procedural utility of participants can originate from obtaining the free ticket itself, when this is considered as a small gift. Overall, we have in our field experiment 122 participants with no ticket, 673 participants with only a free ticket, 49 participants with only a purchased ticket, and 298 participants with both a free and purchased ticket.

We capture procedural utility with momentary happiness, which is measured by the following question: 'How happy do you feel today?' with answer categories ranging from 1 (very unhappy) to 10 (very happy).[50] In particular, we are interested in how people's daily happiness develops around the lottery draw. On average, the participants in the field experiment scored 7.6 in the first questionnaire, 7.5 in the second questionnaire, and 7.4 in the third questionnaire. These scores are comparable to the average happiness obtained in the Netherlands from other Dutch surveys (Veenhoven 2018).[51]

Because of the experimental set-up there is no need for including control variables but we nevertheless did this to account for possible non-randomness in the set-up. As control variables, we included several personal and personality characteristics. The personal characteristics we included are gender, age, income, educational attainment, occupational status, marital status, household composition, and characteristics of the place of residence. The personality characteristics we included are based on answers to questions regarding level

49 As suggested by one of the reviewers, an alternative setup would be to incorporate a condition in which one of the groups receives cash. However, due to budget limitations we were not able to extend the experiment.

50 We use a more momentary measure of subjective well-being instead of the more stable life satisfaction measure, since procedural utility is better operationalized by survey questions that capture 'happiness in life' than survey questions that capture 'happiness with life' (Veenhoven 2000).

51 Declining happiness scores have also been found in other panel studies where through panel conditioning people report lower happiness scores the longer they participate in a panel (Chadi 2013) whereas Van Landeghem (2014) notes that these panel effects vary widely across studies. However, because of the small calendar time period between our subsequent surveys panel attrition is an unlikely candidate to explain the overall drop in happiness we find. Nevertheless, even over a short time period circumstances under which respondents fill in questionnaires may differ. We find that reported happiness is higher in weekend-days and lower on rainy days. This explains at least part of the drop in overall happiness. The gap between T1 and T2 is largely explained by more rain in T2 while a substantial part of the drop in happiness between T1 and T3 is explained by almost half of the respondents answering the T1 questionnaire in the weekend compared to no-one in T3.

of materialism, locus of control, and degree of optimism. In addition, we controlled for the general gambling behaviour of the respondents as well as the date on which the respondents completed their questionnaires and how they experienced the survey questionnaires, i.e. whether they enjoyed answering the questions or whether they found it difficult. Finally, we controlled for changes in life satisfaction in the period under observation to account for possible events that affected people's happiness with life over the period studied. Nevertheless, it should be noted that the evaluation of life satisfaction is—like happiness today—also dependent on momentary moods. Hence, the models in which we control for life satisfaction changes can be considered as conservative estimates for the procedural utility of lottery play.[52]

As a robustness check, we investigated whether the joy of lottery play was contingent on thoughts about the lottery draw and positive and negative feelings regarding the draw, and willingness to pay for a lottery ticket. In our survey at T2, we asked the respondents how often they thought about the State Lottery. Answer categories ranged from 1 (never) to 7 (all the time). In addition, lottery players were asked the following question before the draw (T2): 'What emotions do you experience when you think about your participation in the draw of the State Lottery of May 10th?'.[53] Respondents indicated on a scale from 1 (not at all) to 7 (completely) to what extent they felt happy, hopeful, excited, curious, trusting, amused, and friendly (positive emotions) as well as to what extent they felt worried, sad, annoyed, disappointed, regret, distant, and indifferent (negative emotions). Willingness to pay was examined in the survey at T1, where participants had to make a choice between receiving a small sum of money or a lottery ticket with a retail price of €15 in a hypothetical experiment. An overview of the variables included in the analysis is presented in Appendix 5.1, while the questionnaires are available in online Appendix 5.2.

5.3 PROCEDURAL UTILITY BEFORE THE DRAW

We start our analysis by investigating the presence of procedural utility before the draw. Through linear regression, we related happiness to the type of lottery ticket people possessed (purchased, free or both) and to a series of control variables. To remove observed and unobserved time-invariant characteristics from the analysis, we used as dependent variable the change in happiness between survey 1 and survey 2, $\Delta H_{12,i}$. We assume the following relationship:

52 Although controlling for life satisfaction takes into account changes in one's life that cannot be attributed to obtaining a lottery ticket between T1 and T2, this variable is endogenous because of the halo effect: people in a better mood, evaluate all aspects of life and life in general higher.

53 A similar question was asked in T3 where participants also had to reflect on their emotions regarding the draw of May 10.

$$\Delta H_{12,i} = \alpha_1 + \beta_1 F_i + \beta_2 B_i + \beta_3 C_i + \beta_4 X_i + \beta 5 \Delta S_{12,i} + \beta_6 \Delta LS_i + \varepsilon_{12,i}$$

where 1 represents a vector of interview date fixed effects, i refers to an individual, F is a dummy variable for whether or not a free lottery ticket was received (but no lottery ticket was bought), B is a dummy variable with value 1 if no free lottery ticket was received but one was bought, C is a dummy variable with value 1 if the individual had received a free lottery ticket in addition to having bought one, and indicates the first difference of a variable. Furthermore, X is a vector of personal and personality characteristics, S if a vector of survey characteristics and LS represents life satisfaction. Finally, 1 to 6 are our (vectors of) parameters and 12 is an error term.

In case of procedural utility before the draw, we expect that the change in happiness between T1 and T2 is significantly larger for lottery participants than for nonlottery participants. Furthermore, we expect that the change in happiness between T1 and T2 is not significantly larger for lottery participants with a free ticket than for lottery participants with a purchased ticket. If there would be a difference, the increase in happiness could be related to a monetary transfer, i.e. receiving the lottery ticket for free.

Table 5.1 | Parameter estimates change in happiness between T1 and T2

Panel A				
Lottery ticket (β1 = β2 = β3 = β*1)	0.40 (0.12)**	0.37 (0.13)**	0.25 (0.11)*	
R2	0.01	0.07	0.20	
Panel B				
Free ticket (β1)	0.38 (0.13)**	0.37 (0.13)**	0.26 (0.12)*	
Free ticket—no lottery-play last year (β1a)				0.27 (0.12)*
Free ticket—state lottery-play last year (β1b)				0.26 (0.14)#
Purchased ticket (β2)	0.56 (0.20)**	0.52 (0.21)*	0.39 (0.21)#	
Free and purchased ticket (β3)	0.40 (0.13)**	0.34 (0.14)*	0.19 (0.13)	
R2	0.01	0.07	0.20	0.20
β1 = β2 (p value)	0.31	0.38	0.51	
β1 = β3 (p value)	0.86	0.74	0.30	
β2 = β3 (p value)	0.36	0.31	0.29	
β1a = β1b (p value)				0.96
Personal controls	No	Yes	Yes	Yes
Lottery behaviour controls	No	Yes	Yes	Yes
Survey controls	No	Yes	Yes	Yes
Change life satisfaction	No	No	Yes	Yes

Based on 1142 observations; reference group: no ticket; robust standard errors in parentheses
**p<0.01, *p<0.05, #p<0.10

Table 1 provides the OLS parameter estimates for the change in happiness between T1 and T2. The first column shows the parameter estimates of the lottery ticket effect on the

change in happiness without including control variables. On average, people with a lottery ticket report a significantly higher change in happiness score (Panel A), where there are no significant differences between players with only a free ticket, a free and purchased ticket, and only a purchased ticket (Panel B).14[54] As shown in the second column, our results are robust to including several groups of control variables, i.e. personal characteristics, lottery behaviour variables and survey characteristics. In the third column, we also control for the change in life satisfaction in the period between T1 and T2—which can be considered a very conservative estimate of the lottery play effect. Even then, the effect of obtaining a lottery ticket on the change in happiness is positive and significant. All in all, we conclude that on a scale from 1 to 10, participating in a lottery increases happiness with 0.25–0.40.[55]

One potential problem in our analysis is that in the group of free ticket holders there are individuals that intended to buy a ticket but a free one came along and the purchase never happened. In a sensitivity analysis represented in the fourth column of Table 5.1, we therefore distinguish between holders of free tickets who played the State lottery last year (and therefore have a higher chance to have the intention to buy a ticket) and holders of free tickets that did not play the State lottery in the last year. As shown, there is no difference in happiness gain between T1 and T2 between the two groups. In the group of people who participated in the State lottery last year, we made a further distinction between frequent and infrequent gamblers (at least monthly vs. less than one time per month). Again, we find no difference between the different groups.[56]

It can be argued that it is difficult to gain procedural utility from a lottery draw if one never thinks about the lottery. Hence, we re-estimated our models, using information from the survey shortly before the lottery draw. More specifically, we investigated whether the inten-

54 We can only speculate about the reasons why the three groups experience similar happiness effects. On the one hand, a larger effect could be expected for people with a purchased ticket because people who derive relatively more utility from lottery play are more likely to have already purchased a lottery ticket (a self-selection mechanism). On the other hand, we cannot rule out that there is a small gift effect for people with a free ticket. A likely reason that people with both a purchased and free ticket were not happier than people with either a purchased or free ticket is because of strong decreasing returns of an extra ticket. With one ticket you can dream as much about winning the lottery as with multiple tickets.

55 Statistically, we observe that between T1 and T2 the momentary happiness in the group of participants decreases less than in the group of non-participants. As noted by one of the reviewers, an alternative explanation for our findings could be that the happiness of the non-participants was negatively affected because of answering questions about a lottery in which they did not participate. However, it is very unlikely that this causes the drop in momentary happiness of non-participants because the question about momentary happiness was not directly related to lottery play and it was asked at the beginning of the survey. In addition, the participants without a ticket were not informed that other CentER panel participants had received lottery tickets, and they did not receive any further questions about lottery participation.

56 We also investigate heterogeneity in the effect of having a lottery ticket on the change in happiness between T1 and T2. We did not find heterogeneous effects across educational attainment, income level, socioeconomic status, gender, age, having children, geographic area of residence and materialistic disposition. We find heterogeneity in the effect of having a lottery ticket on happiness change between T1 and T2 across marital status (for singles the effect is stronger), original happiness level (people that score high have less to gain), and locus of control (for people with external locus of control the effect is stronger).

sity of thinking about the lottery affects the change in happiness before the lottery draw, i.e. between T1 and T2. Here, we distinguish between three groups of lottery players: players that never thought about the lottery (answer category 1; 15% of the lottery players), players that sometimes thought about the lottery (answer category 2–3; 69% of the lottery players), and players that frequently thought about the lottery (answer category 4 or higher; 16%) using the following equation:

$$\Delta H_{12,i} = \alpha_2 + \gamma_1 LT_i I_{1,i} + \gamma_2 LT_i I_{2,i} + \gamma_3 LT_i I_{3,i} + \gamma_4 X_i + \gamma_5 \Delta S_{12,i} + \gamma_6 \Delta LS_i + \epsilon_{12,i}$$

where 2 represents a vector of interview date fixed effects, LT is a dummy variable indicating whether or not an individual had a lottery ticket irrespective of whether this was bought or received because of the field experiment and I1–I3 are dummy variables indicating whether the individual had no thoughts about the lottery, sometimes thought about the lottery or frequently thought about the lottery. And, 1–6 are (vectors of) parameters.

The first column of Table 5.2 shows that players who never thought about the lottery did not experience a significantly higher increase in happiness than non-players. At the same time, players who thought about the lottery experienced higher increases in happiness than non-players and players who never thought about the lottery. As shown in the second and third columns, the difference remains significant if we include control variables and also the change in life satisfaction. The fourth to sixth column of Table 5.2 show that our results hold if we account for the intensity of thinking about the lottery draw. The change in happiness between T1 and T2 after receiving a lottery ticket is present if the individual thought about

Table 5.2 | Additional parameter estimates change in happiness between T1 and T2: thinking about the draw

Lottery ticket and thoughts about lottery						
No thoughts (γ1)	0.08 (0.17)	0.16 (0.16)	0.07 (0.14)	0.08 (0.17)	0.16 (0.16)	0.07 (0.14)
Thoughts (γ2 = γ3 = γ*2)	0.45 (0.13)**	0.41 (0.13)**	0.29 (0.12)*			
Thought sometimes (γ2)				0.41 (0.13)**	0.39 (0.13)**	0.27 (0.12)*
Thought frequently (γ3)				0.62 (0.15)**	0.52 (0.16)**	0.39 (0.14)**
R2	0.02	0.08		0.02	0.08	0.20
γ1 = γ*2 (p value)	0.00	0.04				
γ1 = γ2 (p value)				0.01	0.07	0.06
γ1 = γ3 (p value)				0.00	0.02	0.02
γ2 = γ3 (p value)				0.06	0.21	0.23
Personal controls	No	Yes	Yes	No	Yes	Yes
Lottery behaviour controls	No	Yes	Yes	No	Yes	Yes
Survey controls	No	Yes	Yes	No	Yes	Yes
Change life satisfaction	No	No	Yes	No	No	Yes

Based on 1140 observations; reference group: no ticket; robust standard errors in parentheses
**p<0.01, *p<0.05, #p<0.10

the lottery, but it does not matter whether the individual thought about the lottery sometimes or frequently.

Along similar lines, it is difficult to gain procedural utility from a lottery draw if one does not have positive feelings when thinking about the lottery. Accordingly, we examined to what extent the procedural utility from a lottery draw is contingent on having overall posi-

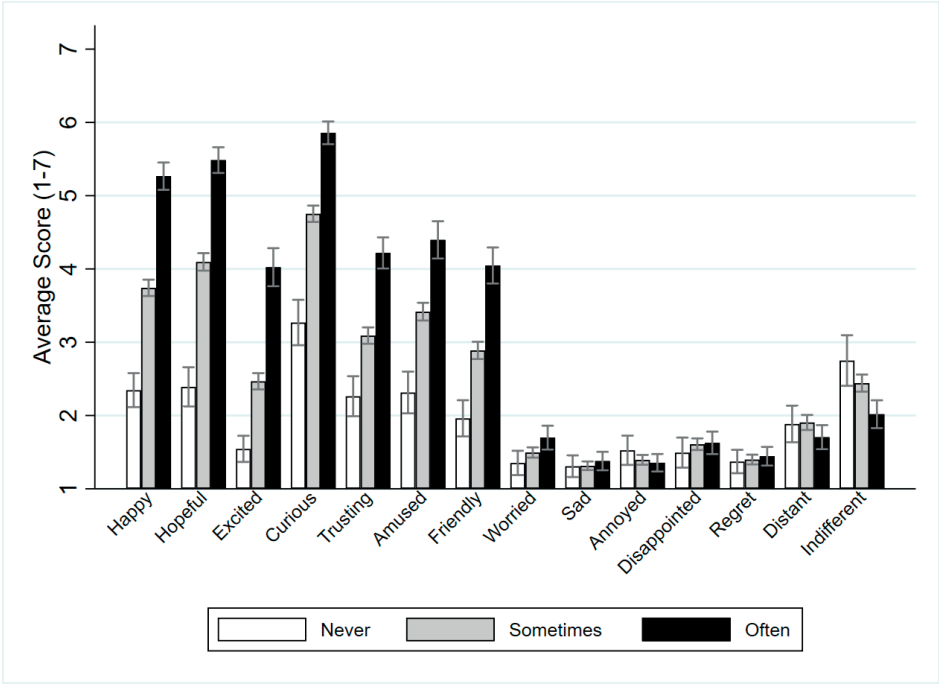

Figure 5.1 | Positive and negative emotions about participation in the State Lottery; experienced before the lottery draw by frequency of thinking about the draw Note: Only for respondents who possessed a lottery ticket for the lottery draw of May 10; average answers to questions on emotions on a scale from 1 (not at all) to 7 (completely)

tive emotions when thinking about the draw. In this regard, it is also interesting to note that participants thinking regularly about the draw experience higher levels of positive emotions and not higher levels of negative emotions compared to participants thinking never or only sometimes about the draw (see Fig. 1). We observe this across the whole range of positive

emotions.[57] In our regression, we investigate whether having positive emotions about the draw affects the change in happiness before the draw (again between T1 and T2), where we take the balance of positive to negative affect (PANA) score regarding the draw as main indicator for the positivity ratio when thinking about the draw. We use the following equation:

$$\Delta H_{12,i} = \alpha_3 + \Phi_1 LT_i + \Phi_2 LT_i PN_{2,i} + \Phi_3 X_i + \Phi_4 \_S_{12,i} + \Phi_5 \Delta LS_i + \nu_{12,i}$$

where 3 represents again a vector of interview date fixed effects and LT is a dummy variable indicating whether or not an individual had a lottery ticket irrespective of whether this was bought or received because of the field experiment, PN is a mean-centred continuous variable indicating a respondents' positivity ratio (PANA) regarding the draw. And, 1 to 5 are (vectors of) parameters. Our regression results are presented in Table 5.3. The first two columns show that players who had a higher positivity ratio regarding the draw experienced higher increases in happiness, where column 3–6 show that these results are primarily driven by the positive emotions. To exemplify, players that had no or hardly any positive emotions at all regarding the draw (maximum average score on the PA of 2 out of 7), did not experience an increase in happiness between T1 and T2 ($p = 0.086$).

Indirectly, the joy of lottery play could also be inferred from people's willingness to pay for a lottery ticket. In the survey at T1, participants indicated their willingness to pay for a lottery ticket. In a hypothetical experiment, participants made a choice between receiving a small sum of money or a lottery ticket with a retail price of €15. Although this can also indicate that people overestimate the expected value of a lottery ticket, many people choose to get the lottery ticket when the amount of money they would have received was larger than the retail price of the lottery ticket. Most notably, 43% of the participants preferred the lottery ticket over receiving €17.50, while even 30% of the participants preferred the lottery ticket over receiving €25.[58]

57 Of course, some respondents may be biased toward more positive answers regarding the State Lottery because they have received a free ticket through their participation in the panel. Although these reciprocal feelings may influence the PANA score, it should not influence the relationship between the PANA score and momentary happiness because our happiness measure has no direct relation with the receipt of a free lottery ticket (a "gift"). The balance of positive to negative emotions is also known as the positivity ratio and estimated as the average positive affect (PA) score minus the negative affect (NA) score. An overview of the emotions included can be found in Fig. 1 and the methodology section. A potential problem with the PANA measure is that some emotions regarding the draw may have been affected by the reception of a free ticket. Hence, we re-estimated our model including only future-oriented positive emotions that are only affected by the upcoming draw (hopeful and curious) and excluding those positive emotions that are potentially affected by the receipt of a free gift (happy, friendly, trusting, amused, and excited). These results are available upon request and yielded no different conclusions.

58 This suggests that for these participants, the transaction costs of buying a lottery ticket were perceived to be more than €10, i.e. the difference between €25 and the price of a lottery ticket. At the same time, participants realized that the chances of winning were small. Our survey showed that well over 80% of the respondents that regularly played the lottery thought that the chance to win a large prize in the lottery is small to very small, while less than 5% thought that the chance was large to very large.

Table 5.3 | Additional parameter estimates change in happiness between T1 and T2: emotions regarding the draw

Lottery ticket and PANA score						
Lottery ticket (Φ1)	0.40 (0.12)**	0.26 (0.11)*	0.40 (0.12)**	0.26 (0.11)*	0.40 (0.13)**	0.25 (0.11)*
Lottery ticket * PANA score (Φ2)	0.09 (0.03) **	0.07 (0.03)*				
Lottery ticket * PA score (Φ2)			0.12 (0.03)**	0.08 (0.03)*		
Lottery ticket * NA score (Φ2)					-0.02 (0.05)	-0.02 (0.05)
R2	0.02	0.20	0.02	0.20	0.01	0.20
Personal controls	No	Yes	No	Yes	No	Yes
Lottery behaviour controls	No	Yes	No	Yes	No	Yes
Survey controls	No	Yes	No	Yes	No	Yes
Change life satisfaction	No	Yes	No	Yes	No	Yes

Based on 1140; PANA = positivity ratio; PA (NA) = positive (negative) part of the positivity ratio; reference group: no ticket; Scores are mean-centred; robust standard errors in parentheses
**p<0.01, *p<0.05

5.4 PROCEDURAL UTILITY OF WINNING A SMALL PRIZE

We want to assess the happiness effect of winning a small lottery prize. For this, we related the change in happiness between surveys 1 and 3, H13,i to explanatory variables as follows:

$$\Delta H_{13,i} = \alpha_4 + (\delta_1 F_i + \delta_2 B_i + \delta_3 C_i)(1 - P_i)$$
$$+ (\delta_4 F_i + \delta_5 B_i + \delta_6 C_i) P_i + \delta_7 X_i + \delta_8 \Delta S_{12,i} + \delta_9 \Delta LS_i + \varepsilon_{13,i}$$

where 4 represents a vector of interview date fixed effects, Pi is a dummy variable for whether or not the individual won a (small) prize and 1 to 9 are (vectors of) parameters.

In case of procedural utility after the draw, originating from winning a small prize, we expect that the change in happiness between T1 and T3 is significantly larger for lottery winners than for non-players. Furthermore, we expect that the change in happiness between T1 and T3 is significantly larger for lottery winners than for non-lottery winners. Finally, we expect that the change in happiness between T1 and T3 is not significantly larger for lottery winners with a free ticket than for lottery winners with a purchased ticket.

In the draw in which the participants of our experiment had a lottery ticket, 49% did not win a prize at all, 39% won less than 10 euro, 11% won a prize between 10 and 100 euro, and 1% won a prize larger than 100 euro. On average, we do not find evidence for procedural utility after the draw, originating from winning a small prize. Lottery winners did not experience a significantly larger change in happiness between T1 and T3 compared to non-players. Nevertheless, as shown in panel A of Table 5.4 there is a significant difference between those that had a lottery ticket and won a prize and those that had a lottery ticket and did not win a prize.

Table 5.4 | Parameter estimates change in happiness between T1 and T3

Panel A					
Lottery ticket and no prize (δ1 = δ2 = δ3 = δ*1)	-0.10 (0.11)	-0.05 (0.11)	-0.04 (0.12)	-0.09 (0.11)	-0.15 (0.10)
Lottery ticket and prize (δ4 = δ5 = δ6 = δ*4)	0.10 (0.11)	0.15 (0.11)	0.15 (0.11)	0.09 (0.11)	0.02 (0.10)
R2	0.01	0.02	0.02	0.06	0.18
Δ*1 = δ*4 (p value)	0.02	0.02	0.02	0.03	0.03
Panel B					
Free ticket and no prize (δ1)	-0.15 (0.12)	-0.11 (0.12)	-0.11 (0.12)	-0.15 (0.12)	-0.19 (0.11)*
Purchased ticket and no prize (δ2)	-0.05 (0.23)	0.04 (0.25)	0.04 (0.25)	0.06 (0.26)	-0.03 (0.22)
Free and purchased ticket and no prize (δ3)	0.05 (0.14)	0.11 (0.14)	0.11 (0.14)	0.04 (0.14)	-0.08 (0.13)
Free ticket and prize (δ4)	0.22 (0.12)#	0.25 (0.12)*	0.25 (0.12)*	0.17 (0.12)*	0.10 (0.10)
Purchased ticket and prize (δ5)	0.04 (0.24)	0.10 (0.26)	0.10 (0.26)	0.08 (0.25)	-0.00 (0.24)
Free and purchased ticket and prize (δ6)	-0.10 (0.13)	-0.03 (0.14)	-0.03 (0.14)	-0.07 (0.15)	-0.14 (0.13)
R2	0.01	0.03	0.03	0.06	0.34
δ4 = δ5 (p value)	0.43	0.47	0.52	0.71	0.67
δ4 = δ6 (p value)	0.00	0.01	0.02	0.04	0.04
δ5 = δ6 (p value)	0.56	0.65	0.63	0.53	0.58
Personal controls	No	Yes	Yes	Yes	Yes
Lottery behaviour controls	No	No	Yes	Yes	Yes
Survey controls	No	No	No	Yes	Yes
Change life satisfaction	No	No	No	No	Yes

Based on 1097 observations; reference group: no ticket; robust standard errors in parentheses
**p<0.01, *p<0.05, #p<0.10

Panel B of Table 5.4 shows the parameter estimates if we also make a distinction between the ways through which the individual got a lottery ticket, i.e. purchased, free or both. Now we find that there is only a positive and significant effect for those with a small prize and a free ticket, while at the same time the winners with a free ticket are significantly happier than winners with both free and purchased tickets. These results are independent of whether or not we include control variables and the change in life satisfaction.

We conclude from these estimations that only a combination of not having purchased a lottery ticket and receiving one for free and winning a prize leads to an increase in happiness and that the effect of a small prize is very limited. The latter conclusion is supported by a test in which participants (n = 401) who did not see the results of the lottery draw had the opportunity to look up the results via a link in the survey to check whether they had won or not won a prize in the lottery.[59] This opportunity was provided after the question asking how

59 People were asked whether they already saw the results. If not, they were offered the opportunity to view the results via a link.

the participants felt today. At the end of the survey, participants were asked how happy they were feeling at this moment on a scale from 0 to 10. Respondents who viewed the link and won a prize were not significantly happier than respondents who viewed the link and did not win a prize ($p = 0.93$). This result was found regardless of whether one had a purchased ticket ($p = 0.13$), a free and purchased ticket ($p = 0.49$), or a free ticket ($p = 0.87$).

As a robustness check, we also examined differences in specific emotions after the draw. Again, participants were asked which emotions they experienced when they thought back about participating in the draw of the State Lottery on May 10th. Although winners reported to be happier and less disappointed, winners and nonwinners did only marginally differ regarding the other experienced emotions regarding the draw (see Fig. 2). In a further analysis, we only found evidence for procedural utility for winners that were already positive about the lottery before the draw.[60] This fuels the idea that the procedural non-monetary utility derived from winning a (small) prize is rather limited.

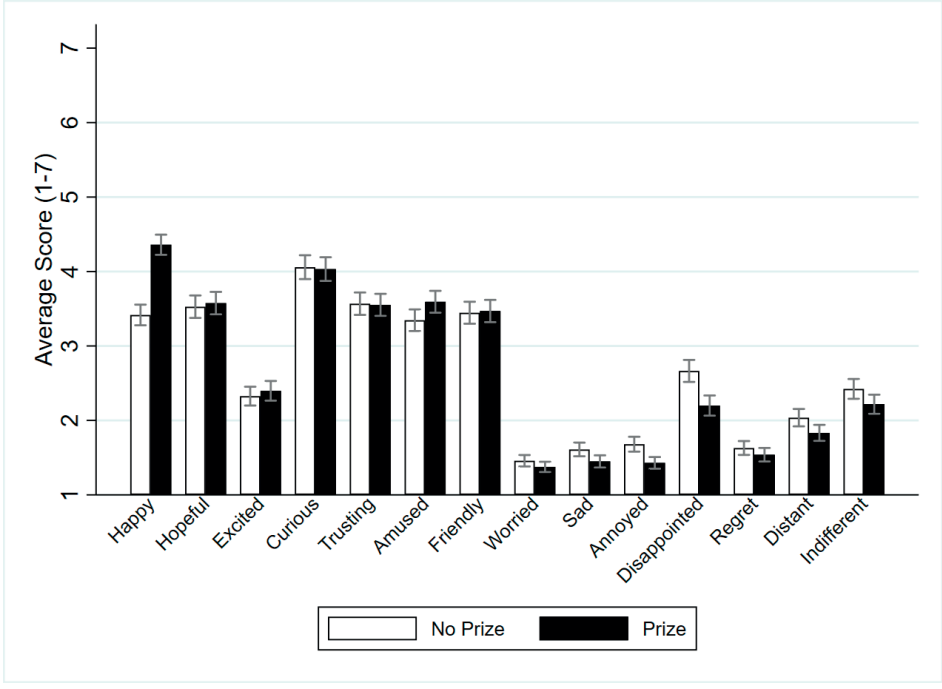

Figure 5.2 | Emotions experienced after the draw by winners and non-winners Note: Only for respondents who possessed a lottery ticket for the lottery draw of May 10; average answers to questions on emotions on a scale from 1 (not at all) to 7 (completely)

60 This analysis is available upon request.

5.5 DISCUSSION AND CONCLUSIONS

From a financial point of view buying a lottery ticket is not a rational investment as the average ex-post value of a ticket is just over half the price of that ticket. Nevertheless, many people participate in lotteries. There are two popular explanations in the economics literature for this: (1) low cost opportunities to improve one's financial position if there are few opportunities to do this otherwise and (2) prospect theory according to which people overweight the small probability of winning a lottery. The first explanation suggests that participation would be predominantly among lower social classes which is not the case since lottery play takes place across the whole income distribution. The second explanation is at odds with the finding that most lottery participants have quite accurate expectations about the probability to win a prize. Although there is some empirical support for both the Friedman–Savage theory and prospect theory, these theories only partly explain people's propensity to gamble.

We studied lottery participation using a field experiment in which some participants of a regular household survey received a state lottery ticket for free, while other participants had no ticket or only a purchased ticket, or both a free and a purchased ticket. This allows us to investigate to what extent participating in a lottery increases momentary happiness. If so, this supports a third explanation of lottery participation, i.e. people deriving non-monetary utility from participating in a lottery play. This could be because of the hope of winning a large prize, the fun and excitement of the game, or because of social bonding activities when playing the lottery together with family or friends.

In our field experiment, momentary happiness is measured at three moments in time, i.e. before free lottery tickets are issued, after providing some individuals with a free lottery ticket but before the draw, and after the draw. We study the change in momentary happiness between the first two moments to investigate whether playing in the lottery increases momentary happiness, regardless of whether the ticket was bought or free. We also study the change in momentary happiness between the first and third moment to investigate to what extent winning a small lottery prize matters.

Our main finding is that participants in a lottery derive procedural utility from playing the game. This is irrespective of whether the lottery ticket was bought or received for free due to the experiment. On a scale from 1 to 10, participating in a lottery increases momentary happiness with 0.25–0.40 (approximately 1/5–1/3 standard deviation increase). These results may be driven by the hope and expectations about financial gains, the thrill of a potential win, and social bonding when playing as a group. However, the procedural utility that players derive from winning a small prize is limited. In sum, we conclude that lottery participation seems to be at least partly driven by the joy of lottery play, i.e. lottery participants may be hoping for financial gains but gamble for fun. More generally, our research shows the importance of taking in procedural utility in modeling decisions of consumers since consumers do not only care about outcomes, but also about the process. Accordingly and in line with previous

work, seemingly irrational decisions such as lottery play could be considered rational from the perspective of procedural utility (see also Benz 2005).

It is important to note that our results are related to the probability of winning which is about 50% in the State Lottery. For lotteries with a smaller winning probability the magnitude of the happiness effects are smaller. It is also important to note that our article has focused on the short-term positive impact on lottery play through procedural utility and does not pay attention to the potential negative long-term effects of lottery play, especially in the case of problem and pathological gambling (Lorenz 1990). In this regard, lottery gambling has been associated with psychological, social, and economic problems. Hence, procedural utility may induce suboptimal decision-making in the long-run. At the same time, the number of problem lottery gamblers among the population is relatively small (Hendriks et al. 1997) and the overall long-term effects of lottery play on overall well-being or experienced quality of life seem to be limited (Burger et al. 2016). However, more research on the consequences of lottery play are needed to examine the long-term effects of lottery play.

What do we already know?

6 Hope in economics

Emma Pleeging and Martijn J. Burger

Based on the book-chapter: Pleeging, E., & Burger, M.J. (2020). *Hope in Economics*. Historical and Multidisciplinary Perspectives on Hope, 165-178.

6.1 HOMO ECONOMICUS

Hope is fundamentally a subjective and normative experience. It is about desire, uncertainty and about what we believe is possible and good (Day, 1969; Webb, 2007; Martin, 2013). However, hope is not a well-covered topic in the field of economics. This can partly be explained by looking at the common understanding of human nature that economists tend to uphold. Within current mainstream economics, the neo-classical approach is still largely dominant. Modelling most of its theories on the prototypical *homo economicus*, this perspective assumes that, universally, people tend to be selfish, behave rationally, aim to maximize their interest, are not influenced by others and have full information and understanding of their surroundings (Henrich et al., 2001; Dequech, 2007). Hence, within this perspective of the calculating, rational human being, emotions or virtues have little explanatory power, and a topic such as hope has received little attention.

However, this is not to say that emotions or virtue do not matter in the field as a whole. Fundamentally, economics is about the production, distribution, and consumption of valuable output. What we regard as valuable can be determined in different ways. The term *utility*, signifying value within economics, was initially part of utilitarian theory developed by philosophical thinkers such as Jeremy Bentham and John Stuart Mill, and was understood to represent the overall pleasure or happiness that we gain from our decisions (Kahneman, 1997). Even though the concept has over time been interpreted differently by other economists, utility from its outset was thus meant to represent something as subjective and personal as happiness. In addition, psychological and ethical theory were also important foundations of neo-classical economic thinking from the outset. Adam Smith, for example, deemed virtues such as prudence, temperance and self-command essential for the correct functioning of the economic system through the pursuit of self-interest (Bruni & Sugden, 2013). Moreover, early neo-classical economic thinkers did incorporate psychological constructs into their theories to explain economic behaviour, investigating for example human tendencies, the effects of stimuli, pleasure and sensitivity (Bruni & Sugden, 2007). However, during the late 19th and early 20th century, economics went through several fundamental changes, leading to an increased focus on mathematical, rational-choice models and theory, and abandoning its psychological and ethical dimensions, all in an aim to increase the unique value and contribution of economics (Bruni & Sugden, 2007). The idea behind this change was that philosophy, sociology and psychology are worthwhile and relevant fields in their own right, but economics should fulfil its particular 'niche' as the scientific field studying the universal rules of logical action. By adopting this focus and making use of empirical data and mathematical models, it was assumed that economics would become simpler, clearer, more relevant in predicting economic phenomena and improving public policy, and avoid the danger of drawing false conclusions based on prepossessed assumptions (Ekelund & Hébert, 2002). The consequence of this change has been that emotion, experience and

subjectivity no longer had a place within economic research. This is for example clear in the way economists have approached a topic such as preferences. During the 18th century, preferences were largely understood in the way philosopher David Hume defined his passions; as motivating and unruly feelings following from our experience of pleasure or pain. However, as neo-classical economists tried to develop mathematical, universal, logical and predictable rules and models of motivation and behaviour, preferences were stripped of their individual, context-dependent and subjective characteristics. Rather, economic theory from then on started to assume that preferences were fixed, separate from belief and completely determined behaviour (Arnsperger & Varoufakis, 2006).

Nonetheless, in recent decades, the field of economics can be said to have experienced a 'counter-revolution' involving heterodox economic approaches, such as behavioural economics, which again swayed attention to the importance of psychology and accepting complexity and ambiguity in understanding economic behaviour (Dequech, 2007). Within this school of thought, the idea of the rational homo economicus and neoclassical theory focusing on universals is assumed to be too simplistic to predict real life behaviours and therefore in need of reform (Henrich et al., 2001). Thinkers within this approach adopt a different interpretation of human nature, stating that comparisons and framing matter; that altruism can be an important motivator; that people can often behave in a seemingly irrational manner, partly since they often don't have and correctly process all relevant information when making choices; and that emotions matter (Henrich et al., 2001; Kahneman, 2003). This is exemplified in the changing approach to preferences; rather than pre-determined golden rules for behaviour, economists started to frame preferences as dynamic, context-dependent and subjective experiences (Sent, 2004). As part of this change, psychological topics have been increasingly investigated by economists during the past decades, and several strands of research have focused on concepts related to hope.

6.2 RESEARCH ON HOPE IN ECONOMICS

Within the academic economic literature, there are very few publications specifically focusing on hope – in the psychological sense of the word. However, there are some strands of research that focus on related topics. Here, we will discuss the most prominent ones, namely *prospects*, focusing on the way people experience decisions; *consumer confidence*, i.e. the belief that economic circumstances will develop in a positive way for consumers; *expectations*, comprising our assumptions about the future; *aspirations*, relating to what we desire; and discuss how these different states are regarded as a form of capital both on micro and macro levels.

6.2.1 Expected utility theory and prospect theory

An important incentive for the further development of behavioural economics has been criticism of the neoclassical *expected utility theory*. This hypothesis states that utility, i.e. the value that people attach to certain goods, can be deduced by observing their choices. Based on the assumption that we cannot objectively and therefore reliably assess the subjective experience of people, e.g. whether and how much we value something, neo-classical economists favoured to observe behaviour as a measure of utility. Choosing a certain amount of a good over another was assumed to reliably represent the value people attach to it. However, as summarized by the opposing *prospect theory*, which is substantiated by several empirical studies over the past decades, people also derive utility from the memory, experience and anticipation of an event or good. This means that *decision utility*, i.e. what we base our choices on and which is reflected in our behaviour, can be and often is different from our *remembered*, *predicted*, *instant*, or *total utility* (Kahneman, Wakker & Sarin, 1997). When we choose to do something, we might often think very differently about this choice afterwards or beforehand, for example when we regret a decision or when we enjoy the anticipation of a something but decide against it at the last minute. This means that simply observing behaviour can draw a very misguided picture of what people really value. Rather, we also need to know what people experience, not only when they make a decision, but also before and after they do so. The increasing acceptance of prospect theory within economics over the last decades, paved the way for numerous investigations into the subjective experience of economic agents over time, including the experience of 'anticipatory feelings' such as dread, savouring hope and anxiety (Senik, 2008). Although this type of research has only recently really started to flourish, the idea that perspectives of the future matter for our experience and economic behaviour has already been around for a bit longer.

6.2.2 Consumer confidence

A relatively traditional topic related to hope within economics focuses on *consumer confidence*, i.e. the belief that future economic developments will be positive and that it is a good time to make large purchases. The development of the consumer confidence index mid-20th century was based on the idea that consumers not only react to the current, objective state of the economy, but also to their subjective interpretation of future developments (Katona, 1968). Items in the consumer confidence indices typically include questions on the present conditions (e.g., how would you rate present general business conditions in your area? [good/normal/bad]) and expectations (Six months from now, do you think business conditions in your area will be [better/same/worse]?).

The aim of the consumer confidence instrument was to better explain and predict consumer behaviour, although over time, it has appeared that the index predicts a relatively modest amount of variation in future consumer spending (Ludvigsson, 2004) and is only substantially better at predicting behaviour than traditional objective measures during times of economic

shock, such as during financial crises or geopolitical tension. This might be because emotions play a more important role in these contexts, as strong feelings of distrust seem to render models based on purely objective measures inadequate (De Boef & Kellstedt, 2004; Dées & Brinca, 2011). To this day, most countries still collect data on consumer confidence, making it possible to analyse trends, make international comparisons, predict behaviour and study the relation between people's confidence in the future and their (economic) behaviour.

6.2.3 Expectations

The idea of consumer confidence is closely related to the concept of *expectations*, i.e. the assumptions we uphold about whether the future will be positive or negative, when it comes to a wide possible array of domains, such as household finances, the economy at large, or life as a whole. Within economic research, there is a growing recognition that (positive) expectations are a worthy topic of scientific investigation, since they can explain behaviour; are valued by people; and affect several outcomes such as health and longevity. For example, a relatively strong relation has been found between pessimism and negative outcomes such as premature mortality, reported pain and low labour force participation (O'Connor & Graham, 2018; Graham & Pinto, 2019). Moreover, optimistic expectations help people endure (economic) hardship; not only are more optimistic people happier, they are also more resilient to negative shocks such as unemployment or political turmoil (Ekici & Koydemir, 2016; Arampatzi et al., 2019). Also, research has shown that income expectations and financial security have a strong relation with our subjective well-being, and at times are even more important than our objective, current income or financial situation (Brown et al., 2005; Frijters Liu & Meng, 2012; Arampatzi, Burger & Veenhoven, 2015). Together, these results indicate that optimism is generally beneficial to our wellbeing and health, and helps as a buffer against misfortune. Moreover, rather than being just instrumental, people seem to value optimistic expectations in and of themselves. For example, some seemingly (financially) irrational behaviours, such as lottery participation, can be explained by the finding that people simply enjoy the positive anticipation they engender (Senik, 2008; Burger et al., 2016; 2019). However, there is also some evidence that being overly optimistic might be harmful to us; expecting too much from the future might make us prone to disappointment or societal disillusionment (Eastelin, 2001; Gollier, & Muermann, 2010; Sweeny & Shepperd, 2006; Kleist & Jansen, 2016; Arampatzi et al., 2018); being overly optimistic might give people a distorted picture of reality and incentivise reckless behaviour (Malmendier & Tate, 2005); and naïve feelings of optimism without any evidence could be taken advantage of or leave people apathetic in the face of serious threat or risk (Ojala, 2012; Sleat, 2013; Boukala & Dimitrakopoulou, 2017).

There is a strong social component to the role of expectations within economics. People are social animals, and constantly examine how they relate to others. For example, when we see that other people's welfare is increasing, we also tend to be more optimistic about our chances of increased prosperity, but we could also become envious (Frijters, Liu & Meng,

2012). In modern capitalist economies, hope for prosperity is often based on the perceived possibility of upward social mobility, and seeing others' progress can be interpreted as a sign that one's own welfare might also soon increase (Hage, 2003). However, here also lies an important risk, since optimistic expectations that remain unanswered can transform to disappointment, disillusionment and envy. This is symbolized in the so-called 'tunnel-effect' voiced by economist Albert Hirschman; when waiting in traffic, we might at first become optimistic when we see cars in the lane next to us moving, as this might indicate that we too might be able to move soon. However, if nothing changes after a while, people tend to get frustrated, envious and might even start to break the rules, for example to shift lanes. Similarly, economic prosperity can increase people's optimism, but having to wait too long before such expectations are realized can lead to frustration and deviant behaviour (Hirschman & Rotschild, 1973).

In many societies, there are indications that there are large groups of people who have been structurally disappointed in their expectations for a better life and suffer from negative effects such as ill-health and low well-being (Graham, 2017). In a study we conducted among US citizens, for example, we find that people's hope represent little of the American Dream where anything is possible as long as we put our minds to it. When asked for their hopes for the upcoming years, people generally report that they hope for better health, being able to make it through the year despite of (financial) misfortune or to be able to save enough money for a down payment on a house. Moreover, positive expectations tend not to be evenly distributed among different groups of people in society, meaning that some groups might disproportionally experience pessimism and its related negative consequences (Kleist & Jansen, 2016; Graham & Pinto, 2019). At a societal level, the 'tunnel-effect' has been associated with eruptions of popular anger in the form of protests and voting against the incumbent party (Witte, Burger, & Ianchovichina, 2019).

6.2.4 Aspirations

A different strand of research within economics focuses on *aspirations*, i.e. the desire to reach certain goals, for which one is prepared to invest time, effort and money (Easterlin, 2001). Such aspirations are also often heavily influenced by our surroundings, since what we desire partly follows from what we perceive to be possible and what others think is desirable. It has for example been found that increased wealth goes together with higher aspirations; so that the richer people become, the more they desire. This can partly be explained by the finding that as people get wealthier, they quickly adapt to new standards of living and because they start to compare themselves to a new, wealthier group of peers (Stutzer, 2004). In happiness economics, it is believed that these increasing aspirations cause a hedonic treadmill or the observed tendency of people to return to a relatively stable level of happiness despite major positive life changes such as a major income increase (Brickman & Campbell, 1971).

Contrariwise, very low levels of wealth seem to coincide with lower aspirations. Here, it is assumed that aspirations and effort are jointly determined; high aspirations lead to higher effort to achieve ones goals, but through creating better outcomes, higher effort also becomes a stepping stone towards higher aspirations. However, since people living in poverty have fewer means to achieve positive outcomes with the same effort, for example because of less influential contacts, less wealth that can be used for investments, or less access to information, they are likely to form lower aspirations, which in turn limits the goals they might achieve (Appadurai, 2004; Dalton, Ghosal & Mani, 2015).

6.2.5 Hope as psychological capital

As an increasing number of studies seems to indicate, optimistic perspectives of the future are related to many other positive outcomes, such as wellbeing, health, productivity, but also academic and athletic success (Snyder, 2002). Therefore, it is perhaps not surprising that traits such as hope and optimism are increasingly regarded as capital that can be used to achieve greater prosperity and as a buffer against misfortune. This is perhaps most clearly exemplified in the field of business economics, where hope and optimism are seen as positive psychological capital that can help employees flourish, be productive and stay healthy (Youssef & Luthans, 2007). Also, it is theorized that effective leadership styles such as authentic and spiritual leadership are closely related to, and could be strengthened by inducing hope (Helland & Winston, 2005). Moreover, it seems that the human tendency to be somewhat overoptimistic plays an important role for investment and entrepreneurship (Flyvbjerg, 2006; Sharot, 2011). It appears that most people are generally overoptimistic when it comes to economic assessments and decisions, and that this is especially the case for entrepreneurs (Dawson et al., 2014). Moreover, this optimism seems to pay out, since optimistic entrepreneurs tend to be more successful (Ayala & Manzano, 2014). Due to its strong perceived motivating power, optimism and hope are often regarded as important resources to teach to youngster and in battling societal challenges such as climate change (Ojala, 2012).

On the flip side, it seems that pessimism also has some negative consequences, and prevents constructive investments in our future. A field within economics that has focused on the effects of lack of hope is that of development economics (Lybbert & Wydick, 2018; Bloem et al., 2018). Here, the focus is on the question whether hope affects if and how we invest in our futures. For example, the idea of a *poverty trap* implicates that in situations where people see no possibilities to improve their situation, they are likely to become apathetic and refrain from behaviours that could actually make their lives better, whereas offering people hope by creating new possibilities will increase their agency and resourcefulness (Sen, 1999; Duflo, 2012). This might partly be explained by the fact that people who think negatively about the future, tend to avoid thinking about it in general. This might limit the negative effect of focussing too much on what might go wrong, but it can also prevent people from taking precautions against misfortune and from grasping opportunities when they arise (Duflo, 2012).

6.3 HOPE AND RELATED CONCEPTS

While the field of economics is thus increasingly focused on how perspectives of the future influence behaviour and outcomes, there is quite some heterogeneity in its approaches and little consensus on terminology; concepts such as optimism, expectation, hope, aspiration and confidence are often used interchangeably, without paying much attention to the question whether these concepts do indeed represent the same experiences. Within the fields of philosophy and psychology, hope has been a more prevalent topic, and these disciplines have therefore developed much more detailed definitions, from which we can borrow some conceptual clarification. Within the field of positive psychology, hope is often defined as a desire, agency and resourcefulness in the face of obstacles on the way to our hopes (Snyder, 2002). Philosophical approaches usually follow the orthodox definition of hope, claiming that hope entails desire for a possible, but uncertain event (Day, 1969; Martin, 2016). Based on our own interdisciplinary literature review of academic articles on the definition and characteristics of hope, we see that the individual experience of hope entails at least three core components; *desire, a probability estimate* of attaining this desire and a way of dealing with the inherent *uncertainty* of whether or not we will attain our hopes (see Chapter 2). This implies that expressing hope means that we would like to achieve whatever the hope is aimed at, that we think reaching this goal is possible, but not certain, and that we are aware of this uncertainty.

This definition showcases that hope is quite a particular phenomenon, and differs fundamentally from related concepts. For example, 'expectations' are not at all uncertain, but are actually about expressing certainty, about what we belief is probably going to happen. Having strong positive expectations means an event is likely to happen, whereas having a lot of hope can easily pertain to something quite unlikely (even if our hopes might grow with increased probability of attaining our goal). Moreover, expectations don't necessarily involve desire. Although we can certainly form expectations about events we desire, stating that we expect something to happen does not imply that we want it to happen, even if it pertains to something most people regard as positive. Hoping for an event, on the other hand, does always mean that we want it to happen. 'Optimism' refers to the tendency to have positive expectations and thus differs from hope in the same way as expectation does (Bailey et al., 2007; Alarcon, 2013). Aspiration on the other hand focuses on desire, and does not relate to any uncertainty. Expressing hope implies that we are aware that we might not get what we what, while aspiring to something does not implicate anything regarding our assessment of whether it is probable or not. Similarly, confidence can boost hope, but we can nonetheless also hope for things we believe to be quite unlikely (but not impossible) to happen. As pointed out by Swedberg (2017), consumer confidence overlaps to some extent with hope, the most important difference between hope and consumer confidence is that consumer confidence focuses mostly on expectations what will happen, while hope focuses more on aspirations

and desires. Although what will happen can coincide with what one wants to happen, this is not necessarily the case.

These distinctions are important, because it means that hope and its related concepts have quite different meanings and therefore also quite different roles for our behaviour and experience. Hope is a very particular phenomenon, with especially important characteristics when it comes to economic behaviour. Firstly, hope is about desire, and as such tells us a lot about what people value. Contrary to expectations, asking people about their hopes relates both to what they think will happen, as well as what they want to happen. Secondly, the fundamental uncertainty that underlies hope has a strong motivating power. As long as our hopes are uncertain, we need to take persistent action. Things we already expect to happen on the other hand, require no further initiative. Thirdly, awareness of the inherent uncertainty of our hopes makes that hope is often more process-focused than other, related concepts such as expectations. Hope is both about what we want to achieve and about how we might navigate the uncertain path towards it. This does not necessarily mean we will always act on our hopes, or even have very specific ideas about how we might achieve them. But it does mean that we are aware of the obstacles between our current state and the one we want to achieve, and will need to navigate our way around them (Snyder, 2002). As such, hope tells us a lot about what people want and what will motivate them to behave in a certain way. Although there is no perfect correlation, hope could function as a very strong prediction or explanation of our behaviour.

The field within economics that seems to focus most specifically on hope rather than on another related concept, is that of development economics (see also Chapter 14 of this volume). The difference between this strand of research and others, is that in this conceptualization, hope does entail desire, i.e. it is about what people regard as progress; a probability estimate, i.e. whether people perceive their attempts and efforts worthwhile; and uncertainty, i.e. that opening up the possibility of change, influences their behaviour. For example, several studies theorize that certain interventions aimed at alleviating poverty might be specifically effective because they engender a renewed desire for a better life, increase the perceived possibility of doing so and open up entrenched assumptions to make room for new behaviours. Nonetheless, this research focusing on the role of hope in poverty alleviation is still largely theoretical, and lacks empirical substantiation (Duflo, 2012).

6.4 FUTURE RESEARCH ON HOPE IN ECONOMICS

While current strands of economic research focusing on expectations, aspirations and consumer confidence are definitely proving their value, we belief that economic thought could benefit further from a specific focus on hope. Rather than the other concepts, hope implies a strong motivating state, which simultaneously represents desire and subjective

assessment of probability of attainment. These characteristics make hope specifically useful for predicting (economic) behaviour, since they determine whether people are prepared to invest, either in their future, in an uncertain venture or in collaboration with others. Previous empirical research from fields such as psychology, environmental studies, leadership and business studies, has found several, mainly positive, consequences of a hopeful disposition. Hopeful people have been found to perform better academically and athletically, to be more creative and innovative, to be better able at dealing with change, to be healthier and happier, and to behave more constructively in an organizational setting (Snyder, 2002; Reichard et al., 2013). Moreover, hope and optimism have been found to be conceptually different and have their own, unique relation to wellbeing (see Chapter 7; Bailey et al., 2007). This is not to say that more hope is always necessarily better, since there can be important negative side-effects to hope, such as false hopes, passive hope, or manipulation through appeasing to people's hopes. However, it does tell us that hope has a particularly strong relation to behaviour, especially when it comes to our willingness to improve our future.

Therefore, there are several economic phenomena that will most likely be better understood when we understand how hope plays a role. Possible economic topics that might profit especially from a focus on hope are types of behaviour that rely heavily on investments, such as sustainable behaviour, education and prosocial behaviour; and the behaviour of marginalized groups, such as refugees, unemployed, and people living in poverty. Here, people make decisions based on what they assume to be a possible and better future. Here, there is also a strong social component at play, since hope often relies at least in part on our surroundings; others influence what we deem possible, but also often what we desire. As such, what people hope for often gives some insight into what we perceive as progress within our specific context (Kleist & Jansen, 2016). Moreover, hope plays an important role during economic and societal shocks such as financial crises or political turmoil, and could even function as an early signal before even further societal unrest.

All of this is based on the assumption that it is possible to measure hope. There are currently a wide variety of measures available which tap into how hopeful people feel. Popular multi-item instruments that have been used, mainly within psychological research and nursing studies, are for example Snyders's Trait Hope Scale (Snyder et al., 1991), Herth's Hope Scale (Herth, 1992), Beck's Hopelessness Scale (Beck et al., 1974) and the Comprehensive Hope Scale (Scioli et al., 2011). All these scales have been proven to be valid instruments for measuring hope. However, little research has been done on possible shorter instruments or how well these multi-item scales perform compared to a single-item question. Although there are thus several avenues for increased empirical research concerning hope, there is also still a lot to be gained.

6.5 CONCLUSION

Hope has not been a very popular topic in economics throughout history. Although mainstream economic thought was, from the outset, inherently related to psychological functioning and ethical consideration, and thus with how people perceive their surroundings and their future, neoclassical economic theory has tended to focus only on subjects that can be measured objectively and can be generalized to universal rules. However, recent heterodox approaches have started to again incorporate psychological and philosophical topics and theories in their study of economic phenomena, and as a consequence embraced subjective topics such as hope. Studies in this field show that humans are much more complex than the traditional image of the calculating, rational *homo economicus* leads us to believe. Life is uncertain, and people constantly try to make sense of their surroundings and behave in accordance to their subjective experiences. Hope is an important emotion in this regard. Positive perspectives of the future have been found to have an impact on our longevity, health and quality of life; to motivate behaviour and increase innovation, creativity, productivity, leadership and entrepreneurship. Moreover, a lack of hope can induce apathy, rigidity and myopia. On the other hand, more hope is not necessarily always better. Overly optimistic hopes can lead to disappointment and reckless behaviour, and naïve hope can be easily abused. All in all, hope seems to play an important role in many economic phenomena, and the field could probably profit from further study into the topic. Definitional clarity is however necessary to further disentangle the roles of different types of positive perspectives of the future. Hope, optimism, expectations, aspiration and confidence are often used interchangeably, but refer to fundamentally different states, all with their unique characteristics and effects on behaviour. Nonetheless, economics might become a more hopeful field by incorporating more of the complexity of human behaviour and experience.

7 Hope and happiness

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7.1 INTRODUCTION

Hope and subjective well-being are closely connected (Bailey et al., 2007). A hopeful disposition usually makes us feel happier, and feeling well often strengthens our hope for a good future. However, both hope and subjective well-being can take different forms, and the relationship between hope and subjective well-being is sometimes ambiguous. Hope, for example, can also be used as a defence mechanism by unhappy people in times of crisis, and false hope does not contribute to a happy life. Both hope and happiness are multidimensional concepts that are conceptualized differently in varying scientific disciplines and can be experienced in different 'modes' in daily life (Webb, 2007). As such, even though we know that hope and happiness are generally positively related, we do not yet know how different aspects of these concepts, e.g., hope as an expectation, emotion or thought-pattern and happiness as life satisfaction or positive affect, are related. These unknowns impede our understanding and use of these powerful feelings, since we cannot infer whether different types of hope and subjective wellbeing are related in a similar fashion. As such, it is for example difficult to extrapolate findings from one discipline or study to another. However, understanding under which circumstances hope translates into subjective well-being can help us understand the determinants and mechanisms underlying a happy life. Hence, the current article examines the following question: what do we know so far about the relationship between hope and subjective well-being and how can we better understand this complex relationship? Before we can answer this question, we must define hope and subjective well-being.

7.1.1 Hope

Hope is essentially a strong desire that is actively pursued, while it is uncertain that this desire will be fulfilled (Martin, 2011). The probably most well-known theory about hope comes from Rick Snyder (2002). He defines hope as a primarily cognitive, goal-oriented pattern of thought in which people come up with different 'pathways' to achieve their goals, remain motivated to follow these pathways, and actively look for alternative pathways to these goals when necessary. According to Snyder, hopeful people are those who are persistent and creative in pursuing their goals[61]. This line of thinking is also used in organizational psychology, in which hope is seen as a form of psychological capital that helps employees act in a creative, flexible and constructive manner in an organization (Youssef & Luthans, 2007; Avey et al., 2011).

Other psychologists emphasize the more emotional side of hope. For example, Fredrickson (2001) sees hope as a psychological force or 'buffer' that provides resilience and helps us deal with stressful and negative situations. In clinical psychology, the frequently used Herth Hope Index (Herth, 1992) focuses not only on future expectations and purposeful thinking but also

61 In this sense, the 'agency' dimension of hope is related to self-efficacy, i.e. the belief in one's ability to perform certain tasks, yet empirical evidence shows that the two concepts are similar but distinct (Magaletta & Oliver, 1999)

on a general, diffuse sense of 'hopefulness', hope as an experience rather than as an action, and hope aimed at gaining control over emotions rather than over external circumstances. The hopelessness scale of Aaron Beck (1974), on the other hand, measures negative expectations of the future, a lack of motivation, and the conviction that someone will never be able to achieve his or her goals. This scale is mainly used in studies of psychopathology but is also used to a lesser extent as a divergent validation of subjective well-being (Lucas, Diener & Suh, 1996). Although these approaches also incorporate cognitive components, such as expectations, assumptions and purposeful planning, compared to the hope theory of Snyder, they are much more attuned to the affective side of hope, i.e., the more uncontrollable, spontaneous feelings of arousal and valence accompanying a hopeful state.

Psychology is, however, not the only discipline that has shown interest in hope. References to hope research can also be found in sociology (e.g., Jarymowicz & Bar-Tal, 2006; Cohen-Chen, 2014; Petersen and Wilkinson, 2015), economics (e.g. Foster, Frijters & Johnston, 2012; Frijters, Liu & Meng, 2012; Foster & Frijters, 2014; Lybbert & Wydick, 2018) philosophy (Webb, 2007; Martin, 2011), and political science (Bar-Tal, 2001; Drahos, 2004; Cohen-Chen et al., 2013; Sleat, 2013; Boukala & Dimitrakopoulou, 2016), although there are clear differences in the research methodology and definitions used. Specifically, many studies in these fields focus more on expectations of improvement or deterioration of the economic, social or personal situation of a country or individual. This operationalization of hope thus often reflects more general, abstract positive expectations and not so much active hope for personal, concrete goals. Moreover, personal expectations or optimism, i.e. the tendency to expect positive things will happen, differ from hope, in the sense that optimism relies on the assumption that things will turn out well, whereas hope is inherently uncertain[62] (Bailey et al., 2007). Although the concept of hope as used within psychology does include expectations (Snyder, 2000), the focus on expectations within social sciences diverges from the psychological approach in two ways. First, hope is inherently agentic and active: when we hope for something, it is uncertain whether we will reach this goal, and we will therefore have to take action if possible. A positive expectation, on the other hand, does not require any action since we already assume that our desire will be fulfilled (or, in the case of negative expectation, that it will not happen). Second, hope is more process-oriented. While expectations mainly relate to the goals we expect to achieve, hope also relates to the pathways we come up with to get there (Snyder, 2000). These differences are important, as they might influence how the different interpretations of hope relate to subjective well-being.

62 Similarly, self-confidence is related to hope, since hope can be more likely to appear when chances of attaining our goals are high. However, hope can also (and often does) arise when future expectations are actually quite grim (Webb, 2007).

7.1.2 Subjective well-being

The concept of subjective well-being concerns the appreciation of one's personal condition or one's subjective enjoyment of life as a whole (Diener et al., 1999; Veenhoven, 2000). Like hope, happiness has both a cognitive and an emotional component. When we think about our happiness, for example, we may ask ourselves not only whether we feel comfortable throughout the day but also whether we are satisfied with our lives and whether we have achieved the goals we have set for ourselves. The first component concerns intuitive experiences, or our emotional affect balance. The second component is more about a cognitive assessment of life as a whole or how we think our current life compares to the most ideal life we have in mind. Together, these components determine - from a hedonistic point of view - overall happiness (Veenhoven, 2000; Kashdan, Biswas-Diener & King, 2008).

These different components of happiness do not always go hand in hand and are influenced in different ways by our living conditions. A successful career may well contribute to life satisfaction, while the additional stress creates a more negative emotional balance during the working day. However, it is also possible to feel good throughout the day but not be satisfied with what we have achieved in our lives. For example, a higher income is usually found to increase life satisfaction (Kahneman et al., 2011), whereas social contacts mainly lead to a positive emotional balance (Diener, Ng, Harter, & Arora, 2010).

7.1.3 The relationship between hope and subjective well-being

Snyder's hope theory assumes that hope leads to higher levels of subjective well-being when we experience success in pursuing our goals. People who are more hopeful are more creative and show more perseverance in pursuing their goals, which in turn could result in higher levels of happiness by gaining more successful experiences (Snyder, 2000; Bailey et al., 2007). Another possible explanation for the relationship between hope and subjective well-being is that people who are hopeful see more opportunities and therefore more easily achieve the things that make them satisfied with their life, such as a successful relationship or career. For example, various studies have shown that hope is positively associated with academic (Snyder, 2002), professional (Youssef & Luthans, 2007) and athletic success (Curry, Snyder, Cook, Ruby & Rehm, 1997). A third explanation can be found in the broaden-and-build theory, according to which positive emotions contribute to broader subjective well-being because people who feel good are usually more open to new situations, relationships and impressions and therefore gain more experience and skills (Fredrickson, 2001). Moreover, positive emotions would ensure that people can respond with more resilience in negative situations and thus experience fewer negative consequences of setbacks (Arampatzi et al., 2019).

Although hope and subjective well-being usually go hand in hand, this connection is not uniform for all different aspects of hope and subjective well-being. In particular, the connection between positive expectations and subjective well-being can be hypothesized to be relatively weak. First, positive expectations of the future generally concern more abstract

social developments that lie outside the individual, whereas other forms of hope focus specifically on achieving concrete, personal goals. However, it is precisely these personal goals, for which we are intrinsically motivated, that usually contribute to our happiness (Ryan & Deci, 2000). In addition, positive expectations can have a negative effect on happiness if they do not materialize, as those who expect a lot from life will probably be disappointed sooner than others (Greenaway et al., 2015). Moreover, when expectations are focused on acquiring material wealth, this can distract from other aspects of our lives, such as good social relationships. Usually, such a materialistic focus goes hand in hand with diminished well-being (Van Boven, 2005). Lastly, an overly optimistic view of the future might diminish well-being if it keeps people from improving a bad situation. This might especially be the case when positive expectations are based on denial of the severity or urgency of problems at hand (Ojala, 2012).

Given the potentially ambiguous relationship between hope and subjective well-being, in this paper, we take stock of what we know about the relationship between the different aspects of these concepts. Although the topic has been included in previous meta-analytic reviews (e.g., Avey et al., 2011; Alarcon et al., 2013; Reichard et al., 2013), to the best of our knowledge, this study is the first to include and systematically compare studies from different disciplines, covering both cognitive and emotional aspects of hope and subjective well-being as well as expectations, on top of conducting an empirical study including a diverse set of measures of hope and subjective well-being. The remainder of this paper is organized as follows. We start with a systematic review of the existing literature (Section 2), in which we summarize existing empirical evidence, followed by an empirical study (Section 3), in which the many faces of hope and happiness are further compared. Section 4 discusses and concludes the paper.

7.2 EMPIRICAL LITERATURE ON HOPE AND SUBJECTIVE WELL-BEING

7.2.1 Selection of Studies

In this research, we used the World Database of Happiness to study the existing literature on the relations between hope and happiness. The World Database of Happiness includes studies that examine happiness in terms of subjective enjoyment with life as a whole, also known as 'subjective well-being', 'perceived quality of life' and 'life satisfaction'. Studies are included in this database based on the outcome measure, and the database includes only studies that use valid measures of subjective well-being. Of all publications in the World Database of Happiness, 48 studies concern the topic of hope and subjective well-being. Of these 48 studies, we selected those that were quantitative in nature, reported new findings (to avoid duplicate findings), and reported zero-order correlations. Please note that most studies (especially older studies) report only zero-order correlations, and for comparability, we report only these findings. Quantitative studies that reported regression coefficients but

no zero-order correlations, i.e., predominantly economics studies that examined the positive expectations and subjective well-being relationship, were therefore omitted from the review. In total, our review contains 34 different studies and 84 different findings regarding the correlation between hope and subjective well-being. An overview of the studies included in the survey can be found in Appendix 7.1.

7.2.2 Hope and Subjective Well-Being Measures in Empirical Studies

With regard to hope, we discern three different types of measures that were used in the included studies, capturing three different approaches: the cognitive approach, the emotional approach, and positive expectations.

In *the cognitive approach to hope,* hope is most often measured using Snyder's Adult Trait Hope Scale (ATHS; Snyder et al., 1991) or the Revised Snyder Hope Scale (RSHS; Shorey et al., 2009). The former scale contains 12 items (of which 4 are used as fillers), for which participants have to rate statements such as 'I can think of many ways to get out of a jam' and 'My past experiences have prepared me well for my future'. The scale can be subdivided into two subscales: one for agency and one for pathways. Agency refers to the belief that someone is capable of achieving her or his goals, whereas the pathways subscale refers to the ability to imagine possible routes to these goals (Snyder, 2000).

The emotional approach to hope uses instruments aimed at measuring general feelings of hopefulness or hopelessness. Hopefulness, capturing the positive emotional approach to hope, has been measured using the Herth Hope Index (HHI; Herth, 1992)[63] and the Miller Hope Scale (Miller & Powers, 1988). The statements that respondents have to rate in the HHI focus on temporality, the future, positive expectations, readiness and interconnectedness. Example statements include 'I have a positive outlook towards life', 'I have deep inner strength', and 'I feel all alone'. Similarly, the Miller Hope Scale focuses on the anticipation of a future good, mutuality, competence, well-being and purpose and includes statements such as "I look forward to an enjoyable future". Hopelessness is captured by the Beck Hopelessness Scale (Beck et al., 1974), where respondents have to rate statements such as 'My future seems dark to me' and 'I might as well give up because I cannot make things better for myself'. Questions in the Beck Hopelessness Scale centre on feelings about the future, loss of motivation, and future expectations.

Positive expectations are captured using the single-item question 'What are your expectations for the year to come: will the next twelve months be better, worse or the same when it comes to your standard of living?'

63 Please note that the Herth Hope Index also includes more cognitive items and, hence, measures both components of hope. However, most emphasis of the Herth Hope Index is put on the emotional component of hope.

With regard to subjective well-being, we discern three types of measures that were used in the included studies: the cognitive component of subjective well-being, the emotional component, or overall happiness.

Measures of the more *cognitive component* of subjective well-being include the Satisfaction with Life Scale (Diener et al., 1985), Student's Life Satisfaction Scale (Huebner, 1991), Cantril Ladder (Cantril, 1965), and single-item life satisfaction questions. Example questions from the Satisfaction with Life Scale include 'In most ways my life is close to ideal' and 'The conditions of my life are excellent'. Please note that several studies have by now found that single-item subjective well-being measures have acceptable reliability and validity (Schimmack and Oishi 2005; Abdel-Khalek, 2006; Cheung and Lucas 2014).

The more *emotional component* of subjective well-being is usually captured using affect balance scales, such as the Positive Affect and Negative Affect Scale (PANAS; Watson et al., 1988), the Affect Balance Scale (ABS; Moriwaki, 1974), and the Scale of Positive and Negative Experience (SPANE; Diener et al., 2010). These scales can usually be subdivided into a positive affect scale and a negative affect scale. The positive affect scale of the PANAS, for example, asks respondents to indicate to what extent they felt excited or enthusiastic during the past few weeks, while the negative affect scale of the PANAS asks respondents to indicate to what extent they felt hostile or distressed during the past few weeks.

Measures of *overall happiness*, capturing both the cognitive and emotional component of subjective well-being, include the Subjective Happiness Scale (Lyubomirski and Lepper, 1999) and a single-item overall happiness question.

7.2.3 Presentation of Results

In the literature review, we summarize the findings of these studies, examining the reported correlations between the different measures of hope and subjective well-being. When reporting coefficients, we consider a correlation between 0 and 0.19 to be very weak, between 0.2 and 0.39 to be weak, between 0.40 and 0.59 to be moderate, between 0.6 and 0.79 to be strong, and between 0.8 and 1 to be very strong (Evans, 1996).

7.2.4 Literature Review Findings

When we turn to the existing empirical evidence, we observe that particularly in psychology, but increasingly also in sociology and economics, some empirical research has been conducted on the relationship between different types of hope and subjective well-being. However, there seems to be a division in research fields, within which specific measures of hope and subjective well-being are usually studied simultaneously. For example, there are only a few studies that compare affect and expectations, whereas the correlation between cognitive hope and life satisfaction is very well documented.

In an exploration of zero-order correlations, a number of patterns can be recognized. First, although there is generally a positive connection between cognitive hope and life satisfac-

tion, it is apparent that the various aspects of Snyder's Hope scale are not connected with happiness in the same way. Agency, the belief that we are able to achieve our goals, has a stronger association with life satisfaction than the different pathways we can come up with to achieve our goals. It thus seems to be especially important for life satisfaction that we have the conviction that we can achieve our goals: this belief has a greater impact on life satisfaction than the process of getting there.

Second, when comparing positive and negative affect, it is evident that they are not connected in the same way to cognitive hope. That is, the correlation between cognitive hope and positive feelings is generally stronger than the relationship between cognitive hope and negative feelings. From this difference, it can be concluded that a hopeful attitude is associated mainly with more positive feelings, while the absence of cognitive hope is not directly accompanied by strong negative feelings. For the other forms of hope, however, no differences between positive and negative feelings were found. These findings substantiate the idea that positive and negative affect are not merely opposites on one continuum but rather are distinct states of being that both relate to other constructs in dissimilar ways (Larsen & McGraw, 2011).

Third, the relation between general positive expectations and happiness turns out to be weaker than the relationship between happiness and other forms of hope. While some studies have found a positive correlation, there appears to be no or even a negative relationship in other studies. This discrepancy may in part be due to the wide variety of questions about positive expectations since there is much less consistency in these types of questions. However, when looking at specific studies, positive expectations appear to be more weakly related to happiness than other forms of hope. This finding could be explained by the idea that there is a curvilinear relationship between expectations and subjective well-being (Arampatzi et al., 2019). Although previous studies have shown that positive expectations predict life satisfaction better than actual income (Frijters et al., 2012; Ekici & Koydemir, 2016)

Table 7.1 | Relationships between Hope and Subjective Well-Being

	Cognitive hope		***Emotional hope***		***Positive expectations***
	Agency	*Pathways*	*Hopefulness*	*Hopelessness*	
Life Satisfaction	++	+	++	--	+/0
	++				
Affect Balance	+		+++	--	+/0
Positive Affect	++		++	--	0
Negative Affect	-/0		---	++	-
Overall Happiness	++		++	-	+

+ correlations are typically between 0.20 and 0.40; ++ correlations are typically between 0.40 and 0.60; +++ correlations are typically greater than 0.60; - correlations are typically between -0.20 and -0.40; -- correlations are typically between -0.40 and -0.60; --- correlations are typically less than -0.60

and that moderately optimistic people can cope better with exogenous shocks (Arampatzi et al., 2019), these studies also warn about overly optimistic expectations, since subjective well-being seems to decrease if an outcome is worse than originally expected (Bell, 1985; Schwartz, 2003; Arampatzi et al., 2019). Compared to expectations, hope is less prone to resulting in disappointment and disillusionment, since it is inherently uncertain and requires personal effort. Therefore, having positive expectations might be a worse predictor of subjective well-being than hope, since the former can easily lead to disappointment, and the latter does not.

7.3 EMPIRICAL STUDY

The literature review thus highlighted three findings: (1) the association of subjective well-being with the agency component of cognitive hope is stronger than that with the pathways component, (2) the association of cognitive hope with positive affect is stronger than of cognitive hope with negative affect, and (3) expectations are only weakly correlated with all components of subjective well-being. At the same time, the reviewed studies are difficult to compare with each other, as the more emotional hope scales are disproportionately found in research on patients with a physical or psychological disorder, while the cognitive hope scales are disproportionately found in studies on the general population. Moreover, none of the included studies combined all types of subjective well-being and hope within one survey. Hence, we conducted an empirical study in which we further compared all the different types of hope and subjective well-being.

7.3.1 Data

A two-wave panel dataset was collected in the US in 2016 and 2017 using Prolific, a virtual crowdsourcing platform similar to Amazon Mechanical Turk, where people can fill out surveys for small compensation (Sheehan, 2018). Prolific has been used in many empirical studies in the social sciences, and previous studies have shown that online crowdsourcing in general, and Prolific in particular, offer high quality data (Buhrmester et al., 2011; Peer et al., 2017). Originally, 517 people participated in wave 1. Of this group, 338 also participated in wave 2. Only these respondents were included in the analysis, and their characteristics are reported in Table 7.2, column 1. As shown in column 2, men are over-represented in the group of people who did not participate in wave 2, i.e. the 'dropouts'. However, in both the second and first wave, slightly more than half of the sample was male. The other characteristics of the drop-outs were not notably different from those of the research population. Since emotional hope was measured among only a subset of the first wave, only 167 of the respondents in the

final analysis answered the questions on emotional hope in wave 1[64]. Respondents reported their age, gender, household composition, income, and ethnicity. These characteristics were included as covariates.

Table 7.2 | Demographics of Participants

	Waves 1 & 2 (N=338)	Drop-outs (N=179)[4]
Gender		
Male	55%	64%
Female	45%	36%
Age	34 years	31 years
Household composition		
Single	42%	46%
Single parent	6%	4%
Two adults, no children	24%	19%
Two adults, with children	22%	25%
Other	7%	6%
Monthly household income		
Less than $900	6%	6%
$900 - $1300	10%	9%
$1,300 - $1,800	12%	14%
$1,800 - $2,700	25%	28%
$2,700 - $3,200	16%	15%
More than $3,200	30%	28%
Religion		
Important/very important	22%	27%
Slightly important	16%	25%
Not important/don't know	61%	49%
Ethnicity		
Caucasian/White	74%	73%
African American	6%	8%
Asian	9%	11%
Other	12%	7%

4 Please note that these respondents were not included in this study

64 Please note that respondents were selected to answer the Herth-questions at random, so the group that answered these questions does not differ from the group that did not.

7.3.2 Measures

The cognitive component of hope was measured using the ATHS (Snyder et al., 1991), where high scorers are regarded as more hopeful, more motivated to achieve their goals, and better able to think of ways to reach their goals. All eight items in the ATHS were scored on a scale from 1 (Definitely False) to 7 (Definitely True) and were averaged to calculate an overall score ranging from 1 to 7. Apart from an overall cognitive hope measure, we constructed measures using the agency and pathways subscales. Emotional hope was estimated using the HHI (Herth, 1992), where twelve statements were rated on a scale from 1 (Strongly Disagree) to 7 (Strongly Agree), and the average of statement scores was used as the total score. In addition, a single-item hopefulness measure was presented to respondents, asking: 'In the past 4 weeks, how often have you felt hopeful?' Possible answers ranged from 1 (Never) to 7 (Always). During the first wave, only a subsample of the entire sample filled out the HHI (167 out of 338). Positive expectations were measured using a single-item measure in which respondents had to answer the following questions: 'What are your expectations for the next twelve months: will the next twelve months be better, worse or the same, when it comes to your life in general?'. The possible answers were (1) Worse, (2) Same, and (3) Better.

With regard to the life satisfaction question, respondents had to provide an answer to a single question: 'All things considered, how satisfied are you with your life as a whole nowadays?' Possible answers ranged from 0 (very dissatisfied) to 10 (very satisfied). Positive affect and negative affect were measured using the PANAS scale, where respondents indicate to what extent they generally feel certain positive (alert, inspired, determined, attentive and active) and negative (upset, hostile, ashamed, nervous and afraid) emotions on a scale from 1 (Never) to 7 (Always), resulting in an average score ranging from 1 to 7. Finally, overall happiness was measured using the following single-item question: 'Taking all things together, how happy would you say you are?', where 0 means very unhappy, and 10 means very happy.

The internal reliability of all scales was sufficient (Cronbach's α>0.70; Nunnally and Bernstein, 1994) and well within the αranges reported in different studies. The descriptive statistics for the hope and subjective well-being measures in both study waves – including the internal reliability scores for the utilized scales – can be found in Table 7.3.

Table 7.3 | Descriptive Statistics of Hope and Subjective Well-Being Measures

Wave 1 (N=338)	Mean	Standard Deviation	Cronbach's α
Adult Trait Hope (1-7)	4.91	1.07	0.90
Adult Trait Hope – Agency (1-7)	4.76	1.26	0.86
Adult Trait Hope – Pathways (1-7)	5.06	1.05	0.83
Herth Hope Index (1-7) (N=167)	4.99	1.09	0.90
Hopefulness (1-7)	4.88	1.44	N/A
Positive Expectations (1-3)	1.85	0.69	N/A
Life Satisfaction (0-10)	6.31	2.31	N/A
Positive Affect (1-7)	4.69	1.07	0.82
Negative Affect (1-7)	2.53	1.19	0.87
Overall Happiness (0-10)	6.42	2.23	N/A
Wave 2 (N=338)	**Mean**	**Standard Deviation**	**Cronbach's α**
Adult Trait Hope (1-7)	4.93	1.10	0.91
Adult Trait Hope – Agency (1-7)	4.83	1.27	0.87
Adult Trait Hope – Pathways (1-7)	5.05	1.10	0.85
Herth Hope Index (N=167) (1-7)	5.04	1.10	0.91
Hopefulness (1-7)	4.70	1.38	N/A
Positive Expectations (1-3)	1.76	0.67	N/A
Life Satisfaction (0-10)	6.26	2.22	N/A
Positive Affect (1-7)	4.79	1.03	0.80
Negative Affect (1-7)	2.62	1.15	0.86
Overall Happiness (0-10)	6.36	2.24	N/A

7.3.3 Correlations

The bivariate correlations between the different types of hope and well-being show patterns that are largely in line with those found in the literature review (Table 4). First, we find moderate to strong correlations of (1) cognitive and emotional hope measures with (2) overall happiness, life satisfaction, and positive affect measures. We also see that the associations of the subjective well-being measures with the agency component of hope are slightly stronger than with the pathways component of hope. Second, we find that the association of cognitive hope with positive affect is stronger than that with negative affect. In contrast to the literature review, we find only a weak correlation of negative affect with hopefulness and a moderate correlation with the HHI. Third, the correlations between positive expectations and the subjective well-being measures are generally weak. Finally, it is notable that the correlations in both studies are very similar. When we gauge the correlations of changes in hope with changes in subjective well-being between the two moments of measurement (Table 5), we see that these correlations are generally weaker than those between the level variables

(Table 4). However, the earlier observed pattern of the relative strength of the relationships between the different hope and subjective well-being measures remains.

Table 7.4 | Bivariate Correlations between Hope and Subjective Well-Being Measures

	Cognitive hope			Emotional hope		Positive expectations
	ATHS	ATHS (Agency)	ATHS (Pathways)	Herth Hope Index[#]	Hopefulness	
Wave 1 (N=338)						
Life Satisfaction	0.68*	0.72*	0.53*	0.59*	0.69*	0.39*
Positive Affect	0.66*	0.65*	0.56*	0.62*	0.57*	0.19*
Negative Affect	-0.42*	-0.40*	-0.38*	-0.41*	-0.30*	-0.25
Overall Happiness	0.67*	0.70*	0.53*	0.58*	0.70*	0.38*
Wave 2 (N=338)						
Life Satisfaction	0.69*	0.72*	0.56*	0.70*	0.72*	0.45*
Positive Affect	0.65*	0.65*	0.56*	0.61*	0.55*	0.33*
Negative Affect	-0.41*	-0.41*	-0.36*	-0.52*	-0.41*	-0.21*
Overall Happiness	0.70*	0.70*	0.54*	0.75*	0.72*	0.46*

*p<0.05; 0-0.19 is regarded as a very weak correlation, 0.2-0.39 as weak, 0.40-0.59 as moderate, 0.6-0.79 as strong and 0.8-1 as very strong
[#] N=167 for wave 1

Table 7.5 | Bivariate Correlations between Hope and Subjective Well-Being Measures – Changes between Wave 1 and Wave 2 (N=338)

	Δ ATHS	Δ ATHS (Agency)	Δ ATHS (Pathways)	Δ Herth Hope Index[#]	Δ Hopefulness	Δ Positive Expectations
Δ Life Satisfaction	0.52*	0.54*	0.38*	0.34*	0.48*	0.24
Δ Positive Affect	0.43*	0.44*	0.33*	0.32*	0.31*	0.14
Δ Negative Affect	-0.31*	-0.35	-0.21	-0.42*	-0.21*	-0.13
Δ Overall Happiness	0.46*	0.50*	0.32*	0.41*	0.45*	0.25*

*p<0.05; 0-0.19 is regarded as a very weak correlation, 0.2-0.39 as weak, 0.40-0.59 as moderate, 0.6-0.79 as strong and 0.8-1 as very strong
[#] N=167

7.3.4 Nonlinearities

The literature review and correlation analyses showed that cognitive and emotional hope have a relatively strong positive relation with well-being, while positive expectations appear to be only weakly related to well-being. One possible explanation for the latter finding is that the relation between expectations and well-being is non-linear; although moderate positive expectations are generally associated with greater well-being, this might not be the case when people expect too much from life and consequently become disappointed. Previous studies have indeed hinted that this might be the case (Bell, 1985; Schwartz, 2003; Arampatzi

et al., 2019). To test this hypothesis, several fixed effects regressions were run, calculating the relation between differences in well-being and differences in hope between wave 1 and wave 2 for differing levels of hopefulness[65].

Table 7.6 | Fixed effects regression on the relation between hope and subjective well-being (N=338)

	Life satisfaction	Positive affect	Negative affect	Happiness
ATHS				
Middle	1.31*** (0.23)	0.27*** (0.10)	-0.46*** (0.11)	1.16*** (0.24)
High	2.01*** (0.28)	0.71*** (0.12)	-0.65*** (0.14)	1.93*** (0.29)
ATHS (Agency)				
Middle	1.35*** (0.21)	0.30*** (0.09)	-0.60*** (0.10)	1.22*** (0.22)
High	1.94*** (0.27)	0.72*** (0.12)	-0.77*** (0.13)	2.02*** (0.27)
ATHS (Pathways)				
Middle	0.97*** (0.21)	0.43*** (0.09)	-0.32*** (0.10)	1.08*** (0.21)
High	1.39*** (0.26)	0.57*** (0.11)	-0.38*** (0.12)	1.32*** (0.26)
Herth Hope Index (N=167)				
Middle	1.10*** (0.36)	0.24* (0.15)	-0.69*** (0.15)	1.23*** (0.34)
High	1.36*** (0.44)	0.63*** (0.19)	-0.98*** (0.19)	1.74*** (0.42)
Hopefulness				
Middle	1.08*** (0.18)	0.23*** (0.08)	-0.25*** (0.09)	1.13*** (0.18)
High	1.61*** (0.22)	0.45*** (0.10)	-0.27** (0.11)	1.47*** (0.23)
Positive Expectations				
Staying the Same	1.14*** (0.24)	0.29*** (0.11)	-0.19* (0.12)	0.91*** (0.25)
Getting Better	1.33*** (0.27)	0.36*** (0.12)	-0.29** (0.13)	1.29*** (0.27)

*p<0.10, ** p<0.05, ***p<0.01

To interpret these results more fully, Figure 7.1 shows scatterplots for all the predicted values of happiness at the three levels of the different hope measures. Here, a non-linear line indicates that the well-being differences between low, moderate and high levels of hope are not equal.

The results show that, on average, lower levels of hope are associated with lower levels of well-being. However, it also appears that for several combinations of hope and happiness measures, the difference between moderate and high levels of hope makes a relatively small difference. This finding would indicate that for these measures, overly optimistic hopes do not generally translate into an equal rise in happiness and eventually may even result in a decline. This finding is quite clear for the relation of positive expectations with life satisfaction and positive affect; people with moderate and positive expectations hardly differ in their well-being scores. Moreover, the relation between the HHI and life satisfaction; the relation between the pathways subscale of the ATHS and affect and overall happiness; and of general hopefulness with negative affect and happiness also show indications of diminishing returns.

65 Since positive expectations were measured as a categorical three-point variable, all other hope measures were also rescaled as such.

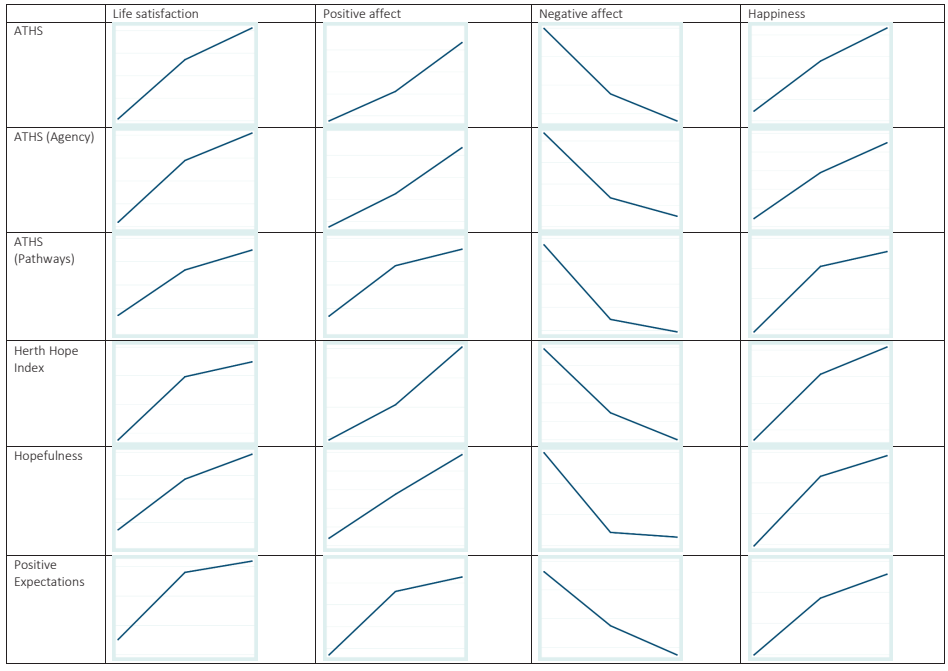

Figure 7.1 | Scatterplots for predicted values of happiness at three different levels of hope

7.4 DISCUSSION AND CONCLUSION

Over the past decades, the relation between hope and well-being has become a topic of increasing interest in several academic disciplines, such as psychology, economics, sociology, and political science. How people perceive the future appears to greatly influence how they behave and experience their current situation, and research on the topic can thus lead to new insights into the drivers of well-being. However, different disciplines define and operationalize hope and well-being in diverging ways. Hence, it is difficult to relate findings from one field of research to those from another. In this study, we combined a literature review and an empirical investigation of the relation between different types of hope and subjective well-being. As such, this study provides insight and nuance to the differing relations between these two concepts. Although hope and subjective well-being generally seem to be correlated, the strength of the relations differ between the types of hope and subjective well-being. Most notably, expectations appear to be only weakly related to subjective well-being. Our data suggest that this relation could be non-linear, as overly optimistic expectations may harm subjective well-being through disappointment.

By combining a literature review and empirical study, this research offers a structured and comprehensive overview of how hope and subjective well-being are related. However,

to maintain comparability, some important findings could not be included in the current article. First, the literature review focuses solely on cross-sectional data and zero-order correlations, overlooking studies conducted with regression analyses or panel data, which are more common in the field of economics and in more recent studies within psychology. Moreover, only a handful of the instruments used to measure happiness and hope could be included in the empirical study, disregarding, for example, popular measures such as the Satisfaction With Life Scale and the Miller Hope Scale. Nonetheless, the current research is unique in comparing a wide range of findings and instruments from different disciplines. The aim of this study was not to be exhaustive but to offer a comprehensive first step to greater comparability across disciplines. Future research could extend these findings by including even more measures. Moreover, making use of larger datasets enables a more detailed study of how the subjective well-being of different groups of people is affected by their hopes for a positive future.

In summary, our research shows that although greater hopes usually go hand-in-hand with higher subjective well-being levels, we should be mindful of the nuances of this relation. First, the relationship between hope and subjective well-being is contingent on the definitions used, and not all types of hope and well-being are equally strongly related. Second, more optimistic hopes are not always associated with higher levels of subjective well-being. Especially with regard to positive expectations, it might pay off to remain moderately cautious. Third, cognitive and emotional hope, measured with the ATHS and Herth Hope Index, do appear to have strong and robust positive relations with all components of subjective well-being in this study. More generally, this research provides insight into how findings on hope and subjective well-being from different disciplines can be compared. Our findings have methodological implications, since they help to interpret the relations between specific measures of hope and subjective well-being. Moreover, they have important policy-implications. The strong relation between hope and subjective well-being indicates that policies affecting hope, either in a positive or negative way, will also influence well-being. Increased insecurities, affecting people's perspective of the future, for example because of temporary employment-contracts, increasing debts, or weakening social safety nets, will therefore inevitably also affect people's subjective well-being. Furthermore, it means that interventions aimed at increasing hope can be used to simultaneously increase subjective well-being, but also that policies aiming to raise either hope or subjective well-being without taking into account the relation between the two may not be as effective. The findings of this study could help to better understand the mechanisms underlying increased well-being, and could be applied to for example public policy, education and health care.

A limitation of this study is that it used only two waves of data and a relatively small sample. Therefore, we should be very cautious about making any causal inferences. Future research could test the relations between different types of hope and well-being in a larger sample, comprising more waves. Additionally, experimental set-ups would be needed to study the

causal relation between changing levels of hope and well-being. Moreover, although we found indications that the relation between expectations and some measures of hope and well-being is non-linear, more research is needed to examine the level at which increased hope no longer improves well-being and to verify which components of a hopeful disposition lead to diminishing returns in terms of well-being.

IV

Measuring hope

8 Measuring hope

Emma Pleeging

Based on the paper - Pleeging, E. (Forthcoming). Measuring hope. Validity of four very brief hope scales. Submitted to Quality & Quantity.

8.1 INTRODUCTION

Over the past decades, hope has increasingly become a topic of interest in several scientific disciplines, such as psychology, health science, economics and anthropology (Van den Heuvel, 2020). This is perhaps not very surprising, considering the relatively large impact that hope appears to have on our daily lives. Research has found hope to be an important correlate or determinant of several, mainly positive, life-outcomes such as the academic and athletic success of youngsters (Snyder, 2002); recovery after (mental) illness (Snyder, 2002; Herth, 1992); proactive economic behaviour (Duflo, 2012; Reichard et al., 2013; Flechter, 2014; Lybbert & Wydick, 2018); sustainable behaviour (see Chapter 4; Ojala, 2012); mental health and even longevity (Graham & Pinto, 2019; O'Connor & Graham, 2019). However, research on the topic has remained largely within the confines of these different disciplines, meaning that the specific definition and instruments used to measure hope are often quite divergent between fields. While studies within psychology for example predominantly make use of the Adult Trait Hope Scale (ATHS), defining hope as a combination of agency and resourcefulness (Snyder et al., 1991); studies within health sciences usually perceive hope as the multidimensional experience of a confident, but uncertain expectation that is measured with the Herth Hope Index (HHI) (Herth, 1992); whereas economic and sociological studies more often use existing, largescale datasets in which hope is generally understood as positive expectation (Graham & Pinto, 2019; O'Connor & Graham, 2019).

Although there is clearly some overlap between these approaches, there are also important differences. While the ATHS for example focuses on the agentic, behavioural component of hope, the HHI is much more concerned with emotions and attitudes; and whereas the HHI perceives uncertainty as a defining trait of hope, expectations are generally centred on feelings of certainty (Bailey et al., 2007). Also, critique has been offered that most western instruments are focused too much on the individual, at the expense of a more social understanding of hope (Aspinwall & Leaf, 2002; Bernardo, 2010; Du & King, 2013; Howell, Bailie & Buro, 2015), as well as disregarding the more transcendental or spiritual components of the experience (Ludema, Wilmot& Stivastva, 1997; Antelius, 2007; Scioli, Ricci & Nguyen, 2011).

Building on the idea that hope entails multiple dimensions, such as cognitive, emotional, active and social traits, which each play a more or less important role in different contexts and therefore in different disciplines (Webb, 2007), we assert that trans-disciplinary research and collaboration between disciplines is important to increase our understanding of hope in practical contexts. Such trans-disciplinary relies on short, easy-to-use instruments, focusing on different domains of a hopeful experience. However, current instruments developed to measure hope are generally quite lengthy and can therefore not be easily added to or combined in empirical studies. The HHI and ATHS for example both consist of 12 items. Moreover, relatively little is known about how these different instruments relate to each other. In this study we therefore compare the original and brief versions of four different hope-

instruments, each covering a different domain of the hopeful experience, using three-wave panel data from a representative sample of around 1,000 citizens from the Netherlands. The instruments studied are the Herth Hope Index (HHI); Adult Trait Hope Scale (ATHS); Locus of Hope Scale (LOHS); and spiritual dimension of the Comprehensive Hope Scale (CHS). We study the validity of shorter versions of each of these instruments and investigate how they compare to a single-item hope question and several related concepts, such as expectations, life satisfaction and positive affect.

This study has both relevance in practice and in the academic field. First, by validating brief versions of several well-known instruments, as well as the validity of a single-item hope-question, we improve the possibility to study hope using less time-consuming methods, for example in larger-scale studies in which there is little room for long multi-item scales. Second, by examining how different hope-instruments are related, this study helps us estimate to what degree insights from one field are applicable in another. Third, by developing short, easy-to use hope-scales, it will hopefully become easier and more common to study hope in specific, societally relevant contexts, such as within organisations or municipalities.

8.2 LITERATURE

8.2.1 Modes of hoping

There are many different approaches to defining hope. In its simplest sense, we can turn to the 'orthodox definition', a very trimmed down definition of hope, developed and used mainly in the field of philosophy, which states that hope comprises two necessary and sufficient elements: a *desire* for an *uncertain* event (Day, 1969; Martin, 2011). When we hope for something, we express that we want this event to happen, but that we are never certain that it will, although we do think it is possible. Beyond this very brief definition, many more complex descriptions have been offered throughout the years, each with its own focus, be it on goal-achievement, the social context of hope, hope as an emotion or the prudence of hope. We assume here that these different definitions are not necessarily at odds with each other, but that there are multiple 'modes of hoping' (Webb, 2007) that all reflect important components of hope and become more or less important depending on the specific context. 'We may each of us at different times and in different circumstances experience hope in the manner described by Marcel or Dauenhauer or Bloch or Snyder or Rorty. Our hopes may be active or passive, patient or critical, private or collective, grounded in the evidence or resolute in spite of it, socially conservative or socially transformative. We all hope, but we experience this most human of all mental feelings in a variety of modes.' (Webb, 2007:80). Moreover, since each scientific discipline focuses on a specific part of reality, it is logical that their definition of hope is tailored to this context and might miss other components.

8.2.2 Hope scales

In this study, we focus on four different hope-scales, each representative of a specific approach or focus in understanding hope, namely a *cognitive* (ATHS), *emotional* (HHI), *social* (LOHS) and *spiritual* focus (CHS)[66]. There are several reasons for choosing these specific scales. First, we assume that each of these approaches adds something different to our understanding of hope, and is complementary to the others. Although there is some overlap, the ATHS for example specifically assumes that hope is primarily about the cognitive assumptions regarding goal-achievement; the LOHS is specifically designed to measure the social sources of our hope; the spiritual dimension of the CHS focuses on spiritual sources of hope; and although the HHI is not explicitly about emotion, its items are much more emotionally laden. Moreover, as these four scales are all previously validated and are somewhat prevalent in existing empirical research, they have a better chance of proving to be useful in shortened versions. However, a multi-dimensional understanding of hope is not new, as several different multi-dimensional hope theories have been developed over the years, each describing different domains to the hopeful experience (e.g. Herth, 1992, Webb, 2007; Hammer, Mogensen & Hall, 2009; Scioli et al., 2011; Eaves et al., 2014). The four domains we describe are thus by no means the only characteristics of hope, yet we chose these as each covers an important line of thought within hope research and can be represented in a measuring instrument.

The ATHS – Cognition

In scientific research, especially within the field of psychology, Snyder's hope theory has been very influential in the past decades. This theory defines hope as a predominantly *cognitive* experience (Snyder, 2002). According to this theory, hope is a combined sense of *agency*, or belief in our ability to reach our goals and a resourcefulness in following different *pathways* towards these goals even when we are met with obstacles. Snyder regards hope as "primarily a way of thinking, with feelings playing an important, albeit contributory role" (2002:249). In this theory, emotions function as feedback on how well we perceive we are doing in achieving our goals, yet the central experience of hope is defined as the thoughts we have about our abilities of goal-attainment. So, here hope is about the cognitive belief we can reach our goals, and emotions are viewed as sequela, i.e. consequences of these thoughts (Rand & Cheavens, 2009). The related Adult Trait Hope Scale (ATHS) (Snyder et al., 1991) aims to capture the cognitive beliefs regarding goal achievement and comprises two dimensions; agency and pathways.

66 Most of these instruments however follow from a broader hope-theory, and thus have a wider focus than solely these respective dimensions, yet we take them to be largely representative for thinking of hope in a specific way.

The Herth Hope Scale – Emotion

Perceptions of hope as an *emotion* are represented in many different theories over the past years. Fredrickson (2013) for example regards hope as one of the most common positive emotions that builds resilience and broadens our mindset, by motivating and encouraging people towards a brighter future. Also, often in response to Snyder's hope theory's focus on cognition, several thinkers have argued that emotions play the most important role in the hopeful experience, for example in helping people decide what goals to pursue, whether to maintain or pause their actions, and as the overall hard-to-control 'feeling tone' that hope encompasses (Aspinwall & Leaf, 2002; Scioli et al., 2011). In the often-used hope theory developed by Herth (1992), hope is defined as "a multi-dimensional dynamic life force characterized by a confident yet uncertain expectation of achieving good, which to the hoping person, is realistically possible and personally significant" (Herth, 1992:1253). This approach defines three factors to hope, namely *temporality and future*, *positive readiness and expectancy*, and *interconnectedness*. Here, emotion plays an important role as the motivating force that results from perceiving a future goal as possible. The Herth Hope Index (HHI) has been developed with these three domains in mind.

The Locus of Hope Scale – Social hope

Hope can feel like a highly individual experience, since it involves our personal desires and estimation of achievement. Yet, to varying degrees, hope is also very *social*. First, other people can be the source of our hopes; by offering for example support, friendship, and a shared structure of norms and values, others can greatly influence both what we desire and what we believe we can achieve (Bernardo, 2010; Du & King, 2013). Second, other people can be the object of our hopes; in many cases, the things we hope for are not for ourselves, but for others (e.g. for our children to be happy) or are aimed our relationships (e.g. to have a happy marriage) (Howell, Bailie & Buro, 2015; Krafft & Walker, 2018). Third, developing our hopes can be part of a social or even societal process, for example through a dialogue on what we find worthwhile and achievable (Ludema, 1997; Drahos, 2004; Webb, 2007; Scioli et al., 2011; Torres & Tayne, 2017). The first of these is measured using the Locus-Of-Hope Scale (LOHS), which asks to what degree people's feelings of hope originate from others and to what degree they feel others help them achieve their goals (Bernardo, 2010).

The Comprehensive Hope Scale – Spirituality

Having hope can often be a *transcendental or spiritual* experience. First, since hope always involves some 'leap of faith' or trust in an unknown, it requires people to tap into their personal faith system about how they think the world works and what gives their life meaning (Scioli et al., 2011). Such a system can be based on religion, but this does not have to be so; it can for example also be derived from trust in science or belief in fundamental human rights. Second, since humans are fundamentally hopeful beings, in the sense that we are

always pulled forward, always act in accordance with a grounding belief that things can be better, hope can often comprise an existential or transcendental experience in itself (Marcel, 1962; Ludema et al., 1997). The Comprehensive Hope Scale (CHS, Scioli et al., 2011) covers four domains, namely an attachment, mastery, survival and spiritual domain. The spiritual component measures both spirituality as a source of hope, as well as hope as an inherently transcendental experience.

8.3 METHODOLOGY

8.3.1 Participants

For this study, three-wave panel was collected in the Netherlands in 2018, 2019 and 2020, through the Longitudinal Internet Studies for the Social sciences (LISS) panel, consisting of a true probability sample of households drawn from the population register by Statistic Netherlands. Overall, 903, 868 and 1,261 respondents filled out the survey in the first, second and third wave. Due to attrition, the sample declined over the years, but was supplemented with new respondents from the same population each year. Results from 2020 are used for all the analyses using cross-sectional data. As can be found in Table 8.1, the sample is largely representative of the population. Descriptives for the sample in 2018 and 2019 can be found in Appendix 8.2. For each of the scales, about 20% of the sample filled out the existing long versions[67], whereas the rest of the sample got the short version. Moreover, to assess cross-cultural reliability, a cross-sectional survey was conducted in the same year as wave two, among 244 English-speaking respondents from Mexico, using Prolific, a platform for academic survey-research. Descriptives of this sample can be found in Appendix 8.4.

67 A smaller group filled out the spiritual CHS, since this question contained a screening questions asking respondents whether they had any religious or non-religious spiritual beliefs or experiences. If respondents answered 'Not at all' they were not asked to fill out the CHS items.

Table 8.1 | Demographic characteristics of the sample

	Sample		Dutch average
N	1,261		
Age (mean in years)	55		42
Gender			
Male	592	47%	50%
Female	669	53%	51%
Employment status			
Employed	507	45%	51%
Freelance	58	7%	2%
Unemployed / unable to work	89	31%	20%
Pensioned	387	17%	18%
Other	220		
Education			
Lower education	292	24%	33%
Middle education	431	34%	40%
Higher education	482	38%	27%
Other	56	4%	
Household type			
Single	308	24%	37%
Partner, no children	508	40%	29%
Partner and child(ren)	350	28%	27%
Single with child(ren)	61	5%	7%
Other	34	3%	
Income			
<€900	29	3%	5%
€900-€1,800	193	17%	38%
€1,800-€3,200	404	35%	38%
€3,200-€5,000	334	29%	17%
>€5,000	182	16%	4%
Ethnicity			
Autochthonous	1,025	83%	77%
Western immigrant	114	9%	10%
Non-western immigrant	96	8%	13%
Long scales			
ATHS	259	21%	
HHI	260	21%	
LOHS	258	20%	
CHS	243	19%	
No long scale	241	19%	

8.3.2 Materials

Demographics. Respondents reported their age, gender, household composition, religiosity and ethnicity. These characteristics were included as covariates in some of the analyses. Demographics for the sample can be found in Table 8.1.

Hope scales. Four original, previously validated hope scales were selected, each with their own specific focus on a part of hope. All the items to each of the hope-instruments used in this study can be found in Appendix 8.1.

The *Adult Trait Hope Scale (ATHS)* developed by Snyder and colleagues (Snyder et al., 1991) is a 12-item Likert-type scale, of which 4 items are fillers, 4 are representative of the domain *agency*, i.e. the conviction that we can achieve our goals, and 4 items represent the domain *pathways,* i.e. the perceived resourcefulness in coming up with different ways to achieve someone's goals. Example statements are 'I meet the goals that I set for myself' and 'There are lots of ways around any problem', which are rated on a 7-point answering scale ranging from 'Completely disagree' to 'Completely agree'.

The *Herth Hope Index (HHI)* developed by Herth (1992) is an abbreviated, 12-item version of the Likert-type Herth Hope Scale, and aims to measure hope as 'a multi-dimensional dynamic life force characterized by a confident yet uncertain expectation of achieving good, which to the hoping person, is realistically possible and personally significant' (Herth, 1992: 1253). It comprises three dimensions, namely *temporality,* i.e. someone's assessment of the future, *positive readiness and expectancy,* i.e. the behavioural and affective component, and *interconnectedness*, i.e. the relation to self and others that helps us feel hopeful. Sample items from the HHI include 'I have inner positive energy', 'I feel scared about my future' and 'I feel overwhelmed and trapped' (last two reverse-scored).

The *Locus Of Hope Scale (LOHS)* builds on the ATHS and measures 'whether the components of trait hope involve internal or external agents and internally or externally generated pathways' (Bernardo, 2010:945). Similar to the ATHS, the LOHS comprises of two domains; *agency* and *pathways*. The original scale differentiates between an internal, personal locus of hope and an external locus of hope based on three sources, namely peers, family and a spiritual source. For brevity, in the current study we have combined all external sources to one, referring to the more generic term of 'others' as representative of an external locus of hope. Sample items include 'I have reached many of my own goals with the help of others' and 'Others can often help me think of different ways to get out of a jam'.

The *Comprehensive Hope Scale (CHS)* is based on a multidisciplinary theory, defining hope as 'a future-directed, four-channel emotion network [comprising] four constituent channels [of] mastery, attachment, survival, and spiritual systems' (Scioli et al., 2011:79). Here, we are specifically interested in the domain of spirituality, as the CHS is one of only a few instruments comprising questions to specifically measure spiritual hope. This part of the CHS comprises of 12 items, and sample items include 'Spiritual beliefs provide me a sense of security' and 'My spiritual beliefs are a source of comfort'. Since the Netherlands is a highly secularized society, we opted to add a pre-screening question to the CHS, asking respondents whether they adhered to any religious or non-religious spiritual believes on a scale of 1 (Not at all) to 7 (Very much). Respondents who answered that they had no spiritual beliefs whatsoever, were not presented with the CHS-items.

Convergent variables. To measure convergent validity, several measures are included for which we expect a positive correlation. A *single-item hope* question asked respondents to indicate to what degree they had felt hopeful in the past four weeks, ranging from 1 (Never)

to 7 (Always). *Life satisfaction* is measured using a single-item question which asked respondents how satisfied they are with their life as a whole, ranging from 0 (very dissatisfied) to 10 (very satisfied) (Cheung & Lucas, 2014). *Positive affect* is assessed using the positive emotions from the short version of the Positive and Negative Affect Schedule (PANAS; see Watson et al., 1988). This scale represents the balance of positive and negative emotions that participants experienced in the past month and scores range from 1 (Only negative emotions) to 7 (Only positive emotions). In this study respondents were asked about their *expectations* for several personal and societal matters, such as their household finances, the economy, education, safety and the climate. *Health* is measured by asking respondents to rate their health from 1 (very bad) to 5 (very good).

8.3.3 Method

In advance to this study, all instruments were translated to Dutch by a Dutch research team, all fluent in English[68]. Also, before the main study, a pilot-study was conducted in another survey among 1,623 Dutch citizens, in an aim to select four items for each of the brief versions of the ATHS, HHI, LOHS, and spiritual dimension of the CHS (descriptives of this sample can be found in Appendix 8.2 and results are reported in section 4.1). In the main study, the long version of each of the hope scales was given to a randomly assigned group of about 20% of the total sample (see Table 8.1), while the rest of the respondents filled out the short version. The 'long-version groups' filled out the same long versions each year on top of the shorter versions of the other scales[69]. In the analyses, the sample is divided between a 'long' and 'short' group.

8.4 RESULTS

8.4.1 Item selection

Item selection was based on item-rest correlations between the items in the pilotstudy, where we looked for the highest correlating items both within the scale as a whole, as within the specific dimensions of each scale. Item-rest correlations for the selected items all exceeded 0.70, except for the temporality dimension of the HHI. Moreover, since the social component of hope is already reflected in the LOHS, the *Interconnectedness* domain of the HHI was dropped. As a result, the final four instruments each consist of four items, with the ATHS (*agency* and *pathways*), HHI (*temporality* and *positive readiness*) and LOHS (*agency* and *pathways*) comprising two domains. The full results, including the items used in the short versions, can be found in Appendix 8.1.

68 This Dutch translation is available upon request.

69 Due to attrition and a 'Don't know' option for most of the questions, there is some missing data.

Table 8.2 | Mean scores for the main variables of interest (standard deviation in parentheses)

	Long	*Short*
ATHS (1-7)	4.91 (0.93)	5.04 (0.99)***
Agency	4.84 (1.05)	5.04 (1.09)***
Pathways	4.98 (0.95)	5.03 (1.06)
N	259	996
HHI (1-7)	4.61 (0.64)	5.39 (1.06)***
Temporality	4.63 (0.69)	5.47 (1.11)***
Positive readiness	5.27 (0.89)	5.32 (1.13)
Interconnectedness	3.93 (0.85)	
N	260	995
LOHS (1-7)	3.98 (1.25)	4.42 (1.20)***
Agency	3.77 (1.37)	4.24 (1.32)***
Pathways	4.20 (1.24)	4.60 (1.21)***
N	258	995
CHS (1-7)	2.60 (1.53)	2.98 (1.86)***
N	243	1,010
	Long[5]	*Short*
N	1,020	241
Life satisfaction (1-10)	7.61 (1.34)	7.57 (1.31)
Single item hope (1-7)	5.04 (1.33)	5.11 (1.19)
Positive affect (1-7)	4.82 (0.99)	4.75 (0.91)
Expectations (1-7)	4.35 (0.95)	4.34 (0.92)
Health (1-5)	3.62 (0.84)	3.56 (0.78)

5 Long and short here refers to whether the respondent filled out one of the longer scales or filled out no longer scales at all.

8.4.2 Main variables

The mean scores for the short and long version of each of the scales can be found in Table 8.2. The significance in column 2 indicates whether the average scores on the short hope scales significantly differ from those on the long versions. Here, we can see that most of the mean scores of the short and long scales differ significantly, however, that these differences are relatively small, with the largest difference on the *positive readiness* domain of the HHI (0.83 difference on a 7-point scale) while all other differences are less than half a point. In general, respondents score slightly higher on the short scales compared to the long scales. Overall, the sample appears to be relatively hopeful, with scores between about a 4 and 5 on a scale of 1-7, although scores for the CHS are markedly lower than those for the other scales, with mean scores below 3[70]. Furthermore, the sample also scores relatively high on

70 All scores were calculated for each of the three waves, yet only the most recent numbers are mentioned here. All full results can be found in Appendix 8.2.

life satisfaction (around 7.6 on a 10-point scale), a single-item hope question (a 5.0 or 5.1 on a 7-point scale), positive affect (4.8 on a 7-point scale), expectations (4.4 and 4.3 on a 7-point scale) and health (3.6 on a 5-point scale).

8.4.3 Parallel reliability

Parallel reliability is calculated using pairwise correlations between scores on the short and long versions of the hope scales among the respondents that filled out the long version. All coefficients were positive, strong to moderately strong[71] and significant with 99% certainty. The scores for the ATHS indicated high overlap (0.95***, 0.92*** and 0.91*** for the whole scale, agency-domain and pathways domain respectively); the HHI showed lower, but still sufficient overlap (0.81***, 0.75*** and 0.87*** for the whole scale, temporality domain and positive readiness domain respectively), the LOHS showed high overlap (0.97***, 0.97*** and 0.95*** for the whole scale, agency, and pathways domains respectively) and the CHS also showed high overlap (0.95***).

Table 8.3 | Cronbach's alpha

	Long	Short
ATHS	0.92	0.87
Agency	0.88	0.83
Pathways	0.85	0.80
HHI	0.90	0.90
Temporality	0.82	0.80
Positive readiness	0.80	0.84
Interconnectedness	0.51	
LOHS	0.95	0.90
Agency	0.93	0.84
Pathways	0.89	0.80
CHS	0.97	0.97

8.4.4 Internal consistency

As can be seen in Table 8.3, all long and short scales showed high internal consistency, with a Cronbach's alpha over 0.8. However, the scores were somewhat more positive for most of the longer scales, although the differences are small. Therefore, it can be assumed that both the long and short hope scales have sufficient internal consistency, without large differences between the long and short scales.

71 Here we consider correlations of 1.0 perfect, 0.9-0.7 strong, 0.4-0.6 moderate, 0.1-0.3 weak, and 0 none (Dancey & Reidy, 2007).

8.4.5 Test-retest reliability

Test-retest reliability is not particularly high, ranging between 0.57 and 0.89, yet perhaps more importantly, the scores do not differ significantly between the long and short versions. Both the long (individual ICC of 0.67) and the short ATHS (0.68) shows moderate reliability. The long version of the HHI demonstrates moderate to high reliability (0.69), with a similar score for the short version (0.67). The LOHS scores somewhat lower, but still adequately, although the long version performs somewhat better (0.64) than the short version (0.57). The CHS is more stable, with the long version showing good reliability (0.84) and the short version moderate reliability (0.74).

8.4.6 Convergent validity

As quite similar and overall positive experiences, we expect all hope scales to be positively related to a single-item hope question, life satisfaction, positive affect and expectations. However, most scales show only weak to moderate correlations with these concepts. For the ATHS, the correlations are moderate to weak, with the shorter scale scoring only slightly lower (correlation-coefficients of 0.48***, 0.45***, 0.59*** and 0.18*** respectively) than the long scale (0.58***, 0.49***, 0.63*** and 0.20***). For the HHI, the pattern is reversed, with the short version more strongly related to these related concepts (0.62***, 0.62***, 0.60*** and 0.22***) than the longer version (0.40***, 0.39***, 0.53*** and 0.15***). Scores for the LOHS are only very weakly related, with the short version showing mainly weak, albeit positive relations (0.33***, 0.33***, 0.30*** and 0.17***) and the long version showing correlation coefficients hardly high enough to speak of any relation (0.22***, 0.24***, 0.17*** and 0.23***). The scores are even lower and sometimes even insignificant for the CHS, both for the short (0.09***, 0.03, 0.10*** and 0.12***) and long version (0.08, 0.03, 0.05 and 0.05). Overall, these results show that the ATHS and HHI seem to be more closely related with concepts which we would expect to be similar to a hope scale, while the LOHS and CHS perform more poorly. However, all correlations are quite low, especially considering that we would expect the single-item hope question to measure roughly the same concept as the instruments. Moreover, we find that all short scales perform roughly similar to the longer scales.

Table 8.4 | Pairwise correlations hope scales with a single item, life satisfaction, positive affect and expectations in year 3

	Single item hope	Life satisfaction	Positive affect	Expectations
ATHS short	0.49***	0.45***	0.59***	0.19***
Long version	0.58***	0.49***	0.63***	0.20***
HHI short	0.60***	0.62***	0.60***	0.20***
Long version	0.40***	0.39***	0.53***	0.15***
LOHS short	0.31***	0.31***	0.27***	0.19***
Long version	0.22***	0.24***	0.17***	0.23***
CHS short	0.09***	0.04	0.09***	0.12***
Long version	0.08	0.03	0.05	0.05

8.4.7 Divergent validity

For these instruments to show their merit, we investigate to what degree they measure unique, separate components of a hopeful experience, or whether they all measure pretty much the same thing. Therefore, we calculated pairwise correlations between the different scales. The ATHS appears to be relatively closely related to the HHI (0.71*** for the short and 0.68*** for the long scale), but less so to the LOHS (0.45*** and 0.27***) and not at all to the CHS (0.04 and -0.07). Moreover, there is a moderate to weak relation between the HHI and LOHS (0.46*** for the short and 0.27*** for the long) but again hardly any relation to the CHS (0.14*** and 0.01). Lastly, there is also hardly any relation between the LOHS and CHS (0.14*** and 0.07). Overall, these results show that the ATHS and HHI appear to measure quite similar, although different concepts, that the LOHS measures something somewhat similar, and the CHS is least similar to the other measures. Moreover, we see that the short version of the CHS is weakly but positively related to the others scales, whereas the longer version is not.

Table 8.5 | Correlation with related measures in year 3

	ATHS	HHI	LOHS	CHS
ATHS	-	0.71***	0.39***	0.05*
Long version	-	0.73***	0.47***	0.16**
HHI	0.71***	-	0.40***	0.15***
Long version	0.73***	-	0.32***	0.44***
LOHS	0.39***	0.40***	-	0.14***
Long version	0.23***	0.27***	-	0.22***
CHS	0.05*	0.15***	0.14***	-
Long version	-0.07	0.01	0.07	-

Table 8.6 | Factor loadings for the ATHS

	Short	*Long*
Agency		
ATHS 2	1	1
ATHS 4	0.88***	1.01***
ATHS 7		0.83***
ATHS 8		1.05***
Pathways		
ATHS 1	1	1
ATHS 3	1.03***	0.87***
ATHS 5		0.85***
ATHS 6		0.92***

Table 8.7: Factor loadings for the HHI

	Short	*Long*
Temporality and future		
HHI 1	1	1
HHI 3	1.07***	0.93***
HHI 5		0.91***
HHI 9		-0.80***
Positive readiness and expectancy		
HHI 2	1	1
HHI 4	0.95***	1.03***
HHI 7		0.68***
HHI 10		0.50***
Interconnectedness		
HHI 6		1
HHI 8		-0.55***
HHI 11		-1.04***
HHI 12		-0.91

Table 8.8: Factor loadings for the LOHS

	Short	Long
Agency		
LOHS 3	1	1
LOHS 4	0.84***	0.99***
LOHS 6		0.88***
LOHS 8		0.96***
Pathways		
LOHS 1	1	1
LOHS 2	1.10***	1.06***
LOHS 5		0.89***
LOHS 7		0.87***

8.4.8 Factor analysis

The original ATHS, HHI and LOHS are all comprised of several dimensions. Here we test to what degree the shortened versions also tap into these different components. As can be seen in Table 8.6, all factor loadings for both the long and short version of the ATHS are positive and significantly related to their respective domains. Moreover, the short model appears to perform somewhat better with an RMSEA below 0.08 (Browne & Cudeck); TLI over 0.09 (Bentler & Bonett, 1980); CFI over 0.9 (Bentler, 1990); and SRMR below 0.10 (Pituch & Stevens, 2016) (specifically, RMSEA 0.07; TLI 0.99; CFI 1.00; SRMR 0.01), whereas the long model performs less well (RMSEA 0.10; TLI 0.93; CFI 0.96; SRMR 0.04).

Similarly, the items of both the short and long HHI relate positively to their respective domains when it comes to the domains *Temporality* and *Positive readiness*, while only two of the items of the domain *Interconnectedness* of the long scale are significant. Overall, the short scale performs somewhat better (RMSEA 0.00; TLI 1.00; CFI 1.00; SRMR 0.00) than the longer version (RMSEA 0.11; TLI 0.83; CFI 0.87; SRMR 0.07)

Again, for the LOHS, all items are significantly related to their respective domains, with the shorter model performing better (RMSEA 0.06; TLI 0.99; CFI 1.00; SRMR 0.01) than the longer one (RMSEA 0.24; TLI 0.99; CFI 0.85; SRMR 0.07).

8.4.9 Hypothesis testing

To study how well the hope instruments work in common models, fixed effects models were used to calculate the relation between hope and circumstances which can be expected to relate to hope. Such a model makes use of the panel-structure of this dataset by investigating whether changes within individuals on an independent variable are related to changes in the dependent variable, as well as allowing us to control for time-variant changes (in this case education and employment status), leading to more robust calculations about the strength and direction of these relations.

Firstly, we expect that a change in income could be related to higher levels of hope, since a higher income allows us to make use of more resources to achieve our hopes (see Chapter 3). However, this relation only shows up in the model using income to predict the short version of the ATHS (regression coefficient 0.17* and 0.27* on a scale of 1-7 for incomes between €1,800 and €3,200 and over €3,200 respectively. Secondly, we expect health to predict people's levels of hope, as again, good health should allow us to pursue our hopes more easily. This relation is however only found for the short version of the ATHS (regression coefficient 0.07**); short version of the HHI (0.06**) and short version of the LOHS (0.08**). Lastly, when comparing different groups, we see that both the short and long version of the ATHS indicate that women are less hopeful (regression coefficients -0.13*** and 0.18*** respectively) whereas women actually score higher on the HHI (0.12*** and 0.11**). Moreover, women score higher on the short LOHS (0.09***) and short CHS (0.37***), but we see no differences between women and men on the longer scales. Lastly, we see a significant, negative relation between age and hope for the short and long LOHS (-1.01*** and -1.73***), yet a positive relation for the long ATHS (0.05*), short HHI (0.43***) and short CHS (0.45*) (see Appendix 8.2 for the full results). These results thus suggest that the hope-instruments relate differently to life circumstances such as income and health, and that not all groups of people score similarly on these instruments. Moreover, the shorter versions appear to be somewhat more sensitive to picking up of these differences.

8.4.10 Cross-cultural validity

Much hope research has been mainly conducted within western countries. To investigate whether it is likely that these hope instruments are also valid in other cultures, we examine whether there are significant differences between Dutch residents and 244 respondents currently living in Mexico (see Appendix 8.4 for sample descriptives)[72]. As can be seen in Table 8.9, the mean scores for some of the hope scales differs significantly between these groups. Specifically, the Mexican sample scores, on average, lower on the 'temporality' domain of the HHI, yet higher on the 'pathways' component of the ATHS, all domains of the LOHS and on the CHS.

Table 8.9 | Hope scores in different regions

	Dutch sample	Mexican sample
ATHS	5.01	5.16
Agency	5.01	5.02
Pathways	5.01	5.30***
HHI	5.43	5.20**
Temporality	5.55	5.29**
Positive readiness	5.32	5.11
LOHS	4.29	4.91***
Agency	4.09	4.77***
Pathways	4.49	5.04***
CHS	2.79	3.72***

* p<0.1 ** p<0.05 *** p<0.01 difference with scores from Dutch sample

The internal consistency is quite similar for all the scales in the two different regions. The CHS (Cronbach's alpha of 0.97 both for the Dutch and Mexican sample) scores highest, subsequently followed by the HHI (0.91 and 0.89 respectively) and LOHS (0.88 and 0.88), with the lowest, but still high reliability for the ATHS (0.88 and 0.83) (See full results in Appendix 8.4).

When it comes to the ATHS and HHI, hope scores appear to be largely similarly related to other instruments such as a single item hope question (ATHS 0.50*** for the Dutch sample, 0.56*** for the Mexican sample; HHI 0.57*** and 0.65***), life satisfaction (ATHS 0.47*** and 0.63***; HHI 0.61*** and 0.70***) and positive affect (ATHS 0.64*** and 0.69***; HHI 0.60*** and 0.65***). Scores on the LOHS are however somewhat more strongly related in Mexico when it comes to life satisfaction (LOHS 0.25*** and 0.48***) and positive affect (LOHS 0.27*** and 0.47***) but there are few differences when it comes to single item hope (LOHS 0.35*** and 0.37***) and expectations (0.23*** and 0.37***). Scores on the CHS appear to be more important in Mexico for all four; single item hope (CHS 0.11*** and 0.36***), life satisfaction (CHS 0.02 and 0.41***), positive affect (CHS 0.10*** and 0.31***) and expectations (CHS 0.12*** and 0.27***) are all more strongly related to the CHS in Mexico. Lastly, in their cor-

72 For consistency, all data is from wave 2, i.e. 2019.

relation to expectations, there are larger differences when it comes to the ATHS (0.20*** and 0.41***) and HHI (0.19*** and 0.40***).

So, overall we find that the Mexican respondents exhibit more social and spiritual hope, and that these types of hope are also more strongly related to positive states for the Mexican sample.

8.5 DISCUSSION

Popular instruments to measure hope in academic research vary significantly in how they define hope. We assume that this does not mean that one instrument is inherently better than another, rather that each instrument has its unique merit in specific contexts, as different components of the hopeful experience become more or less important. In order to aid interdisciplinary research on hope, as well as hope research in general, the current study compares and validates four short hope scales, each with a different focus, namely the ATHS (assuming hope to be mainly cognitive), the HHI (focusing more on emotion and temporality); the LOHS (assuming hope is socially constructed) and CHS (looking at the spiritual dimension of hope). We do so using three wave panel data from the Netherlands, as well as cross-sectional data from residents from Mexico. Results show that the short hope scales perform very similar to the longer scales when it comes to parallel reliability, internal consistency, test-retest reliability, and convergent and divergent reliability. Respondents score somewhat higher on the short scales compared to the long scales, yet scores are strongly correlated. All scales are internally consistent. None of the instruments is highly stable, but test-retest reliability is very similar between the short and long scales. The ATHS and HHI are more strongly related to concepts which we would expect to correlate to hope, such as a single-item hope question, life satisfaction, positive affect and expectations, while there is only a weak to moderate relation between these concepts and the LOHS and CHS. Here, again, the short and long scales perform similarly well. However, all instruments, short and long, demonstrate surprisingly low correlations to very similar instruments, such as a single-item hope question and expectations. Furthermore, each of the instruments appears to measure some unique construct, as the correlations between them is positive, but only moderate. Factor analyses indicate that the short ATHS, HHI and LOHS are at least equally well-equipped to differentiate between their domains. Hypothesis testing indicates that only the short ATHS can be predicted by changes in income, whereas a change in health predicts the short versions of the ATHS, HHI and LOHS. Also, the shorter versions of these scales pick up on differences in age and gender when it comes to hope. Lastly, although all instruments seem to work well both in the Netherlands and in Mexico, we find indications that the social and spiritual components of hope are more important for wellbeing in Mexico. This might be a consequence of the relatively low percentage of religious residents of the Netherlands,

meaning that spirituality is a less common source of hope. Moreover, social ties might play a more important role in Mexican culture, compared to the Netherlands.

This study adds to the academic literature by further studying the reliability and validity of popular hope instruments, and by developing and evaluating shorter hope scales, which can aid future (interdisciplinary) hope research. Moreover, such shorter hope scales could hopefully be more easily included in societally relevant surveys, for example within municipalities or organisations.

There are several limitations to this study. First, most of these results are based on cross-sectional data and pairwise correlations, without looking at causality or potential confounding variables. Although all analyses were performed in multiple years with similar results, and a fixed effects model with control variables was used to get a first glimpse into the direction and possible confounding variables in the relation between hope and several independent variables, future research using longer panels and experiments could give further insight into the causality and overlap between hope and related concepts. Second, although efforts were made to corroborate our findings in countries other than the Netherlands, the Mexican sample used to this effect is relatively small, and consisted of English-speaking residents, meaning that they comprise a very specific, and likely more internationally-oriented subset of the population. Therefore, more detailed multicultural research is necessary to know whether these instruments work similarly in different cultures. Third, this study finds surprisingly low correlations between each of the hope scales and other instruments that are expected to measure roughly the same experiences, such as a single-item hope question and expectations. Although the hope-scales thus appear to be reliable and largely valid, this might indicate that they only capture a part of the overall hopeful experience, and future research could reveal whether other additional instruments are necessary to fully explain what people experience as 'being hopeful'.

Overall, the results indicate that the short scales perform at least equally well to the existing longer scales, and that these instruments are therefore useful in investigating how hope functions in specific contexts. Hopefully, such studies will shed further light on the role that hope plays in our society and for us personally.

9 Discussion

9.1 OBJECTIVE & MAIN FINDINGS

The main aim of this dissertation is to *develop an interdisciplinary characterization of hope, which can be validly and reliably measured and applied in a variety of contexts.* This aim is relevant and timely both for society and academia, since rapid and fundamental societal developments such as globalization, automation, digitalization and climate change have led to increased societal pessimism and unrest, against which hope could be an important antidote. Previous academic research has shown that realistic hope generally relates to positive states such as resilience, pro-active behaviour and creativity, while false or manipulated hopes can conversely lead to disappointment, resentment and apathy. Research on the role of hope within society and for our individual lives is paramount to understanding and fostering constructive hopes. However, while academic research on the topic has been steadily growing over the past decades, these studies tend to stay within the confines of their respective scientific fields, leading to widely diverging conceptualizations and approaches. This means that insights from one field cannot easily be compared to and enrich those of another, hampering comprehensive research on hope, especially when it comes to practical research on complex issues, such as the beforementioned societal developments, which require a broad, nuanced approach. Real life does not adhere to distinctions between scientific disciplines, and the societal challenges we are currently faced with cannot be understood comprehensively from a mono-disciplinary perspective. Therefore, there is a need for interdisciplinary research on the topic of hope, leading to the main question of this dissertation *"How can we understand the meaning and role of hope from an interdisciplinary perspective?"* To address this question, in this dissertation I looked at four sub-questions, namely 'What is hope?', 'Why should we care about hope?', 'What do we already know about hope?', and 'How can we measure hope?'.

Each of the four parts of this dissertation discussed one of these sub-questions. In part I, I looked at the question 'What is hope'? from an interdisciplinary perspective. To do so, in Chapter 2, I systematically collected and analysed the characteristics ascribed to hope in 66 academic articles from ten different academic fields, from the past decades. Here, I assumed that one characterization is not necessarily better than another, but that each perspective highlights different components of the hopeful experience. I find that there is not one definition of hope which sufficiently covers the variety and richness of what hope can be in different contexts. The orthodox definition of 'uncertain desire' appears to be correct from nearly all perspectives, yet is far too succinct to capture the many different ways in which we experience hope. More specifically, this orthodox definition focuses on the individual experience of hope, while disregarding its social components, as well as the process that people go through when feeling hopeful, and how the (absence of) the object of hope impacts our experience. I therefore developed a classification matrix differentiating between internal and external sources, experiences and effects of hope, and the object of hope, altogether yielding seven domains of hope (see Table 9.1).

Table 9.1 | Classification matrix of the characteristics of hope

		Hope as context-dependent	
		External	Internal
Hope as a process	Sources of hope	*Social network* *Education* *Trust* *Culture* *Societal institutes* *Politics* *History* *Work* *Faith system*	*Biology* *Dissatisfaction* *Personal traits* *Choice* *Past experiences* *Virtuousness*
	The experience of hope	*Shared desire* *Societal optimism/pessimism* *Uncertainty & trust* *Layers of hope* • *Shared mood* • *Shared knowledge* • *Motivation*	*Desire* *Probability estimate* *Uncertainty* *Layers of hope* • *Emotion* • *Cognition* • *Motivation*
	Effects of hope	*Smoothing social interaction* *Social capital* *Virtuous behaviour* *Mobilization* *Identity* *Societal disillusionment*	*Behaviour/action tendencies* *Personal development* *Comfort* *Disappointment* *Meaning* *Spirituality*
The object of hope *General / specific* *Goalsetting* *Individual / shared goals* *Promotion / prevention* *Significance* *Virtuous objects* *Normativity*			

Here, I also discussed a wide range of examples of each of these domains and show how each scientific field focuses on only a part of this matrix. Of course, each field has its specific focus, and not all dimensions of this matrix are always relevant in each context; however, being aware of a broader understanding of hope can show whether relevant dimensions might be overlooked. And, someone interested in the topic of hope might understand the parts better when being aware of the whole. In sum, taking into account how different disciplines characterize hope, I conclude that hope can be defined as: an individual as well as a social and societally embedded process of developing, experiencing and propagating desire for a specific or general object of which we are never sure whether we will attain it. Yet, I also wish to underscore that, to understand what hope means to specific people in specific contexts, one sentence is not enough to capture the full complexity of this experience.

Part II examined the relevance of hope, on a societal as well as a personal level. Again, to answer the question 'Why should we care about hope?', there is not one single answer. Most simply, I conclude that hope matters because it motivates behaviour, influences our wellbeing and helps us to be resilient in times of adversity. More specifically, in Chapter 3, I investigated whether hope determines how our current circumstances translate into wellbeing by studying whether hope mediates the relation between income and life satisfaction in a sample of US residents. I find that hope partly mediates this relation, but only for people with a monthly income over $1,800, which roughly equals to the poverty threshold in the US. This indicates that better life circumstances, such as a high income, not only make us happier directly, but also because they make us believe in the possibility of a better future. Yet, this only happens if the circumstances allow us to make meaningful investments in our future, but not when we're struggling to 'make ends meet'. Subsequently, in Chapter 4, I asked whether hopeful people are willing to invest more in the future, by studying whether Willingness To Pay (WTP) for sustainable energy is higher among those high on hope. Here, the results show that WTP is higher among hopeful people, suggesting that hope is an important impetus for a future-minded attitude. Moreover, I find that hope is especially important for people who are very worried or have a relatively poor understanding of the issue, indicating that hope can be a specifically strong motivator when we are concerned or confused about our future. However, the results also indicate that false hopes, based on denial of the severity and urgency of climate change, relate to lower WTP, especially when it is combined with a lack of worry or the feeling that someone understands the issue very well. This underscores the importance of combining hope with a realistic understanding of, a perhaps not very positive, reality. Next, Chapter 5 looked at 'procedural utility', i.e. the value people attach to the experience of an activity rather than its outcome. To do so, this chapter examined lottery play and finds that people are motivated to buy lottery tickets in part because they enjoy the experience of hope that it grants them. This means that people consume part of the lottery ticket before the draw, through positive anticipatory feelings. Hence, although buying a lottery ticket is seemingly irrational economic behaviour, as on average only 50% of the costs of a lottery ticket are returned to players through wins, the choice is less irrational when we take into account that people also buy a ticket for the positive emotional experience it engenders, not solely its average pay-off.

Hope is not a brand-new topic in many scientific fields, and Part III explored what is already known in two of these fields, namely economics and happiness studies. In Chapter 6, I find that although the traditional economic perspective of the rational, calculating 'homo economicus' did not fit well with studying a concept such as hope until halfway through the twentieth century, more recent heterodox approaches are actually finding that subjective experiences such as hope are very useful in understanding and explaining economic behaviour. Life is uncertain, and people constantly try to make sense of their surroundings and behave in accordance to their subjective experiences. These new studies indicate that

positive perspectives of the future are generally related to longevity, health and quality of life; and motivate innovation, creativity, productivity, good leadership and entrepreneurship. Moreover, it is often stated that a lack of hope can induce apathy, rigidity and myopia. On the other hand, studies in this field also warn against overly optimistic hopes which can lead to disappointment and reckless behaviour, and for naïve hopes which can be easily abused. When considering the future of economic research on hope, we find that further definitional clarity differentiating hope from related concepts is necessary, since concepts such as hope, aspiration and expectation are used interchangeably, while research in other fields (especially psychology) has shown this is inaccurate. This idea is underscored by the findings of Chapter 7, where I reviewed studies on hope in the field of happiness studies and investigated how different types of perspectives of the future and types of subjective wellbeing are related. Using meta-analysis of existing research, as well as new empirical research, I find that there is not an equally strong relationship between all conceptualizations of hope and wellbeing. Most notably, although there seems to be a robust positive relation between wellbeing and different types of hope, I find that expectations are only weakly associated to all measures of wellbeing. Similarly, the results indicate that agency, the conviction that we are able to achieve our goals, is more strongly related to all wellbeing measures compared to other, more passive conceptualizations of hope. Overall, research in both economics and happiness studies indicates that hope is indeed an interesting and important topic for scientific study, while many questions about it need to be addressed in future research.

Part IV of the dissertation is based on the assumption that measuring hope is an important step to getting further insights into how hope plays a role in practical contexts, and asked which instruments are suitable to measure hope, by validating and comparing several hope-instruments in Chapter 8. I find that the short versions of four popular survey-type hope-instruments appear to be equally valid as their longer counterparts, and that each instrument measures something distinct from the other, indicating that each instrument has its own specific merit. However, I also find that each of the instruments is only moderately correlated to a single-item hope question and related concepts such as expectations. It thus seems to be the case that each instrument measures a different component of an overall hopeful feeling, and that none of the instruments individually completely captures what it means to feel hopeful. Moreover, the results also show that some of the instruments, such as those focused on social and spiritual hope, are more tightly related to wellbeing and related hope-questions in a non-western culture, indicating that our socio-cultural context could affect how important different components of the hopeful experience are to us. Overall, I conclude that it is possible to measure hope using short survey-instruments, but that each instrument measures only a part of the overall hopeful experience.

9.2 STRENGTHS & WEAKNESSES

There are several strengths and weaknesses to each of the individual studies presented in the different chapters of this dissertation, but also to this dissertation as a whole. A first strong point is the *diversity of questions* addressed here. Understanding a complex concept such as hope requires us to look at the issue from different perspectives, and that is exactly what I do here. I look at the definition of hope; how hope plays a role in practical contexts; how different academic fields have discussed the topic; and how we could measure hope in a scientifically valid and reliable manner. Each approach gives a deeper understanding of the other. For example; looking at hope in context reveals that one simple definition does not suffice for the many different ways in which hope can play a role in our lives. Subsequently, such a characterization informs us that an instrument looking only at one component of hope is not sufficiently broad. And this, in turn, helps us to see that the contradictions between insights from different fields do not mean that these insights are necessarily untrue, but simply follow from their specific context. A second strong point lies in the *interdisciplinarity* of the approach of these works. By adopting an interdisciplinary perspective, I could more easily combine insights from different fields, making it easier to see the whole picture, rather than only its components. From such a perspective, it becomes clear that hope can indeed at times be a very individual process of goal-pursuit, but that this experience is also constrained by what opportunities, limitations and trust society has allotted to people. It helps to understand that realistic hope can indeed lead to resilience and wellbeing, but also that false hopes erode trust, and create disappointment or apathy. We find that people can be motivated to act more sustainably, future-minded and trusting, but also that appealing to the hope of large groups of people can create societal divisions or disillusionment. Moreover, and third, this dissertation adopts a *diversity of methodological approaches*, making use of a wide array of scientific techniques, such as qualitative phenomenographic analysis, regression analysis of large cross-sectional and panel datasets, meta-analysis, an experiment and validity and reliability tests. This triangulation allows me to make use of a wide array of information, creating a broader and more diverse picture, and strengthening the reliability and validity of these findings. Furthermore, by using longitudinal data, I get some insights into the development of hope and its related states, even if I still cannot fully apprehend their causality.

While the strengths of this work largely lie in the diversity of its approach, herein also lie some weaknesses. Because the scope of this dissertation is so broad, it is also difficult to capture all its components in depth. First, by adopting an interdisciplinary perspective, the findings of these studies are *not as detailed* as mono-disciplinary research. Research in psychology has, for example, focused in much more detail on the correlates of hope; philosophers have developed much more nuanced discussions of the precise ingredients of hope; sociologists have more specific accounts of how hope functions in society; compared to the studies included here. Yet, the aim here was to include insights from all these fields and see

how they relate to each other, not to repeat the in-dept disciplinary research that already exists. Nonetheless, *not every field received similar attention* here, with a stronger focus on economics and happiness studies compared to the other scientific fields. These two fields were chosen in part because they are closer to the expertise of the authors of the chapters included in this dissertation and in part because hope is relatively new topic in these fields, meaning there were few existing overviews or meta-analyses and need for work in this regard. A more thorough focus on the other scientific fields concerned with hope would have undoubtedly yielded more detailed and thorough understanding.

Second, the works in this dissertation *focused only on general, western populations*. None of the works included here focus on specific groups of people for whom hope might play a particularly important and specific role. Similarly, the focus was largely on western populations, even if some attempts were made to explore to what extent the findings might similarly apply to other socio-cultural contexts. We do find some indications that specific components of hope, such as the social and spiritual component, are more important in some non-western cultures, signalling the relevance of more cultural diversity in research on hope, especially also in increasingly multi-cultural societies. Although we assume that the presence of hope is universal, the precise way in which we -across and within societies- experience hope is most likely not.

Third, although a wide array of techniques has been used and we included an experiment to get some insight into how hope develops over time, we *have to be very careful about assuming causality* when it comes to the correlates of hope. For example, we cannot say with certainty that it is hope that causes people to be more resilient or happy, or the other way around.

9.3 FUTURE RESEARCH

Considering the currently growing attention for hope as a scientific topic, there are many possible avenues for future research that could likely have a substantial positive impact on how we understand and deal with hope. A first possible avenue lies in the *scope of study*; more non-western focused research will help to develop a more encompassing, nuanced understanding, both when it comes to the definition, measurement and role of hope in society. It might be especially worthwhile to study how more socially-oriented cultures experience hope, compared to the more individual-focused experience of hope present in western cultures, especially as societies are becoming increasingly multicultural. Also, to get further insight into the heterogeneity of hope's meaning and impact, it is important to study what hope means to different groups of people for whom hope plays an important role, such as migrants, children or people suffering from illness. Future research could also investigate in more depth whether hope plays a different role for people depending on traits such as

age, health and socio-economic status. For example, does hope take on a different meaning as we get older and perhaps start to think more about a future of which we are no longer a part? Does not only income, but also educational level or access to other forms of capital change how and how much we experience hope? Second, there is still a lot unknown about the causality of hope and its correlates, meaning that *different methodological approaches* are necessary to better understand how hope develops over time. Experimental studies are especially important in this regard, since we still know little about the causality of hope and its correlates. Third, and related, considering its large impact on our lives, it would be very worthwhile to *study the extent to which we can actively influence hope*. There are some studies indicating that it is possible to stimulate particular types of hope, but a lot is still unknown about how hope might be influenced on an individual, organisational or societal level, and with which effects. It might be very worthwhile to study the effectiveness of individual or societal interventions aimed at increasing hope, for example among students, employees, patients or people living in disadvantaged neighbourhoods. Moreover, studies from sociological and political science warn us that using hope to manipulate large groups of people can lead to division and disillusionment, yet we also see that hope can help bring people together and behave more future-minded and trusting manner. Therefore, fourth, we need *more research on how hope develops in large and diverse groups*, such as a society, and in particular how and when hope transforms to disappointment or mistrust. Also, as the realism of our object of hope has a big impact on how this hope affects us, more research is necessary to *understand what entails a constructive or false hope*, and how we can foster the former while staying clear of the latter. It will be worthwhile to know whether certain traits make people more likely to adopt unrealistic hopes, or whether the way in which a message is communicated can lessen the likelihood that people become unrealistic. An especially relevant topic in this regard is climate change; how can we give people messages of hope without fostering unrealistic expectations? Last, it is increasingly becoming clear that hope plays a role in many different contexts, such as organisations, schools, health-care institutions and so forth. As such, *research on the role of hope in specific contexts* is very valuable. Some topics which might be specifically important to study in this regard are education, migration, entrepreneurship and work.

9.4 OVERALL CONCLUSIONS

This dissertation started with the question *"How can we understand the meaning and role of hope from an interdisciplinary perspective?"* First, I conclude that we should understand hope not as one simple, static thing, but rather as a complex collection of experiences which share a core meaning, but vary in their specific description depending on the context. I describe hope as an individual, social and societally embedded process of developing, experiencing

and propagating desire for a specific or general object which we cannot attain with certainty, but also underscore that depending on the context, certain components of this description become more or less important. So, what hope means exactly partly depends on the context. During serious illness, hope is about clinging on to uncertainty and perhaps hoping against hope. At school, hope is about playful imagination. Faced by climate change, hope is about motivating ourselves to focus on our ability to change the future. In the political arena, hope can be about creating new images of possibility in the minds of millions of people, but it can also be about creating division between our rightful hopes of one and the hopelessness of 'the other'. All of this is hope, and we would miss out a great amount of insight and nuance if we focused only on one description.

Second, although hope is a complex, multifaceted concept, I conclude that it is possible to measure the whole as well as the parts of this experience in a valid way, using the right instruments. The short versions of the four hope instruments studied in Chapter 8, for example, all appear to be largely valid and reliable measures of part of the hopeful experience. However, I also underscore that each single approach and instrument offers insight into only one part of a broader and more nuanced reality. There is nothing wrong with focusing on only one such component, as long as we are aware that it is just that. Adopting for example only the cognitive perspective of positive psychology; the more emotional view from health sciences; the social perception advocated in social sciences; or the spiritual viewpoint from theology, inevitably only tells us about our cognitive assumptions, emotional experiences, social support or spiritual convictions, not of what hope means to our lives as a whole. Which instruments we should use depends on the specific question and context we are reviewing, yet we should always keep in mind that we are only viewing part of reality.

Third, I conclude that hope research is an important and promising activity. Hope appears to play an incredibly important role in our personal lives as well as in society at large. It is an important incentive for behaviour; it entices us to invest in our future; and to a great degree determines our wellbeing. Nonetheless, hope research is still in its infancy in many scientific fields. Throughout history, we have seen periods of some interest alternated by long stretches of silence on the topic in fields such as philosophy and theology. But only in the past decades have we started to systematically investigate how hope influences for example our economy, psychology, education or political system. Insights from these endeavours reveal that humans are fundamentally hopeful beings, behaving and feeling largely in accordance to what they hope the future will have in store. Overall, my findings suggest that it is important and possible to conduct research on hope, but that we should be weary of a one-size-fits all approach. As such, I conclude that hope research has the possibility to offer us much more valuable insights in the future.

9.5 IMPLICATIONS

Building on these insights, there are several implications and recommendations for policymakers, organisations and academic thought.

For policymakers, the insight that emotions such as hope influence how we feel and behave specifically leads to several recommendations. First, it is important to *take hope into account when aiming to improve subjective wellbeing.* I find not only that hope itself is positively related to subjective wellbeing, but also that hope can explain why some of our objective positive circumstances translate into wellbeing. For example, the finding that income partly makes us happier because it makes us more hopeful about the future, indicates that strengthening financial stability is paramount for income growth to impact us positively. Second, *take hope into account when aiming to influence behaviour*. Appealing to hope can motivate people to act, as the goal of achieving our desires is not only enticing in itself, but also since people enjoy an activity more if it actives their hope. People simply enjoy things more when it makes them think of a bright future. When trying to stimulate certain, for example healthy or sustainable, behaviours, it might help to remind people of how it will positively affect their future. At the same time this also means that, as hope is such a powerful incentive, it is important to treat it carefully. If people's assumptions about what they can achieve are (structurally) disappointed, a lack of trust, apathy or resentment are likely to follow. Therefore, and second, policymakers should *combine messages of hope with realistic information* about the situation. We find that hope plays a particularly important role when people are confused about the future, yet also see that in such cases hope based on falsehoods can be easily abused to legitimize apathy and a false sense of safety and certainty. It thus seems wise to be cautious and up-front about the risks of a situation, to hopefully limit the chances of disappointment or apathy. Third, and perhaps stating the obvious, *do not spread false hopes.* Claims to a bright future based on falsehoods will most likely mobilize parts of the population, especially when the information comes from sources with some authority, such as politicians or governmental organisations. Yet, such attempts will most likely erode societal trust and willingness to truly be a part of the solution, and limit the impact of any future attempts to mobilize people through hope. Lastly, and more fundamentally, *take emotions seriously* when trying to understand society. Most of the times, people do not adhere to the image of the rational, calculating 'homo economicus' that inspired influential economic theory. Rather, people are emotional beings, influenced by flawed logic, desire, social connection and many other subjective states. Understanding individual as well as social emotion is paramount to understanding society. To make effective policies therefore requires us to understand emotion.

To organisations, these findings indicate that attempts to influence employees as well as clients is likely to be more successful if they take into account how people perceive their future. Specifically, *offering hope will most likely improve employee wellbeing*. Employers

might for example take into consideration that not only a suitable financial compensation in the current moment is important to employee wellbeing, but that employees are also greatly helped by a stable (financial) future. Also, it can be worthwhile to discuss with employees how the organisation aims to foster a brighter future, and make them -and their career prospects- part of this organisational hope. Moreover, *stimulating employees to be more hopeful about the future will likely positively influence their performance*. Previous research has not only indicated that hopeful people are more creative, resilient and innovative, but also that the wellbeing that hope can engender goes hand in hand with many other positive correlates, such as productivity and health (DeNeve et al., 2013). However, here it is again important to *remain realistic*, and realize that disappointment can actually lessen trust and the wellbeing of employees. Additionally, *when marketing products or services, appealing to hope can be an important incentive*. Consumers enjoy the experience of hope, so it is not a far stretch to assume that they are more likely to buy those products and experiences that make them feel hopeful. This might for example be part of the appeal of sustainable products, which evoke positive feelings about a brighter, greener future.

This work also has several implications for academic thought. A first one follows from the finding that hope has a broad scope of influence, meaning that research on the topic therefore helps us to better understand a diverse range of topics and questions regarding human behaviour and experience. Therefore, first, I state that *more research on hope is necessary and worthwhile*. We still know very little about, for example, how and when people develop a hopeful disposition; whether hope could be actively influenced; how different groups of people experience hope; how and when hope transforms to disappointment; whether specific behaviours or thoughts could prevent us from falling victim to false hopes; how hope spreads through society, and many more other questions. Research on all these questions will greatly help our overall understanding of human behaviour and how our society functions, and will help us to address complex societal issues such as climate change, increased inequality, polarization, etcetera. The social sciences have so far not been very good at predicting societal developments and civil unrest such as expressed in the rise of right-wing nationalism, the Arab Spring, the black lives matter movement. A stronger focus on the societal development of hope might give us more insight into these developments, as each of them relates to a socially upheld hope. Second, since we find that hope is such a complex, multifaceted concept, I assert that studying these topics *will require both mono-disciplinary and interdisciplinary research*, to get both specific, detailed information, as well as a more integrated and nuanced understanding. Although interdisciplinary research will never be as specific and in-depth as mono-disciplinary research, the past decades have shown that staying within the confines of one scientific field can lead to tunnel-vision and disregard of findings from other fields. Third, realizing that mono-disciplinary research on hope tends to focus on only one conception of hope, overlooking other perspectives not directly apparent, leads me to advise monodisciplinary hope-researchers to -at the least- *take knowledge of*

conceptions of hope in other scientific fields. As discussed in Chapter 2, understanding part of the puzzle becomes easier and more meaningful when we are aware of the broader picture. Fourth, finding that several short hope-instruments validly and reliably measure part of the hopeful experience, but that none of them seems to measure everything about hope at once, I advise researchers to *thoughtfully consider which conceptions of hope to study and to consider combining instruments* to get a more complete picture. The analysis in Chapter 8 showed that the addition of short versions of the four investigated complementary instruments might be sufficient to enrich a mono-disciplinary study. In other words, it may be a small but rewarding effort. Fifth, in several scientific disciplines, emotions are still not always considered a valid topic of scientific study, due to the idea that something as subjective and intangible cannot be completely comprehended by science. Yet, I maintain that *any scientific study concerning human behaviour or experience needs to take emotions such as hope seriously*. For example, the idea of the rational 'homo economicus' simply does not sufficiently match up to reality. Emotions motivate a significant portion of our behaviour and experience, meaning that we cannot fully understand individual or societal behaviour without recognizing and studying the impact of emotions. Measuring subjective states might require different approaches and yield less absolute results as compared to objective data, yet it is very much possible and imperative to do thorough research using subjective data.

9.6 EPILOGUE

The last parts of this dissertation were written in early 2021, a period of great societal hope and despair, as it appears to be the beginning of the end of the individually and socially debilitating COVID-19 pandemic. "More than two million people have died worldwide and the threat of variants and uneven policy decisions on how to respond has created uncertainty in what the future holds. But despite this, there is hope that the end game is in sight, as vaccine rollout steadily increases while many continue to adhere to mask mandates and physical distancing" (World Happiness Report, 2021). For about a year, we have seen large numbers of people around the world becoming unemployed, losing their business, getting sick or losing their lives without their loved ones being able to be near them. Currently, we appear to live through a global hangover, tired of the isolation, sad of our loss, and frustrated by all the lost opportunities to just live our normal life. And now, more than ever, we seem to live on hope. Hope that our loved ones will stay healthy for long enough to get their vaccine, hope that our health care system and society will be able to cope and recover, hope to one day again be able to go to a restaurant, throw a party or go to the cinema, hope to once again get a hug from our friends. In the past year, several of our hopes have been disappointed, yet they have also kept us going. Without hope, we would most likely not have seen the tremendous public and private investments, the solidarity, the resilience of overburdened healthcare workers,

or the more or less enthusiastic embrace to learn new skills and hobbies to remain sane during lockdown. Yes, some of our hopes were unrealistic in hindsight. Yes, most of us have felt frustrated, hopeless or disappointed at some point. And yes, we will need quite a while to recover. But hope also gave us, "as a species and as individuals, what we otherwise wouldn't have: a chance" (Green, 2010). A chance to keep going, show our best selves, and to keep feeling that, maybe, things might eventually get better.

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In 2015, the Goldschmeding Foundation for People, Work and Economy, a foundation aiming to contribute to a more sustainable and inclusive world, invited Martijn Burger, academic director of the Erasmus Happiness Economics Research Organisation (EHERO), and Patrick Nullens, director of the Institute of Leadership and Social Ethics (ILSE), to prepare a short pitch in which they combined their fields of expertise, respectively economics and theology, to shed light on the topic of hope. Referencing the famous quote from the recently re-elected president of the US, Barack Obama's "Yes we can", Martijn and Patrick highlighted the importance of hope as an incentive for personal and societal progress. The pitch turned into a research proposal, which turned into a 1-year project, and eventually into a long-term 'Hope Project', still running to this day. From the outset, the project aimed to be interdisciplinary and to combine insights from research as well as practice. At that time, after just completing an internship at EHERO and my masters in Humanistics, I started to work part-time at EHERO on the Hope Project. Later, when Martijn asked me to use the work we were doing for a PhD program, I hesitated. I had just decided I didn't want to pursue a career in academia, but also enjoyed working at EHERO tremendously, was passionate about the topic and appreciated the chance to conduct interdisciplinary research. As evidenced by this dissertation, of course I took the opportunity.

It takes a village to raise a child, and the same could be said for this dissertation. There are many people to whom I am so grateful. First, the opportunity to do this work was made possible by the Goldschmeding Foundation, for which my great gratitude. Then, thank you Martijn for getting me into this adventure. I have occasionally been upset with you for even thinking I was capable of such madness, but you have guided me through it all. Thanks for challenging me, inspiring me, and believing I could do so much more than I thought I could myself. Thanks for the many long talks that started discussing work, but ended on politics, philosophy, art, traveling, movies and the tastiest dishes around the world. You are truly one of the smartest and kindest people I know. Thank you, Job van Exel, for being the best promotor I could have wished for. Your advice, patience, kindness and humour were the reasons I have been able to complete this journey. I've been greatly impressed and inspired by your ability to combine being a great academic, manager, educator, as well as 'simply' a down-to-earth, kind person. Each of our meetings in the past years left me more inspired, confident and hopeful than I was before. To Patrick Nullens, Steven van den Heuvel and Cees Tulp, thank you for the many inspiring talks on hope, philosophy and spirituality. I am very grateful for having been able to work with you and learn from you, and hope to continue doing so in the future. Of course, also a great thanks to the 'big minds' related to EHERO; Harry Commandeur, Ruut Veenhoven, Celia Taia Boneco, Guy van Liemt and Erik Bemelmans, for being leaders for such a remarkable and wonderful organisation. Also, I'd like to thank all the researchers who gave me feedback or asked me questions to better my work, specifically Jan van Ours, Justus Veenman, Scott Gravlee, Anthony Scioli, Kirsten Rohde, Darren Webb, Kelsey O'Connor, and Erik Olsman.

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Summary

Hope plays an important role in our personal lives and for society at large. It motivates us to take action, to trust others, to invest in our future and sometimes to simply 'keep going'. All of us experience personal worries, and due to modern media, we are all increasingly aware of societal challenges such as climate change, inequality and automatization. Such worry can be paralyzing and hamper cooperation, as it often makes us feel defensive, scared and close-minded. Hope, most simply defined as uncertain desire for a future event, can be an important antidote against such worry or pessimism. Contrary to optimism, which refers to a tendency to expect good things to happen regardless of our actions, hope is based on the assumption that the future is uncertain. As such, hope is an important incentive for personal as well as societal progress; as long as there is hope, our actions can, and are necessary to, achieve what we want. Nonetheless, more hope is not always better, as false or disappointed hopes can erode trust and incite disappointment, meaning that it is important to combine hope with a realistic sense of our situation.

While hope has become an increasingly popular topic for scientific research over the past decades, this research tends to stay within the confines of specific disciplines, meaning that the insights of one field do not easily translate to or enrich those of another. Hope has been studied most extensively in the fields of psychology, health science, philosophy, theology and sociology, and each of these fields defines hope differently, focusing for example on emotion, cognition, uncertainty, resilience, transcendence, history, or something else. However, reality does not adhere to these distinctions. Hope in practical contexts is about emotion as well as about cognition, social relations, trust, history and economic opportunity. In this dissertation, I therefore investigate how we can understand the meaning and role of hope from an interdisciplinary perspective, by combining and comparing insights from different scientific fields and by empirically studying how hope affects us.

In part I of the dissertation I ask the question 'What is hope?'. I find that the very succinct philosophical definition of hope as 'desire + uncertainty' does indeed apply to most instances of hope, but that research from other disciplines add a much richer elaboration focusing on other parts of the hopeful experience. Specifically, I find that the standard account does not mention the finding that hope can be social as well as individual; that it is not one experience, but rather a cyclical process of different experiences; and that the object of hope can impact how we experience it. This leads me to conclude that hope is an individual, social and societally embedded process of developing, experiencing and propagating desire for a specific or general object which we cannot attain with certainty, but I also underscore that depending on the context, certain components of this description become more or less important (Chapter 2).

Part II focuses on the relevance of hope. Why should we care about hope, either personally or on a societal level? Three empirical papers show that hope plays an important role in explaining behaviour and the degree to which our circumstances lead us to be happier. I find that the relation between increases in household income and life satisfaction is partly medi-

ated by hope, meaning that income in part makes people happier because it makes them feel more hopeful about the future (Chapter 3). Also, studying the relation between hopefulness and Willingness To Pay (WTP) for green energy, I find that hopeful people are more willing to contribute to the green energy transition, so long as their hope is not based on denying the issue at hand and combined with a realistic sense of worry and understanding regarding climate change (Chapter 4). Then, I investigate 'procedural utility' and find that hope can partly explain seemingly irrational economic behaviour, such as lottery play, meaning that people are willing to pay money just to experience a short period of hope (Chapter 5).

Part III of the dissertation offers an overview of current knowledge on the topic of hope within two specific scientific fields, in which hope-research is relatively novel, namely economics (Chapter 6) and happiness research (Chapter 7). Here, I find that hope is often found to relate to other positive states such as wellbeing, innovation, creativity, health and even longevity. Also, I conclude that there are also still considerable gaps in our knowledge, especially when it comes to the distinction between hope and related states, such as expectations or aspirations.

In part IV, I ask the question how we can measure hope, and find that the short versions of four existing, popular hope-instruments are at least as valid as their longer counterparts and that each instrument measures a distinct part of the hopeful experience. Also, I find indications that the importance of different components of hope can depend on context, as social and spiritual hope appear to be more important for well-being in a non-western culture compared to western culture.

In sum, I find that the exact meaning of hope depends on context; that it plays an important role in our personal and societal lives as it influences our well-being, behaviour and decisions; that hope often, but not always relates to positive states; that a lot is still unknown about the topic; and that it is possible to study hope using the right instruments. These insights can be used in academia, organisations, governmental organisations or in our personal lives. It tells us that taking hope into account when trying to understand or influence behaviour is important; that hope can impact our wellbeing; that messages of hope should be accompanied by realistic information about the situation; and that it is possible and worthwhile to study the topic further. Moreover, it shows us how important it is to keep hope alive. Hope is no panacea, but hope gives us "as a species and as individuals, what we otherwise wouldn't have: a chance" (Green, 2010). A chance to keep going, show our best selves, and to keep feeling that, maybe, things might get better.

Samenvatting

Hoop speelt een belangrijke rol in ons persoonlijk en maatschappelijk leven. Het motiveert ons om actie te ondernemen, om anderen te vertrouwen, om in onze toekomst te investeren, en soms simpelweg om 'door te gaan'. Ieder van ons ervaart persoonlijke zorgen en, vanwege moderne media, zijn we ons steeds meer bewust van maatschappelijke uitdagingen zoals klimaatverandering, groeiende ongelijkheid en automatisering. Deze zorgen kunnen verlammend werken en samenwerking tegengaan, aangezien we ons er vaak defensief, angstig en kortzichtig door voelen. Hoop, kortweg gedefinieerd als verlangen naar een onzekere gebeurtenis, kan tegenwicht bieden aan dergelijke zorgen of pessimisme. In tegenstelling tot optimisme, dat verwijst naar een neiging om positieve dingen te verwachten ongeacht van onze handelingen, is hoop gebaseerd op de aanname dat de toekomst onzeker is. Op deze manier is hoop een belangrijke drijfveer voor persoonlijke en maatschappelijke ontwikkeling; ons handelen is mogelijk én nodig om te bereiken wat we willen, zolang er hoop is. Echter, meer hoop is niet altijd beter, aangezien valse hoop vertrouwen kan doen afnemen en teleurstelling kan veroorzaken, wat aangeeft dat het belangrijk is om hoop te combineren met een realistisch begrip van onze situatie.

Hoewel hoop in de afgelopen decennia een steeds populairder onderwerp is geworden voor wetenschappelijk onderzoek, is dit onderzoek doorgaans binnen de grenzen van specifieke disciplines gebleven, wat betekent dat de inzichten van het ene vakgebied niet gemakkelijk vertaalt en gebruikt kunnen worden voor een ander. Hoop is het meest uitgebreid onderzocht in de vakgebieden psychologie, gezondheidswetenschap, filosofie, theologie en sociologie, en elk van deze vakgebieden definieert hoop anders, met bijvoorbeeld een focus op emotie, cognitie, onzekerheid, weerbaarheid, transcendentie, geschiedenis of iets anders. Maar de realiteit volgt deze onderscheidingen niet. In praktische situaties gaat hoop zowel over cognitie als over sociale relaties, vertrouwen, geschiedenis en economische kansen. In deze dissertatie onderzoek ik daarom hoe we de betekenis en rol van hoop kunnen begrijpen vanuit een interdisciplinair perspectief, door inzichten uit verschillende vakgebieden te combineren en door empirisch onderzoek te doen naar de effecten die hoop op ons heeft.

In deel I van de dissertatie stel ik de vraag 'Wat is hoop?'. Ik vind dat de zeer beknopte filosofische definitie van 'verlangen + onzekerheid' inderdaad toepasselijk is voor bijna alle gevallen van hoop, maar dat onderzoek uit andere disciplines veel rijkere beschrijvingen toevoegt. Specifiek vind ik dat deze filosofische standaard definitie niet beschrijft dat hoop zowel individueel als sociaal kan zijn; dat het niet één ervaring is, maar een cyclisch proces van verschillende ervaringen; en dat het onderwerp van onze hoop beïnvloedt hoe we het ervaren. Gebaseerd op deze bevindingen definieer ik hoop als een individueel, sociaal en maatschappelijk proces van het ontwikkelen, ervaren en verspreiden van verlangen voor een onzeker specifiek of algemeen doel, maar ik benadruk ook dat, afhankelijk van de context, bepaalde onderdelen van deze beschrijving meer of minder belangrijk worden (Hoofdstuk 2).

Deel II focust op de relevantie van hoop. Waarom zouden we ons bezig moeten houden met hoop, zowel persoonlijk als op maatschappelijk niveau? Drie empirische artikelen laten zien

dat hoop een belangrijke rol speelt in het verklaren van gedrag en de mate waarin onze omstandigheden leiden tot groter welzijn. Ik vind dat de relatie tussen toenemend huishoudelijk inkomen en levenstevredenheid gedeeltelijk wordt gemedieerd door hoop, wat betekent dat inkomen mensen gedeeltelijk gelukkig maakt omdat het samengaat met een hoopvol gevoel (Hoofdstuk 3). Dan, in een onderzoek naar de relatie tussen hoop en bereidheid om te betalen (Willingness To Pay, WTP) voor duurzame energie, vind ik dat hoopvolle mensen eerder geneigd zijn om bij te dragen aan duurzaamheid, zolang hun hoop niet is gebaseerd op ontkenning van de situatie en gecombineerd is met realistische zorgen en begrip omtrent klimaatverandering (Hoofdstuk 4). Vervolgens onderzoek ik 'procesmatig nut' (procedural utility) en vind dat hoop een gedeeltelijke verklaring biedt voor ogenschijnlijk irrationeel economisch gedrag, zoals loterijdeelname, wat betekent dat mensen bereid zijn geld te betalen om een korte periode van hoop te ervaren (Hoofdstuk 5).

Deel III van de dissertatie biedt een overzicht van de huidige kennis rondom hoop in twee specifieke wetenschappelijke velden, waarin hoop-onderzoek relatief nieuw is, namelijk economie (Hoofdstuk 6) en geluksonderzoek (Hoofdstuk 7). Hier vind ik dat hoop vaak samengaat met andere positieve ervaringen, zoals welzijn, innovatie, creativiteit, gezondheid en zelfs onze levensduur. Ook concludeer ik dat er nog aanzienlijke gaten bestaan in onze kennis, met name als het gaat om het onderscheid tussen hoop en vergelijkbare ervaringen, zoals verwachtingen en aspiraties.

In deel IV onderzoek ik de vraag hoe we hoop kunnen meten, en vind ik dat de korte versies van vier bestaande, populaire hoop-instrumenten ten minste zo valide zijn als hun langere tegenhangers, en dat elk van deze instrumenten een specifiek onderdeel meet van de ervaring van hoop. Ook vind ik aanwijzingen voor het idee dat het belang van verschillende onderdelen van een hoopvolle ervaring afhankelijk is van context, aangezien sociale en spirituele hoop belangrijker blijken te zijn voor welzijn in een niet-westerse cultuur, vergeleken met een westerse cultuur.

Samenvattend, in deze dissertatie vind ik dat de precieze betekenis van hoop afhankelijk is van context; dat hoop een belangrijke rol speelt in ons persoonlijk en maatschappelijk leven aangezien het ons welzijn, gedrag en beslissen beïnvloedt; dat hoop vaak, maar niet altijd, samengaat met andere positieve ervaringen; dat er nog veel belangrijke kennis ontbreekt over dit onderwerp; en dat het mogelijk is om hoop te onderzoeken met de juiste instrumenten. Deze inzichten kunnen gebruikt worden in onderzoek, organisaties, overheidsinstanties en in ons persoonlijk leven. Het vertelt ons dat hoop ons welzijn beïnvloedt; dat een focus op hoop gecombineerd zou moeten worden door realistische informatie over de situatie; en dat het mogelijk en waardevol is om dit onderwerp verder te onderzoeken. Bovendien laat het ons zien hoe belangrijk het is om hoop levend te houden. Hoop is geen wondermiddel, maar hoop geeft ons "als een soort en als individuen, wat we anders niet hadden gehad: een kans" (Green, 2010). Een kans om door te gaan, om onze beste kanten te laten zien, en om te blijven voelen dat, mogelijk, dingen beter zullen worden.

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Appendices

APPENDIX 2.1: ARTICLES USED IN PHENOMENOGRAPHIC ANALYSES

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APPENDIX 2.2: SELECTION PROCESS OF SOURCES

Table A2.1 | Data selection criteria

	Criteria	Articles
1	All Webb of Science articles with author keyword 'hope' Addition of seminal theories (Beck, 1975; Herth, 1992; Snyder, 2002)	1,939
2	Within eleven fields (economics and business, environmental studies, health science, history, humanities, philosophy, political science, psychology, social science, theology and youth studies) the twenty most-cited articles (including all articles cited as often as the 20th article)	652
3	Substantial focus on the concept of hope • No articles that only mentioned hope a few times • No articles on the Cape of Good Hope • No articles on the housing project HOPE Scientifically rigorous • Published in a peer-reviewed academic journal • No bachelor's or master's theses • No opinion articles without scientific references	259
4	Substantial scope • Meta-analyses and reviews prioritized • Articles with a very specific population or location excluded Relevant topic • Articles with a focus on the definition or characteristics of hope prioritized	66

APPENDIX 2.3: NUMBER OF CITATIONS PER SOURCE

Table A2.2 | References and number of citations in analyses

	Number of citations
Alarcon et al. (2013).	3
Antetius (2007).	10
Aspinwall &. Leaf (2002).	2
Atwater (2007).	4
Bar-Tal (2001).	9
Beck et al. (1974).	1
Benzein & Saveman (1998).	13
Benzein & Saveman, (1998).	15
Benzein Norberg & Saveman (2001).	19
Bland & Darlington (2002).	16
Boukala & Dimitrakopoulou (2017).	4
Braithwaite (2004).	10
Brown (2015).	3
Cantor (2006).	3
Cohen-Chen et al. (2014).	7
Coulehan (2011).	5
Drahos (2004).	8
Du & King (2013).	9
Duggleby et al. (2010).	6
Eaves et al. (2014).	16
Eaves Nichter & Ritenbaugh (2016).	19
Edara (2015).	29
Eliott & Olver (2007).	30
Esteves et al. (2013).	11
Folkman (2010).	8
Griggs & Walker (2016).	2
Halpin (2001).	5
Hammer Mogensen & Hall (2009).	28
Herth (1992).	4
Hobbs (2013).	2
Hornsey & Fielding (2016).	9
Insole (2016).	4
Jansen (2016).	3
Kadlac (2015).	30
Kerret Orkibi & Ronen (2016).	2
Kleist & Jansen (2016).	22
Krause & Hayward (2015).	2

	Number of citations
Leung et al. (2009).	23
Ludema, Wilmot & Srivastva (1997).	36
Luthans & Youssef (2007).	4
McCormick (2017).	3
McGeer (2004).	18
Nekolaichuk, Jevne, & Maguire (1999).	5
Ojala (2012).	5
Pecchenino (2015).	13
Poels & Dewitte (2008).	11
Reichard et al. (2013).	4
Schrank, Stanghellini & Slade (2008).	4
Schrank et al. (2011).	2
Schwartz & Post (2002).	6
Scioli et al. (2011).	10
Singh (2016).	1
Sleat (2013).	5
Smith & Sparkes (2005).	5
Snyder et al. (1991).	1
Stevenson & Peterson (2016).	4
Torres & Tayne (2017).	3
Toscani & Maestroni (2006).	3
Vilaythong et al. (2003).	1
Wang, Joy & Sherry Jr. (2013).	4
Webb (2007).	17
Webb (2010).	20
Webb (2013).	6
Weingarten (2010).	25
Wiles, Cott, C., & Gibson (2008).	4
Zigon (2009).	8

APPENDIX 3.1: FULL LIST OF ITEMS FOR THE ADULT TRAIT HOPE SCALE

1. I can think of many ways to get out of a jam.
2. I energetically pursue my goals.
3. I feel tired most of the time.
4. There are lots of ways around any problem.
5. I am easily downed in an argument.
6. I can think of many ways to get the things in life that are important to me.
7. I worry about my health.
8. Even when others get discouraged, I know I can find a way to solve the problem.
9. My past experiences have prepared me well for my future.
10. I've been pretty successful in life.
11. I usually find myself worrying about something.
12. I meet the goals that I set for myself.

Items 2, 9, 10, and 12 make up the agency subscale.

Items 1, 4, 6, and 8 make up the pathway subscale.

Items 3, 5, 7, and 11 are fillers

APPENDIX 3.2: DIFFERENT SCORES ON MAIN VARIABLES OVER THE YEARS

Table A3.1 | ANOVA between respondents who participated 1, 2 or 3 years

	One year	Two years	Three years
Life satisfaction	6.34	6.46	6.16
One year Two years	 0.12 (1.00)		-0.18 (1.00) -0.30 (0.24)
Hope	4.71	4.95	4.97
One year Two years	 0.24* (0.07)		0.26 (0.02) 0.02 (1.00)

p-level in parenthesis
* significant at the 0.1 level ** significant the 0.05 level *** significant at the 0.01 level

Table A3.2 | Chi^2 test on the relation between income and participating multiple years

	One year	Two years	Three years
Less than $900	6%	4%	8%
$900-$1,300	9%	13%	9%
$1,300-$1,800	13%	18%	9%
$1,800-$2,700	29%	22%	27%
$2,700-$3,200	15%	17%	15%
More than $3,200	27%	26%	32%

Pearson $chi^2(10) = 9.78$ Pr = 0.46

Table A3.3 | Testing selection effects based on personal characteristics for participating in multiple waves

	One year only	Two years	Three years
Age	30.8	29.7	37.3
One year			6.42*** (0.00)
Two years	-1.19 (0.87)		7.61*** (0.00)
Gender			
Male	63%	56%	55%
Female	37%	44%	45%
Pearson $chi^2(2) = 2.96$ Pr = 0.23			
Household composition			
Single	46%	45%	42%
Single parent	4%	7%	5%
Couple without children	20%	23%	23%
Couple with children	24%	19%	23%
Other	6%	7%	6%
Pearson $chi^2(8) = 3.23$ Pr = 0.92			
Ethnicity			
White	73%	69%	77%
Black/African American	12%	10%	7%
Asian	8%	7%	5%
Other	7%	13%	11%
Pearson $chi^2(6) = 7.35$ Pr = 0.29			
Religion			
Very important	9%	8%	12%
Important	18%	13%	12%
Slightly important	26%	15%	17%
Not at all important	47%	64%	59%

Pearson $chi^2(6) = 15.13$ Pr = 0.02

p-level in parenthesis

* significant at the 0.1 level ** significant the 0.05 level *** significant at the 0.01 level

APPENDIX 3.3: MEDIATION ANALYSIS ON THE RELATION BETWEEN INCOME AND AFFECT

Table A3.4 | Fixed effects regression model on affect and hope

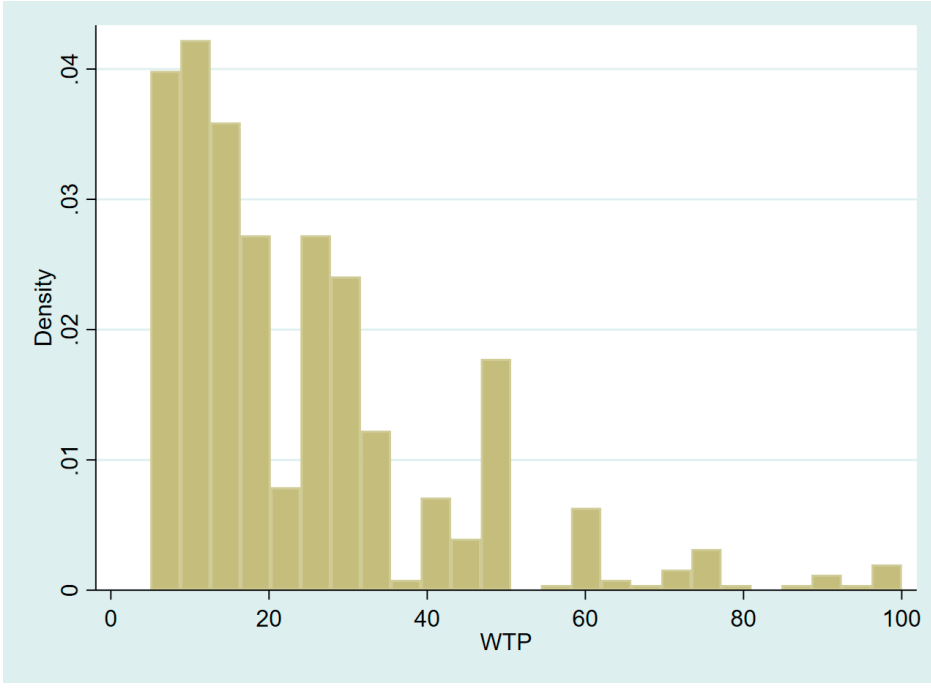
	(1) Affect	(2) Affect	(1-2) Difference	(3) Affect
Income <$900	Reference	Reference		
$900 - $1,300	0.193 0.182)	0.141 (0.164)	0.052	
$1,300 - $1,800	0.152 (0.177)	0.073 (0.159)	0.079	
$1,800 - $2,700	0.171 (0.181)	0.026 (0.164)	0.145*	
$2,700 - $3,200	0.289 (0.185)	0.136 (0.167)	0.153*	
More than $3,200	0.326* (0.189)	0.089 (0.173)	0.237***	
Hope		0.607*** (0.054)		0.610*** (0.049)
Constant	6.608*** (1.459)	3.477*** (1.341)		3.502*** (1.233)
R^2 (within)	0.128	0.430		0.444
N (groups)	327	327		339

Robust standard errors in parenthesis
* significant at the 0.1 level ** significant the 0.05 level *** significant at the 0.01 level
All models are corrected for age, age squared, gender, household composition and year-dummies

APPENDIX 4.1: DEMOGRAPHIC CHARACTERISTICS OF THE SAMPLE

Table A4.1 | Demographic characteristics of the sample

	N	Percent / mean	Percent / mean Dutch average (LISS panel / Statline)
Age (mean)	905	52 years	42 years
Gender			
Male	412	46%	50%
Female	493	54%	51%
Employment status			
Employed	443	50%	51%
Unemployed / unable to work	67	8%	2%
Pensioned	247	28%	20%
Other	136	15%	
Education			
Lower education	222	25%	33%
Middle education	319	35%	40%
Higher education	330	36%	27%
Other	34	4%	
Household type			
Single	198	22%	37%
Partner, no children	365	40%	29%
Partner and child(ren)	278	31%	27%
Single with child(ren)	43	5%	7%
Other	21	2%	
Income (mean)	829	€3215	€3.508
Ethnicity			
Autochthonous	715	84%	
First generation western descent	38	4%	5%
First generation non-western descent	35	4%	7%
Second generation western descent	36	4%	5%
Second generation non-western descent	23	3%	6%


Density
0
.01
.02
.03
.04
0
20
40
60
80
100
WTP

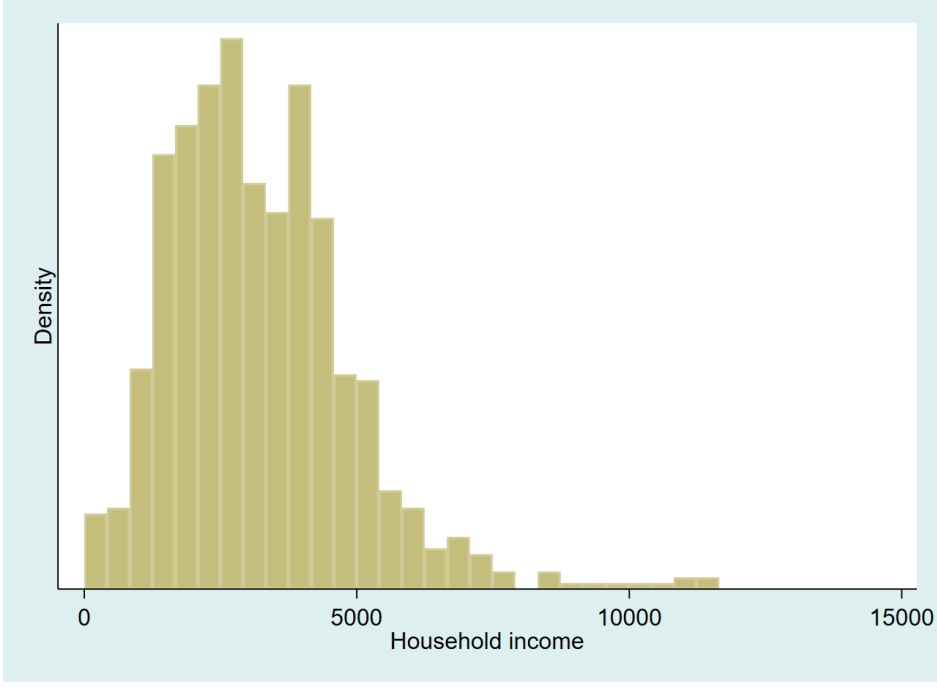

Density
0
5000
10000
15000
Household income

Table A4.2 | Test on skewness of WTP and income

	Observations	Pr(Skewness)	Pr(Kurtosis)
WTP	667	0.000	0.000
Income	829	0.000	0.000

Table A4.3 | Regressions on WTP

	WTP	Log-transformed WTP	Log-transformed WTP	Log-transformed WTP
Control variables	YES	YES	YES	YES
Income	YES	YES	YES	NO
Log-transformed income	NO	NO	NO	YES
R-squared	0.065	0.068	0.068	0.069
R-squared adjusted	0.032	0.035	0.035	0.035
N	583	583	583	583

Control variables: generalized hope, gender, age, ethnicity, household composition, employment type, urbanity

Table A4.4 | Probit model on the likelihood that someone gave a 'protest answer', i.e. is not willing to express the value they attach to green energy

General hope		0.069 (0.054)					
Hope about climate change			-0.122 (0.076)				
Climate-hope based on denial				0.182*** (0.045)			
Climate-hope not denial					-0.246*** (0.057)		
Climate worry							
Very worried						Reference	
Fairly worried						-0.382* (0.213)	
Hardly worried						0.057 (0.196)	
Understands climate change							
(Very) well							Reference
(Very) bad							-0.063 (0.133)
Gender							
Male	Reference	Reference	Reference	Reference	Reference	Reference	Reference
Female	-0.129 (0.119)	-0.122 (0.119)	-0.117 (0.119)	-0.108 (0.121)	-0.080 (0.121)	-0.074 (0.124)	-0.143 (0.124)
Age	0.006 (0.005)	0.006 (0.005)	0.007 (0.005)	0.004 (0.005)	0.008 (0.005)	0.005 (0.005)	0.006 (0.005)
Ethnicity							
Native Dutch	Reference	Reference	Reference	Reference	Reference	Reference -0.399	Reference
First generation, western	-0.325 (0.291)	-0.341 (0.292)	-0.342 (0.290)	-0.320 (0.300)	-0.380 (0.290)	(0.326) -0.183	-0.222 (0.300)
First generation, non-western	0.077 (0.290)	0.085 (0.290)	0.084 (0.292)	0.084 (0.287)	0.116 (0.294)	(0.364) 0.093	0.042 (0.311)
Second generation, western	0.119 (0.274)	0.105 (0.276)	0.106 (0.275)	0.181 (0.275)	0.118 (0.278)	(0.295) 0.404	0.192 (0.282)
Second generation, non-western	0.403 (0.357)	0.393 (0.357)	0.443 (0.360)	0.317 (0.358)	0.464 (0.364)	(0.365)	0.321 (0.386)
Log income	-0.206*** (0.059)	-0.208*** (0.059)	-0.200*** (0.059)	-0.208*** (0.060)	-0.189*** (0.060)	-0.200*** (0.063)	-0.199*** (0.060)
Household							
Single	Reference	Reference	Reference	Reference	Reference	Reference 0.198	Reference
In a relation, no children	0.214 (0.149)	0.204 (0.150)	0.208 (0.1500)	0.199 (0.150)	0.184 (0.151)	(0.242) 0.129	0.208** (0.155)
In a relation, with children	0.227 (0.188)	0.220 (0.188)	0.235 (0.188)	0.172 (0.190)	0.213 (0.190)	(0.197) 0.385	0.161** (0.196)
Single, with children	0.332 (0.298)	0.344 (0.298)	0.308 (0.298)	0.356 (0.303)	0.271 (0.301)	(0.306) -0.034	0.326 (0.301)
Other	-0.225 (0.442)	-0.214 (0.440)	-0.209 (0.447)	-0.235 (0.440)	-0.189 (0.455)	(0.220)	-0.109 (0.453)

General hope		0.069 (0.054)					
Employment							
Full-time employed	Reference	Reference	Reference	Reference	Reference	Reference -0.383	Reference
Part-time employed	-0.441* (0.235)	-0.423* (0.236)	-0.448* (0.236)	-0.418* (0.236)	-0.450* (0.239)	(0.242) 0.418*	-0.338 (0.240)
Unemployed	0.356* (0.209)	0.395* (0.212)	0.337 (0.210)	0.394* (0.212)	0.328 (0.213)	(0.221) 0.031	0.364 (0.217)
Pensioned	0.017 (0.183)	0.033 (0.184)	0.005 (0.184)	0.061 (0.186)	0.009 (0.187)	(0.194) -0.210	-0.029 (0.191)
Other	-0.154 (0.208)	-0.137 (0.209)	-0.170 (0.209)	-0.166 (0.213)	-0.209 (0.213)	(0.220)	-0.238 (0.225)
Urbanity living environment							
Very strongly urban	Reference	Reference	Reference	Reference	Reference	Reference -0.131	Reference
Strongly urban	-0.176 (0.199)	-0.177 (0.199)	-0.150 (0.200)	-0.213 (0.289)	-0.121 (0.203)	(0.208) 0.134	-0.138 (0.204)
Somewhat urban	0.165 (0.201)	0.176 (0.202)	0.195 (0.202)	0.113 (0.203)	0.227 (0.205)	(0.209) 0.305	0.212 (0.205)
Low urban	0.338* (0.192)	0.355* (0.193)	0.361* (0.193)	0.279 (0.195)	0.369* (0.195)	(0.202) 0.441**	0.285 (0.198)
Not urban	0.412** (0.186)	0.425** (0.187)	0.439** (0.188)	0.379* (0.188)	0.472** (0.190)	(0.196)	0.408* (0.195)
Constant	0.116 (0.494)	-0.228 (0.564)	0.465 (0.541)	-0.282 (0.511)	0.895 (0.536)	0.126 (0.561)	-0.077 (0.503)
N	755	755	755	755	755	720	713
Pseudo R^2	0.063	0.065	0.066	0.085	0.089	0.074	0.058

* p<0.1 ** p<0.05 *** p<0.01. Standard error in parenthesis.

Table A4.5 | Probit model on the probability of being willing to pay at least some amount (1) and OLS model on the height of a logarithmic transformation of WTP, using a Heckman selection model (2)

	Willing to pay some amount	WTP
Gender		
Male	Reference	Reference
Female	0.400*** (0.149)	-0.115* (0.064)
Age	0.001 (0.006)	-0.002 (0.002)
Ethnicity		
Native Dutch	Reference	Reference
First generation, western	-0.128 (0.320)	0.070 (0.159)
First generation, non-western	-0.588* (0.338)	-0.014 (0.156)
Second generation, western	-0.471 (0.382)	0.076 (0.137)
Second generation, non-western	0.314 (0.452)	0.256 (0.190)
Log income	0.103 (0.077)	0.168*** (0.048)
Household		
Single	Reference	Reference
In a relation, no children	-0.204 (0.199)	0.039 (0.079)
In a relation, with children	0.041 (0.248)	-0.131 (0.096)
Single, with children	0.386 (0.510)	-0.058 (0.155)
Other	4.435*** (0.252)	-0.052 (0.192)
Employment		
Full-time employed	Reference	Reference
Part-time employed	-0.045 (0.268)	-0.040 (0.100)
Unemployed	-0.730 (0.255)	-0.117 (0.137)
Pensioned	-0.021 (0.237)	-0.004 (0.094)
Other	0.225 (0.245)	0.033 (0.097)
Urbanity living environment		
Very strongly urban	Reference	Reference
Strongly urban	-0.546** (0.277)	0.071 (0.097)
Somewhat urban	-0.594** (0.284)	0.050 (0.105)
Low urban	0.501* (0.286)	0.001 (0.097)
Not urban	-0.627 (0.290)	-0.041 (0.097)
Constant	1.046* (0.620)	1.772*** (0.401)
N	53	583
Pseudo R^2	0.076	0.084

* p<0.1 ** p<0.05 *** p<0.01. Standard error in parenthesis.

Table A4.6 | Test for multicollinearity and heteroskedasticity

	VIF	VIF	VIF	VIF	VIF	VIF	VIF	VIF	VIF	VIF	VIF
Gender											
Male											
Female	1.15	1.07	1.16	1.15	1.16	1.16	1.18	1.16	1.18	1.16	1.18
Age	2.15	2.15	2.22	2.18	2.19	2.17	2.19	2.17	2.20	2.19	2.23
Ethnicity											
Native Dutch											
First generation, western	1.03	1.03	1.04	1.03	1.04	1.04	1.03	1.04	1.03	1.04	1.03
First generation, non-western	1.06	1.06	1.06	1.07	1.06	1.06	1.06	1.06	1.06	1.06	1.06
Second generation, western	1.06	1.06	1.06	1.06	1.06	1.07	1.08	1.07	1.08	1.07	1.08
Second generation, non-western	1.12	1.12	1.13	1.13	1.12	1.13	1.13	1.13	1.13	1.14	1.14
Log income	1.38	1.39	1.39	1.38	1.39	1.39	1.39	1.40	1.39	1.39	1.39
Household											
Single											
In a relation, no children	1.86	1.88	1.86	1.86	1.86	1.88	1.91	1.90	1.93	1.88	1.91
In a relation, with children	2.24	2.26	2.24	2.25	2.24	2.26	2.29	2.27	2.31	2.27	2.32
Single, with children	1.24	1.24	1.25	1.24	1.24	1.26	1.26	1.26	1.26	1.26	1.26
Other	1.10	1.10	1.11	1.10	1.10	1.10	1.10	1.11	1.10	1.11	1.10
Employment											
Full-time employed											
Part-time employed	1.26	1.28	1.27	1.26	1.26	1.26	1.25	1.27	1.26	1.26	1.25
Unemployed	1.22	1.24	1.22	1.23	1.22	1.24	1.23	1.26	1.25	1.24	1.23
Pensioned	2.30	2.30	2.31	2.32	2.30	2.33	2.32	2.33	2.33	2.33	2.34
Other	1.34	1.35	1.35	1.34	1.35	1.35	1.36	1.36	1.37	1.35	1.36
Urbanity living environment											
Very strongly urban											
Strongly urban	1.87	1.87	1.88	1.87	1.88	1.87	1.83	1.87	1.83	1.87	1.84
Somewhat urban	1.74	1.75	1.76	1.74	1.75	1.76	1.72	1.77	1.73	1.76	1.72
Low urban	1.95	1.95	1.95	1.95	1.95	1.98	1.93	1.98	1.94	1.98	1.93
Not urban	2.03	2.03	2.04	2.03	2.03	2.04	1.98	2.04	1.98	2.04	1.98
General hope		1.07						1.08	1.11		
Climate hope			1.10								
Climate hope - denial				1.05						1.27	1.10
Climate hope – not denial					1.07						
Climate worry											
Very worried											
Fairly worried						3.06		3.06		3.12	
Hardly worried						3.11		3.11		3.55	
Understands climate change											
(Very) well											
(Very) bad							1.06		1.08		1.10
Mean VIF	1.53	1.51	1.52	1.51	1.51	1.69	1.51	1.67	1.50	1.70	1.50
Breusch-Pagan test for heteroskedasticity											
chi^2	0.25	0.00	0.00	0.00	0.41	0.01	0.22	0.12	0.06	0.02	0.01
Prob > chi^2	0.619	0.948	0.967	0.953	0.520	0.933	0.639	0.726	0.800	0.892	0.941

Table A4.7 | OLS regression with an interaction of hope, worry and understanding on a logarithmic transformation of WTP without zeros, conditional on the probability of respondent being willing to pay some amount

Climate specific hope	-0.072 (0.130)	-0.071 (0.053)			
Climate hope – not denial			0.052 (0.094)	0.041 (0.040)	
Worry					
Very worried	Reference		Reference		Reference
Fairly worried	-0.420 (0.561)		0.020 (0.525)		-0.156 (0.108)
Hardly worried	-0.332 (0.548)		-0.158 (0.501)		-0.324*** (0.106)
Worry – Climate specific hope					
Very worried * hope	Reference				
Fairly worried * hope	0.069 (0.148)				
Hardly worried * hope	0.004 (0.144)				
Worry – Climate hope-not denial					
Very worried * denial hope			Reference		
Fairly worried * denial hope			-0.039 (0.109)		
Hardly worried * denial hope			-0.038 (0.104)		
Understanding					
(Very) well		Reference		Reference	Reference
(Very) bad		-0.155 (0.396)		0.268 (0.345)	-0.956 (0.705)
Understanding – Climate specific hope					
(Very) well * hope		Reference			
(Very) bad * hope		0.009 (0.099)			
Understanding – Climate hope not-denial					
(Very) well * denial hope				Reference	
(Very) bad * denial hope				-0.084) (0.074)	
Worry – understanding					
Very worried * (very) good					Reference
Very worried * (very) bad					Reference
Fairly worried * (very) good					Reference
Fairly worried * (very) bad					0.838 (0.715)
Hardly worried * (very) good					Reference
Hardly worried * (very) bad					0.891 (0.709)
Constant	2.277	2.055	1.814	1.646	2.063
N	621	612	621	612	607
Wald chi^2	58.80***	42.57***	57.60***	41.78***	58.22***

Controlled for age, age^2, gender, income, ethnicity, household composition, employment status and urbanity of living environment.

* p<0.1 ** p<0.05 *** p<0.01

APPENDIX 5.1: OVERVIEW OF CONTROL VARIABLES

Personal characteristics

- Female: Dummy variable indicating whether the respondent is female
- Age: Age in years
- Employed: Dummy variable indicating whether the respondent is working
- Unemployed: Dummy variable indicating whether the respondent is unemployed
- High household income: dummy variable indicating whether the net monthly household income is over €2600
- High education level: Dummy variable indicating whether the respondent finished at least a study program at ISCED 5–6 level
- High socio-economic status: Self-assessed status regarding salary, job and social status.
- Partner: Dummy variable indicating whether the respondent has a partner
- Children: Dummy variable indicating whether the respondent has children
- Urban environment and region: Dummy variables indicating level of urbanity of residence is at least high or very high; Dummy variable whether the respondent lives in the North, East, or South of the Netherlands (West is reference group)

Personality characteristics (including gambling behavior)

- Materialism: Score on Richins's Material Values Scale (Richins 2004)
- Optimism: Score on the Life Orientation Test—Revised (Scheier et al. 1994)
- Internal locus of control: Score on Short version of the Levenson IPC scale (Sapp and Harrod 1993)
- Frequency of lottery participation: Dummy variable indicating that a respondent has at least participated in the State lottery a few times in the last year
- Won in past year: Dummy variable indicating the respondent has had a win in the State lottery in the past year
- Thinks chance of winning is high: Dummy variable indicating that the respondent assessed the chances of ever winning a large price is high (larger than a score of 3 on a seven-point scale)

Perceived survey characteristics

- Change in duration questionnaire: Difference in duration of questionnaire in minutes for the different time points.
- Change in enjoyability questionnaire: Difference in enjoyability for the different time points. Based on the question: Did you enjoy filling out this questionnaire? (1 = Not at all; 5 = Very much).
- Change in difficulty questionnaire: Difference in duration of questionnaire for the different time points. Based on the question: Did you find it difficult answering the questions in this questionnaire? (1 = Not at all; 5 = Very much).

- Change in life satisfaction: Change in life satisfaction score between two surveys. Based on the question: All things considered, how satisfied are you with your life-as-a-whole? (1 = very dissatisfied; 10 = very satisfied).

APPENDIX 5.2: DESCRIPTIVE STATISTICS

Table A5.1 | Descriptive statistics

Variables	Tables 1-3 (N = 1142)			Table 4 (N = 1096)		
	Mean	Min	Max	Mean	Min	Max
Change in happiness (T1-T2)	-0.10	-7	6			
Change in happiness (T1-T2)				-0.22	-7	6
Lottery ticket	0.89	0	1			
Free ticket		0	1			
Purchased ticket		0	1			
Free and purchased ticket		0	1			
Thought about lottery		0	1			
Thought sometimes about lottery		0	1			
Thought frequently about lottery		0	1			
Lottery ticket and no prize				0.44	0	1
Lottery ticket and prize				0.45	0	1
Free ticket and no prize				0.32	0	1
Purchased ticket and no prize				0.01	0	1
Free and purchased ticket and no prize				0.11	0	1
Free ticket and prize				0.27	0	1
Purchased ticket and prize				0.02	0	1
Free and purchased ticket and prize				0.16	0	1
Female	0.47	0	1	0.47	0	1
Age	56.78	18	92	56.61	18	92
Employed	0.46	0	1	0.46	0	1
Unemployed	0.08	0	1	0.08	0	1
High household income	0.46	0	1	0.46	0	1
High education level	0.39	0	1	0.38	0	1
High socio-economic status	0.21	0	1	0.21	0	1
Partner	0.69	0	1	0.68	0	1
Children	0.26	0	1	0.26	0	1
Urban environment	0.40	0	1	0.40	0	1
Northern Netherlands	0.13	0	1	0.13	0	1
Eastern Netherlands	0.19	0	1	0.19	0	1
Southern Netherlands	0.25	0	1	0.25	0	1
Materialism	26.66	9	56	26.68	9	56
Optimism	29.25	9	42	29.27	9	42
Internal locus of control	45.59	25	63	45.61	25	62
Frequent lottery participation	0.64	0	1	0.64	0	1
Won in past year	0.02	0	1	0.02	0	1
Thinks change of winning is high	0.17	0	1	0.17	0	1

Variables	Tables 1-3 (N = 1142)			Table 4 (N = 1096)		
Δ duration questionnaires T1-T2	-29.29	-5590.83	1486.93			
Δ enjoyability questionnaires T1-T2	0.07	-4	4			
Δ difficulty questionnaires T1-T2	-0.77	-4	4			
Δ life satisfaction T1-T2	-0.13	-9	6			
Δ duration questionnaires T1-T3				-18.76	-5589.87	2143.21
Δ enjoyability questionnaires T1-T3				0.08	-4	4
Δ difficulty questionnaires T1-T3				-0.81	-4	4
Δ life satisfaction T1-T3				-0.16	-9	6

APPENDIX 7.1: STUDIES INCLUDED IN LITERATURE REVIEW

Table A7.1 | Detailed analysis of existing studies on hope and happiness

	Cognitive Hope (Snyder's Adult Trait Hope Scale; Variations on Snyder's Hope Scale)		*Emotional Hope (Herth Hope Index; Miller Hope Scale; Beck Hopelessness Scale)*		*Positive expectations (Trust in own future; Positive expectations about own future).;*
	Agency	Pathways	Hopefullness	Hopelessness	
Life satisfaction (Satisfaction with Life Scale Students Life Satisfaction Scale Single item Life satisfaction questions)	++[6] ++[7] ++[8] ++[9] +[10] +++[11] +++[12] ++[38] ++[39] ++[40] ++[41] +[42] ++[43] ++[44]	+[13] +[14] +[15] +[16] +[17] ++[18] ++[19]	++[20] ++[21] ++[22] +++[23] ++[24] ++[25]	0[26] --[27] --[28] --[29] ---[30]	++[31] 0[32] +[33] +[34] 0[35] 0[36] +[37]
Affect Balance Score	+[45]		+++[46]	---[47] --[48] --[49]	+++[50] 0[51] 0[52] +[53] 0[54] +[55]
Positive Affect	+[56] +[65] +++[66] +[67] ++[68]	+[57] +[58]	+++[59] ++[60]	--[61] -[62] --[63]	0[64]
Negative affect	0[69] -[76] -[77] -[78] -[79] 0[80] 0[81]	-[70] 0[71]	---[72]	++[73] ++[74]	-[75]
Overall happiness (Subjective Happiness Scale; Single item overall happiness questions)	++[82] +[83] +++[84]		++[85] +[86]	-[87]	+++[88] 0[89]

	Cognitive Hope (Snyder's Adult Trait Hope Scale; Variations on Snyder's Hope Scale)		*Emotional Hope (Herth Hope Index; Miller Hope Scale; Beck Hopelessness Scale)*		*Positive expectations (Trust in own future; Positive expectations about own future).;*
	Agency	Pathways	Hopefullness	Hopelessness	
Legend (Strength of Correlations) - = -0.40 - -0.20 -- = -0.60 - -0.40 --- = < -0.60 + = 0.20 – 0.40 ++ = 0.40 – 0.60 +++ > 0.60 0 = -0.20 – 0.20					

6 Bailey et al. (2007). SWLS versus ATHS agency subscale. R = 0.58, p<0.01. Population: US (students).
7 Chang (2003). SWLS versus ATHS agency subscale. R = 0.54, p<0.01. Population USA (middle aged males)
8 Chang (2003). SWLS versus ATHS agency subscale. R = 0.41, p<0.001. Population USA (middle aged females)
9 Cotton Bronk et al. (2009). SWLS versus ATHS agency subscale. R = 0.58, p<0.01.
10 Bailey et al. (2007). QOLI (Quality of Life Inventory) versus ATHS agency subscale. R = 0.37, p<0.001. Population: US (students).
11 Smedema et al. (2014). SWLS versus ATHS agency subscale. R = 0.678, p<0.01. Population: Adults with spinal cord injuries.
12 Kwon & Hugelshofer (2010). SWLS versus ATHS agency subscale. R = 062 p<0.01. Population: LGB adults in China.
13 Bailey et al. (2007). SWLS versus ATHS pathways subscale. R = 0.34, p<0.01. Population: US (students).
14 Chang (2003). SWLS versus ATHS pathways subscale. R = 0.32, p<0.01. USA (middle aged males)
15 Chang (2003). SWLS versus ATHS pathways subscale. R = 0.20, p<0.01. USA (middle aged females)
16 Cotton Bronk et al. (2009). SWLS versus ATHS pathways subscale. R = 0.36, p<0.01.
17 Bailey et al. (2007). QOLI (Quality of Life Inventory) versus ATHS pathways subscale. R = 0.25, p<0.001. Population: US (students).
18 Smedema et al. (2014). SWLS versus ATHS pathways subscale. R = 0.506, p<0.01. Population: Adults with spinal cord injuries.
19 Kwon & Hugelshofer (2010). SWLS versus ATHS pathways subscale. R = 0.56 p<0.01. Population: LGB adults in China.
20 Rustoen et al. (2010). Life satisfaction versus HHI. R = 0.547, P<0.01. Population: Cancer patients.
21 Wnuk et al. (2012). Life satisfaction versus HHI. R = 0.46, P<0.01. Population: Poland (cancer patients).
22 Gestel-Timmermans et al. (2010). MANSA (life and domain satisfaction) versus HHI. R = 0.56, P<0.05. Population: Netherlands (patients with serious mental health problems).
23 c Landeen et al. (2000). Cantrill ladder versus Miller Hope Scale. R = 0.68. No significance level reported. Population: Canada (patients with schizophrenia).
24 Bunston et al. (1996) (In: Kalitzikus & Twohig eds., Bordering Biomedicine). Global quality of life versus Herth Hope Index. R = 0.47, P<0.01. (Cancer patients).
25 Coward (1996). Cognitive wellbeing versus HHI. R = 0.53, P<0.01. Population: US.
26 Costa & McCrae (1980). Life satisfaction versus Hopelessness scale. R = -0.18, p<0.05. Population: United States (35-85 aged white males (largely veterans).
27 Shek (1993). Life satisfaction versus hopelessness scale. R = -0.51, P<0.01. Population: China (students)
28 Chioqueta & Stiles (2007). Life satisfaction versus hopelessness scale. R = -0.57, P<0.01. Population: Norway (students)
29 Lucas et al. (1996). SWLS versus hopelessness scale. R = -0.49, P<0.01. Population: US (students).
30 Lucas et al. (1996). Life satisfaction versus hopelessness scale. R = -0.60, P<0.01. Population: US (students).
31 Cheung (2016). Life satisfaction versus single item ("To what degree are you confident about your future?"). R = 0.43, p<0.01.
32 Arampatzi et al. (2019). Life satisfaction (single item) versus positive expectations index. R = 0.14,. Population: Greece.

33 Mähönen et al. (2012). Global wellbeing scale versus social expectations. R = 0.21, P<0.05. Population: Russian immigrants in Finland.
34 Mähönen et al. (2012). Global wellbeing scale X years later versus social expectations. R = 0.26, P<0.01. Population: Russian immigrants in Finland.
35 Mähönen et al. (2012). Global wellbeing scale versus economic expectations. R = 0.10, P>0.05. Population: Russian immigrants in Finland.
36 Mähönen et al. (2012). Global wellbeing scale X years later versus economic expectations. R = 0.12, P>0.05. Population: Russian immigrants in Finland.
37 Emmons (1986). SWLS versus single item ("In the future, how likely is it that you will be successful in achieving [personal goal]?"). R = 0.26, P<0.05.
38 Yalçin & Malkoç (2015). SWLS versus ATHS. R = 0.43 p<0.01. Population: Turkey (students).
39 Bailey & Snyder (2007). SWLS versus ATHS. R = 0.51, p<0.01. Population: US (students).
40 Marques (2013). Student's Life Satisfaction Scale versus CHS. R = 0.55, p<0.01. Population: Portugal (adolescents).
41 Aghababaei et al. (2016). SWLS versus ATHS. R = 0.49, p<0.01. Population: Iran (students).
42 Halama (2010). SWLS versus ATHS. R = 0.381, p<0.01.
43 Hutz et al. (2014). SWLS versus ATHS. R=0.41 (no significance score). Population: Brazilian population.
44 Hutz et al. (2014). SWLS versus ATHS. R=0.54 (no significance score). Population: US population.
45 Ziv et al. (2011). PANAS affect balance versus ATHS. R = 0.28, p<0.05.
46 Coward (1996). ABS versus HHI. R = 0.64, P<0.01. Population: US.
47 Costa & McCrae (1980). ABS versus Hopelessness scale. R = -0.61, p<0.01.
48 Sisask et al. (2009). WHO-5 versus Hopelessness scale. R = -0.412, P<0.05. Population: Norway (suicide attempters).
49 Sisask et al. (2009). WHO-5 versus Hopelessness scale, single item. R = -0.332, P<0.05. Population: Norway (suicide attempters).
50 Kamman & Flett (1983). ABS (Affect Balance Score) vs single item ("My future looks good). R=+.61 p<0.01. Population: New Zealand (18+).
51 Mähönen et al. (2012). Mood versus social expectations. R = 0.14, P>0.05. Population: Russian immigrants in Finland.
52 Mähönen et al. (2012). Mood versus economic expectations. R = 0.04, P>0.05. Population: Russian immigrants in Finland.
53 Mähönen et al. (2012). Mood 1 year later versus social expectations. R = 0.21, P<0.05. Population: Russian immigrants in Finland.
54 Mähönen et al. (2012). Mood 1 year later versus economic expectations. R = 0.04, P>0.05. Population: Russian immigrants in Finland.
55 Emmons (1986). Affect Balance Scale versus single item ("In the future, how likely is it that you will be successful in achieving [personal goal]?"). R = 0.31, P<0.01.
56 Lu & Hsu (2013). PANAS positive affect versus ATHS agency subscale. R= 0.29, p<0.05. Population: student athletes in Taiwan.
57 Ziv et al. (2011). PANAS positive affect versus ATHS pathways subscale. R = 0.31, p<0.05.
58 Lu & Hsu (2013). PANAS positive affect versus ATHS pathways subscale. R= 0.34, p<0.05. Population: student athletes in Taiwan.
59 Wnuk et al. (2012). Feeling loved versus HHI. R = 0.87, R<0.01. Population: Poland (cancer patients).
60 Bunston et al. (1996) (In: Kalitzikus & Twohig eds., Bordering Biomedicine). ABS positive affect versus Herth Hope Index. R = 0.52, P<0.01. (Cancer patients).
61 Velting (1999). Positive emotions from the big five personality scale *NEO Personality Inventory* versus hopelessness scale. R=-0.49, P<0.01. Population: US (Students).
62 Lucas et al. (1996). PANAS positive affect versus hopelessness scale. R= -0.27, P<0.01. Population: US (students).
63 Lucas et al. (1996). ABS positive affect versus hopelessness scale. R=-0.55, P<0.01. Population: US (Students).
64 Emmons (1986). Positive affect versus single item ("In the future, how likely is it that you will be successful in achieving [personal goal]?"). R = 0.13, P>0.05.
65 Yalçin & Malkoç (2015). SPANE positive affect versus ATHS. R = 0.39 p<0.01. Population: Turkey (students).
66 Gallagher & Lopez (2009). PANAS positive affect versus RSHS. R = 0.62 p<0.05. Population: US (students).
67 Hutz et al. (2014). PANAS positive affect versus ATHS. R= 0.39 (no significance score). Population: Brazilian population.
68 Hutz et al. (2014). PANAS positive affect versus ATHS. R= 0.43 (no significance score). Population: US population.

69 Lu & Hsu (2013). PANAS negative affect versus ATHS agency subscale. R= 0.01 N.S. Population: student athletes in Taiwan.
70 Ziv et al. (2011). PANAS negative affect versus ATHS pathways subscale. R = -0.28, p<0.05.
71 Lu & Hsu (2013). PANAS negative affect versus ATHS pathways subscale. R= -0.12 N.S. Population: student athletes in Taiwan.
72 Wnuk et al. (2012). Feeling lonely versus HHI. R = -0.65, R<0.01. Population: Poland (cancer patients).
73 Lucas et al. (1996). PANAS negative affect versus hopelessness scale. R = 0.40, P<0.01. Population: US (Students).
74 Lucas et al. (1996). PANAS negative affect versus hopelessness scale. R = 0.55, P<0.01. Population: US (students).
75 Emmons (1986). Negative affect versus single item ("In the future, how likely is it that you will be successful in achieving [personal goal]?"). R = -0.34, P<0.01.
76 Yalçin & Malkoç (2015). SPANE negative affect versus ATHS. R = -0.32 p<0.01. Population: Turkey (students).
77 Gallagher & Lopez (2009). PANAS negative affect versus RSHS. R = -0.38 p<0.05. Population: US (students).
78 Yalçin & Malkoç (2015). SPANE negative affect versus ASHS. R = -0.34 p<0.01. Population: Turkey (students).
79 Hutz et al. (2014). PANAS negative affect versus ATHS. R=-0.34 (no significance score). Population: Brazilian population.
80 Hutz et al. (2014). PANAS negative affect versus ATHS. R=-0.11 (no significance score). Population: US population.
81 Ong et al. (2006). PANAS negative affect versus ATHS. R = -0.15 N.S. Population: US population.
82 Gallagher & Lopez (2009). SHS versus RSHS. R = 0.50, p<0.05. Population: US (students).
83 Aghababaei et al. (2016). SHS versus ATHS. R = 0.38, p<0.01. Population: Iran (students).
84 Abdel-Khalek (2006). Happiness versus ATHS. R = 0.68, p<0.01. Population: Kuwait (students)
85 Wnuk et al. (2012). Happiness in recent days versus HHI. R = 0.42, P<0.01. Population: Poland (cancer patients).
86 Phillips-Salimi et al. (2007). Index of wellbeing versus Herth Hope Index. R = 0.33 p<0.01. Population: US adolescents and young adults with cancer.
87 Satici & Uysal (2016). Subjective happiness versus Hopelessness scale. R = -0.38, P<0.01. Population: Turkey (students).
88 Kamman & Flett (1983). Happiness vs single item ("My future looks good) R = 0.64 p<0.01. Population: New Zealand (18+).
89 Arampatzi et al. (2019). Happiness (single item) versus positive expectations index. R = 0.12,. Population: Greece.

APPENDIX 8.1: ITEM SELECTION

Table A8.1 | Item-rest correlations ATHS in pilot study

		Item-rest correlation whole scale	Item-rest correlation domains
Agency			
ATHS 2	I energetically pursue my goals.	0.76	0.70
ATHS 4	I meet the goals that I set for myself.	0.72	0.71
ATHS 7	My past experiences have prepared me well for my future.	0.70	0.63
ATHS 8	I've been pretty successful in life.	0.63	0.65
Pathways			
ATHS 1	I can think of many ways to get out of a jam.	0.72	0.71
ATHS 3	Even when others get discouraged, I know I can find a way to solve the problem.	0.76	0.70
ATHS 5	There are lots of ways around any problem	0.60	0.61
ATHS 6	I can think of many ways to get the things in life that are important to me.	0.73	0.65

Table A8.2 | Item-rest correlations HHI in pilot study

		Item-rest correlation whole scale	Item-rest correlation domains
Temporality			
HHI 1	I have a positive outlook toward life.	0.70	0.55
HHI 3	I believe that each day has potential.	0.69	0.53
HHI 5	I have short and/or long range goals	0.55	0.45
HHI 9	I feel scared about my future.	0.39	0.40
Positive readiness			
HHI 2	I have a sense of direction.	0.70	0.75
HHI 4	I feel my life has value and worth.	0.72	0.76
HHI 7	I can see possibilities in the midst of difficulties.	0.53	0.41
HHI 10	I can recall happy/ joyful times.	0.29	0.27
Interconnectedness			
HHI 6	I feel all alone.	0.42	0.15
HHI 8	I have a faith that gives me comfort.	0.22	0.19
HHI 11	I have deep inner strength.	0.51	0.34
HHI 12	I am able to give and receive caring/ love	0.48	0.31

Table A8.3 | Item-rest correlations LOHS in pilot study

		Item-rest correlation whole scale	Item-rest correlation domains
Agency			
LOHS 3	Due to the support of others, I am well prepared for my future	0.84	0.71
LOHS 4	I have reached many of my own goals with the help of others	0.75	0.70
LOHS 6	There are others who energetically help me pursue my goals	0.71	0.66
LOHS 8	With the help of others, I've been pretty successful in life.	0.78	0.72
Pathways			
LOHS 1	With the help of others, I can think of many ways to get the things in life that are important to me.	0.75	0.74
LOHS 2	When I get discouraged, I know others can help me find a way to solve the problem.	0.78	0.76
LOHS 5	Others can often help me think of different ways to get out of a jam.	0.72	0.62
LOHS 7	Together with others, I can think of lots of ways around any problem	0.69	0.81

Table A8.4 | Item-rest correlations COHS in pilot study

		Item-rest correlation whole scale
COHS 1	My spiritual beliefs have empowered me to succeed in life.	0.92
COHS 2	I find comfort in my spiritual beliefs.	0.93
COHS 3	My spiritual beliefs keep me calm in a crisis.	0.94
COHS 4	My spiritual beliefs provide me with a feeling of safety.	0.93
COHS 5	In pursuing my goals, I try to work hand-in-hand with God or a higher power.	0.75
COHS 6	Accomplishments are due to human will power; not prayer or spiritual guidance.	-0.34
COHS 7	I believe in a benevolent higher power.	0.76
COHS 8	There is a higher intelligence that guides life in a positive direction.	0.76
COHS 9	I believe there are ways one can get in touch with a greater spiritual force.	0.74
COHS 10	Spiritual experiences are possible with the right attitude.	0.71
COHS 11	I have the ability to connect with God, a spiritual force or a higher power.	0.81
COHS 12	In the right environment, I can feel the presence of a spiritual force or a higher power.	0.83

APPENDIX 8.2: FULL SAMPLE DESCRIPTIVES

Table A8.5 | Demographic characteristics of the sample

	Pilot study	Wave 1	Wave 2	Wave 3
N	1,623	903	868	1,261
Age (mean in years)	52	52	55	55
Gender				
Male	46%	46%	46%	47%
Female	54%	54%	54%	53%
Employment status				
Employed	43%	49%	47%	45%
Freelance	6%	8%	2%	7%
Unemployed / unable to work	8%	28%	28%	31%
Pensioned	28%	15%	23%	17%
Other	16%			
Education				
Lower education	25%	25%	24%	24%
Middle education	34%	35%	35%	34%
Higher education	37%	36%	37%	38%
Other	3%	4%	4%	4%
Household type				
Single	24%	22%	22%	24%
Partner, no children	38%	40%	42%	40%
Partner and child(ren)	30%	31%	29%	28%
Single with child(ren)	4%	5%	4%	5%
Other	3%	2%	3%	3%
Income				
<€900	4%	4%	4%	3%
€900-€1,800	20%	17%	17%	17%
€1,800-€3,200	36%	34%	34%	35%
€3,200-€5,000	29%	34%	33%	29%
>€5,000	10%	12%	13%	16%
Ethnicity				
Autochthonous	82%	84%	83%	83%
Western immigrant	10%	9%	10%	9%
Non-western immigrant	8%	7%	7%	8%
Long scales				
ATHS		22%	21%	21%
HHI		23%	22%	21%
LOHS		19%	21%	20%
CHS		13%	19%	19%
No long scale		23%	18%	19%

APPENDIX 8.3: HYPOTHESIS TESTING

Table A8.6 | Fixed effects regression model

	ATHS		HHI		LOHS		CHS	
	Short	Long	Short	Long	Short	Long	Short	Long
Income								
< €1,800	Ref.	Ref	Ref.	Ref.	Ref.	Ref	Ref.	Ref.
€1,800-3,200	0.17*	0.42	0.19	-0.11	0.04	0.14	0.41**	0.22
	(0.11)	(0.26)	(0.12)	(0.16)	(0.15)	(0.24)	(0.15)	(0.23)
> €3,200	0.27*	0.34	0.20	-0.21	0.11	0.12	0.31	-0.16
	(0.14)	(0.32)	(0.14)	(0.21)	(0.19)	(0.30)	(0.22)	(0.28)
Health	0.07**	0.05	0.06**	0.06	0.08**	0.05	0.03	-0.09
	(0.03)	(0.05)	(0.03)	(0.04)	(0.04)	(0.07)	(0.04)	(0.07)
Gender								
Male	Ref.	Ref.	Ref.	Ref.	Ref.	Ref.	Ref.	Ref.
Female	-0.13***	-0.18***	0.12***	0.11**	0.09*	-0.00	0.28***	0.15
	(0.04)	(0.07)	(0.04)	(0.05)	(0.05)	(0.10)	(0.08)	(0.13)
Age / 100	0.07	0.05*	0.43***	0.00	-1.03***	-1.73***	0.45*	0.56
	(0.14)	(0.24)	(0.15)	(0.17)	(0.17)	(0.33)	(0.25)	(0.42)

* p<0.1 ** p<0.05 *** p<0.01

All models are controlled for education level and employment status

APPENDIX 8.4: CROSS-CULTURAL VALIDITY

Table A8.7 | Demographic characteristics of the sample from Mexico

	Mexico
N	244
Age (mean in years)	28
Gender	
Male	61%
Female	38%
Employment status	
Employed	43%
Freelance	19%
Unemployed / unable to work	10%
Pensioned	4%
Other	27%
Household type	
Single	20%
Partner, no children	3%
Partner and child(ren)	17%
Single with child(ren)	28%
Other	32%
Income	
<€900	32%
€900-€1,800	33%
€1,800-€3,200	21%
€3,200-€5,000	7%
>€5,000	7%

Table A8.8 | Cronbach's alpha

	Dutch sample	Mexican sample
ATHS	0.88	0.83
Agency	0.81	0.76
Pathways	0.81	0.68
HHI	0.91	0.89
Temporality	0.82	0.78
Positive readiness	0.86	0.82
LOHS	0.88	0.88
Agency	0.83	0.84
Pathways	0.77	0.75
CHS	0.97	0.97

Table A8.9 | Correlation hope scales and a single item hope question

	Dutch autochthonous	Mexican sample
ATHS	0.50***	0.56***
Agency	0.48***	0.57***
Pathways	0.44***	0.46***
HHI	0.57***	0.65***
Temporality	0.55***	0.64***
Positive readiness	0.54***	0.59***
LOHS	0.35***	0.37***
Agency	0.29***	0.32***
Pathways	0.38***	0.38***
CHS	0.11***	0.36***

Table A8.10 | Correlation hope scales and life satisfaction

	Dutch autochthonous	Mexican sample
ATHS	0.47***	0.63***
Agency	0.47***	0.67***
Pathways	0.41***	0.49***
HHI	0.61***	0.70***
Temporality	0.57***	0.64***
Positive readiness	0.58***	0.68***
LOHS	0.25***	0.48***
Agency	0.22***	0.47***
Pathways	0.25***	0.44***
CHS	0.02	0.41***

Table A8.11 | Correlation hope scales and positive affect

	Dutch autochthonous	Mexican sample
ATHS	0.64***	0.69***
Agency	0.63***	0.69***
Pathways	0.57***	0.57***
HHI	0.60***	0.65***
Temporality	0.58***	0.63***
Positive readiness	0.57***	0.60***
LOHS	0.27***	0.47***
Agency	0.20***	0.40***
Pathways	0.31***	0.49***
CHS	0.10***	0.31***

Table A8.12 | Correlation hope scales and expectations

	Dutch autochthonous	Mexican sample
ATHS	0.20***	0.41***
Agency	0.19***	0.44***
Pathways	0.18***	0.31***
HHI	0.19***	0.39***
Temporality	0.16***	0.34***
Positive readiness	0.19***	0.40***
LOHS	0.23***	0.30***
Agency	0.22***	0.28***
Pathways	0.21***	0.28***
CHS	0.12***	0.27***

Hoop

Gisteren vlogen 35 wulpen over de Klosse richting het zuiden
in een hele brede V, eigenlijk naast elkaar

als een boog, gefocust
als troost voor de wereld
Wij zijn sterk en doen ons ding

Elly van Haastert
25 april 2020