

How Do We Hope? The Neuro-Cognitive Foundation of Hoping and Believing

Andreas M. Krafft^{1*}, Rüdiger J. Seitz^{2,3}, Hans-Ferdinand Angel⁴

¹Institute of Systemic Management and Public Governance, University of St. Gallen, St. Gallen, Switzerland

²Centre for Neurology and Neuropsychiatry, LVR-Klinikum Düsseldorf, Heinrich-Heine-University Düsseldorf, Düsseldorf, Germany

³Neuroscience Network Düsseldorf, Department of Neuropathology, Heinrich-Heine-University Düsseldorf, Düsseldorf, Germany

⁴Institute of Catechetics and Religious Education, Karl-Franzens-University Graz, Graz, Austria

Email: *andreas.krafft@unisg.ch, rudiger.seitz@googlemail.com, hfangel@inode.at

How to cite this paper: Krafft, A.M., Seitz, R.J. and Angel, H.-F. (2026) How Do We Hope? The Neuro-Cognitive Foundation of Hoping and Believing. *Journal of Behavioral and Brain Science*, 16, 177-195
<https://doi.org/10.4236/jbbs.2026.166007>

Received: April 23, 2026

Accepted: June 23, 2026

Published: June 26, 2026

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Abstract

In a neurocognitive account, we introduce hope as the result of a process we describe as hoping. It consists of three components: the desire for a valuable good, the belief that it can be realized, and the trust in personal and social resources to make it a reality. We describe how hope shares neurocognitive processes with believing, such as unconscious emotional valuation, probabilistic prediction, attitudes and intentions to act, personal perspective-taking, and expressing oneself through verbal propositions. In addition, hope accommodates the experience of trust, the affective judgments of good, and the attitude of confidence. As people are embedded in a socio-cultural environment, individual hope can turn into collective hope and a sense of collective agency, which, in conjunction with moral, political, and cultural values, can support communities in flourishing. We discuss that our processual account is consistent with traditional theories of hope.

Keywords

Hope, Beliefs, Wish, Trust, Emotions, Valuation, Meaning, Credition

1. Introduction

In recent years, hope has become a pressing topic of inquiry in academia and society. Scientists from various disciplines, including philosophy, theology, psychology, nursing, and health research, have developed theories that explain many facets of the complex, existential phenomenon of hope [1]-[4]. In psychology, hope

has been conceptualized as both a character trait and a positive emotional state that can help people overcome dire situations [5] [6]. Given the interplay of emotional, cognitive, semantic, and behavioral processes, hope has been shown to encompass interpersonal, social, and spiritual dimensions [7] [8]. In philosophy and the social sciences, the focus has expanded from individual to collective hope [9]. Despite extensive debate, psychologists, philosophers, theologians, and other scholars have not reached consensus on the nature of hope [10]. Furthermore, existing theories lack grounding in the systems physiology of the human brain, a topic within cognitive neuroscience.

This article presents a cognitive neuroscience perspective, proposing a universal, trans-disciplinary, and process-oriented conceptualization of hope and hoping. The rationale for our approach is that hope is inseparable from belief-formation processes, accounting for emotional states, character traits, multidimensional concepts, and both individual and collective approaches to hope. We draw on neuropsychophysiological and socio-cultural insights into the brain processes of believing that are brought about by large-scale cortico-subcortical networks, including the perceptive, reward, and motivational systems [11]. We will show that understanding believing as a bio-psycho-social brain function has implications for any understanding of hope and the processes of hoping. This accounts for the philosophical perspective that to hope for p is to hold a wish or desire for p and to believe that p is possible [12] [13]. In fact, hope is understood as a prerequisite for effective action, encompassing the elements of wishing, believing, and trusting at individual, social, global, and transcendent levels [14]. Similarly, the processes of believing enable the coding of action by integrating perception and emotions within a socio-cultural context [11]. Accordingly, both processes—hoping and believing—are intimately linked to uncertainty and other factors, such as values, meaning, self-identity, intentionality, intuition, attitudes, agency, imagination, and trust.

The scope and purpose of this article have four main topics: 1) We introduce a transdisciplinary (e.g. philosophical and psychological) model of hope and its core elements [14]; 2) conceptualize hope as the dynamic psychological activity of hoping; 3) present the cognitive neuroscience model of believing [11]; and 4) relate the processes of hoping and believing.

2. Antecedents of Hope Research

Hope is a prominent concept in several research areas within positive psychology. It has been conceptualized as one of the main character strengths within the virtue of transcendence [6], and it has also been considered one of the top ten positive emotions in Fredrickson's broaden-and-build theory [5]. Also, hope has been presented as both a trait and a state [15]-[17]. As a state, it reflects individuals' current feelings about a specific situation; it may vary over time and can be influenced by personal development and interventions. As a trait, hope serves as an attitude or outlook on life, making it less prone to changes in response to life's challenges [4].

Drawing on cognitive theories, Snyder (2002) [1] developed a hope model that defines hope as the combination of mental willpower (agency) and pathways related to personal goals. Several authors, on the other hand, emphasize the emotional nature of hope [15] [18] [19]. While Snyder (1994) [17] maintains that achieving goals produces positive feelings, Fredrickson (2013) [5] emphasizes that hope, as an emotion, drives people to believe they can fulfill their goals or wishes, even amid temporary setbacks or struggles. Moreover, it has been argued that hope is an emotion that broadens one's perception, especially in difficult situations, strengthens good social relationships, develops new perspectives, fosters belief in success, and motivates active work towards it [19]. This means that hope is a feeling that arises when people face uncertainty and threatening situations, and precedes the attitude of successful agency. It is noteworthy that, in this view, hope involves introspection focused on the individual's situation.

While Snyder's Hope Theory focuses on the individual only, several other authors have conceptualized hope as a multifaceted phenomenon comprising bio-psycho-spirito-cultural dimensions [2] [4] [7]. Importantly, numerous sources of belief, including a higher power, nature, oneself, family, or various social, cultural, and political institutions, can be significant carriers of hope [15] [20]. However, broader theories may include dimensions that are context-dependent rather than essential to every experience of hope [8]. Thus, hope remains a conceptually contested construct.

Hope is furthermore connected to concepts such as expectations and optimism. Although these terms are often used interchangeably in everyday language, hope is distinct in that it typically concerns outcomes perceived as unlikely yet possible and over which individuals have limited control [21]-[23]. Perceived hope is therefore strongly associated with uncertainty and unpredictability and may persist even in the absence of confidence or optimism. Unlike positive expectations, such as optimism, hope, in a broader sense, is directed toward desired outcomes that may be difficult to attain. Whereas optimism is generally associated with positive emotions such as joy, hope often functions as a means of coping with negative feelings, including fear and worry [19]. Moreover, confidence and optimism are commonly expressed as states, whereas hope is more often articulated as an active orientation toward the future.

3. A Transdisciplinary Model of Hope

Traditional theories of hope have been criticized for being either too narrow or too broad and for representing an overly individualistic Western perspective [16]. Snyder's Hope Theory nearly equates hope with self-efficacy, self-confidence, goal orientation, and perseverance [24]. Still, it is less apt to address situations in which the individual hopes for things beyond their field of influence [22]. Multidimensional hope theories, on the other hand, include features that can foster one's hope but are neither necessary nor sufficient to explain the fundamental phenomenon of hope. Between the over- and under-representation of the phenomenon lies a

gap that we intend to bridge by proposing a more universal, trans-disciplinary, and process-oriented conceptualization of hope and hoping. Rooted in psychological, philosophical, and theological theories of hope, Krafft *et al.* [14] proposed a transdisciplinary model that articulates its fundamental elements while avoiding both under- and over-conceptualization. The essential elements capture the essence of hope and remain broad enough to apply hope to various situations across different levels (individual, interpersonal, social/collective, and transcendent) and in diverse cultural contexts.

Contemporary philosophers have identified a common foundation for conceptualizing hope. The standard account, or orthodox definition, of hope comprises at least two fundamental elements: (1) a desire for a valued good outcome (we only hope for what is significant to us) and (2) the belief that achieving our wish is possible but not certain [12] [13]. Several authors acknowledge that these two components are necessary but not sufficient to explain hope and propose various missing factors: the “license” to act or incorporation argument [25], the cognitive resolve process [26], imagination [27], external factor account [13], and an attitude of fundamental or substantial trust [9] [28] [29].

Krafft *et al.* [14] posited that hope encompasses the processes of 1) wishing a valued outcome or state, 2) believing that its realization is possible, albeit not necessarily probable, and 3) trusting in the availability of internal or external resources that could facilitate its achievement, particularly when facing obstacles and setbacks. The willpower to act and persevere was argued to result from the nature and significance of the desired good and the intensity of belief and trust, which could be rooted in several sources and held by individuals who hope.

The three mechanisms—wishing, believing, and trusting—appear to have a universal character. They can be applied at two distinct levels of abstraction, which in the literature are known as the level of specific hopes and the level of perceived or fundamental hopefulness [30]. From individual hopes for personal endeavors to interpersonal hopes for loved ones and collective hopes for a better world, we can recognize and study the manifold aims, beliefs, and sources of hope. Furthermore, we can examine people’s overall level of hopefulness [14]. Hope arises as an emergent phenomenon from the interplay of wishing, believing, and trusting. This conceptualization of hope, by being broader in scope, embraces and extends beyond Snyder’s dispositional hope theory. In empirical studies, perceived hope added incremental predictive power beyond dispositional hope for life satisfaction, subjective well-being, and future prospects [31].

4. The Dynamic Psychological Activity of Hoping

Elliott and Olver (2002, 2007) [32] [33] conducted a comprehensive analysis of the English term “hope,” elucidating significant variations in its content and connotation. While in everyday language, “hope” is employed as a noun (“My hope is...”), there is also the verb (“I hope that...”), and the adjective or adverb (“I’m hopeful...”). The subjective nature and the process character are expressed through

the use of the verb “to hope”. In this way, hope is understood as a personalized expression, characterized by phrases such as “I hope” or “we hope”. It signifies a dynamic, active process that emphasizes an individual’s or a group’s commitment to the hoped-for outcome. This phenomenon also occurs when an individual harbors aspirations for another person. Interpersonal hope fosters a sense of connection and facilitates the sharing of personal goals and values among two or more individuals [34]. Furthermore, the activity of hoping can be volatile, with several ups and downs depending on experiences and moods. Sometimes we can hope more than at other times, and sometimes we seem to despair.

In essence, the processes underlying hope appear to require both an environmental trigger and the subject’s awareness through introspection. When someone states “I hope that ...”, he/she has formed an emotionally charged concept that something specific shall happen. By including a normative message in our hope, we express what we consider important and valuable, what we believe is good for us or others, and what is possible. Notably, the processes of hoping and the hope itself are not bound to behavioral manifestations and, thus, remain non-observable to other people unless expressed verbally. However, whether the desired outcome is ultimately achieved is not always in our hands. We can, therefore, continue to hope (verb) even when we are not able to do anything to realize the hoped-for good, and, in some cases, even when there appears to be no hope (noun) left.

Importantly, people hope for different ends, believe in different things, and trust various sources of hope [20].

5. The Cognitive Neuroscience Model of Believing

To understand the processes involved in hope, we draw on work on the formation and updating of beliefs. They are based on sensory experiences, emotional values, and cognition. Individuals interpret their surroundings and inner life, predict future events, make decisions, and take actions in uncertain situations [35] [36]. Although beliefs about the world and ourselves can be stable and deeply ingrained, they can change in response to new experiences and insights [37]. Accordingly, people can learn and further develop themselves.

In neuroscience terms, beliefs result from perceptual and emotional processes that underlie the act of believing. These processes often occur in the brain outside conscious awareness [11]. The act of believing is shaped by the socio-cultural environment, encompassing external objects, relationships with others, and social and cultural expressions such as news and events [38]. Belief formation and updating integrate memories from the past, current perceptions, and future prospects by conveying meaning to the person’s experiences. We continuously receive and interpret external and internal information to make sense of what is happening around us and to behave accordingly. Importantly, these processes provide an emotional charge that renders the perceived information relevant or meaningful to the subject. The rapid temporal dynamics of belief formation must be linked to the ambiguity and uncertainty of the information received from the environment.

They result in subjective, probabilistic representations and involve memories from the past with current information, enabling us to prepare for action through predictive coding [37].

The model of believing is conceptualized as a hierarchical, nested structure in which different believing processes occur across several levels [39]. Neurophysiological processes relating to brain functions are connected to psychological processes, including emotions, valuations, and cognitions, and are fostered through social interactions. These interactions contribute to interpersonal processes within larger social systems and cultural manifestations. They ultimately affect group-level physical and psychological processes [40]. Social interactions shape relational, social, and conceptual beliefs at individual and collective levels [41]. People can share their perceptions, emotions, and beliefs through communication in the form of propositions and narratives. To foster a sense of belonging, essential for positive development and cooperation, people must feel emotionally connected, build a shared system of meaning, and hold similar values and beliefs. This lays the foundation for reciprocal processes that foster social cohesion, cooperation, and mutual support. This can lead to collective intentionality with shared visions and goals for the future [42]. Intimately related to attachment and belonging, and therefore to belief formation, is the phenomenon of trust [43]. Trust encompasses assumptions about other people's values, preferences, and positive intentions, and therefore implicitly or explicitly involves a prediction about the future [44].

6. Integrating the Formation Process of Hope and Belief

The relationship between hope and faith/belief has been discussed since Antiquity. For instance, in the 4th century, St. Augustine asks: *Quid autem sperari potest quod non creditur?* - What can be hoped that is not believed? (Patrologia Latina 40). We extend beyond the philosophical/theological discussion and explore the relationship between hope and belief from a cognitive neuroscience perspective. We aim to elaborate on the intricate connections between the processes of hoping and believing (Figure 1). Beliefs are semantic terms for encoded sensory perceptions, along with associated personal emotions, that motivate action generation through predictive coding [11]. While the stimulus-action relation is fast, the believing subjects may subsequently become aware of what they believe and articulate it verbally as propositions. This allows the individual to communicate his/her beliefs to others and reflect upon them. The novel aspect in this communication is that, in parallel with actions, the subject's attitude results from belief-related predictive coding. This corroborates and supplements prior research on the role of repetitive sensory perceptions, along with associated personal emotions, in shaping attitudes beyond beliefs [45] [46]. The attitude may be converted into perspective-taking towards others, in the sense of empathy and mentalizing (e.g., theory of mind), as well as introspection. Thus, the subjective perspective pertains to the individual him/herself, other people, events, and the individual's momen-

tary personal engagement.

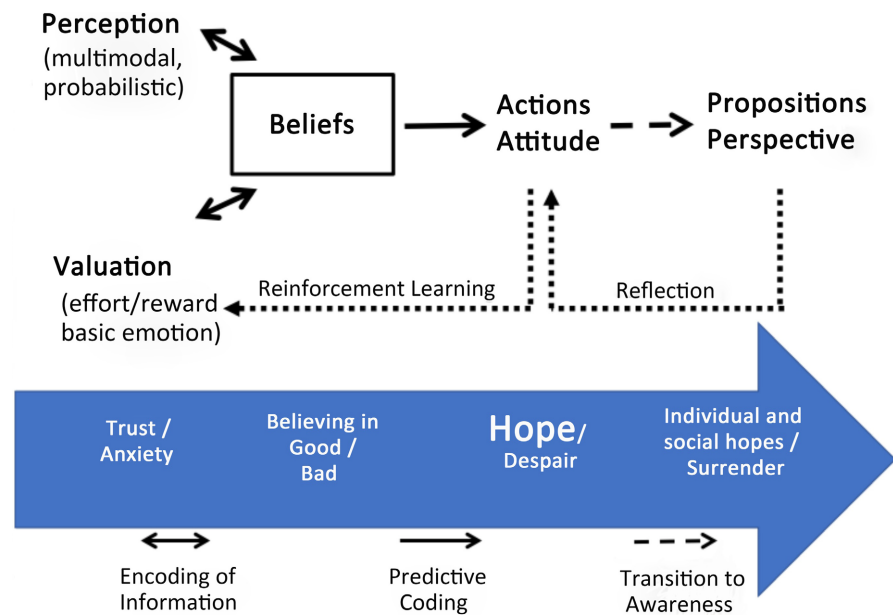


Figure 1. Integration of the processes of belief formation and hope.

The emergence of hope, we claim, is intricately interwoven with the processes of believing (**Figure 1**). It reflects the expectation that there is a reasonable chance a wish will come true in the future. Accordingly, beliefs and hope are based on a subject's behaviorally relevant and emotionally meaningful, rewarding perceptions. Hope reflects a subject's positive attitude and fosters the belief that the subject's wishes can be realized in the future. Thus, hope entails strong personal engagement and serves as a driving force that enables humans to persevere. In the following sections, we will relate the processes of belief formation to the emergence of hope in sequential, dichotomic steps. By doing so, we move beyond the dualistic paradigm in terms of trust-mistrust, good-bad, and hopeful-hopeless.

At the end of each step, we present the fictitious therapy case of Susanne, a young woman with partial dissociative identity disorder [47]. This case illustrates the underlying dynamics. The assumptions about the process itself remain hypothetical.

1) Step 1: Perception and Emotional Valuation—Trust and Anxiety

To understand the emergence of hope as an existential human phenomenon, developmental theory has defined hope as the first human virtue to be cultivated in early childhood [28] [48]. This virtue results from the tension between existential fear and fundamental trust in caregivers. *Through* memory functions, the child develops an inner sense of certainty and predictability about the presence of the person they trust. These are the first emotional experiences of consistency and continuity, which give the child a rudimentary proto-hope for the future. As the child realizes that parents do not act arbitrarily, a fundamental understanding of trust and hope in meeting one's own needs is fostered. Establishing social bonds

and a sense of belonging is crucial for brain development and shaping fundamental human qualities. This includes self-regulation, emotional well-being, cognitive functions, resilience, social competence, empathy, future expectations, and an individual's development as well as cooperation within social networks and larger communities [49].

In consequence, hope emerges from the positive development in the conflict between mistrust (fear) and trust. It leaves the individual with an unconscious, embodied disposition to believe that existential needs will be fulfilled despite the distress associated with them. The positive outcome of the conflict between primal fear and primal trust contributes to a new quality and strength in the formation of an individual's identity. A fundamental sense of order and consistency between the past, present, and future emerges. As a dynamic phenomenon of a psychosocial balance between primal fear and primal trust, hope is constantly threatened and/or affirmed in the course of life. Although the fundamental conflict persists, people learn to cope with it by adopting a positive, fundamental attitude towards themselves, their fellow human beings, and life. The initial basic trust in the caregiver expands in subsequent phases of life to encompass trust in other people and in the social and cultural institutions of the social environment, thereby rendering hope a socio-psychological phenomenon [48]. Since hope is grounded in a broader sense of belonging and togetherness, it can endure even in the face of specific threats and frustrations.

Susanne's emotional valuation—from anxiety to trust: Before psychotherapy, Susanne's emotional world was dominated by anxiety, confusion, and exhaustion. Her partial dissociative identity disorder made everyday life unpredictable. These created emotional insecurity and deep self-doubt. In therapy, this anxiety gradually shifted toward trust. The therapist's consistency, attuned listening, and respectful engagement with Susanne's inner persons created a safe relational space. Over time, Susanne began to risk openness and to experience trust not only in the therapist but also in her own internal system.

2) Step 2: Shaping Beliefs—Good and Bad

Through the probabilistic representation of reality provided by beliefs, the individual begins to take a stance toward what happens in the world. He/She develops preferences for affection and desirability, defining norms and values of proper behavior [50] [51]. The stabilization of beliefs is the foundation for a consistent and meaningful appraisal and judgment, and, thus, for making decisions, behaving, and acting in a specific way. Remember that these operations initially occur implicitly below the level of awareness, giving rise to pre-linguistic, primal beliefs, and only become conscious through narratives and reflection in a subsequent phase [52] [53].

By continually constructing and reconstructing meaning throughout life, individuals develop complex systems of meaning that lead to relatively stable worldviews. These worldviews encompass assumptions about the world and oneself, as well as future expectations, purposes, and goals [54] [55]. Primal world beliefs, as defined

by Clifton *et al.* (2019) [56], are fundamental convictions about the world. They range from positive qualities such as good, beautiful, fascinating, safe, and exciting to their opposites—dangerous, ugly, and meaningless [57]. Similarly, a person may believe that the world can be improved by one's engagement and will get better, or that it is impossible to change and is worsening.

Recent empirical studies support the notion that these fundamental beliefs have a substantial impact on perceived hope [58]. The more people believe in a kind and controllable world and trust themselves and external supports, the less they depend on luck and unpredictability, and the more they can hope. Hope is closely linked to believing in the goodness of the world and humanity, as well as in one's dignity, self-worth, and ability to influence one's future. Generally, hope rests on the belief that the future can bring new opportunities and that current situations can improve, although this is not always the case [14].

Susanne's shaping beliefs—From believing in bad to believing in good: Years of misdiagnosis and invalidation had led Susanne to believe that her inner chaos was her fault. She expected little from therapy and carried negative beliefs about herself, her symptoms, and her future. Step by step, she learned that her system had developed as a necessary response to repeated childhood trauma. This knowledge, along with growing trust in the therapist and herself, weakened self-blame and opened the possibility of believing in positive change. Small experiences—fewer switches, better memory, calmer bodily states—strengthened her belief that improvement was possible.

3) Step 3: Actions and Attitudes—Hope and Despair

Beliefs strongly influence people's attitudes and actions by a subjective stance toward current and future affairs [35] [37]. By assigning meaning to a situation, the individual can define personal goals and form broader purposes that motivate attention and engagement [59]. These preferences give rise to specific wishes that motivate appropriate actions and foster a sense of agency [60]. In light of meaningful goals and purposes, individuals' intentions are modulated by cost-benefit estimates for achieving them [53] [42]. Attitudes have been described as representing a summary evaluation of a psychological object as beneficial or harmful [45]. Actions and attitudes are likely to be concordant. They are generated by the orchestrating function of the basal ganglia [61]. Attitudes involve initially automatic, intuitive, and subsequently controlled, consciously aware processing, reported to occur in the posterior medial frontal gyrus [62] [63]. This is the positive driving force of hope in the sense of "What can I hope for?" These processes are behaviourally highly relevant as they are tightly linked to the reward system and can induce motivation [51] [64].

According to the "Cognitive Resolve Theory of Hope" developed by Pettit (2004) [26], hope, in its substantial sense, arises when individuals face significant uncertainty and perceive that their wishes and desires have a low probability of being realized (for empirical support, see [22]). To hope as a "cognitive resolve" involves a "what-if" mode of thinking. The person chooses to act as if the desired

outcome is still possible, despite evidence to the contrary, and believes it has a chance of being realized [26]. In Martin's "Incorporation Theory," hope exists when the belief in the possibility of a particular good is intuitively understood as a license to engage oneself in whatever mental (e.g., patient waiting) or practical (e.g., task performance) actions are possible and appropriate [25]. When faced with adversity, hope serves a vital psychological self-regulatory function in situations perceived as threatening to one's identity and sense of self [65]. The individual incorporates their desires and beliefs into their understanding of agency within the mental scheme of practical ends and means. Therefore, hope is a prerequisite for effective agency. Instead of surrendering, hope motivates people to reinforce their wishes, even when those wishes seem out of their control. In moments when we are confronted with our limitations, hope enables us to develop ourselves further by believing that our agency is not static and that through cooperation with others, we can learn and expand our capabilities [28].

Hope and hopelessness are not static dichotomic experiences. Throughout life, we continually swing between hope and hopelessness, meaning and meaninglessness, trust and mistrust, and, in extreme cases, between hope and despair. Hope embodies the belief that the future is open to new possibilities and that we can grow and flourish. At the same time, despair conveys the belief that our wishes will not come true. Therefore, despair signifies the conviction that the future is already predetermined [66] [67]. When in despair, one expects a negative outcome and perceives any attempt to improve circumstances as meaningless [13]. In extreme situations, despair entails relinquishing both one's sense of agency and trust in others [68]. Ultimately, despair embodies the existential belief that one is unworthy of living a fulfilling life [69].

Susanne's changing attitudes—From despair to hope: At the beginning, Susanne's attitude was close to despair. She was surviving rather than living, caught in fragmentation and exhaustion. Yet a fragile wish remained: she longed for stability, fewer disruptions, and relationships that would not collapse under the weight of her symptoms. As she gained trust and belief, she began to imagine and hope for a better future.

4) Step 4: Subjective Perspectives and Propositions—Individual and Social Hopes and Surrender

Owing to the human and social capacity to formulate meaning verbally as narratives, beliefs can become explicit and conscious [52]. The higher the personal meaning attributed to a situation, the stronger the impulse to express its contents as personal propositions or statements and share them with others. This gives rise to conceptual and social beliefs [70]. Conceptual beliefs can reflect attitudes and norms regarding the personal self, the community, and many other aspects of social life [71]. They also give answers to questions about how to make meaning from and cope with possible future events. These ideas create images with personal meaning that are stored in and subsequently retrieved from one's declarative memory [72]. Because it is rooted in verbal expressions, this stage of the belief

formation process is fundamentally social and culturally oriented, resulting in moral, political, and religious beliefs [41].

People generate subjective perspectives on the contextual situation and their momentary orientation towards themselves, their engagements, and others. Such perspectives are likely to manifest as awareness, similar to propositions [11]. People may become aware of their momentary mood in a differentiated way and express the contents of their perspectives, how they are feeling and thinking, using propositional statements such as “I’m convinced that...”, “I’m afraid that...”, or “I hope that...”. It should be highlighted that the propositional statements describe the sensed condition of an individual as a momentary state. People can convey their emotional and cognitive stance as if something has happened to them, thereby putting them into a particular state. Thus, their momentary states are not the emotions of the given subject. Instead, the feelings have moved the subject into a state in which they are aware of and can communicate their emotions [73]. The perspectives represent emotions within the contextualized setting of an individual’s behavior [74]. People can reflect on their perspectives, use them to establish long-term goals, or adjust them in response to changing circumstances.

According to Bovens (1999) [27], the value of hope lies in the human capacity to imagine and anticipate the future. The mental energy of hoping “is just having the proper belief and desire in conjunction with being engaged to some degree in mental imaging” [27]. Bovens distinguishes between latent and occurrent beliefs and, therefore, between latent and occurrent hopes. Latent hopes are characterized by desires and beliefs deprived of mental imaging. Once explicit episodes of mental imaging take place, one can reflect upon one’s own beliefs and hopes and think about what one desires and considers to be attainable. The intrinsic value of hope lies primarily in favorable anticipation of the future, especially during challenging times, and, according to Bovens, is grounded in the feeling of love. By doing so, our agency is infused with the energy of hope, which helps overcome frustrations and deal with failures and setbacks. When hoping for others, one is declaring that they matter and deserve our attention and care. Once one ceases to hope and to imagine a better future, one not only surrenders to a devastating reality but also refrains from appreciating one’s life and the lives of others as precious and worthy of engagement.

Susanne’s development of new perspectives—From surrender to individual and social hopes: Previously, Susanne often felt surrendered to her symptoms. Her life was shaped by amnesia, inner conflict, and loss of control. Through therapy, her perspective shifted toward future possibilities. She desired change, began to believe it was attainable, and trusted the therapeutic process. Her individual hopes included stability, self-understanding, and a meaningful, self-directed life. Mutual and social hopes also developed: her inner life learned to communicate, cooperate, and care for herself, becoming more able to connect with others.

5) Step 5: Social beliefs—Collective Hope and Fear

The processes of belief formation occur within a hierarchical, nested structure.

Complexity increases as we move from individual psychoneurological level to the interpersonal and then to more abstract cultural and even spiritual levels [39] [41]. The field of “social” cognitive neuroscience is concerned with the latter levels. It acknowledges that the individual is closely interrelated with various aspects of the social and natural environment [75]. This implies that meanings and beliefs are constructed at both individual and social levels [76]. Within a social community, people exchange their perceptions, emotions, meanings, and expectations through everyday interactions and conversations. To support one another, they need to cultivate a shared system of social, moral, political, cultural, and religious values. They develop similar ideals and create common goals for the future, shaping a mutual identity and lending meaning to collective actions. This gives rise to the phenomenon of collective intentionality, including the articulation of common interests on the group level and concerning political issues [42] [77].

Here is where the experience of collective and transformative hope fosters a sense of collective agency. By confronting a shared reality, groups, communities, and societies cultivate a collective cognitive and emotional orientation [78]. In its basic form, this common orientation can be characterized by a focus on either fear or hope [79]. Collective hope arises from social processes in which individuals believe in and commit to shared visions and goals, trust social institutions, and participate in collective actions [9] [28]. In particular, collective hope is significantly motivated and shaped by transformative visions of a meaningful and flourishing life and society, which propel social and political change [80]-[82].

Notably, collective hope possesses a unique quality because hopes associated with social issues, such as strengthening democracy, are generally seen as beyond the control and agency of the single individual [72] [79]. Interpersonal hope is intimately linked to the experience of mutual support and solidarity. This helps develop a new reality perceived as a socially extended agency [34]. Common wishes and shared beliefs in collective visions of a better future form the foundation for developing a sense of collective agency [30]. On the one hand, an individual’s sense of agency can be enhanced by the emotional and instrumental support of others [79] [83]. On the other hand, these experiences can foster trust in others and social institutions, encourage collective actions, and give rise to a sense of collective agency [9]. Precisely the opposite tends to happen when a society is driven by fear. The consequences include a lack of trust in others and social institutions, along with a diminished belief in a better future, ultimately leading to social disengagement, disintegration, conflict, and, finally, the impairment of individual agency as described by Nussbaum (2019) [84].

Susanne’s case for society—From collective fear to collective hope: The rising prevalence of psychological disorders in contemporary society is a cause for concern. Susanne’s case illustrates the broader societal relevance of positive therapeutic experiences for individuals facing similar challenges. Such experiences may have a ripple effect: Belief in the health care system and trust in therapists can foster hope that psychological disorders can be effectively understood, treated, and re-

versed.

7. Discussion

In this contribution, we argue that there is a need to develop a processual view to reconcile the diverse psychological concepts of hope as an emotional state, a character trait, and a multidimensional and collective phenomenon into a comprehensive conceptual framework. We propose that the processes of hope help us understand how emotional states, character traits, and various dimensions—ranging from self-mastery to social, spiritual, and cultural domains—are formed and interrelated. By doing so, we go beyond and aim to provide a common ground between traditional psychological and Judeo-Christian theological theories. Taking into account philosophical, psychological, and neurobiological theories from developmental to socio-cultural processes, we present a transdisciplinary model of hope that proposes three core elements of hope in processual terms: It is the act of wishing for a valuable good, believing in the possibility (not necessarily the likelihood) of its realization, and trusting in internal and external resources to overcome obstacles and setbacks. We posit that the processes of hoping give rise to concrete hopes and are intricately linked to the formation of beliefs [37]. In fact, at each step of the belief formation activities, we also identified the core elements of the hope processes (Figure 1). The theoretical framework conceptualizes hope as arising from universal psychological mechanisms, drawing on extensive empirical evidence from systems neuroscience research on perception, emotion, and cognition. This includes, in addition to empirical behavioral studies, several neural-level studies using fMRI and EEG. The interested reader may consult, e.g., the recent textbook by Garrett and Hough (2021) [85] for further reading.

Believing is a central brain function that enables the formation and modulation of beliefs [11]. Similarly, hope is grounded in a brain function that initially evolves outside conscious awareness and only later, during the process of manifestation, becomes aware to the individual. It indicates that a subject has a positive perspective towards future possibilities. From a cognitive neuroscience viewpoint, both beliefs and hope rely on large-scale brain systems, including sensory brain areas, the limbic system, the dopaminergic mesolimbic circuitry, and the memory system [37]. This will even allow us to “hope against all hope”—a central topic in the Jewish-Christian theology. Thus, although beliefs and hope are phenomenologically distinct, they are functionally tightly linked. If, for example, something happens that a subject has hoped for, it will reinforce a corresponding belief of that subject. Similarly, a belief may be strengthened by a third person who maintains that what was hoped for can become true. This is what conceptual beliefs are all about as socio-cultural phenomena [41].

The hope process begins with an affective valuation of a perceived state of affairs, which in its basic form involves the interaction between trust and anxiety. Through meaning-making processes, the individual begins to form beliefs about the world and themselves, ranging from good to bad, which in turn give rise to

further beliefs about future possibilities. This results in the emergence of attitudes and intentions to act or refrain from acting. Hope is essential for developing a positive attitude towards oneself and the world, as it fosters a belief in future possibilities, motivates effective action, and contributes to a sense of identity and agency [14]. Despair, to the contrary, closes one's future, gives up one's agency, and quits any trust in external resources. Through verbalizing their attitudes and reflecting on their actions, people adopt a specific perspective and explicitly articulate their hopes and aspirations. All this is done within a socio-cultural network, giving rise to collective beliefs, hopes, and a sense of extended agency.

Examining hope from a perspective of belief formation will lead to an understanding of hope as a result of the hoping process. This has profound consequences for the fundamental understanding of agency and willpower. In psychology, agency has been typically regarded as a constitutive element of hope [1]. In this article, we propose that the psychological processes might work in the opposite direction. Perceived hope, as an emergent phenomenon based on the fundamental formation processes of desires, beliefs, and trust, shapes our sense of individual and collective agency. The belief-formation processes are at the core of hope and, consequently, of the development of personal and collective agency. From a developmental and process-oriented perspective, beliefs and, in particular, hope are likely to precede one's consciously perceived sense of agency. In other words, the stronger the emotional value of the wished-for end, the greater the belief in its possibility of realization, and the greater the trust in oneself and others, the stronger will be the willpower to remain engaged and not give up.

8. Conclusion

We propose a novel understanding of hope as the result of preparatory processes grounded in and tightly linked to belief formation. Our transdisciplinary concept of hope interrelates the bio-psychological, personal, and socio-cultural levels, making sense of the emergence of individual and collective hope. Furthermore, we propose understanding agency as both an individual and a collective phenomenon, resulting from the processes by which beliefs and hopes are formed and shaped. By doing so, we underscore the original quality of trust, which fosters belief in the good and hope for positive outcomes, with profound consequences for the flourishing of the individual and society.

Conflicts of Interest

The authors declare that the work was conducted without any potential conflicts of interest.

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