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Surpassed by Nature: Awe, Ehrfurcht and Their Conceptual Relationship

Tini (Laura Christin) Katz, M. Sc.

Vorsitzender der Promotionskommission:
Prof. Dr. Stephan Winter,
Rheinland-Pfälzische Technische Universität Kaiserslautern-Landau, Deutschland

Erster Berichterstatter:
Prof. Dr. Gerhard Reese,
Te Herenga Waka | Victoria University of Wellington, Neuseeland
Ehem. Rheinland-Pfälzische Technische Universität Kaiserslautern-Landau, Deutschland

Zweiter Berichterstatter:
Prof. Dr. Jonathan R. Hicks,
Minnesota State University, Mankato, Minnesota, USA

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I. General Abstract

Since the early 2000s, there has been an enormous amount of research on awe and its links with other phenomena. One might therefore assume that there is a clear conceptualization of awe. However, based on the review of 168 publications on awe, I argue in this dissertation that this is not the case. The conceptual unclarity of awe makes it difficult to interpret study results and to develop a sound theory of awe. With this dissertation, I contribute to advancing the conceptualization of awe and expanding culturally sensitive research on awe and its equivalents. Based on the exploration of ehrfurcht in German context and its conceptual comparison with the influential definition of awe according to Keltner and Haidt (2003), I highlight the scope and limitations of this definition in the German context.

First, I review ideas of awe and ehrfurcht in and beyond psychological research. In Chapter 2, I draw on the analysis of 168 publications on awe to show that the influential conceptualization of awe is unclear and suggest methodological approaches that can overcome problems in the research field. In Chapter 3, I explore the characteristics of ehrfurcht in the German context based on the meaning of the term, the facets of perception, and the associated contexts. In Chapter 4, I explore the influential conceptualization of awe according to Keltner and Haidt (2003) in the German context with a focus on the assigned term, the associated perceptions and contexts. Furthermore, I compare the German meaning of Keltner and Haidt's (2003) conceptualization of awe with that of German ehrfurcht and compare the German meaning the US-American one. In Chapter 5, I discuss the implications of this dissertation and identify avenues for future research.

In this dissertation, I identified fundamental problems in psychological research on awe. The findings indicate to revisit the conceptualization of awe and advocate for methodological pluralism in awe research. The contextualized investigation of awe that also incorporates the perspectives of multiple disciplines is suggested to pave the way for a sound theory building. The exploration of German ehrfurcht revealed the close link between ehrfurcht in nature and sustainable behavior. This suggests the potential for application for example in mitigating the climate and biodiversity crisis as soon as the concept ehrfurcht will be sufficiently clear in the future.

Keywords: awe, ehrfurcht, conceptual problems, cross-cultural research, methodological pluralism

II. Zusammenfassung (German Abstract)

Seit Anfang der 2000er Jahre gibt es eine Vielzahl von Forschungsarbeiten zum Thema Awe und dessen Zusammenhang mit anderen Phänomenen. Es liegt daher nahe, anzunehmen, dass es eine hinreichend klare Konzeptualisierung von Awe gibt. In dieser Dissertation behaupte ich jedoch, dass dies nicht der Fall ist und erörtere das anhand der Untersuchung von 168 Publikationen zu Awe. Diese konzeptuelle Unklarheit von Awe macht es sehr schwierig, Studienergebnisse zu interpretieren und eine robuste Theorie von Awe zu entwickeln. Mit dieser Dissertation trage ich dazu bei, die Konzeptualisierung von Awe zu verbessern und die kultursensible Forschung zu Awe und seinen Entsprechungen auszuweiten. Basierend auf der Exploration von Ehrfurcht im deutschen Kontext und ihres konzeptuellen Vergleiches mit der einflussreichen Definition von Awe nach Keltner und Haidt (2003), zeige ich den Geltungsbereich und die Grenzen dieser Definition im deutschen Kontext auf.

Zunächst bespreche ich die Vorstellungen von Awe und Ehrfurcht in psychologischer Forschung und darüber hinaus. In Kapitel 2 beziehe ich mich auf die Untersuchung von 168 Publikationen über Awe um zu zeigen, dass die einflussreiche Konzeptualisierung von Awe unklar ist. In diesem Zusammenhang schlage ich methodische Herangehensweisen vor, die die Probleme im Forschungsfeld überwinden können. In Kapitel 3 exploriere ich die Charakteristika von Ehrfurcht im deutschen Kontext anhand der Begriffsbedeutung, den Wahrnehmungsfacetten und der assoziierten Kontexte. In Kapitel 4 exploriere ich die einflussreiche Konzeptualisierung von Awe nach Keltner und Haidt (2003) im deutschen Kontext. Dabei liegt ein besonderer Fokus auf dem Begriff, den assoziierten Wahrnehmungsfacetten und Kontexten die dieser Konzeptualisierung von Awe zugeordnet werden. Weiterhin

vergleiche ich die Bedeutung der Konzeptualisierung von Awe nach Keltner und Haidt (2003) im deutschen Kontext und vergleiche diese Bedeutung mit derer im US-Amerikanischen Kontext. In Kapitel 5 diskutiere ich die Implikationen von dieser Dissertation und identifiziere Ansätze für zukünftige Forschung.

In dieser Dissertation habe ich grundlegende Probleme in psychologischer Forschung zu Awe identifiziert. Basierend auf den Ergebnissen sehe ich die Überarbeitung der Konzeptualisierung von Awe angezeigt und setze mich für eine Vielfalt an methodischen Herangehensweisen in Forschung zu Awe ein. Die kontextualisierte Untersuchung von Awe, die zudem interdisziplinäre Perspektiven mit einbezieht, kann als Grundlage für fundierte Theoriebildung dienen. Die Exploration von Ehrfurcht im deutschen Kontext machte eine enge Verknüpfung zwischen Ehrfurcht und nachhaltigem Verhalten deutlich. Dies legt das Potential nahe, beispielsweise bei der Abschwächung der Klima- und der Biodiversitätskrise zur Anwendung zu kommen sobald das Konzept Ehrfurcht in der Zukunft hinreichend geklärt ist.

Schlagwörter: awe, ehrfurcht, konzeptuelle Probleme, interkulturelle Forschung, Methodenvielfalt

III. Acknowledgements

I think one of the best things about CDs compared to streaming is that they come with a booklet. To all (future) readers who may be unfamiliar with CDs in general: CD booklets contain lyrics, photos, and acknowledgments related to the album; They are, metaphorically speaking, a tiny door in the backdrop that allows you to take a peek behind the scenes. I can spend hours studying all the details, looking for more context for what I hear in the songs. This acknowledgments section is, so to speak, the booklet for this dissertation. Inspired by the extensive acknowledgements sections by my fellow PhD students from marine biology, I want to use this space to express my gratitude to all the people who have supported me and my dissertation project by so much – even if this takes up significantly more pages than is usual in psychological dissertations.

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Table of Contents

I. General Abstract V

II. Zusammenfassung (German Abstract) VII

III. Acknowledgements IX

IV. List of Tables XVII

V. List of Supplementary Materials (Online Attachments) XIX

1. General Introduction 1

1.1 The Lack of a Sufficiently Precise Conceptualization of Awe 1

1.2 Psychological Awe Research is Growing Rapidly 2

1.3 Keltner and Haidt's (2003) Influential Conceptualization of Awe is yet Untested 4

1.4 Lesser-Known Conceptualizations of Awe 5

1.5 Psychological Awe Research Centers Around the Term "Awe" 6

1.6 The Meaning of Terms and Concepts Depend on the Context of Use 7

1.6.1 The Linguistic and Cultural Variation in the Meaning of Awe 8

1.6.2 Roots of German Ehrfurcht 10

1.6.3 Philosphical and Theological Accounts on Ehrfurcht 10

1.7 The Problem of Applying Awe_{KH} Context-Independently 12

1.8 The Present Dissertation 14

2. What is Awe? On an Uncontested Definition, Conceptual Ambiguities, and Cultural Limitations 16

3. Surpassed by Nature: A Qualitative Exploration of Ehrfurcht (Awe) in German Context 29

3.1 Introduction 31

3.2 Theory 31

3.3 Methods 35

3.4 Results 38

3.4.1 Current Meaning of the Term "Ehrfurcht" 39

3.4.2 The Perception of Ehrfurcht 41

3.4.3 Contexts of Ehrfurcht 49

3.5 Discussion 51

3.5.1 The Relationship Between Temporary and Attitudinal Ehrfurcht 51

3.5.2 Dynamic Characteristics of Temporary Ehrfurcht 53

3.5.3 Ehrfurcht in Cross-Cultural Context 54

3.5.4 Implications 55
3.5.5 Limitations 56
3.6 Conclusion 57
3.7 Bibliography Chapter 3 58
4. Two Words, One Soul? English Awe and German Ehrfurcht in German Context and Their Conceptual Link 64
4.1 Introduction 66
4.2 Theory 67
4.3 Methods 71
4.4 Results 75
4.4.1 Terms that Express German Awe_{KH} 75
4.4.2 The Perception of Awe_{KH} 77
4.5 Discussion 93
4.5.1 Awe_{KH} in the German Context 93
4.5.2 Different Meanings Attached to Awe_{KH} in the German vs. the US-American Context 94
4.5.3 One Concept, Multiple Meanings 95
4.5.4 No Connectedness with Space in Temporary Awe_{KH} 95
4.5.5 The Role of Need for Accommodation (NFA) in Awe_{KH} and Ehrfurcht 96
4.6 Limitations 97
4.7 Implications 97
4.8 Conclusion 99
4.9 Bibliography Chapter 4 101
4.10 Appendix Chapter 4 107
5. General Discussion 113
5.1 Problems in Awe Research 113
5.2 Ehrfurcht in the German Context 115
5.3 Awe_{KH} and Ehrfurcht in the German Context 115
5.4 Theoretical Implications and Avenues for Future Research 116
5.5 Implications of the Unclarity of the Awe Concept 118
5.5.1 Revisiting How We Conceptualize Awe: Reply to Friedman and Bonner (2025) 119
5.5.2 Implications from Methodological Problems in Awe Research 125

5.5.3 Implications from Problems Related to the Use of Concepts as Awe ... 125
5.6 Implications for Researching Awe and Ehrfurcht in the German Context .. 127
5.6.1 Implications for the Development of a Psychological Instrument to Quantitatively Assess Ehrfurcht 128
5.7 US-American Awe_{KH} in the German Context 129
5.8 Cross-Temporary Changes of Psychological Concepts 132
5.9 Conditions Linked to Types of Ehrfurcht or Awe_{KH} 133
5.10 Interdisciplinary Perspectives on the Link Between Ehrfurcht and Religiosity, Spirituality, and Mindfulness 134
5.11 Limitations 135
5.12 Conclusion 137
Bibliography 139
Original Publications and Contribution Statement 155
Declaration 159
Curriculum Vitae 160

IV. List of Tables

Chapter 2

Table 1*	Frequencies of types of awe definitions	20
Table 2*	Frequencies of codes across categories	21

Chapter 3

Table 1	Sociodemographic data of interview participants	37

Chapter 4

Table 2	Sociodemographic data of interview participants	74
Table 3	Interpretations of Attitudinal Awe_{KH} and the respective themes	85
Table A1	Interpretations of Temporary Awe_{KH} and the respective themes	107

* Study is displayed as printed in the journal with according table labeling.

List of Figures

Chapter 1

Figure 1	Publication curve of publications on awe	3
Figure 2	Conceptualization of awe according to Keltner and Haidt (2003)	5

Chapter 3

Figure 3	Overview of themes and subthemes of ehrfurcht	39

Chapter 4

Figure 4	Overview of all themes and subthemes of awe_{KH}	76
Figure 5	Conceptual links between Temporary Awe_{KH} and Temporary Ehrfurcht	89
Figure 6	Conceptual links between Attitudinal Awe_{KH} and Attitudinal Ehrfurcht	92
Figure 7	Possible relations between awe, ehrfurcht, German awe_{KH} and US-American awe_{KH}	130

V. List of Supplementary Materials

(Online Attachments)

Chapter 2

Codings of all publications
https://supp.apa.org/psycarticles/supplemental/amp0001520/amp0001520_supp.html

Excel sheet with all relevant information on which the coding is based
https://supp.apa.org/psycarticles/supplemental/amp0001520/amp0001520_supp.html

Chapter 3

Preregistration
https://osf.io/76m34/overview?view_only=b41356f921fa4751998077b6516d2215

Codebook
https://osf.io/f276j/?view_only=ceee9ad9acd14ab0b0ac7e368a343590

Interview guide (English and German)
https://osf.io/f276j/?view_only=ceee9ad9acd14ab0b0ac7e368a343590

Chapter 4

Preregistration
https://osf.io/76m34/overview?view_only=b41356f921fa4751998077b6516d2215

Codebook
https://osf.io/zm9wr/overview?view_only=da9b166bb39540449a2a65e8dc481c46

Interview guide (English and German)
https://osf.io/zm9wr/overview?view_only=da9b166bb39540449a2a65e8dc481c46

1. General Introduction

By virtually any measure, Taylor Swift is one of the most famous artists worldwide. She has won numerous awards, including 14 Grammys (Recording Academy, 2025) and 49 Billboard Music Awards (Grein, 2024), and holds various records, such as being the most streamed artist on Spotify in 2024 (Covert, 2024). She toured the world for more than one and a half years, and roughly 10 million people came to see her shows (Treisman, 2024). Her fans are dedicated and loyal, and will go to any lengths to be close to "Tay-tay", as the singer is affectionately known by her most passionate fans, the Swifties (Sauer, 2024).

Similar to how the hype surrounding Taylor Swift has reached extraordinary proportions, the hype surrounding awe in psychological research has taken on unexpected dimensions. As I have been listening to her music since I was a teenager, I noticed several parallels between Taylor Swift and awe research, which I want to explore in this introduction.

1.1 The Lack of a Sufficiently Precise Conceptualization of Awe

"Happy, Free, Confused and Lonely in the Best Way" (Swift, 2021a, l. 8)

But what is awe in the first place? To prevent disappointment: there is no clear scientific answer to this question yet. While there are numerous publications on awe that claim that awe has great potential in association with, e.g., greater prosocial behavior (e.g., Jiang & Sedikides, 2022; Piff et al., 2015, 2025; Stegemoeller, 2016; Stellar et al., 2017) or greater pro-environmental behavior (e.g., Chirico et al., 2023; Gao, 2025; Huijsmans et al., 2025; Ibanez et al., 2017; Kjaer et al., 2025; Liu et al., 2025; Ni & Zhang, 2025; Wang et al., 2025; Zhao et al., 2018), awe research lacks a

sufficiently precise conceptualization of the phenomenon. For now, laypeople reports may help to develop an idea of what characteristics awe may possibly have: According to study participants from North America, they experienced awe when looking out at the sea from a cliff and watching the colors of the sunset blend together and the sea reflecting this scene (participant from the US; Katz et al., 2025); or they experienced awe when they accompanied a loved one in the process of passing away (participant from the US; Katz et al., 2025). Yet other study participants reported experiencing awe when they would make their coffee and watch the cream swirl around as they pour it into the coffee (participant from the US; Stellar, 2020). Thus, the contexts in which people report awe vary greatly: contexts can have both positive and negative valence; they can be located in nature settings or non-nature settings; they can be extraordinary settings or ordinary ones—to name just a few of the factors that describe the contexts that are linked to people's awe experiences (Katz et al., 2025; Stellar, 2020).

1.2 Psychological Awe Research is Growing Rapidly

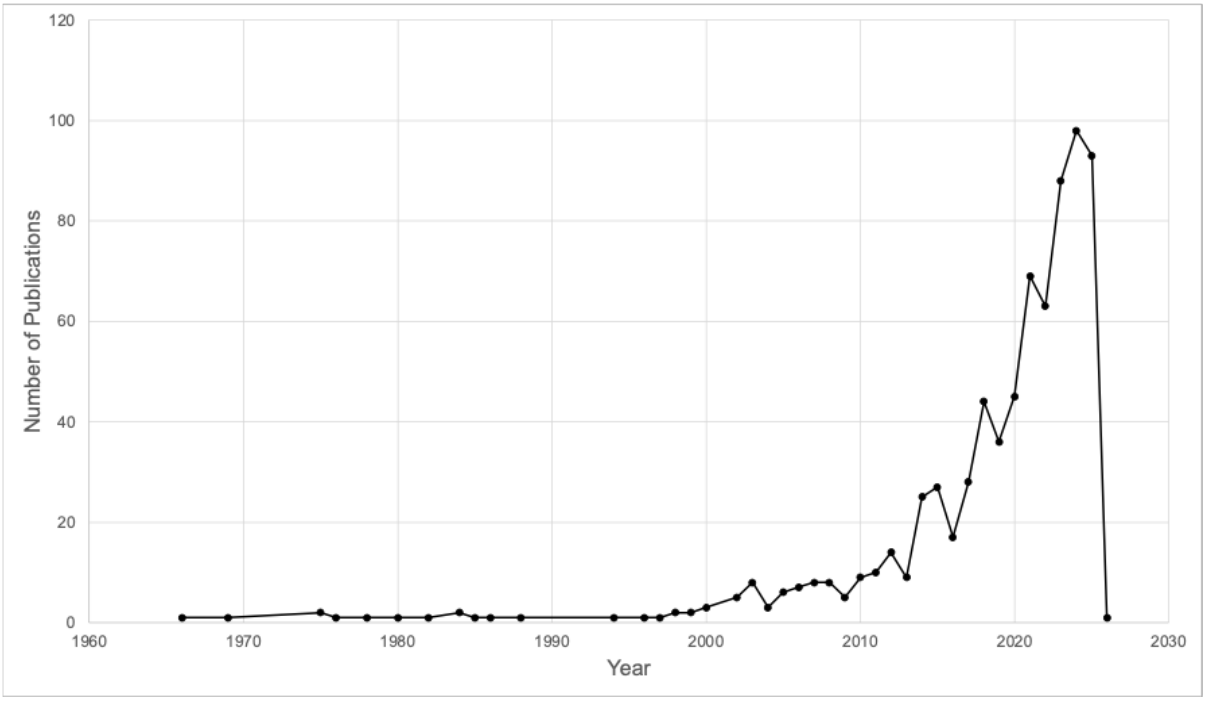
"Let the Games Begin" (Swift, 2017b, l. 37)

In the early 2000s, Taylor Swift's fame and psychological awe research were still in their infancy. Swift's songs were mostly recognized in the country music genre (Sherman, 2023) before they transitioned to the pop genre later on. Back then, Swift was only starting to become famous (Kawashima, 2007), touring radio shows to promote her latest album (Roland, 2010). Similarly, psychological awe research was still coming into its own, with eight publications published between 1960-2003, the year Keltner and Haidt (2003) published their approach to conceptualize awe (own literature research on Scopus on "awe" in article titles in psychology, 1960-2003, conducted on September 11, 2025; Elsevier, n.d.-a). Earlier than 2003, philosophy and theology had been studying awe and *ehrfurcht*, the German translation of awe.

However, interest in awe research increased significantly following Keltner and Haidt's 2003 article, with the publication curve showing a significant increase in 2014, see Figure 1 (own literature research on Scopus on "awe" in article titles in psychology, 1960 – present, conducted on November 03, 2025; Elsevier, n.d.-b) . Since then, there has been an exponential increase in publications per year, reaching a new peak with 98 new psychological publications in 2024 alone (own literature research in Scopus on "awe" in article titles in psychology, 2024, conducted on November 3, 2025; Elsevier, n.d.-c).

Figure 1

Publication curve of publications on awe



Note. Based on literature search on term "awe" in article titles in psychology, 1960 – present. Source: Own illustration based on data from Elsevier, 2025, Scopus; Elsevier, (n.d.-b).

1.3 Keltner and Haidt's (2003) Influential Conceptualization of Awe is yet Untested

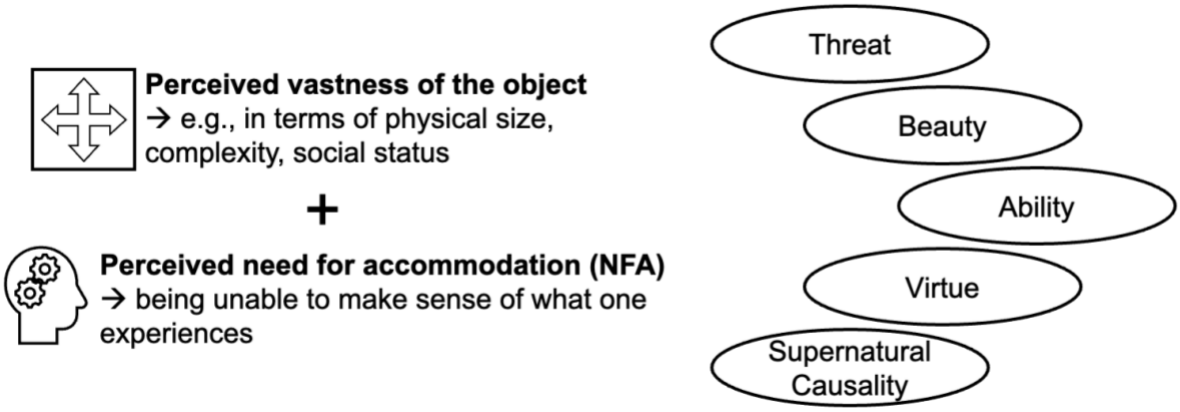
"She's Not a Saint and She's Not What You Think" (Swift, 2023a, l. 11)

Taylor Swift seems approachable, and the interaction between her and her fans is so close that they easily get the feeling of being good friends with her who know her inside and out (Sauer, 2024). However, the image that her fans have of her is based solely on the information that Swift herself provides. For example, little is known about what her everyday life is like, as she tries to keep it private (Willman, 2020). As a result, her fans cannot tell what the artist Taylor Swift is like as a private person. In awe research, a conceptualization of awe was adopted by the majority of researchers without putting it to the test. The current conceptualization of awe is therefore unclear; hence it is very difficult for researchers to develop a coherent theory of awe. Keltner and Haidt (2003) intended their suggested conceptualization of awe (from here on: awe_{KH}) as an approach to the phenomenon awe that was developed "in the absence of empirical evidence" (Keltner & Haidt, 2003, p. 311). They proposed that awe would be present if the two core criteria *perceived vastness* and *need for accommodation* were present simultaneously. They described perceived vastness to be the perception of greatness, vastness, or complexity "that is experienced as being much larger than the self, or the self's ordinary level of experience or frame of reference" (Keltner & Haidt, 2003, p. 303). Vastness could be experienced in a physical sense, e.g., seeing mountains, or in social settings, e.g., in the face of people with high social status. The need for accommodation is referred to as a need to extend one's ideas about the world in order to make sense of what is experienced. In awe_{KH}, only the *need* for accommodation would be relevant, not whether this need is satisfied. Furthermore, Keltner and Haidt acknowledged the various contexts in which awe could be experienced by adding

so called “flavours” (Keltner & Haidt, 2003, p. 304) to their conceptualization of awe that would influence the way awe would be perceived in a specific situation: threat, beauty, ability, virtue, and supernatural causality. For instance, “an encounter with God” (Keltner & Haidt, 2003, p. 305) would be categorized as supernatural causality feature of awe. Accordingly, the authors expected awe to be perceived as “glorious if the entity is perceived as benevolent” (p. 306). For an overview of awe_{KH}, see Figure 2.

Figure 2

Conceptualization of awe according to Keltner and Haidt (2003)



Note. The simultaneous presence of the two core criteria perceived vastness of the object and perceived need for accommodation are considered necessary elements of awe. The ellipses show the so called “flavors” threat, beauty, ability, virtue, and supernatural causality are proposed to influence the way awe would be perceived in a specific situation (Keltner & Haidt, 2003). Own illustration.

1.4 Lesser-Known Conceptualizations of Awe

“Mirrorball” (Swift, 2020b)

Just like the multitude of mirrors on a mirrorball, multiple conceptualizations of awe have been proposed alongside the influential awe_{KH}. Some of these conceptualizations challenged awe_{KH}. For example, Konečni (2005) proposed to conceptualize awe as a combination of fear and joy that could be experienced in the context of existential security. Halstead and Halstead (2004) suggested the combination of fear

and wonder to constitute awe. Sundararajan (2002) expressed skepticism about Keltner and Haidt's assumption that "negative valence" (Sundararajan, 2002, p. 178) could only be a possible part of awe and questioned whether it was, instead, inherent to awe. Schneider (2017) proposed distinguishing between two forms of awe, namely a short, intense form and a longer-lasting form that may lead to changes in the individual. Likewise, Chirico et al. (2024) acknowledged that multiple forms of awe could potentially coexist. However, few of these further conceptualizations of awe have been discussed or tested, nor have they gained wider acceptance in the research field.

1.5 Psychological Awe Research Centers Around the Term "Awe"

"Say My Name and Everything Just Stops" (Swift, 2017, l. 11)

When I told my friend that I was soon going to a Taylor Swift concert, she reacted with confused astonishment: "No way, you are a Swiftie?!" It appeared that she was able to deduce from the information that I was going to a Taylor Swift concert that I could now be labeled a "Swiftie". And it seemed that whatever meaning she attributed to the term "Swiftie" was incompatible with her picture of me. In awe research, the majority of studies have employed the term "awe" to evoke or assess the phenomenon awe. However, with the strong focus on the term "awe", it has remained largely unclear what meaning participants exactly attribute to the term. For instance, study participants were asked to "think about a particular time, fairly recently, when [they] encountered a natural scene that caused [them] to feel awe" (Piff et al., 2015, p. 887). The assessment of awe was mostly represented by the term "awe" as single item. For example, participants were asked to rate "the extent to which they felt […] awe" on a 10-point Likert scale (1 = *not at all*; 10 = *extremely*; Bai et al., 2017, p. 190). By purely

relying on the term "awe", it is unknown how well participants' actual and researchers' intended understandings of the term match in awe evocation as well as in the assessment of awe (see also Griskevicius et al., 2010). Since researchers did not ask for participants' subjective understanding of the term "awe" but only focused on the term itself, it is very difficult to interpret the collected data. However, a few qualitative studies found substantial variation in the subjective understandings of the term "awe" (Agate, 2010; Bonner & Friedman, 2011; Cuzzolino, 2021; Hicks & Stewart, 2020; White, 2017), giving rise to the assumption that researchers' and participants' understandings of the term "awe" might differ.

1.6 The Meaning of Terms and Concepts Depend on the Context of Use

"The Story Isn't Mine Anymore" (Swift, 2024b, l. 31)

Taylor Swift acknowledges her fans' attention and support for instance in her song "The manuscript": "the only thing that's left is the manuscript [...] But the story isn't mine anymore" (Swift, 2024b, ll. 28-31). She makes art that is subsequently interpreted by the Swifties and by this is made their own. In a similar way, awe research is dominated by awe_{KH} as conceptualization of awe, but it is the subjective and contextualized understandings of awe held by study participants that shape study findings. Since the meanings of terms and their translations differ depending on context, they differ between linguistic and cultural contexts, too. This was discussed impressively on the example of the English term "happy": While in English, the meaning of "'happy' has drifted away from happiness so far that it can almost be said to be halfway between 'happy' and 'okay'" (Wierzbicka, 2004, p. 38), the German translation "glücklich" expresses to be filled with profound joy (Digitales Wörterbuch der deutschen Sprache, n.d.-b), which is close to the meaning of "bliss" (Collins

Dictionary, n.d.-a). This also highlights how difficult it is to meaningfully incorporate translations of terms into research, e.g., when letting participants rate the degree of a certain emotion they perceive. The meaning of "happy" implies that it is ordinal in structure, i.e., that one can be very happy or only a little happy. In contrast, the meaning of the term "glücklich" is by definition not ordinal. Being a little "glücklich" does not fit with the understanding of the term as expressing outstanding joy (Wierzbicka, 2004).

Most research on awe worldwide has been based on awe_{KH}, and thereby on the English term and US-American cultural understanding of awe. However, most studies across the globe have not taken into account the linguistic and cultural backgrounds of the respective samples they were investigating (Katz & Franz, 2025).

1.6.1 The Linguistic and Cultural Variation in the Meaning of Awe

"Maybe We Got Lost in Translation" (Swift, 2021b, l. 29)

With regard to linguistic variation, qualitative studies have shown evidence of differences in the meaning of awe across languages. For example, the Japanese translation of the term "awe" was primarily associated with the perception of superior greatness in a spiritual or religious context, as well as with socially higher-status individuals (Nakayama & Uchida, 2020). In contrast, in the US, the linguistic meaning of awe seemed to be associated with perceiving outstanding greatness in nature (Hicks & Stewart, 2020), gaining new scientific knowledge (Cuzzolino, 2021), or being valued by others for one's achievements (Hu & Meng, 2022).

Cultural imprints of awe's translations beyond the US may additionally be at play when centering research on translations of the term "awe". However, cross-cultural studies on awe have not taken the cultural imprint on the subjective understandings of awe or its translations into account. For example, Razavi et al. (2016) assessed awe

by using , among others, the item “I often feel awe” (p. 1098), or their translations in the US, Iran, Malaysia, and Poland. Accordingly, it is difficult to understand each of the cultural specificities of awe based on the data.

A few studies have highlighted the difficulties of correctly assessing the meaning of awe in several cultures. For example, in a study with German-speaking participants, the term “ehrfurcht”, the German translation of the term “awe”, was omitted (Possler, 2021). The author assumed that the German term might be associated with fear, which might have led to bias. Instead, the English term “awe” was used. In another study, items containing the Chinese word for awe were omitted in order to better address the study participants' understanding of awe: Since the Chinese word for awe “is a sacred and abstract word” (Lv et al., 2021, p. 4184) that is almost never used, the authors did not expect it to correspond to the participants' expressions of awe. However, by avoiding the respective equivalents of the term “awe”, it is not possible to discover the characteristics of awe in different linguistic and cultural contexts.

There is also direct empirical evidence from cross-cultural qualitative research on awe and its equivalents that has suggested that the understanding of awe varies across cultures. For instance, study participants in Greece, Turkey and Bulgaria found it difficult to grasp the meaning of the respective translations of awe, whereas study participants from the US easily reported examples of perceiving awe (White, 2017).

Psychological phenomena are closely linked to language, which means that the meaning of terms and their use are of great importance to investigate the corresponding phenomenon (Hutmacher & Franz, 2024): If researchers know which facets participants attribute to the researched phenomena and the respective terms, it is easier to meaningfully interpret research data. For psychological awe research, this means that it is crucial to examine the respective equivalent of awe in the given linguistic and cultural context.

1.6.2 Roots of German Ehrfurcht

"Old Cardigan Under Someone's Bed" (Swift, 2020a, ll. 13-14)

The term "ehrfurcht" has only rarely been used in the past decades and resembles an old cardigan that has been forgotten under someone's bed. In 2021, "ehrfurcht" was used 11 times less than in 1957 across all published books of the respective years (Google, n.d.). The term "ehrfurcht" is a compound of the subjects "ehre" ("honor") and "furcht" ("fear"). According to the dictionary, it means "shyness, based on great deference" (Digitales Wörterbuch der deutschen Sprache, n.d.-a; own translation) and is used, for example, to express deference or respect (Digitales Wörterbuch der deutschen Sprache, n.d.-a; own translation). It has a spiritual or religious connotation, which is reflected in its use in relation to spiritual entities (Deutsches Wörterbuch von Jakob Grimm und Wilhelm Grimm, n.d.). Although so far there has been no discourse on ehrfurcht in psychology that goes beyond understanding ehrfurcht as equivalent to awe, philosophy and theology do have addressed this. While this dissertation has no intention to give an exhaustive account of the philosophical and theological perspectives on ehrfurcht, I want to briefly mention a few of the discourses on ehrfurcht in these disciplines. Given the long history of ehrfurcht in philosophy and theology, I put psychological research in context and illustrate the broadness of the research field beyond psychology.

1.6.3 Philosphical and Theological Accounts on Ehrfurcht

"Wise Men Once Said" (Swift, 2024a, l. 1)

As one of the most famous representatives of philosophy, Friedrich Nietzsche named ehrfurcht as virtue above all other virtues (Cheung, 2025). In doing so, he referred to the fact that ehrfurcht can serve as a foundation for leading an ethical and meaningful life. Albert Schweitzer's postulated ethic "ehrfurcht vor dem leben"

("ehrfurcht for life", often translated as "reverence for life"; Balsinger, 2007) is frequently cited, particularly in publications on natural ethics (Baranzke, 2012). Therefore, it is mentioned here, even though Schweitzer is rightly the subject of controversy due to racist statements and behavior as well as his silence on the Holocaust (Fetscher, 2025). In his famous statement "I am life in the midst of life that wants to live" (Schweitzer, 1923, p. 330; own translation), he expressed the awareness of being a living being himself. From this, Schweitzer concluded that humans should actively engage in the protection of all living beings (Balsinger, 2007). He justified this with ehrfurcht: "Ethics therefore consists in my experiencing the compulsion to treat all will to live with the same ehrfurcht for life as my own. This provides the necessary basic principle of morality. It is good to preserve and promote life; it is evil to destroy and inhibit life." (Schweitzer, 1923, p. 331; own translation). In her publication, Baranzke (2012) classified Schweitzer's work within philosophical discourse and critically reflected on its impact and originality.

Ehrfurcht in theological discourse is mostly linked to Rudolf Otto's work "Das Heilige" ("The Idea of the Holy"; Otto, 2014). Otto described ehrfurcht as a feeling that would arise when encountering the holiness of God: "The feeling of the creature sinking into its own nothingness and decaying in the face of that which is above all creatures" (Otto, 2014, p. 10; own translation). Specifically, Otto assumed two states to occur simultaneously in the individual: *mysterium tremendum* and *mysterium fascinans*. Mysterium tremendum encompasses the utter aloofness of God's representation, to which the individual reacts with dread. Mysterium fascinans describes the alluring, charming character of God's representation, through which the individual receives the drive to turn towards this representation of God. According to Otto, ehrfurcht is therefore a state of simultaneous repulsion and attraction. Otto's ideas about

the fear of God were widely discussed in theology (e.g., Hänel, 1931; Hempel, 1926; van der Leeuw, 1933) and fundamentally questioned (Barth, 1957).

Though to this point there has been no clearly discernable discourse on ehrfurcht in psychology that goes beyond understanding ehrfurcht as equivalent to awe, ehrfurcht seems to play a role in current texts and spoken language. In addition to mentions of ehrfurcht in religious contexts (e.g., Greiner-Bär, 2022; Moltmann, 2017), ehrfurcht is often referred to in the context of nature. For example, German yachtsman Boris Herrmann reported experiencing ehrfurcht in the face of the power of nature and the associated challenges during his 2021 circumnavigation of the globe (Sportstudio, 2021). Similarly, professional diver Anna Pischyna said she experienced ehrfurcht during her first dive to a rediscovered wreck (Pischyna, 2025). Ehrfurcht is also mentioned in connection with mountains, as exemplified by alpinist Dani Arnold, who climbed the 4,478 meter Matterhorn (Lenz, 2015).

1.7 The Problem of Applying Awe$_{KH}$ Context-Independently

> "Re-Recordings" (Sauer, 2024, p. 54)

13 years after recording her first albums, Taylor Swift re-recorded them in order to regain the rights to her art. The songs were the same as on the first recordings, as was the order in which they appeared. What was audibly different, however, was that "the production [...] [sounded] richer and fuller, Taylor's voice firmer and clearer" (Sauer, 2024, p. 53; own translation). Swift had evolved over time, and you could hear it: the music from 2021 was significantly different from that from 2012.

In studies on awe around the globe, awe has mostly been examined with the conceptualization of awe$_{KH}$ as its theoretical base. In Taylor Swift's terms, researchers re-recorded data based on awe$_{KH}$—also with study participants from non-US-American

cultures. Oftentimes, researchers have used the study material from US-American studies without taking potential cultural differences into account (see Chapter 1.6.1).

Likely influenced by US-American culture, Keltner and Haidt suggested that the combination of vastness and need for accommodation would constitute awe (2003). However, it has been unclear whether people from another cultural context would also describe the combination of these two components of perception with the respective translation of the term "awe" or whether they would interpret these components of perception (i.e., vastness, need for accommodation) in a similar way as the authors of this conceptualization. It was also unclear in which settings of everyday life the interpretation of the conceptualization would play a role.

Furthermore, a large number of publications show a discrepancy between awe_{KH} as their theoretical foundation of awe and the way this concept was implemented in study designs: While awe_{KH} has mostly been used as the conceptual basis for the conducted research, it remained unclear whether study participants also interpreted awe in accordance with the conceptualization of awe_{KH}. As participants' subjective understandings of awe and its equivalents were mostly not assessed, it remains unclear what meaning participants attribute to awe. As a result, there is a potential gap between what researchers intend to investigate by awe_{KH} and what is actually investigated.

To investigate awe in a cultural context that is different from the US-American one, it is highly relevant to investigate the cross-cultural comparability of meanings of awe_{KH}. So far, only Nakayama and Uchida systematically investigated how comparable awe_{KH} is with the Japanese meaning of the Japanese translation of awe (Nakayama & Uchida, 2020). Based on the analysis of a comprehensive corpus of Japanese-language texts, the authors found only partial agreement with the conceptualization of awe_{KH}: there were indications of vastness, but it was difficult to find indications of need for

accommodation. The authors concluded that "using/translating labels by itself might risk the cross-cultural equivalence of the measure, because the meaning of the label words could vary easily across cultures/languages" (Nakayama & Uchida, 2020, p. 58).

Given the uncertainty of how culturally transferable awe_{KH} is, there is a need to investigate its meaning in a culture-sensitive way. Subsequently, it is possible to compare its culture-specific meaning in a given culture with the US-American one. Additionally, comparisons between the culture-specific meaning of awe_{KH} and the meaning of culture-specific equivalents of awe become possible.

1.8 The Present Dissertation

This dissertation contributes to a clearer conceptualization of awe in the research field, which is essential for sound theory building. Specifically, this dissertation contributes to the conceptualization of ehrfurcht (i.e., German translation of awe) in German context. The following research questions are addressed:

1. What is awe in psychological research?
2. Exploration of German ehrfurcht
    a. What is the current meaning of the term "ehrfurcht"?
    b. What characterizes the perception of ehrfurcht?
    c. What are the contexts in which ehrfurcht is perceived?
3. What is awe_{KH} in German context?
    a. Which German terms describe awe_{KH}?
    b. What characterizes the perception of awe_{KH} in German context?
    c. What are the contexts in which awe_{KH} is referred to?

In Chapter 2, I show that it is unclear what awe is and suggest methodological approaches that can overcome problems in the research field. Chapter 3 explores the characteristics of ehrfurcht in German context by focusing on the term, associated

perceptions and contexts. Moving on to Chapter 4, I explore awe_{KH} in German context by focusing on the term, associated perceptions and contexts. Additionally, I compare the meaning of awe_{KH} in German context with the characteristics of ehrfurcht as well as with the US-American meaning of awe_{KH}. Finally, in Chapter 5, I summarize the findings across the previous chapters, provide avenues for future research and discuss the implications of the findings.

2. What is Awe? On an Uncontested Definition, Conceptual Ambiguities, and Cultural Limitations

Katz, T. L. C., & Franz, D. J. (2025). What is awe? On an uncontested definition, conceptual ambiguities, and cultural limitations. *American Psychologist*. https://doi.org/10.1037/amp0001520

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What Is Awe? On an Uncontested Definition, Conceptual Ambiguities, and Cultural Limitations

Tini L. C. Katz[1] and David J. Franz[2]
[1] Environmental Psychology, University of Kaiserslautern-Landau
[2] Hamburg, Germany

In the last 20 years, there has been an enormous amount of research on awe and its associations with other phenomena. In this article, we draw on $N = 168$ publications to argue that it is very difficult to integrate this research into a coherent theory of awe because current awe research lacks a reasonably clear understanding of the phenomenon. In detail, we show that the majority of publications on awe are based on Keltner and Haidt's (2003) approach to awe without putting it to the test. Furthermore, we illustrate how researchers' heavy reliance on the term "awe" in evocation and assessment makes it oftentimes difficult to say what collected data represent. In addition, we identify inconsistencies between researchers' theoretical approach to awe and their empirical methods in some studies. Finally, we outline that there is only very little scientific knowledge about differences in awe across various languages, cultures, and time periods. Based on these claims, we draw conclusions for existing research on awe's associations with other phenomena and for debates about the classification of awe. As a final step, we propose various solutions to solve the problems we identified.

Public Significance Statement
The article points out numerous problems of current awe research that make it difficult to understand the phenomenon of awe. The article points out several consequences and strategies to solve these problems. The significance of the article is that it informs the general public about the problems of current awe research and how it can be improved.

Keywords: awe, conceptual problems, cross-cultural research, mixed methods

Supplemental materials: https://doi.org/10.1037/amp0001520.supp

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In the face of extraordinary experiences, such as observing a spectacular landscape, people often report experiencing awe. Since Keltner and Haidt's (2003) influential publication, psychologists have put much effort into investigating awe. To date, numerous positive associations have been reported between awe and other phenomena: increased well-being (Krause & Hayward, 2015; Liu et al., 2023), humility (Stellar et al., 2017) and connectedness with nature (Yang et al., 2018), strengthened perceptions of connectedness with other people (Seo et al., 2023; Shiota et al., 2007), less interest in money (L. Jiang et al., 2018), greater prosocial behavioral intentions (T. Jiang & Sedikides, 2022) and behavior (Piff et al., 2015), as well as greater pro-environmental behavioral intentions (Skurka et al., 2022; Zhao et al., 2018)

Harris Cooper served as action editor.
Tini L. C. Katz https://orcid.org/0000-0002-8760-1997
David J. Franz https://orcid.org/0000-0002-3639-2056

In the Supplemental Material, a comprehensive table can be found that depicts the coding of all 168 publications and the studies reported therein in detail. In addition, an Excel sheet can be found that contains all the relevant information on every publication, on which our coding is based. The authors have no conflicts of interest to disclose. The authors received no funding for this research. The authors thank their research assistants Charlotte Müller, Ellen Osmann, and Simon Männle for their exceptional work in organizing and formatting the data. In addition, the authors specially thank their research assistants Anna-Clara Kindler, Inna Kliachko, Alisa Scheuermann, and Olga Schick for their strong support in coding the publications. Moreover, the authors thank Gerhard Reese for reviewing an earlier draft of the article.

Tini L. C. Katz played a lead role in formal analysis, methodology, supervision, and visualization and an equal role in conceptualization, writing–original draft, and writing–review and editing. David J. Franz played an equal role in conceptualization, methodology, writing–original draft, and writing–review and editing.

Correspondence concerning this article should be addressed to Tini L. C. Katz, Environmental Psychology, University of Kaiserslautern-Landau, Fortstraße 7, 76829 Landau, Germany. Email: tini.katz@rptu.de



Tini L. C. Katz

and behavior (Ibanez et al., 2017; Yang et al., 2018)—just to name a few (for a current overview of awe research, see Monroy & Keltner, 2023).

In light of these results, it might seem that psychological research has established a reasonably precise understanding of awe. In this article, we argue that this is not the case. By reviewing $N = 168$ publications on awe (out of which $n = 125$ are empirical publications, comprising $k = 242$ studies), we contend that existing research on awe lacks a sufficiently clear conceptualization of the phenomenon. Although Keltner and Haidt's (2003) approach has served as the conceptual basis for many investigations of awe, it has barely been critically examined. Beyond that, "awe" is a highly ambiguous term that is sometimes used in a differing manner by researchers when they theorize about the phenomenon and when they are investigating it. Moreover, while current research heavily relies on the term "awe" in evoking and assessing the phenomenon, it is unclear how participants interpret the term in general and whether there is an equivalent phenomenon for participants with non-English-speaking backgrounds. Taken together, these problems of current awe research make it very difficult to develop a comprehensive theory of awe.

The article is structured as follows: First, we portray Keltner and Haidt's (2003) approach to awe and its adoption in psychological research. Then, we describe our way of reviewing and categorizing studies on awe. In the following sections, we outline in detail the problems that we identified: the lack of critical research on Keltner and Haidt's (2003) approach, various problems associated with the use of the term "awe" in evocation and assessment, and the linguistic, cultural, and timely limitations of awe research. Finally, we draw conclusions from existing awe research and propose solutions for the problems that we identified.

An Influential Account of Awe in Psychology

Keltner and Haidt (2003) suggested a conceptualization of awe (from here on: awe_{KH}) that essentially consists of two aspects: perceived *vastness* and need for accommodation (NFA). Perceived vastness is defined as the "sense that one is in the presence of something vast," which can be "anything that is experienced as being much larger than the self, or the self's ordinary level of experience or frame of reference" (Keltner & Haidt, 2003, p. 303). According to the authors, this perception can relate to physical size (e.g., seeing the Alps) or can be socially related (e.g., meeting a person of extraordinary authority). NFA indicates the "[adjustment of] mental structures that cannot assimilate a new experience" (Keltner & Haidt, 2003, p. 304). This NFA might arise, for instance, when seeing the Alps for the first time after having been exclusively in the lowlands before. Given this situation, the experiencing person is likely to feel blown away and to perceive the need to adjust their mental structures. In their publication, Keltner and Haidt (2003) put emphasis on their assumption that it is both vastness and NFA that form awe together: With only vastness being present but not NFA, the emotion would be deference, but not awe. With only NFA being present but not vastness, the emotion would be surprise, admiration, or elevation, but not awe.

Taking into account that awe can be experienced in different contexts, Keltner and Haidt (2003) defined five so-called flavors (p. 304) that influence the situation-specific quality of awe: threat, beauty, ability, virtue, and supernatural causality. For instance, if awe is flavored by "threat," Keltner and Haidt (2003) expected awe to go along with some degree of fear, whereas awe flavored by "beauty" is assumed to be associated with "aesthetic pleasure" (Keltner & Haidt, 2003, p. 304).

Besides Keltner and Haidt's (2003) valuable first step in research on awe, there have been other approaches to define awe in psychological research. Some of them called awe_{KH} into question. For instance, Konečni (2005) questioned awe_{KH} and conceptualized awe as a combination of fear and joy, which is experienced when the individual perceives existential safety. Halstead and Halstead (2004) defined awe as a combination of fear and wonder. Sundararajan (2002) questioned whether a "negative valence" (p. 178) is merely an optional aspect of awe, as Keltner and Haidt (2003) described it in association with the flavor "threat" or whether it is actually inherent to awe. Schneider (2017) proposed to differentiate between two possible forms of awe, that is, a shorter high-intensity form and a longer lasting form that motivates change in the individual. Similarly, Chirico et al. (2024) considered awe to be composed of multiple different facets. Both accounts allow multiple conceptions of awe to coexist (Chirico et al., 2024; Schneider, 2017). Aside from these critical remarks, no further debate on awe's definition emerged in the research field.

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David J. Franz

Analyzing Research on Awe

Given the fact that there has been very little debate about awe_{KH}, we wanted to know how influential this account actually is in awe research. Furthermore, we sought to assess how comparable approaches to awe by different researchers are. For this reason, we wanted to know how researchers define awe, how they evoke and assess it in empirical investigations, and whether they try to understand how there might be linguistic and cultural differences regarding awe. To provide answers to these questions, the first author and four assistants classified $N = 168$ relevant existing publications, out of which $n = 125$ reported empirical studies on awe ($k = 242$), along the following 10 categories.

In the category "Type of Definition," we examined which definition of awe the authors of a publication referred to. We coded this category on publication level (i.e., $N = 168$) because awe is usually defined once in a publication and the definition applies to all reported studies therein. This category consists of the following nonexclusive codes: $K + H$ = Keltner and Haidt (2003), *own* = individual definition formulated, *multi* = multiple definitions indicated, *no definition* = awe is not defined, *emp* = definition is empirically explored, *spirit* = definition is derived from spiritual context, and $B + F$ = Bonner and Friedman (2011). We assigned the codes $K + H$ or $B + F$ either if the authors of a proposed definition of awe were cited or if the publication matched the content of the given awe definition: In the case of $K + H$, this means that vastness and NFA were included in the definition of awe; in the case of $B + F$, it means that at least the most dominant themes, namely, profoundness (i.e., the experience is incisive), connectedness (i.e., perception of connectedness), and existential awareness (i.e., being aware of one's own existence), were included in the definition of awe. In the case of a secondary quote, we used the primary source for the coding (i.e., if authors solely referred to another source to define awe, we used this other source as basis for coding). We assigned the code *own* if neither $K + H$ nor $B + F$ matched but an individual definition was formulated. We coded *multi* if multiple definitions were elaborated on, *no definition* if awe was not defined in a publication, *emp* if the article's goal was to empirically explore awe's conceptualization and the definition did not match $K + H$ nor $B + F$, and spirit if awe's definition was solely derived from spiritual context.

The category "Vastness + NFA Assessed" specifies among all publications that define awe by awe_{KH} whether the combination of vastness and NFA is assessed. We coded this category and the category "Assessment Consistent with awe_{KH}" (see below) with reference to empirical publications only (i.e., $n = 125$) because only in empirical publications (e.g., as opposed to theoretical articles) awe is assessed in some way. This category consists of the following codes: *yes* = awe_{KH} is the chosen definition and the combination of vastness and NFA is assessed in at least one of the studies of the publication, *no* = awe_{KH} is the chosen definition and the combination of vastness and NFA is not assessed in any of the studies of the publication, *n/a* = either the publication is not empirical, or awe_{KH} is not the chosen definition or no information on items and/or definition is indicated.

In the category "Assessment Consistent with awe_{KH}," we examined whether publications defining awe by awe_{KH} deployed an assessment that is consistent with the chosen definition. An assessment is regarded as consistent with awe_{KH} if researchers refer to the term "awe" or to vastness combined with NFA in their method of assessment. An assessment is regarded as inconsistent with awe_{KH} if researchers assess awe by mentioning phenomena that are not included in awe_{KH}, such as wonder or amazement (e.g., Anderson et al., 2017). This category consists of the following codes: *yes* = the assessment is consistent with awe_{KH} in all studies of the publication, *no* = at least one of the studies presented in a publication revealed an inconsistency with awe_{KH}, *n/a* = the publication is not empirical, or the publication does not define awe by awe_{KH}, or either the definition or the assessment is not indicated in a publication.

The category "Term in Evocation" indicates whether the term "awe" was included in the wording of the instructions or material to evoke awe in a reported study. Similarly, the category "Term in Assessment" specifies whether the term "awe" was included in the wording of awe's assessment in a reported study. As the use of the term "awe" in research can differ between studies, we coded these variables at the study level (i.e., $k = 242$) to provide a greater level of detail. However, "Term in Evocation" only refers to $m = 205$ studies because applying this category makes only sense in regard to studies, in which awe was manipulated at all. Furthermore, in the category "Subjective Understanding," we assessed

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whether respondents were asked about their subjective understanding of awe in at least one study of the publication. This category refers to all $n = 125$ empirical publications. In all three categories, the codes are *yes*, *no*, or *does not apply* (*n/a*).

The categories "Linguistic Differences," "Cultural Differences," and "Temporal Changes" indicate whether linguistic, cultural, and temporal differences in the understanding of awe are discussed in a publication. Because these categories refer to the discussion within a publication, we have coded them at the publication level (i.e., $N = 168$). The codes were *yes* or *no*.

Finally, the category "Investigation of Associated Variables" specifies whether publications aim to investigate variables associated with awe. We looked for the publications' indicated aim in their title, abstract, and introduction and coded it accordingly at the publication level (i.e., $N = 168$). The codes of this category are *yes*, *no*, or *does not apply* (*n/a*).

Transparency and Openness

In the Supplemental Material, a comprehensive table can be found that depicts the coding of all 168 publications and the studies reported therein in detail. In addition, an Excel sheet can be found that contains all the relevant information on every publication, on which our coding is based.

Little Studied Definition of Awe

Keltner and Haidt (2003) suggested a description of awe that they explicitly classified as an approach: "We have developed this approach, with some trepidation, in the absence of empirical evidence" (p. 311). In spite of Keltner and Haidt's emphasis on the lack of empirical evidence for their approach, their work has been taken as a fixed definition of awe by the majority of studies in the research field. This is evident by the fact that 130 of all publications we analyzed (77%) were based on awe_{KH} (see Table 1). Most publications that cited Keltner and Haidt's article in the context of defining awe for their own investigation did not reflect on their choice of definition nor on Keltner and Haidt's intention to solely suggest an approach to awe. Researchers either elaborated on vastness and NFA and cited Keltner and Haidt's (2003) article or cited publications that they themselves build on awe_{KH}. For instance, Collado and Manrique (2020) indicated: "Keltner and Haidt (2003) define awe as a complex emotional response to perceptually vast stimuli that require mental accommodation" (p. 1107). Stegemoeller (2016) stated: "The research that has been conducted has boiled down the definition of awe into two main components: a perceived vastness and a need for accommodation" (p. 6) while citing Rudd et al. (2012) who themselves cited Keltner and Haidt (2003; see the Supplemental Material for further examples).

Table 1
Frequencies of Types of Awe Definitions

Code	*n*	%
K + H	130	77.4
Own	24	14.3
Multi	34	20.2
No definition	6	3.6
Emp	5	3.0
Spirit	2	1.2
B + F	1	0.6

Note. *K + H* = Definition in accordance with Keltner and Haidt (2003); own = individual definition formulated; multi = multiple definitions indicated; no definition = awe is not defined; Emp = definition is empirically explored; spirit = definition is derived from spiritual context; *B + F* = definition is in accordance with Bonner and Friedman (2011); data are based on the review and nonexclusive coding of $N = 168$ publications. Percentages refer to $N = 168$.

Beyond that, only very little empirical evidence exists to support Keltner and Haidt's approach. One study that has investigated awe based on awe_{KH} is Yaden et al.'s (2019) development of the Awe Experience Scale (AWE-S). The AWE-S is a quantitative psychological instrument that seeks to assess state awe. It has been developed by conducting exploratory and confirmatory factor analyses and has revealed vastness and NFA as distinct factors among others (i.e., time perception, self-diminishment, connectedness, and physical sensations). However, the items of the AWE-S were developed without the intent to investigate awe in all aspects that Keltner and Haidt (2003) had suggested (Yaden et al., 2019). For instance, Yaden et al. (2019) did not systematically investigate whether both NFA and vastness necessarily need to be present for participants to report awe. Hence, based on Yaden et al.'s (2019) analyses, we can only draw limited conclusions about awe_{KH}. Similarly, Cuzzolino (2021) found NFA and vastness in reports of awe, but their study does not allow for conclusions about whether the combination of NFA and vastness is necessary for participants to report awe. Other empirical investigations of awe did not base their works on awe_{KH} but approached awe based on explorative investigations (Agate, 2010; Bethelmy & Corraliza, 2019; Bonner & Friedman, 2011; Weger & Wagemann, 2021). None of these publications support awe_{KH}. At least, Bonner and Friedman (2011) considered their findings on the experiential dimensions of awe to complement the cognitive dimensions described by awe_{KH}.

Throughout the research field, only a few publications addressed the fact that awe_{KH} is a conceptualization that has hardly been empirically investigated (Shiota et al., 2007; Yaden et al., 2019). Nevertheless, Shiota et al. (2007) have based their empirical investigation on awe_{KH} without arguing why they decided in favor of this approach.

The strong impact of awe_{KH} on the research field is further evident in the fact that in 82 of the empirical publications (66%), scholars proceeded in their studies as if the term "awe" evokes exactly what Keltner and Haidt (2003) had expressed in awe_{KH} (see Table 2). That means that scholars defined awe by vastness combined with NFA, or awe_{KH},

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Table 2
Frequencies of Codes Across Categories

Coding at publication level (N = 168)														
	Vastness and NFA assessed[a]		Assessment consistent with awe_{KH}[a]		Subjective understanding[a]		Linguistic differences discussed		Cultural differences discussed		Temporal change discussed		Investigation of associated variable	
Code	*n*	%	*n*	%	*n*	%	*n*	%	*n*	%	*n*	%	*n*	%
yes	9	7.2	70	56.0	5	4.0	20	11.9	38	22.6	6	3.6	141	83.9
no	82	65.6	39	31.2	118	94.4	148	88.1	130	77.4	162	96.4	24	14.3
n/a	34	27.2	16	12.8	2	1.6							3	1.8

Coding at study level (k = 242)				
	Term in evocation[b]		Term in assessment	
Code	*n*	%	*n*	%
yes	59	28.8	193	79.8
no	82	40.0	30	12.4
n/a	64	31.2	19	7.9

Note. Data are based on the review of N = 168 publications that comprise k = 242 studies. Unless otherwise indicated, percentages refer to the respective coding level, N = 168, or k = 242. NFA = need for accommodation; Awe_{KH} = Keltner and Haidt's (2003) suggested conceptualization of awe; n/a = not available.
[a] Percentages refer to n = 125 empirical publications. [b] Percentages refer to m = 205 studies in which awe was manipulated by researchers.

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without putting this combination of vastness and NFA to the test. Consequently, it remains unknown whether confronting participants with the term "awe" evokes awe_{KH} (we elaborate more on the use of the term "awe" in the next section).

Finally, in a number of the empirical publications, we noticed that awe is assessed differently than it is being defined by awe_{KH} (39 of the empirical publications, 31%; see Table 2). For instance, participants were asked to rate the synonym cluster "awe (awe, amazed, wonder)" in one study (Anderson et al., 2018, p. 3). Here, no explanation has been given to participants about the researchers' understanding of the term "awe." Moreover, participants have been instructed that the term "awe" may be interpreted synonymously with the terms "wonder" and "amazement." However, in the theory section of their publication, the authors have defined awe following Keltner and Haidt (2003) as "an emotion elicited by vast stimuli that do not fit into existing mental schema" (Anderson et al., 2018, p. 1). The authors have not introduced wonder and amazement as definition or synonyms to awe. Moreover, the findings of Darbor et al. (2016) suggested a clear difference in the qualities of awe and wonder, which further complicates the synonymous use of the concepts. Similar to Anderson et al. (2018), Sturm et al. (2022) defined awe in accordance with awe_{KH} but treated participants' assessments on the items "awe," "amazement," and "wonder" as synonyms: They converted participants' indications on these three items to a mean score that they labeled "awe cluster" (Sturm et al., 2022, p. 4). Hence, it is unclear how the author's theoretical conceptualizations and their empirical assessments of awe correspond with each other. Such conceptual inconsistencies are problematic because they impede the development of coherent psychological theories (Machado et al., 2000).

The Term "Awe" in Evocation and Assessment

In 59 (29%) of studies in which awe was manipulated by researchers (i.e., 24% of all empirical studies), authors reported the use of the term "awe" to evoke awe. For instance, Piff et al. (2015) instructed their participants in the following manner (for more examples, see Supplemental Material):

> Please take a few minutes to think about a particular time, fairly recently, when you encountered a natural scene that caused you to feel awe. This might have been a sunset, a view from a high place, or any other time you were in a natural setting that you felt was beautiful. (p. 887)

Another example is:

> For the next eight weeks, we'll ask you to go on a walk once a week where you perhaps have an experience of awe. Awe often shifts your attention away from yourself and helps you to appreciate the wonders of the world around you. With the right outlook, awe can be found almost anywhere, but it is most likely to occur in places that involve two key features: physical vastness and novelty. These places could include natural settings, like a trail lined with tall trees, or urban settings, like a city street lined with skyscrapers (Sturm et al., 2022, Suppl. p. 1).

While such instructions provide at least some example situations or a part of an explanation of awe, they are primarily built around the term "awe" itself. Trying to evoke awe by instructing participants to recall their own experience of awe is, of course, a reasonable approach. However, this approach entails the difficulty that it remains an open question whether participants' understanding of the term

"awe" is in accordance with the understanding intended by researchers (see also Griskevicius et al., 2010).

The term "awe" also plays an important role in the assessment of awe in 193 (80%) of the reviewed empirical studies (see Table 2). A common method of assessment is to have participants rate the degree to which they perceived awe. For instance, Bai et al. (2017) asked participants to indicate:

> The extent to which they felt a series of emotions that day—awe, wonder, compassion, gratitude, love, pride, surprise, happiness, hope, amusement, joy, envy, shame, embarrassment, guilt, fear, anger, and sadness—on a 10-point Likert scale (1 = *not at all*, 10 = *extremely*). (p. 190)

In a similar vein, Joye and Bolderdijk (2015) asked "how 'awed,' 'fearful,' 'spiritual,' 'caring,' and 'connected to others' [participants] had felt while watching [a] slideshow" (p. 3) and to indicate that on a 7-point Likert scale ranging from 1 (*not at all*) to 7 (*very much*); for an overview of instructions in assessments, see Supplemental Material.

Here, the same difficulty arises again: Do participants interpret these assessment items in the way that is intended by researchers? Across the $n = 125$ publications reporting empirical studies, none of the quantitative studies asked participants about their subjective understanding of the term "awe." Only five qualitative studies aimed to explore participants' subjective understanding of awe (see Table 2). Consequently, all the reviewed quantitative studies cannot guarantee that there is a sufficient overlap between participants' and researchers' understanding of awe. Moreover, there are many reasons to be skeptical that participants and researchers actually share the same understanding of the term "awe." First of all, it is very likely that "awe" is an inherently vague concept—like most concepts in psychology are—with a variety of different nuances of meaning that can shift depending on social context and on societal developments (Hutmacher & Franz, 2024). Beyond that, it has been shown that participants perceive standardized items of widely used questionnaires (the Rosenberg Self-Esteem Scale, the Need for Cognition Scale, and the Short-Form Big Five Inventory) as not doing justice to the richness of their subjective experiences and their personal ways of expressing these experiences (Mason et al., 2023). Furthermore, a growing number of studies suggest that participants' subjective understanding of widely used Big Five questionnaire items differs dramatically from the interpretation of researchers (Arro, 2013; Diriwächter et al., 2005; Rosenbaum & Valsiner, 2011; Uher, 2018).

There is also direct evidence for considerable discrepancies between researchers' and participants' understanding of the term "awe." In five qualitative studies (4% of the reviewed empirical publications, see Table 2), participants' subjective understanding of awe was examined (Agate, 2010; Bonner & Friedman, 2011; Cuzzolino, 2021; Hicks & Stewart, 2020; White, 2017). These studies revealed a substantial variety of differing understandings of awe. For instance, in Hicks and Stewart's (2020) study, one participant described awe as "a total openness or awareness to the cosmos. … It was amazing, kind of horrifyingly amazing and real" (p. 49). Cuzzolino (2021) cited a participant who explained their understanding of awe yet different: "Making discoveries that no one has known about before. … To know that I know what's happening and I'm the only person that does" (p. 692). White (2017) discovered that some participants were even unsure about the meaning of awe as they "tried searching the dictionary and still could not understand what the word meant" (p. 88). Beyond that, awe even seems to be really burdensome in some cases because some people associate it with death anxiety (White, 2017, p.106). Taken together, these studies suggest that the term "awe" can evoke a huge variety of different interpretations in participants.

In summary, it is unlikely that using the term "awe" in evocation and assessment is sufficient for guaranteeing that participants interpret the material they are confronted with in the way that is intended by researchers. This is a pressing issue rather than a mere uncertainty regarding word use. Empirical studies suggest that semantic relationships can have a larger impact on participants' answers to questionnaire items than empirical relations (Arnulf et al., 2014; Semin & Krahé, 1988). The strong influence of semantic relationships on empirical research results has also been demonstrated argumentatively in different fields of psychology, such as social psychology (Wallach & Wallach, 2001), health psychology (G. Smedslund, 2008), and developmental psychology (J. Smedslund, 1994). Beyond that, both theoretical analyses and empirical evidence suggest that standard ways of validating questionnaire items, that is, by relying on reliability coefficients, factor analyses, and correlations, do not correct the semantic shortcomings of questionnaire items (Maraun, 1998; Maraun & Halpin, 2008; Maul, 2017).

Awe Across Languages, Cultures, and Time

There are important discrepancies in semantics of translations of the term "awe," for instance, awe's German translation *Ehrfurcht* is a composite word, consisting of *Ehre* (honor) and *Furcht* (anxiety). Hence, it expresses a "shyness, based on great deference" (Digitales Wörterbuch der deutschen Sprache, n.d., own translation). Beyond that, the term *Ehrfurcht* is rather infrequently used in German (Dudenredaktion, n.d.). In French, there does not even exist a special term to express the meaning of awe. Rather, the paraphrases *respect mêlé de crainte* (respect mingled with fear) or *respect mêlé d'amiration* (respect mingled with admiration) are used (Collins Dictionary, 2024).

Considering only the English term, the semantics have changed over time, too. While in the 12th century the term "awe" referred to dread and terror, its meaning was extended by reverence and veneration until the 1500

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(Merriam-Webster, n.d.-a). Nowadays, the term's meaning is described as "an emotion variously combining dread, veneration, and wonder that is inspired by authority or by the sacred or sublime" (Merriam-Webster, n.d.-a). However, lately, a purely positively connotated use of "awe" has emerged equating awe with "fascination," "amazement," or "wow effect" (Hinsch et al., 2020; Merriam-Webster, n.d.-b).

Only in 20 of all reviewed publications (12%), researchers discussed that the meaning of translations of the term "awe" varies between languages (see Table 2). Researchers have dealt differently with linguistic variation. For example, in his German publication, Possler (2021) had used the English term "awe" instead of the German translation *Ehrfurcht* to avoid language-specific associations with the German term. Lv et al. (2023) had excluded the item that contained the Chinese term for "awe" and had only employed the items of a scale that did not contain the term "awe." The authors expected the excluded item to not correspond to Chinese laypeople's possible expressions of awe as the Chinese term for awe "is a sacred and abstract word" (Possler, 2021, p. 4), which is rarely used. While it is important that these researchers tried to take semantic differences into account, their approaches do rather circumvent the problem than solve it. Avoiding the equivalent of the English term "awe" in a given language prevents researchers from understanding awe in different linguistic contexts. Thereby, it becomes unclear what exactly is being investigated in a non-English study.

Cultural differences in awe were only discussed in 38 of all reviewed publications (23%; see Table 2). However, most of these publications discussed the role of culture only in the context of their studies' limitations as their samples originated solely from a single culture. However, culture as a factor on its own was considered only in the designs of six quantitative studies (Bai et al., 2017; Cong et al., 2022; T. Jiang & Sedikides, 2022; Nakayama et al., 2020; Nakayama & Uchida, 2020; Razavi et al., 2016a). Nonetheless, these studies partially suffer from problems comparable to the ones we outlined above. For example, Razavi et al. (2016b) defined awe by awe_{KH} but rely on an item in assessing awe, among others, that does not reflect awe_{KH} ("I feel wonder almost every day"; Razavi et al., 2016b, p. 1). Other items used by the authors are constructed around the term "awe" itself without further investigation into participants' understanding of this term. If one takes into account that the semantic ambiguities associated with the term "awe," which are already present in one single culture, are likely to be even bigger across different cultures, it becomes unclear what data generated with these items actually represent. This problem also applies to the studies by Bai et al. (2017), Cong et al. (2022), and T. Jiang and Sedikides (2022). Only Nakayama et al. (2020) and Nakayama and Uchida (2020) addressed the understanding of awe in the target groups they examined. The authors based their research on the understanding of awe in the Japanese context by analyzing a vast text corpus. They found awe in their analysis to be characterized by "vastness in the context of transcendence (e.g., god) and social power (e.g., a powerful ruler)" (Nakayama & Uchida, 2020, p. 56). However, the authors did not find explicit evidence for NFA's relevance in the Japanese translation of awe. Hence, this finding underlines the necessity to systematically investigate awe's meaning across cultures. Beyond that, there is evidence from one qualitative study for cultural differences in awe (White, 2017). The author asked participants from Bulgaria, Turkey, Greece, and the United States the open question of what "awe is like" (White, 2017, p. 192) for them. Among Bulgarian, Turkish, and Greek, awe appeared to be rather infrequently used, and its meaning "mainly connected … with the religious experience" (White, 2017, p. 88). By contrast, in American English, awe seemed to be more commonly used in everyday language and connected to positively connotated things such as "the stars, finding their spouse, … something that leaves one speechless" (White, 2017, p. 88). Taken together, our analysis highlights a need to refine the sensibility for awe's cross-cultural variability in awe research.

Temporal changes in how people understand awe were merely discussed in six of all reviewed publications (4%; see Table 2). The authors of these publications acknowledged the idea that the understanding of the term "awe" is subject to change over time (Bonner & Friedman, 2011; Ejova et al., 2021; Gordon et al., 2017; Possler, 2021; Voski, 2020). However, none of these studies tried to investigate changes in people's understanding of awe over time empirically. In summary, it is reasonable to conclude that there is barely scientific knowledge on the differences in awe between languages, cultures, and time periods.

Implications for Psychological Research on Awe

In this article, we draw on $N = 168$ publications to show that despite an impressive amount of awe research, it is still unclear what awe is. Most publications (77%) cited Keltner and Haidt's (2003) article for defining awe (see Table 1). However, there are almost no studies providing direct empirical support for awe_{KH}. Moreover, in our sample of studies, 82 of the empirical publications (66%) that rely on awe_{KH} do not assess awe_{KH}'s components: vastness and NFA. Furthermore, in 39 of the empirical publications (31%) that are based on awe_{KH}, awe is assessed in a manner that deviates from awe_{KH}. These findings suggest that a great proportion of awe research is based on an untested conceptualization of the phenomenon, which makes it very difficult to develop a conceptually sound theory of awe.

In addition, it is difficult to integrate existing research into a comprehensive theory of awe for two reasons. First, in numerous studies, the term "awe" plays a central role in evocation (in 59 or 29% of the studies that manipulated awe) or assessment (in 193 or 80% of all studies). However, it is

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unknown how participants interpret this term because participants are not asked about their subjective understanding of the term "awe" in 118 of the empirical publications (94%). In addition, the little qualitative evidence currently available suggests considerable variation in participants' understanding of awe. Thus, it is difficult to say how comparable data from different studies are when their methodology is centered around the ambiguous term "awe." Second, the majority of the analyzed publications do not investigate possible variations in awe relating to differences in language (148 or 88% of all reviewed publications), culture (130 or 77% of all reviewed publications), or time (162 or 96% of all reviewed publications). This raises the question of how comparable studies on awe from different countries, cultures, and time points are.

To the best of our knowledge, there have been two systematic integrational works on awe published so far: In a review by Schaffer et al. (2024), the authors found that there is hardly any cross-cultural research on awe, which limited the conclusions they could draw on awe's cultural variation. Problems regarding the conceptual ambiguities of the term "awe" were not discussed by Schaffer et al. (2024). In the meta-analysis by Pérez et al. (2023), none of the problems we identified in our article were considered. Consequently, the cited review and meta-analysis do not report on the conceptual ambiguities across awe research that we outlined.

Our analysis of awe research adds to existing research on psychology's numerous conceptual problems (e.g., Tafreshi & Slaney, 2024). One branch of this research has focused on methodological aspects and identified conceptual problems, among others, in psychological approaches to hypothesis testing (G. Smedslund, 2008; J. Smedslund, 1994; Wallach & Wallach, 2001), in psychological approaches to measurement (Franz, 2022a; Maraun, 1998), in construct validation theory (Maraun, 1998; Maraun & Halpin, 2008), and in the portrayal of psychological and neuroscientific theories (Bennett & Hacker, 2003; Machado et al., 2000). Another branch has focused on psychological phenomena and identified conceptual problems, among others, in psychological conceptualizations of intentions (Machado & Silva, 2007), theory of mind (Hutto, 2009), concepts (Slaney & Racine, 2011), cognition (Susswein & Racine, 2009), and psychiatric diagnoses (Rosenman & Nasti, 2012). By identifying conceptual problems both in the evocation and assessment of awe and in scientists' use of the awe concept, our article extends both of these branches. In the remainder of this article, we outline implications and propose strategies for mitigating the problems we identified.

Awe and Its Relationships With Other Phenomena

In 141 of all the publications (84%, see Table 2) we analyzed, investigating relationships of awe with other phenomena was the primary research purpose. Scientific knowledge about awe's manifold relationships with other phenomena is vital for developing and testing comprehensive theories about awe (for an overview, see Schaffer et al., 2024). However, as long as it is unclear what awe is, it is very difficult to integrate research on awe's associations with other phenomena into a coherent and conceptually sound theory of awe. This can be illustrated by the positive correlations between awe and connectedness with nature (Yang et al., 2018) and perceptions of connectedness with other people (Seo et al., 2023; Shiota et al., 2007). Do these research results suggest that people perceive themselves as being more connected with nature and with other people the more they experience NFA and vastness—as suggested by awe$_{KH}$? Or do they suggest that people are more connected the more they experience profoundness, connectedness, and existential awareness—as suggested by Bonner and Friedman's (2011) most important aspects of awe? Or is connectedness correlated with an entirely different conceptualization of awe? Because our analysis has unraveled substantial unclarity in awe research, it is currently impossible to answer such questions, which impedes theorizing about awe. In addition, from the perspective of Bonner and Friedman's (2011) account of awe, reports of correlations between awe and connectedness with nature and people are at least partially tautological. Bonner and Friedman claimed that experiencing awe means, among others, experiencing connectedness. From this follows that the claim that people perceive themselves to be more connected with people and nature when they experience awe becomes a hypothesis that cannot be false—irrespective of the results of specific studies (cf. G. Smedslund, 2008; J. Smedslund, 1994; Wallach & Wallach, 2001). This further highlights the importance of conceptual clarification for awe research.

What Kind of Phenomenon Is Awe?

There is much discussion about the classification of awe. Scholars have tried to integrate awe into the major entities of psychology (e.g., personality traits, emotions, holistic experiences). Few examples of such classification attempts are Schneider's (2017, 2020) and Chirico and Gaggioli's (2018) arguments for the claim that awe is an experience rather than an emotional state (as it has been widely suggested). They based this claim on the observation that awe is a multifaceted phenomenon that goes beyond a mere emotion and that can sometimes even exist independently of its emotional and cognitive facets (Chirico & Gaggioli, 2018). We support researchers' efforts of understanding what kind of phenomenon awe is. However, we think that this debate can lead to an unnecessary restriction of researchers' understanding of awe.

Conceiving awe as a phenomenon that can be sorted into one—and only one—psychological category is in contrast with the complex and nuanced understanding of awe by laypersons. Participants associate a considerable variety of different meanings with awe, such as "I felt alive" (Agate, 2010, p. 86),

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or "(awe) means a total openness or awareness to the cosmos"; (Hicks & Stewart, 2020, p. 49), or "a real resonance orientation … it is really connected … with a kind of awe for the space I am in" (Deutscher Alpenverein, 2019, 48:02, own translation). This is also evident in the work of Smirnova (2021). Based on a lexical analysis of the term "awe," the author has revealed several categories of awe's meaning. One of which is the "vastness of [a] perceived stimulus" that can either be "mundane," which means that no "spiritual awakening" is implied, or "transcendental," which means the perception of an "unfathomable force" (Smirnova, 2021, p. 243). Hence, perceived vastness can refer to different qualities of perception depending on the context.

The question of whether awe is either an emotion or an experience debated by scientists falls short of this complexity of awe conceptions by laypeople. This is a serious limitation of awe research because scholars have shown that substantial differences regarding the understanding of key psychological terms can call into question widely accepted interpretations of psychological effects (Franz, 2023) or make replication attempts inconclusive (Hutmacher & Franz, 2024). Beyond that, both theoretical analyses and empirical evidence suggest that many psychologists have considerable problems identifying and fixing the conceptual shortcomings of their own research (e.g., Bennett & Hacker, 2003; Franz, 2022a, 2022b; Tafreshi & Slaney, 2024). Because our analysis outlined in this article has unraveled substantial conceptual unclarity in current awe research, we think that laypersons' rich and varying understanding of awe can be a helpful corrective to scientists' perspectives on awe. We want to emphasize that we do not claim that laypeople are simply right about awe and that scientists deviating from laypeople's conceptions of awe are wrong. Because people's self-disclosure can be highly fallible, laypersons' characterization of awe must be examined very critically. Nevertheless, the debate about awe being either an emotion or an experience does not take into account the fact that laypeople's understanding of awe is not restricted to a specific class of human experience. Thus, when considering that awe may be of a different nature under certain conditions and at different times, the quest for a clear classification becomes less important because awe can possibly be both emotion and experience. This perspective opens up the possibility for scientists to explore under which linguistic, cultural, and timely circumstances awe is better conceived as an emotion or as an experience or even as another phenomenon.

Fixing the Problems

The most important finding of our review is that a great proportion of awe research uncritically relies on Keltner and Haidt's (2003) approach. We do not want to claim that awe_{KH} is problematic in itself but rather that a sound evaluation of awe_{KH} is impossible due to the lack of empirical research on awe_{KH}. Therefore, research about the role of NFA and vastness in awe is needed to test awe_{KH}. However, while we are optimistic that further research can buttress awe_{KH} to some extent, we assume that awe_{KH} cannot specify awe to its full extent. Most psychological phenomena have a complex and shifting nature, which makes it impossible to define them once and for all (Hutmacher & Franz, 2024). For this reason, it is highly likely that awe_{KH} captures awe only partially (cf. Chirico et al., 2024; Schneider, 2017)—also when taking into account that Keltner and Haidt (2003) themselves emphasize the variability of awe. Consequently, research is needed that tries to specify under which circumstances awe_{KH} can express which aspects of awe. Additionally, more work on competing accounts of awe is needed that might challenge, improve, or complement awe_{KH}.

As a second point, it is highly important that awe researchers put more effort into the conceptual aspects of their research (cf. Tafreshi & Slaney, 2024). Inconsistencies in the meaning of the term "awe" between researchers' theorizing and their empirical investigations have to be avoided to facilitate sound theory building (cf. Machado et al., 2000). Therefore, scientists should make sure that their theoretical approach to awe and the stimulus material they use are in accordance with each other.

Third, more effort has to be put into understanding how participants interpret the term "awe" to guarantee that data generated by different studies are comparable. In other areas of psychology, there have been proposals to solve problems arising from interpretative uncertainties in quantitative studies by complementing them with qualitative approaches (Franz, 2023; Hutmacher & Franz, 2024; Mason et al., 2023). In line with these proposals, we suggest combining quantitative awe research with qualitative explorations of participants' understandings of awe, for example, by deploying a sequential exploration design (Fetters et al., 2013). Furthermore, existing approaches to investigate qualitatively how laypeople interpret questionnaire items (Mason et al., 2023) could be used to improve quantitative instruments, such as the AWE-S (Yaden et al., 2019).

Fourth and finally, more research that tries to explore awe and its equivalents across languages, cultures, and time periods is needed. It is crucial that such research endeavors put much scientific effort into investigating how the linguistic equivalents of the term "awe" are interpreted by people in different cultures and in different time periods to avoid running into the same problems again that we outlined in this article. There are already research approaches that can identify context-related meanings of awe and its intercultural equivalents, such as Smirnova's (2021) lexical analysis, and there are approaches that can help make comparisons of culturally specific understandings of awe, such as sequential explanation (Ivankova et al., 2006). These approaches should be extended, further improved, and complemented by large-scale longitudinal studies.

Conclusion

Psychological research lacks a clear conceptualization of awe. The shortcomings of awe research can be condensed into three major problems. First, the suggested definition of awe by Keltner and Haidt (2003) has a strong influence on existing research without being systematically tested. Second, while the term "awe" plays an important role in many investigations, it is unclear how participants understand this term, and researchers even use this term in an inconsistent manner in some publications. Third, there is hardly any scientific knowledge about differences in awe across languages, cultures, and time periods. Possible ways to overcome the current problems are to test awe_{KH}, to complement quantitative investigations with qualitative approaches, and to extend systematic cross-cultural research on awe.

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3. Surpassed by Nature: A Qualitative Exploration of Ehrfurcht (Awe) in German Context

Tini L.C. Katz[1*] and Jonathan R. Hicks[2]

[1]University of Kaiserslautern-Landau, Germany

[2]Minnesota State University, Mankato, USA

*corresponding author

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Abstract

To investigate awe in a culture-sensitive manner, we wanted to understand the nuances of its German translation, ehrfurcht. This study explores the current meaning, perception, and contexts of ehrfurcht in nature. We conducted $N = 21$ semi-structured interviews with 11 female and 10 male German-speaking participants, who had an affinity for nature. Qualitative content analysis revealed that ehrfurcht is a rarely used term that encompasses respectfully marveling at nature, being humble, and accepting one's smaller significance. Two types of the ehrfurcht perception emerged: Temporary (i.e., short-term) and Attitudinal (i.e., longer-lasting). Temporary Ehrfurcht involved the themes Extraordinary Qualities of Perception, Interacting With Nature as Counterpart, and Religiosity, Spirituality, and Mindfulness, and Accommodation of Outlook on Life. Attitudinal Ehrfurcht involved Companionship With Nature, Being Integrated Into Nature, Being Limited as Human Compared to Nature, and Acknowledging Nature's Transcendence. Contexts of Temporary Ehrfurcht were linked to Diverse Perceptions of Nature, Being Physically Surrounded by Nature, and Sufficient Attention for Nature. Contexts of Attitudinal Ehrfurcht were embedded in multiple areas of life, such as consumption, behavior towards other living beings or education. This study provides a foundation for further ehrfurcht research and cross-cultural comparisons.

Keywords: awe, ehrfurcht, cross-cultural research, conceptual problems

3.1 Introduction

People report awe when encountering a flock of swallows moving elegantly in the sky, or when watching a scenic sunrise above the sea. In psychological research, awe's conceptualizations are diverse but are mostly based on an English-language understanding of the term "awe". Much of the awe research to date is inspired by the English-language understanding of awe, too. However, it is mostly unclear how applicable the suggested conceptualizations of awe are in the context of a different language and/or culture. So far, there is little research on the linguistic and cultural comparability of awe with its respective translations. Hence, it is largely unclear whether findings on awe and its suggested associations with other phenomena also apply to a different linguistic and cultural context (Katz & Franz, 2025). In order to research awe in a German-speaking context, it was relevant to first understand what ehrfurcht, the German translation of awe (Collins Dictionary, n.d.), means. Building on this understanding of ehrfurcht, it will be possible to further develop a theory of ehrfurcht that allows for cultural and linguistic comparisons between awe and ehrfurcht. In the present study, we aim to explore ehrfurcht in German culture. Specifically, we seek to 1) better understand the current meaning of the term "ehrfurcht", 2) explore the perception of ehrfurcht, and 3) investigate the specific contexts in which people perceive ehrfurcht in nature.

3.2 Theory

Psychological research has investigated awe quite intensely in the past two decades and has suggested a number of theoretical approaches to the phenomenon (e.g., Bonner & Friedman, 2011; Halstead & Halstead, 2004; Keltner & Haidt, 2003; Konečni, 2005; Krenzer, 2018; Sundararajan, 2002). Of these, the proposed definition by Keltner and Haidt (2003) is used most frequently: almost 80% of psychological

publications refer to this approach to define awe (Katz & Franz, 2025). According to Keltner and Haidt's suggested definition, awe is characterized by the joint occurrence of two core characteristics: vastness and need for accommodation. In *perceived vastness*, a stimulus is interpreted as superior in terms of physical size, complexity, or in a social hierarchy. The *need for accommodation* describes the need to adapt one's ideas about the world in order to fathom an experience. This need "may or may not be satisfied" (Keltner & Haidt, 2003, p. 304). The authors referred to the Piagetian (1950) conceptualization of cognitive development, in which Piaget distinguished between *assimilation* and *accommodation*. While assimilation describes the process in which new perceptions are interpreted with the help of already existing ideas about the world, accommodation describes the process in which the existing ideas about the world cannot be applied to the new perceptions because they are too different. The individual therefore would adapt the existing ideas about the world in order to be able to categorize the new perceptions (i.e., accommodate), according to Piaget. Keltner and Haidt (2003) illustrated their suggested definition of awe at the examples of experiencing the view of great mountains or the expanse of the ocean.

Overall, there is little research on cultural differences of awe. Mostly, authors assessed the intensity or frequency with which "awe" or its respective translation was experienced (e.g., Bai et al., 2017; Cong et al., 2022; Jiang & Sedikides, 2022; Razavi et al., 2016), e.g., "participants reported the degree to which they felt 'awe' … on a 7-point scale from 1 (*not at all*) to 7 (*extremely*)" (Bai et al., 2017, p. 193). However, it remains an open question what participants, mostly lay people, understand by the term "awe" or its respective translations and how this understanding relates to the way researchers, being experts in the subject, understand the concept. It should be noted that Nakayama and Uchida (2020) do base their investigation of awe in Japanese

context on their previous qualitative study on Japanese translations of awe and how they correspond with English awe (Nakayama et al., 2020).

Since the term “awe” does not exist in German language, we could not rely on it for our research. Hence, we decided to base our research on the direct linguistic translation of awe into German, i.e., “ehrfurcht” (Collins Dictionary, n.d.). This would allow laypeople to relate to their personal understanding of the term and experience. Since the perception of psychological phenomena is mainly expressed through language, it seemed reasonable to use the linguistic approach to the phenomenon as a common ground for cultural and linguistic investigation (see also e.g., Brailovskaia et al., 2022; Nakayama & Uchida, 2020).

The meanings of terms and phenomena are likely to differ based on language, culture and time (Wierzbicka, 2004, 2010). First, the meanings of translations of “awe” may differ between languages. For instance, for the Japanese linguistic and cultural context, it is known that the Japanese translation of the term “awe” is mainly associated with the perception of superior greatness in a spiritual or religious context, as well as with the perception of social power, such as awe towards a leader (Nakayama & Uchida, 2020). However, the English term “awe” is associated with e.g., perceptions of superior greatness in nature (Hicks & Stewart, 2020), discovering scientific knowledge (Cuzzolino, 2021), or the perception that one's own achievements are appreciated by others (Hu & Meng, 2022). Second, cultural differences may influence the understanding of translations of awe, too. Evidence from a study with a Chinese sample suggests that the Chinese translation of awe is associated with something sacred, for example, so that the term is not used in Chinese spoken language (Lv et al., 2021). White (2017) also suggested that culture may have a powerful impact on understandings of awe’s translations. Study participants from Turkey, Greece, and Bulgaria expressed some confusion about the meaning of the respective translations of awe,

however, study participants from the United States “had an easier time finding descriptions for awe” (p. 88). So far, no such information on the understanding of ehrfurcht is available for the German cultural cluster. Third, given the continuous development of concepts over time (Penrod & Hupcey, 2005), it is unclear how laypeople currently relate to ehrfurcht. The frequency with which the term is used may serve as a guide for how familiar people may be with the term. The temporal development of how often “ehrfurcht” is used suggests that the term is used less than half as often in 2025 as it was 40 years ago (Digitales Wörterbuch der deutschen Sprache, n.d.-b). Furthermore, “ehrfurcht” seems to play a much smaller role in German than “awe” does in English: “ehrfurcht” was used eight times in German books from 2021 (Google, n.d.-b), whereas “awe” was used 6,983 times in American English books from the same year (Google, n.d.-a). Moreover, there is no empirical evidence about which other words replace the word “awe” in contemporary German or what role the phenomenon plays.

Linguistically, “ehrfurcht” is the composite of “ehre” (“honor”) and “furcht” (“fear”) and is defined as “shyness, based on great deference” (Digitales Wörterbuch der deutschen Sprache, n.d.-a, own translation). The terms “achtung” (“deference”) and “respekt”(“respect”) are suggested as synonyms for “ehrfurcht” in contemporary German (Open Thesaurus, n.d.). The term is indicated to be linked to creation and religion in general (Digitales Wörterbuch der deutschen Sprache, n.d.-a).

So far, researchers have not explored the contexts in which ehrfurcht is experienced. Nature seems to be an important context as ehrfurcht is repeatedly reported linked to nature in fiction and storytelling (e.g., Deutscher Alpenverein, 2019; Hirschhausen, 2024; Löhr, 2023). For instance, the German Alpinist Hubert Schmidbauer suggested: „ For me, climbing up the mountains has always been something venerable and sublime and has also been associated with great ehrfurcht for

nature" (Radehose, 2017) and professional yachtsman Boris Herrmann stated about sailing around the world: "Out here, many things are different. Out here, there is a great ehrfurcht for the ocean and a great ehrfurcht for the challenge itself" (Sportstudio, 2021). Given the link of ehrfurcht to nature and our interest in the human-nature relationship, we have limited our research to the context of nature for the purposes of this first approach to ehrfurcht. It should allow for a very detailed examination of the facets of ehrfurcht within the context of nature.

3.3 Methods

We conducted semi-structured interviews in a German-speaking sample in order to explore the understanding of the term "ehrfurcht", the perception of ehrfurcht and the contexts in which ehrfurcht is reported. With this method, we intended to actively involve individuals' subjective understandings of ehrfurcht. This would allow us to bring the understandings of laypeople and researchers closer together, which we expected to strengthen the informative value of findings. The sampling was guided by three theoretical considerations. First, we only included members of nature protection organizations in Germany. Since we chose nature as context to investigate ehrfurcht in, we reasoned that people with an affinity to nature were likely to have an easy access to ehrfurcht in nature. Second, we limited the sample to participants with German as their first language. In this way, we aimed to minimize the influence of participants' other languages on their understanding of ehrfurcht. Third, we aimed to achieve diversity in age and gender. Both are relevant factors for many psychological phenomena (Baltes, 1987; Hyde, 2005). In total, we contacted 22 nature protection organizations all across Germany via mail. Those interested were given the opportunity to provide their email address via an online form (Leiner, 2024) so that

they could be contacted to arrange an appointment. The interviews took place between April and June 2024.

The sample size was guided by the principle of *theoretical saturation*, i.e., as soon as further interviews did no longer reveal new information on the research subject, we stopped sampling (Glaser & Strauss, 1967). This preregistered study (see preregistration) was approved by the local institutional review board considering the ethics guidelines by the German Society for Psychology. All interviews were conducted online via the software Zoom (Zoom Video Communications, Inc., 2024). Participants were offered 15 Euros for compensation. All participants were given the opportunity to re-read their own transcripts and to make any necessary adjustments if the transcripts did not accurately reflect their intended statements.

The final sample consisted of N = 21 participants who were members of nature protection organizations from Germany and who had German as their first language. Participants were on average 46.4 years old (SD = 14.4, range = 49). Eleven participants identified as female, ten identified as male, none did not identify with any sexual identity. See Table 1 for an overview of the sample's demographics.

The semi-structured interviews lasted 27 – 89 minutes (M = 59.4 minutes). The interviews were conducted as part of a larger research project. The following interview questions aimed to explore the subjective understanding of ehrfurcht (for the interview guide and codebook, see OSF-Project):

1. What does the term "ehrfurcht" mean to you in the context of nature?
2. When you think of ehrfurcht in the context of nature, what comes to your mind?

All interviews were conducted and recorded by the first author. The transcription was supported by the transcription software noScribe (Dröge, 2023) and follows the recommendations of Dresing and Pehl (2018).

Table 1

Sociodemographic data of interview participants

Sociodemographic Categories	***n***	**%**
Age		
19-28	4	19.0
29-38	2	9.5
39-48	4	19.0
49-58	6	28.6
59-68	5	23.8
Gender		
female	11	52.4
male	10	47.6
diverse	-	-
Nature-Related Occupation		
Biologist	1	4.8
Ecology Researcher	2	9.5
Employee Nature Protection	7	33.3
Nature Educator	4	19.0
Nature Guide	5	23.8
Nature Photographer	1	4.8
Student Environmental Studies	1	4.8

Note. Nature-related occupation = Voluntary or paid work that is linked to nature protection; Employee Nature Protection = Employee in the field of nature protection. $N = 21$.

We analyzed all transcripts by qualitative content analysis inspired by Kuckartz and Rädiker (2022). The process of analysis was structured as follows: As a first step, we got familiar with all transcripts and made notes on striking passages and ideas. Second, we created major codes guided by our research questions and complemented them by further major codes that evolved in the course of working with the transcripts. We checked these codes for applicability on the transcripts and made sure that they were sufficiently distinct. Third, we applied the major codes to the relevant segments across all transcripts. Fourth, we split the major codes up into several subcodes and defined them. This step also included the consensual coding of 10% of the transcripts (i.e., two transcripts) of the first author and an independent assistant. After discussing

deviations and refining the code descriptions accordingly, we achieved a consensus of 97%. Fifth, we applied the whole set of codes to the transcripts, and in an intermediate step, extracted the themes from the individual codes in summaries. Lastly, we brought these themes together in a content-driven way, thus, creating overarching themes.

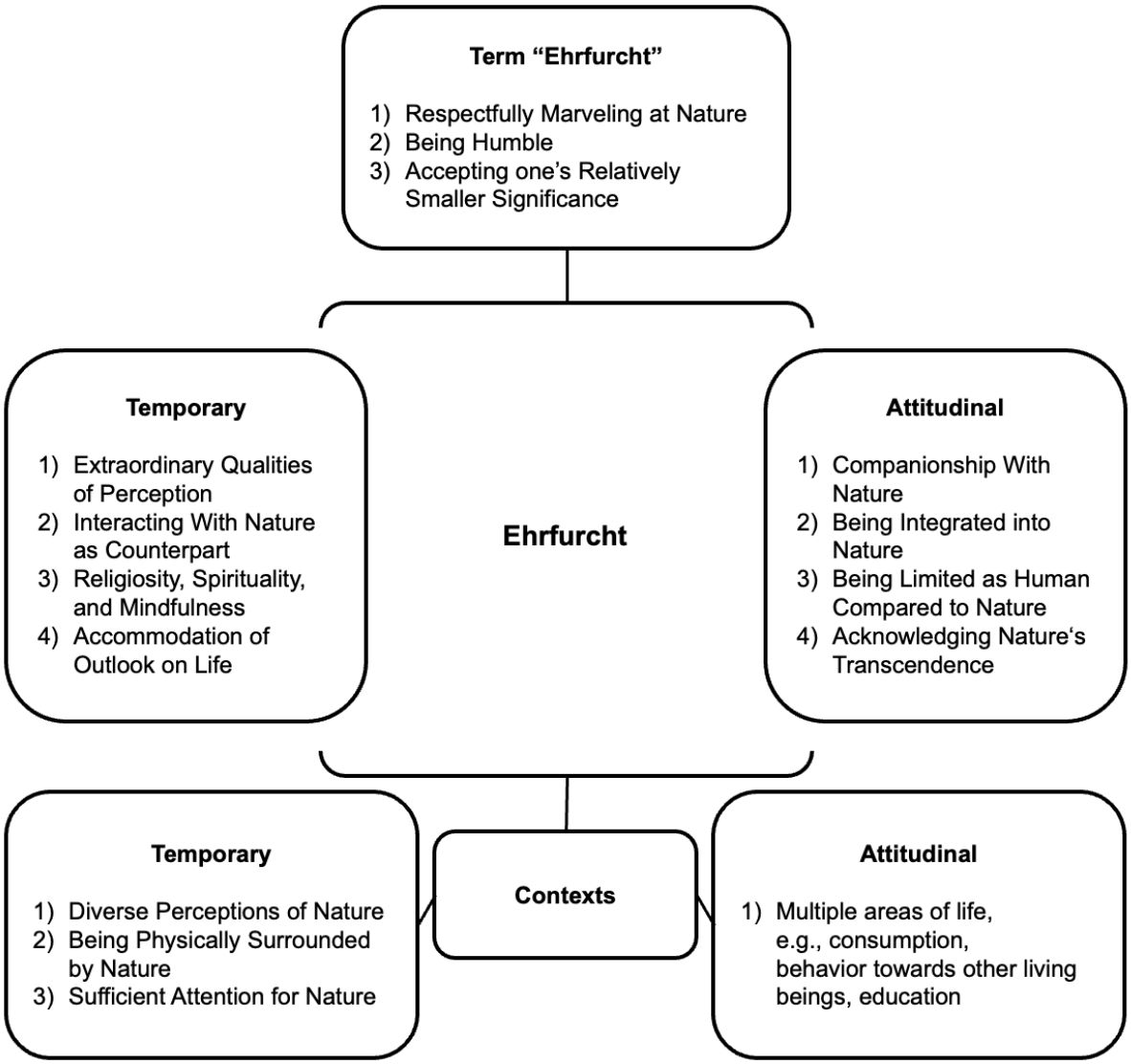
Since we work with epistemologically complex issues, a note to our positionality seems elementary to us. The supervisor of this project (J. R. H.) is a tenured full professor of cultural and natural resource management who has explored the awe experience in natural settings. The leading researcher (T. L. C. K.) is an early-career researcher, lecturer in psychology and environmental psychologist who has previously questioned the clarity of the concept of awe in psychological research (Katz & Franz, 2025).

3.4 Results

In the present study, we explored German ehrfurcht in qualitative interviews with German-speaking laypeople who had an affinity for nature. Qualitative content analysis was guided by the following research questions: 1) What is the current meaning of the term “ehrfurcht”? 2) What characterizes the perception of ehrfurcht? and 3) What are the contexts in which ehrfurcht is perceived? An overview of themes and subthemes is provided in Figure 3. The results-section is organized at the highest level according to the research questions; at the level below (i.e., within the results for each research question), the structure is given by the themes that have emerged for each research question.

Figure 3

Overview of themes and subthemes of ehrfurcht



Note. Boxes on the same horizontal level refer to the same research question. Boxes on the same vertical level refer to the same type of ehrfurcht.

3.4.1 Current Meaning of the Term "Ehrfurcht"

Referring to the first research question, we found that the meaning of the term "ehrfurcht" may refer to temporary experiences, basic attitudes and behaviors. In the sense of a temporary experience, the meaning of the term "ehrfurcht" was characterized by three main themes: 1) Respectfully Marveling at Nature in terms of its unexpected power and complexity. 2) Being Humble when realizing that nature

goes beyond one's limits of thought and control, and 3) Accepting one's Relatively Smaller Significance while feeling accepted in nature. However, not all participants shared this view: One participant linked "ehrfurcht" rather to the idea of being equally significant as other components of nature and someone else even associated "ehrfurcht" with being at the mercy of nature. In the sense of a basic attitude, the term "ehrfurcht" meant a respectful appreciation of nature in general. Lioba illustrated it like this: "Recognizing that I am a very small part of a very big whole. And that I'm not the center of attention, that I'm really just a part of it and that all the other parts are equally important." (pos. 13). In the sense of behavior, "ehrfurcht" meant treating nature with respect in terms of leaving no trace in nature and not changing its state.

Overall, most participants were unsure about the proper meaning of the term "ehrfurcht" in the first place as they considered it to be outdated. Reflections on the term revealed a robust association with religion and spirituality, though most participants did not consider themselves being religious or spiritual. Moreover, the term was assumed to be linked to fear, however, participants agreed that fear was not part of their personal understanding of the term "ehrfurcht". Rather, they attributed "fear" to realizing one's reduced significance in ehrfurcht. In view of the difficult accessibility of the term, participants mostly made it their own with the help of synonyms such as "dankbarkeit" ("thankfulness"), "bewunderung" ("admiration"), "demut" ("humility"), "magisch" ("magic"), or "respekt" ("respect").

Against the background of the outlined facets of the meaning of the term "ehrfurcht", we now want to fan out the perceptual qualities of the phenomenon (Research Question 2). Since our results suggested the distinction between a short-term type of ehrfurcht and a type that persists over time resembling an attitude, we will consider those two aspects separately.

3.4.2 The Perception of Ehrfurcht

Guided by our second research question, we explored the character of the perception of ehrfurcht. Since we found that ehrfurcht can be perceived in terms of a temporary experience as well as a basic attitude which both may be expressed in body movement and individual actions, we structured the results as follows. First, we will elaborate on the perception of Temporary Ehrfurcht in which the following themes are central: Extraordinary Qualities of Perception, Interacting With Nature as Counterpart, Religiosity, Spirituality, and Mindfulness, and Accommodation of Outlook on Life. Then, we will address the perception of Attitudinal Ehrfurcht with the following central themes: Companionship With Nature, Being Integrated Into Nature, Being Limited as Human Compared to Nature, and Acknowledging Nature's Transcendence.

Temporary Ehrfurcht. The short-term type of ehrfurcht (from here: *Temporary Ehrfurcht*) is defined to be short-lived. Based on participants' reports, the duration may range between a couple of seconds and a few hours. Additionally, Temporary Ehrfurcht is typically shaped by an affective component (e.g., fear or gratitude), a cognitive component (e.g., realizing to be powerless in a thunderstorm), and a behavioral component (e.g., stop walking). Temporary Ehrfurcht is manifested by the following main themes:1) Extraordinary Qualities of Perception, 2) Interacting With Nature as (Human-Like) Counterpart, 3) Religiosity, Spirituality, and Mindfulness, and 4) Accommodation of Outlook on Life.

Extraordinary Qualities of Perception. First of all, Temporary Ehrfurcht is a unique kind of perception compared to perceptions of everyday life. May this be in terms of perceiving a "magic" situation that allows things to happen that people would usually term "strange" but in this situation are not experienced as strange, or a situation that individuals have never experienced before in this way. Furthermore, it

appears that the intensity of experience goes beyond individuals' known frame of reference. Participants described nature in Temporary Ehrfurcht to go beyond their expectations, power, and control. In line with this, participants found it impossible to seize by which means elements of nature develop or how their character is shaped. Furthermore, individuals reported an extraordinary beauty in nature. Specifically, this beauty could not only be perceived visually, but also seemed to be experienced through other senses (e.g., "I sense beauty", Marianne, pos. 21).

Moreover, sound-imitating words reflected that participants' frame of reference was transcended. Depending on the context, this could either be in terms of being overwhelmed or surprised ["boah" ("whoa"), "wow" ("wow")], or being overstrained by nature's developments in climate change ["puh" ("phew")]. Expressions of transcended frames of reference were also found in incomplete sentences or individuals struggling for words. In a similar vein, the transgressed limits of individuals' verbal repertoire were reflected in participants being hesitant to express their perception in thoughts or verbally as they could possibly not do justice to the perceptions' character.

A range of emotions were reported in the course of the Extraordinary Qualities of Perception in Temporary Ehrfurcht that varied intra- and inter-individually. We found surprise to likely play a major role in perceptions of Temporary Ehrfurcht. This was either linked to unexpectedly discovering something in nature or to sudden changes in the situation. Moreover, fear was either associated with perceiving a threat to one's integrity or at least to perceive insecurity because one cannot fully assess the situation. Likewise, joy may have taken part in a way of marveling at the beauty, the capacities and the special of nature. In addition, interest was likely to arise, expressing a strong desire to learn more about nature. Gratitude expressed the appreciation of having special experiences in nature. However, gratitude may have also described the

appreciation of other living beings or of nature in general, which provide life. Furthermore, humility could have played a role in different senses. Either in the sense of recognizing that the competences of nature exceeded one's own competences or in the sense of having been willing to be on an equal footing with other living beings or to serve them. Finally, being moved may have expressed a resonance with nature's unexpected capacities or with nature's extraordinary beauty.

Interacting With Nature as a Counterpart. The perception of Temporary Ehrfurcht is characterized by Interacting With Nature as an almost human-like Counterpart. This included two facets: perceived connectedness and a sense of smallness. Participants described nature to resonate with them in such a way that they felt personally addressed and that they responded to their perception by opening up to it. One participant put it like this: "Nature speaks to you [...] it speaks through its existence, through its change" (Hannah, pos. 15). Another participant stated: "That you open up, that you dissolve in such moments" (Marianne, pos. 23).

These interactions with nature in Temporary Ehrfurcht were characterized by a perceived connectedness with elements of nature or nature in general. The extent of connectedness varied from a sense of belonging, to being embedded, to the perception of being a unique part of nature. A special case might be the perception of connectedness with other people that individuals shared moments of Temporary Ehrfurcht with. The connectedness in Temporary Ehrfurcht is also evident in perceptions of the boundaries and transitions between individuals and nature. For example, at the thought that elements of nature and the own body are made of the same material and that this material passes into a new living being after death, or when visually witnessing the cycle of creation and decay of natural elements:

> To see how trees have fallen down after a storm. That there is also destruction caused by storms and the weather. And that nature compensates for this, if it's not

really bad, with clearings. And then suddenly the foxgloves appear because it is now lighter. Young trees have a chance. (Hannah, pos. 41)

Moreover, ehrfurcht worked as a bridge in the inner conflict between the desire to ensure one's own survival and the wish not to kill: Honoring the life of other living beings in ehrfurcht allowed to seeing them as a necessary source to secure one's life.

Additionally, the realization of being limited characterized the interactions with nature as counterpart in Temporary Ehrfurcht: participants realized that nature's developments were beyond humans' control [e.g., witnessing special moments in nature is unavailable "You cannot evoke it" (Greta, pos. 37)], their skills (e.g., forests grow back after being highly impacted by a parasite), and their understanding (e.g., realizing how little one understands and knows of nature). Being limited also incorporated the realization that nature existed and developed independently from human beings: nature would provide for humans' needs (e.g., the need for beauty in a certain combination of colors of a sunrise) and it would threaten humans' integrity (e.g., heavy rain that destructs houses and cities). However, participants indicated that moments of ehrfurcht have strengthened their interest in discovering more of nature. It should be noted that few participants did not experience a lack of control.

Furthermore, participants' interactions with nature as a counterpart were characterized by smallness. On the one hand, smallness was manifested as a metaphorical gesture of respect or, on the other hand, as the visual and metaphorical perception of individuals' bodily smallness or little significance as a human. First, smallness as a metaphorical gesture mirrors the image of decreasing one's body size as expression of respect for nature: "You feel ehrfurcht and respect at the same time. First of all, you just bow down. You would make yourself small" (Anthon, pos. 21). The metaphor of bowing down was a common expression of one's position towards nature in Temporary Ehrfurcht. However, one participant explicitly stated that they did not

make themselves small in Temporary Ehrfurcht. Second, smallness played a role in the visual and metaphorical perception of being small or one's little significance as a human. Visually, individuals perceived their bodies to be smaller compared to the large size of elements of nature, e.g., when standing in front of a tall tree. Metaphorically, this realization was adopted as a metaphor to describe that one's significance for nature would have been small or even irrelevant. For instance, standing in the face of the great expanse of a mountain, participants realized how small their significance was compared to the towering mass of mountains. This realization also allowed for a new perspective in which challenges in individuals' lives appeared less severe than they seemed in the little picture of everyday life and sometimes even allowed individuals to find solutions to life's challenges. It is important to note that the perception of one's comparatively low significance is not to be confused with the perception of being of lower value than other elements of nature. Furthermore, few participants did not experience themselves as small.

Religiosity, Spirituality, and Mindfulness. Furthermore, Temporary Ehrfurcht was linked with religious or spiritual experience. Participants who had an affinity to religion or spirituality interpreted interactions with nature in Temporary Ehrfurcht as indications of a religious or spiritual entity. For instance, experiences of Temporary Ehrfurcht in nature were seen as hints to God or actions of a higher entity. Several participants reported experiencing forms of devotion in Temporary Ehrfurcht, which was also expressed in the repeatedly named metaphor of places in nature being like churches. Interestingly, devotion was named regardless of whether participants generally found value in religion or spirituality or not. Moreover, participants reported having discovered themselves and having found acceptance for themselves in experiences of ehrfurcht in nature. It appeared that realizing nature's order provided meaning for participants' own lives in a way that they felt safe and embedded in the

world. In a similar way, experiences of Temporary Ehrfurcht allowed to discover general principles of life:

> Everything grows on everything else. Dead wood and then something new grows on top of it. And it's so alive. And such small structures. [...] Then I can recognize myself in this forest. Or this realization: Yes, somehow that's how life actually is. Everything somehow grows on something else and then it dies and then it grows again. And it feels so good to see that. (Ivy, pos. 14)

Participants' behavior and bodily perceptions mirrored the religious, spiritual, or mindful experience in Temporary Ehrfurcht. Participants reported to walk slower or even to stop walking when being in Temporary Ehrfurcht as this would allow them to really notice all details e.g., in terms of shapes or colors. Accordingly, the interaction between individuals and nature was described as "gentle" and "mindful" (Daniel, pos. 13), with participants indicating that they surrendered their minds and bodies to nature: "When [...] I'm completely in ehrfurcht, there's this feeling that floods you, it comes from your little toe and goes right up to the very last root of your hair" (Petra, pos. 109).

Accommodation of Outlook on Life. Experiences of Temporary Ehrfurcht were also associated with the perceived accommodation of a new perspective on one's position in the Earth's ecosystem on the long run. For instance, participants described a shift in their own relevance for the Earth's ecosystem that sometimes would develop gradually with more experiences of ehrfurcht and sometimes developed rather quickly after a single experience of ehrfurcht. Additionally, Temporary Ehrfurcht was perceived to initiate processes of reflection about one's own behavior. On a behavioral dimension, participants reported having a changed effect on others, including nature, e.g., they described to be more mindful of processes in nature and how to react to them. Generally, participants described a strengthened motivation to preserve nature as a

consequence of Temporary Ehrfurcht, the wish to motivate others to do so, too and to change the world in general to the better.

Attitudinal Ehrfurcht. In addition to Temporary Ehrfurcht, we found a type of ehrfurcht that persisted over time, that was present across many areas of life and that resembled an attitude (from here on: Attitudinal Ehrfurcht). We propose Attitudinal Ehrfurcht to refer to the way individuals look at the world or nature and how they interact with it. This means, for instance, to figure out one's position in nature and to carefully find out how much one may consume without harming others. Attitudinal Ehrfurcht was manifested by 1) Companionship With Nature, 2) Being Integrated Into Nature, 3) Limited as a Human Compared to Nature, 4) Acknowledging Nature's Transcendence.

Companionship With Nature. The perception of Attitudinal Ehrfurcht is characterized by appreciation and respect for nature. Individuals highly valued other elements of nature and strived to have as little negative impact on nature as possible or to facilitate nature's developments. Being a guest in nature was a common metaphor to illustrate the relation with nature in Attitudinal Ehrfurcht. Generally, interacting with nature went hand in hand with approaching it considerately and respectfully. Participants expressed this by taking a step back and by moving thoroughly and slowly when being in nature, as well as by being incapable of harming living beings. Participants experienced that Attitudinal Ehrfurcht played a greater role in their behavior as they got older. Additionally, appreciation and respect for nature were reflected in the way individuals made consumption choices.

Being Integrated Into Nature. Attitudinal Ehrfurcht was further characterized by considering oneself to Being Integrated Into Nature. This theme was manifested by the idea of being one piece of the whole ecosystem Earth which participants in turn experienced as continuously more consolidated by single perceptions of

being connected in Temporary Ehrfurcht. Lioba expressed this view of being integrated like this:

> Acknowledging that I am a very small piece of a very big whole. And that I am not at the center of it but simply one piece and that every piece has equal value: May it be a forest or a tree, a salad, an ant, a dolphin, or whatever else. (Lioba, pos. 13)

Individuals' actions reflected the idea of Being Integrated Into Nature in Attitudinal Ehrfurcht. For example, choosing regional and organic products over non-regional and non-organic products, or showing one's gratitude for nature's care by giving back something, or by generally sharing one's excitement about nature with others.

Being Limited as Human Compared to Nature. Perceiving Attitudinal Ehrfurcht was characterized by acknowledging to be limited as human compared to nature. Participants acknowledged their limits in terms of their temporary existence on earth, their narrow knowledge in view of the complex interrelations of nature, their limited power over nature, and in terms of generally being aware of their limited relevance as an individual compared to the greatness of nature.

Acknowledging Nature's Transcendence. This theme describes accepting that nature exceeds one's single existence and perceiving a sense of belonging to this greater entity. Specifically, participants indicated to acknowledge nature's transcendence in Attitudinal Ehrfurcht by realizing to be bound to this superior system of nature that would exceed themselves in terms of time. Even if their own lives were to end, nature would continue to exist. It seemed that the thought of being part of a greater system that would last longer than one's life gave comfort to participants. Moreover, Acknowledging Nature's Transcendence was manifested by participants' idea that they would belong to the greater system of nature just as belonging to any other greater entity, such as gods in spirituality. Participants perceived to belong to

the greater system of nature in a way that provided identity to them and the sense of being relevant for this system. The transcendental character in perceptions of Attitudinal Ehrfurcht was reflected in reports of generally being devout when being in nature.

We found Attitudinal Ehrfurcht to be associated with a number of affective states that varied primarily between individuals rather than within individuals. First of all, gratitude expressed the appreciation of being allowed in nature, and of nature providing for one's own basic needs. Attitudinal Ehrfurcht was also accompanied by humility in that individuals acknowledged to be of the same value as other elements of nature. Though fear played a role in that it expressed being insecure due to being incapable to fully assess a nature phenomenon, interest referred to the wish of exploring nature. Finally, joy arose in marveling at the development of life, e.g., "I still find it impressive and also unbelievable how something like this can come about by sheer coincidence … [and that] also awakens a childlike joy" (Daniel, pos. 7).

3.4.3 Contexts of Ehrfurcht

In addition to the facets of ehrfurcht, we were also interested in exploring the contexts under which the perceptions took place (Research Question 3). As we defined Attitudinal Ehrfurcht to be cross-situational, resembling an attitude, its contexts were spread across many areas of life. Examples included consumption, behavior towards other living beings and nature, and education.

However, in Temporary Ehrfurcht, we found that the character of the contexts was diverse. The way nature was perceived in Temporary Ehrfurcht ranged from perceptions of nature's beauty to nature's power to impaired nature.

Generally, we found that Being Physically Surrounded by Nature – as opposed to other representations of nature – was an essential factor in experiencing Temporary

Ehrfurcht. The following contexts varied in the perceived relevance for experiencing Temporary Ehrfurcht: voluntariness to be part of the given situation, one's own physical effort to get to the spot where ehrfurcht was perceived and the uniqueness of the situation. However, some participants had experienced Temporary Ehrfurcht when being confronted with images or stories of nature or with scientific ideas about nature. In these cases, it appeared unnecessary to be physically in nature in order to perceive Temporary Ehrfurcht.

Furthermore, having Sufficient Attention for Nature was linked with perceiving Temporary Ehrfurcht. On the one hand, this applied to the cognitive resources that were directed towards the surrounding nature as silence and solitude were reported as facilitating factors. On the other hand, the capacities to open up to nature, e.g., in terms of time, were relevant in perceiving Temporary Ehrfurcht. Participants indicated that intentionally waiting for Temporary Ehrfurcht to arise and being able to take a step back and appreciate nature in its greatness could support Temporary Ehrfurcht to develop.

We found inter- and intra-individual heterogeneity in settings and attributes of nature that participants reported having perceived ehrfurcht in. Settings of Temporary Ehrfurcht included mountains, water, forest, animals, and weather or climate. Some participants seemed to have a personal favorite nature setting that was linked to their perception of ehrfurcht, other participants reported that their ehrfurcht could take place anywhere in nature, i.e., that the type of nature setting did not matter so much. Moreover, participants identified attributes of settings that they considered relevant for their Temporary Ehrfurcht, i.e., openness of the landscape (e.g., “vastness, for example the sea, the surge, and you feel: Wait, where is the horizon?”; Daniel, pos. 19), order within the nature setting (e.g., “I find the ebb and flow of a tide to be an outright

phenomenon"; Willie, pos. 17) or vividness of the nature setting (e.g., "when you are in a forest where everything feels alive"; Kai, pos. 57).

3.5 Discussion

Based on $N = 21$ semi-structured interviews with German-speaking people who had an affinity for nature, we explored the phenomenon of ehrfurcht, including the understanding of the term and linked contexts. Qualitative content analysis revealed a fundamental distinction between Temporary Ehrfurcht (i.e., a short-term type of perceptions of ehrfurcht) and Attitudinal Ehrfurcht (i.e., a longer-lasting type of perceptions of ehrfurcht). Temporary Ehrfurcht was characterized by four major themes: 1) Extraordinary Qualities of Perception, 2) Interacting With Nature as Counterpart, 3) Religiosity, Spirituality, and Mindfulness, and 4) Accommodation of Outlook on Life. In contrast, the following four themes illustrate Attitudinal Ehrfurcht: 1) Companionship With Nature, 2) Being Integrated Into Nature, 3) Limited as Human Compared to Nature, 4) Acknowledging Nature's Transcendence.

3.5.1 The Relationship Between Temporary and Attitudinal Ehrfurcht

In the course of the analysis, we identified two types of ehrfurcht, i.e., Temporary and Attitudinal Ehrfurcht. In order to account for this finding, we post-hoc added Research Question 2a to our agenda: What is the relationship between Temporary and Attitudinal Ehrfurcht?

Although Temporary and Attitudinal Ehrfurcht are different in nature, they share a few themes that are manifested differently in each case. The first common theme we identified was connectedness between individuals and other elements of nature. While connectedness in Temporary Ehrfurcht meant feeling connected to specific other elements of nature in a given situation, connectedness in Attitudinal Ehrfurcht meant feeling connected to the Earth's ecosystem. Furthermore, we found the perception of

being limited in terms of power, knowledge and one's own existence. In Temporary Ehrfurcht, for example, this meant realizing at a certain moment that one could do nothing against elements of nature, whereas in Attitudinal it meant fundamentally recognizing that one had limited capacities compared to nature. In addition, the experience of being embedded in nature as a larger entity was evident in both types of ehrfurcht. In Temporary Ehrfurcht, it meant feeling secure in the observed order in nature within this larger system, whereas in Attitudinal it meant feeling secure in the system of nature that endures over time. Finally, we found reflection on one's own significance in the Earth's ecosystem as a commonality. In Temporary Ehrfurcht, there was a process of reflection linked to individual experiences of ehrfurcht, whereas in Attitudinal Ehrfurcht, individuals were generally aware of their minor importance in the ecosystem. Despite those similarities, some of the themes in Temporary and Attitudinal also differ. In contrast to Temporary Ehrfurcht, outstanding qualities of perception did not tend to be part of Attitudinal Ehrfurcht. While Temporary Ehrfurcht was perceived as coming from outside oneself, Attitudinal Ehrfurcht was perceived as emanating from one's own person. Moreover, while accommodating one's outlook on life was robustly linked with Temporary Ehrfurcht, this was not the case in Attitudinal Ehrfurcht. In the latter, it seemed that individuals' outlook on life either had already changed at some point in the past or that their outlook on life had always been a way that aligned well with their Attitudinal Ehrfurcht (i.e., Companionship With Nature).

Some of the participants shared their thoughts on how their Temporary Ehrfurcht was related to their Attitudinal Ehrfurcht, which we add here to expand our view on the data. On the one hand, participants explicitly stated that their Attitudinal Ehrfurcht was independent from temporally definable experiences of ehrfurcht. Rather, they thought that Attitudinal Ehrfurcht was for example learned from teachers

and parents only. However, they considered Attitudinal Ehrfurcht to be at the base for perceiving Temporary Ehrfurcht. On the other hand, participants stated that their Attitudinal Ehrfurcht was built on or consolidated by several experiences of Temporary Ehrfurcht. For instance, several participants stated that the more they learned about nature, the more attitudinal ehrfurcht they would perceive towards it.

3.5.2 Dynamic Characteristics of Temporary Ehrfurcht

Participants reported various characteristics of ehrfurcht that they perceived in relation to a specific period of ehrfurcht. It seemed that there was a dynamic development in ehrfurcht's character over time. Ehrfurcht's components smallness, being limited, and being connected only seemed to occur *after* the first moment in Temporary Ehrfurcht. The very first reaction, however, was described by being "flooded" (Marianne, pos. 25; Petra, pos. 109) by the perception and hence being limited in one's capabilities to think or talk – no thoughts would arise and no words could be found to express the perception.

Furthermore, the associated emotions played a varying role in the course of the perception of ehrfurcht. We found surprise, fear, joy, and/or interest to play a major role in the first moments of perceptions of Temporary Ehrfurcht. The presence of one or more of these emotions seemed to be associated with the nature of the specific situation. For example, surprise occurred in association with unexpected perceptions, while fear arose when participants' integrity was perceived to be at risk. Combinations of multiple emotions were possible. At a later stage in Temporary Ehrfurcht, other emotions seemed to be relevant, i.e., gratitude, humility, and being moved. Those emotions seemed to arise when the experience was placed in a larger context. They referred to more abstract ideas such as the appreciation of having special experiences in nature or the appreciation of nature in general.

3.5.3 Ehrfurcht in Cross-Cultural Context

To the best of our knowledge, this article represents the starting point of research on ehrfurcht in the German-speaking context. However, in other language areas, there are initial findings on the conceptual understanding of the respective translations of "awe". Compared to the current Japanese meaning of awe's translation (Nakayama & Uchida, 2020), Temporary Ehrfurcht parallels with some of its themes and facets. In both understandings, the theme of spirituality or transcendence are present that hint to a higher entity. Similarly, the facets of fear and respect are manifested in both phenomena. The theme of spirituality or transcendence seems to be reoccurring, as White (2017) also found them robustly for awe's translations in Greek, Bulgarian and Turkish.

Furthermore, we found two types of ehrfurcht, Temporary Ehrfurcht (i.e., a shorter type of perception) and Attitudinal Ehrfurcht (i.e., a longer-lasting type of perception), which we have not found in any of the descriptions of other translations of awe. We recognize that there is a distinction between state and trait awe in awe research and that it might seem reasonable to assume a parallel to short-term and long-term. However, we do not consider this comparison accurate. First, the conceptual unclarity of awe (Katz & Franz, 2025) makes it difficult to determine the differentiation between two types of awe. Second, conceptual uncertainties may also be manifested in trait awe since it is assumed to build on state awe (Shiota et al., 2006).

Some of the themes we identified in the present study match themes from proposed definitions of English-language awe. For example, Temporary Ehrfurcht shows some parallels with Keltner and Haidt's (2003) suggested themes of awe (i.e., perceived vastness, actual accommodation, threat, beauty, ability, supernatural causality), or with Krenzer's (2018) suggested dimensions of awe (i.e., connection, chills, small self in a vast world). Although the current state of research does not allow for robust

comparisons of the two phenomena yet, this partial comparability opens up an opportunity for future research to systematically compare ehrfurcht and awe.

3.5.4 Implications

Our study is a first step towards gaining a better understanding of German ehrfurcht. It is a start towards conceptualizing ehrfurcht, which should be complemented by further studies. To this end, we propose a research agenda that proceeds in three steps: 1) investigating ehrfurcht more extensively, 2) developing an instrument with which ehrfurcht can be assessed, 3) comparing ehrfurcht cross-culturally with awe and its respective translations.

As a first step, we recommend examining ehrfurcht with respect to further potential facets, with the aim of enriching and specifying the conceptualization of ehrfurcht. For example, it would be interesting to understand which qualities characterize ehrfurcht in the context of nature when those people are asked who do *not* have a strong affection for nature. Furthermore, it might be insightful to examine ehrfurcht in other contexts, such as the practice of religion, spirituality or mindfulness, but also music or human abilities. Particularly the situational context of religious or spiritual practice might be of importance in view of the religious or spiritual character of ehrfurcht in the context of nature. One question that could be addressed here is, among other things, in which areas of life Attitudinal Ehrfurcht is reflected and how (given that this type of ehrfurcht is manifested in in the context of religious, spiritual, or mindfulness practice). In the present study, we found that in the context of ehrfurcht in nature, a large proportion of the areas of life in which Attitudinal Ehrfurcht plays a role are related to nature, e.g., sustainable consumption choices to protect nature. It would be illuminating to find out whether Attitudinal Ehrfurcht in

the context of religion, spirituality, or mindfulness is also primarily reflected in the area of life in which religion, spirituality, or mindfulness is practiced.

In a second step, we propose to develop an instrument that allows the assessment of ehrfurcht. This will pave the way for the cross-cultural comparison of ehrfurcht with English awe and its respective translations in other languages and cultures. When developing the instrument, we recommend using an exploratory sequential design (Fetters et al., 2013), where qualitative data is used as the basis for further quantitative data collection. In this way, the richness and context dependency of ehrfurcht can be accounted for.

As a third and final step, we propose to compare ehrfurcht with English-language awe and translations of awe in further languages and cultures. This aims to gain a more precise understanding of the cultural transferability of the currently dominant conceptualization of awe according to Keltner and Haidt (2003), as well as the cross-cultural validity of previous findings on the associations between English awe and other variables.

3.5.5 Limitations

In this study, we focus on nature as the physical context of ehrfurcht. However, the results of our study do not allow to draw conclusions about the phenomenon of ehrfurcht in contexts other than nature, such as in music or architecture. It is possible that certain themes of ehrfurcht, such as Interacting With Nature as Counterpart, are specific to nature as a context, but do not play a role in the context of music, for example. Furthermore, our sample consists exclusively of people who have an affinity for nature. It cannot be ruled out that people who do not have a pronounced affinity for nature or are even averse to it would respond differently, thus revealing other facets of ehrfurcht.

For the purpose of this publication, the interview content was translated from German to English by the first author. It cannot be ruled out that this may have resulted in some bias.

3.6 Conclusion

This exploration of ehrfurcht in the German context has provided insights into the complex and multifaceted nature of this phenomenon. Our findings suggest that perceptions of ehrfurcht are multifaceted in content and in character, and are accompanied by various attitudinal states in different contexts, highlighting the need for further research to better understand its nuances. While this study has laid the groundwork for future investigations, many questions remain unanswered, such as the specific themes that are relevant under particular circumstances, what ehrfurcht in nature is like according to people without explicit affinity to nature, and how other contexts shape the conceptualization of ehrfurcht. We hope that these preliminary findings will inspire a more detailed and comprehensive investigation of awe and its translations across languages and cultures, ultimately contributing to a deeper understanding of these human perceptions.

3.7 Bibliography Chapter 3

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4. Two Words, One Soul? English Awe and German Ehrfurcht in German Context and Their Conceptual Link

Tini L.C. Katz[1*] and Jonathan R. Hicks[2]

[1]University of Kaiserslautern-Landau, Germany

[2]Minnesota State University, Mankato, USA

*corresponding author

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Abstract

In order to investigate awe in the German linguistic and cultural context, we wanted to better understand the overall relevance of the influential conceptualization of awe according to Keltner and Haidt (2003). Based on 21 semi-structured qualitative interviews with 11 female and 10 male German-speaking participants, we investigated the meaning of Keltner and Haidt's (2003) conceptualization of awe in the German context and its relation to ehrfurcht, the German translation of awe. We found that multiple terms and meanings were attributed to Keltner and Haidt's (2003) conceptualization of awe across various contexts. Additionally, a temporary and a longer-lasting type (i.e., attitudinal type) were revealed. The perception of the temporary type was characterized by: Being Limited, Outstanding Perception, and Being Fascinated by the Inexplicable. The perception of the attitudinal type was characterized by: Acknowledging Being Surpassed by Nature, and Acknowledging to Be One Part of Nature. While the meanings of awe according to Keltner and Haidt (2003) in the German context had many themes in common with ehrfurcht, several differences emerged. We derive implications for research on awe and ehrfurcht that is culturally sensitive and that advances their respective conceptualization processes.

Keywords: awe, cross-cultural, conceptual problems, ehrfurcht, qualitative content-analysis, German

4.1 Introduction

When being asked for situations of awe, people of different cultures name a great range of situations, for instance: “when you're doing science and you get a result, and there's a moment right there where you're the only human being in the entire world that has ever seen this” (US-American citizen; Cuzzolino, 2021, p. 692), “encountering the galaxy alone, feeling fear and anxiety” (Greek citizen; White, 2017, p. 103), “to see an [ice bear] hunt like that, and be inside the perimeter of that hunt (Norwegian citizen; Løvoll & Sæther, 2022, p. 7), the “first experience in the temple, looking at the analoya, the place where the icon is. He is reaching, but cannot see further. […] What remains is the hunger and the hope (Bulgarian citizen; White, 2017, p. 106).

So far, psychological research on awe has paid little attention to cultural and linguistic variation in meanings of awe. The vast majority of publications in this research field is based on Keltner and Haidt’s (2003) approach, that proposes awe is constituted by the combined occurrence of perceived vastness and need for accommodation (from here on: awe_{KH}). However, this proposed definition from the US-American context has not yet been empirically tested. Thus, it is unclear what characteristics define awe in the US-American context. When considering research on awe in linguistic and cultural contexts other than the US-American one, the unclarity of the concept is magnified. In most languages, the term “awe” does not exist, but in many languages, there are direct translations of the term “awe”. Since the meanings of terms are culturally shaped (Hutmacher & Franz, 2024), different meanings of the respective translations of “awe” appear. Currently, most researchers rely on the term “awe” or its respective translations to evoke or assess awe (Katz & Franz, 2025), regardless of the linguistic or cultural background of the given sample. However, based on studies that center around the term “awe”, it is very difficult for researchers to meaningfully

interpret the data: It remains unknown how the meanings match that participants from a certain linguistic and cultural context attach to the term "awe" or its translation and the meaning that researchers attach to the term "awe" based on awe_{KH} from the US-American context.

We employed culture as a heuristic to refer to "practices, symbols, values, and ideals that are constructed and shared by a community, transmitted from one generation to the next, constantly renegotiated and subject to change" (Causadias et al., 2018, p. 244). However, we are aware that the concept of culture has been subject of controversy as it has frequently been used to express differences that express racial ideas and, hence, solidified hierarchies in society (Smedley & Smedley, 2005; Visweswaran, 2010).

In the present study, we aimed to investigate awe_{KH} in the German context. Working with a sample of $N = 21$ German native speakers, we aimed to find out, which German term participants used to describe awe_{KH} and which perceptions they associated with it. Building on the previous exploration of German "ehrfurcht", awe's translation into German (Katz & Hicks, 2025), we aimed at mapping the conceptual relationship between awe_{KH} and ehrfurcht. Specifically, we strived to explore 1) the terms, 2) perceptions, and 3) settings that individuals linked to awe_{KH} in the German context, as well as 4) the conceptual links between awe_{KH} and ehrfurcht.

4.2 Theory

Psychological research has investigated awe quite intensely in the past two decades. In most publications, awe has been defined by awe_{KH} (Katz & Franz, 2025). Keltner and Haidt (2003) described awe_{KH} as the combined presence of the following two core characteristics: A stimulus is perceived to be superior in terms of size, vastness or complexity (i.e., *perceived vastness*) which is accompanied by the need to adapt one's ideas

about the world in order to make sense of the experience [i.e., *need for accommodation* (*NFA*)]. Awe_{KH} also takes into account several situational contexts that can influence the context-specific character of awe: threat, beauty, ability, virtue, and supernatural causality. For instance, the authors expected beauty as situational context of awe to be linked to its character of "aesthetic pleasure" (Keltner & Haidt, 2003, p. 304). The authors indicated awe to be associated with encountering settings as the mountains or the sea.

Although much research on awe has been done, Katz and Franz (2025) have argued that the concept of awe in psychological research is vague. They justified this assumption, among other reasons, with the observation that the linguistic and cultural variance in the meaning of the term "awe" and its translations has not been taken into account in the majority of publications. They found that in studies on awe that were conducted in languages other than English, researchers have chosen various ways of dealing with translation. In some studies, "awe" was directly translated into the language of the sample. This translation was additionally checked with the help of back-translations by bilingual experts (e.g., Chirico et al., 2024). In some studies, researchers explicitly did not use the translation of the term in order to avoid activating connotations that are culturally and linguistically shaped (Lv et al., 2021; Possler, 2021). However, Katz and Franz (2025) argued that these attempts did not solve the problem: The meaning of translations of "awe" remained unclear, as did their conceptual links to awe in English. Attempts to take cultural differences into account failed, for example, because the items were solely based on the respective translations of the term "awe". It remained unclear what meaning participants attributed to the translation of awe. The authors concluded that it was therefore unclear what exactly was examined in most non-English studies on awe. However, they found that a few studies have qualitatively examined the meaning of awe and its linguistic translations. For

example, Nakayama and Uchida (2020) investigated the meaning of awe's Japanese translation based on a vast text corpus. These authors found the Japanese translation of awe to be consisting of "vastness in the context of transcendence (e.g., god) and social power (e.g., a powerful ruler)" (Nakayama & Uchida, 2020, p. 56). Contrary to awe_{KH}, NFA did not seem to play a role in the meaning of the Japanese translation of awe. Furthermore, research from Bulgaria, Turkey, Greece, and the US found fundamental differences in meaning when comparing awe and its respective translations across cultures and languages (White, 2017).

Given that the meanings and applications of psychological concepts are shaped by linguistic and cultural contexts (Hutmacher & Franz, 2024), we assumed that the characteristics of awe may be shaped by languages and cultures, too (see also Hoemann, 2023; Kemmerer, 2023). This is not simply a linguistic issue, but rather a fundamental difference in meaning. For instance, Hoemann et al. (2024) were able to show that people from different cultures had different concepts of emotion, that were also applied differently: While participants from North Carolina seemed to organize their emotion concepts on a more abstract level, participants from Hadza, Tanzania, based their categories of emotion on concrete events (Hoemann et al., 2024). Accordingly, the characteristics of awe may be closely linked to the respective linguistic and cultural context in which it is examined.

The majority of psychological publications on awe originate in the US (see systematic review by Schaffer et al., 2023). Furthermore, the US-American linguistic and cultural background of Keltner and Haidt have likely influenced their suggested conceptualization of awe. Hence, awe research may be strongly influenced by American English language and US culture. So far, it is unclear how US-American awe relates to German ehrfurcht, the direct translation of the term "awe" into German.

From a linguistic perspective, the term “ehrfurcht” is made up of the two nouns “ehre” (“honor”) and “furcht” (“fear”). Its current lexical meaning is described as “shyness, based on great deference” (Digitales Wörterbuch der deutschen Sprache, n.d., own translation), however, “ehrfurcht” is currently only infrequently used (Google, n.d.). Rather, “respekt” (“respect”) or “achtung” (“deference”) are suggested to be synonyms (Open Thesaurus, n.d.) of the term “ehrfurcht” that is connotated with spiritual or religious meaning (Digitales Wörterbuch der deutschen Sprache, n.d.).

A previous study explored the characteristics of German ehrfurcht in nature focusing on the current meaning that individuals attach to the term, the characteristics of the perception itself, and the contexts associated with the perception (Katz & Hicks, 2025). It appeared that the term “ehrfurcht” was applied to temporary perceptions, perceptions that resemble an attitude, and behaviors. The meaning of the term referred to one or more of the following three themes: respectfully marveling at nature, being humble when realizing that nature goes beyond one’s limits of thought and control, and accepting one’s relatively smaller significance while feeling accepted in nature. Furthermore, the study revealed that ehrfurcht could be perceived both as a temporary experience (i.e., Temporary Ehrfurcht) and as a basic attitude (i.e., Attitudinal Ehrfurcht). The temporary type was characterized by the following themes: 1) Extraordinary Qualities of Perception, 2) Interacting with Nature as a (human-like) Counterpart, 3) Religiosity, Spirituality, and Mindfulness, and 4) Accommodation of Outlook on Life. Temporary Ehrfurcht was associated with a multitude of settings that differed between individuals. However, physical contact with nature and sufficient attention for the environment seemed to be settings that were shared across individuals. In contrast, the attitudinal type was characterized by the following themes: 1) Companionship with Nature, 2) Considering Oneself to be Integrated into Nature, 3) Limited as a Human Compared to Nature, 4) Acknowledging Nature’s

Transcendence. Attitudinal Ehrfurcht played a role in most settings of life, for instance consumption, behavior towards other living beings and nature, or education.

In order to study awe in the German linguistic and cultural context, we sought to better understand the overall relevance of awe_{KH} relative to a German linguistic and cultural context. Therefore, our goal was to find out what meaning awe_{KH} has in the German context and how it relates to the meaning of ehrfurcht. The following research questions guided our study:

1) What is awe_{KH} in the German context?
    a. Which term do German-speaking people use to refer to awe_{KH}?
    b. What characterizes the perception of awe_{KH}?
    c. What are the contexts in which awe_{KH} is perceived?
2) How are awe_{KH} and ehrfurcht conceptually linked in the German context?

4.3 Methods

We conducted semi-structured qualitative interviews in order to explore awe_{KH} in German context, similar to the previous study on ehrfurcht (Katz & Hicks, 2025). This approach allowed for a high level of detail as participants were able to ask questions and explain their interpretations of the terms and phenomena. Furthermore, investigating awe_{KH} in the German context and its relation to German ehrfurcht from within a single language and culture – as opposed to several – allowed to reduce bias that might stem from several languages or cultures.

To account for diversity within the culture, we aimed to sample participants from all over Germany to achieve a possibly rich dataset. This was especially guided by our assumption that the meaning of the term “ehrfurcht” has a religious component (Digitales Wörterbuch der deutschen Sprache, n.d.). Since spirituality or religiosity vary in character and intensity among Germany's regional subcultures (Müller &

Pollack, 2022), we assumed that the religious aspect of ehrfurcht may also vary depending on the region and its subculture.

We based the sampling on three theoretical considerations. First, we chose to sample only nature enthusiasts. Nature is frequently described as context of awe or ehrfurcht for instance in the literature or nature sports (Crosby, 2017; Hirschhausen, 2024; May, 2020; Sportstudio, 2021). Accordingly, we presumed that people with an affinity for nature would find it easy to relate to awe or ehrfurcht in nature. People with affinity for nature were defined as members of nature protection organizations in Germany. Second, we sampled only those people whose first language was German. Our goal was to reduce the impact of participants' other spoken languages on the meaning they attached to ehrfurcht. Third, we strived for the biggest possible diversity in gender and age as both are important aspects for many psychological phenomena (Baltes, 1987; Hyde, 2005). We sent emails to a total of 22 nature protection organizations located across Germany. Those who were interested were provided with an online form (Leiner, 2024) to submit their email address to be contacted for setting up an interview appointment. The interviews were conducted from April to June 2024.

The *theoretical saturation principle* served as the basis for the sample size; that is, we stopped sampling as soon as additional interviews yielded no new information about the research topic (Glaser & Strauss, 1967). The local institutional review board granted approval for this preregistered study (see preregistration) based on the German Society for Psychology's ethical criteria. The software Zoom (Zoom Video Communications, Inc., 2024) was used to conduct all of the interviews online. Participants were offered compensation with 15 euros. Every participant had the chance to go over their own transcripts again and make any required corrections if their transcript did not accurately reflect what they intended to say.

The final sample was made up of N = 21 individuals with German as their first language who belonged to German nature protection organizations. The average age of the participants was 46.4 years (SD = 14.4, range = 49). Ten participants identified as male and eleven as female, while none did not identify with any sexual identity. A summary of the sample's demographics can be found in Table 2.

The semi-structured interviews took 27 – 89 minutes (M = 59.4 minutes) and were part of a larger research project. We explored the German terms, perceptions, and settings that were associated with awe_{KH} with the following interview questions (for the interview guide in German and English as well as the codebook, see OSF-Project).

1. There is a phenomenon that people describe as follows: they experience the vastness or complexity of something. This vastness or complexity is so great that they find it difficult to categorize it or to fully understand what they are experiencing. If you think of this description in the context of nature, which term would you use to describe this phenomenon?
2. When you think of [individual term for the phenomenon] in the context of nature and feel your way into it, what comes to your mind?
3. What do you think is the relationship between the phenomena of ehrfurcht and [individual term for the phenomenon]?

The first author conducted and recorded every interview. The transcription was supported by the transcription software noScribe (Dröge, 2023) and its style complies with suggestions of Dresing and Pehl (2018).

Table 2

Sociodemographic data of interview participants

Sociodemographic Categories	***n***	**%**
Age		
19-28	4	19.0
29-38	2	9.5
39-48	4	19.0
49-58	6	28.6
59-68	5	23.8
Gender		
female	11	52.4
male	10	47.6
diverse	-	-
Nature-Related Occupation		
Biologist	1	4.8
Ecology Researcher	2	9.5
Employee Nature Protection	7	33.3
Nature Educator	4	19.0
Nature Guide	5	23.8
Nature Photographer	1	4.8
Student Environmental Studies	1	4.8

Note. Nature-related occupation = Voluntary or paid work that is linked to nature protection; Employee Nature Protection = Employee in the field of nature protection. $N = 21$.

Guided by Kuckartz and Rädiker (2022), we used qualitative content analysis to examine every transcript. The structure of the analysis process was as follows: First, we familiarized ourselves with all transcripts and took notes on interesting notions and sections. Second, using our research questions as orientation, we developed major codes and added further significant codes that emerged as we worked with the transcripts. We ensured that these codes were sufficiently distinct and that they applied to the transcripts. Third, we assigned the major codes to all transcripts' significant segments. Fourth, we defined and organized the major codes into a number of subcodes. Additionally, two transcripts (10% of all transcripts) underwent

consensual coding by the first author and an independent assistant. We reached an agreement of 97% after talking about variations and adjusting the code descriptions accordingly. Fifth, we applied all of the codes to the transcripts. In a subsequent phase, we used summaries to extract the themes from each code. Finally, we combined these themes in a content-driven manner to overarching themes. Figure 4 gives an overview of all themes and subthemes.

A note to our positionality seems essential to us because we deal with issues that are epistemologically complex. The project's supervisor (J. R. H.), a tenured full professor of cultural and natural resource management, has studied awe experiences in natural settings. The principal investigator (T. L. C. K.) is an early-career researcher, environmental psychologist, and psychology lecturer.

4.4 Results

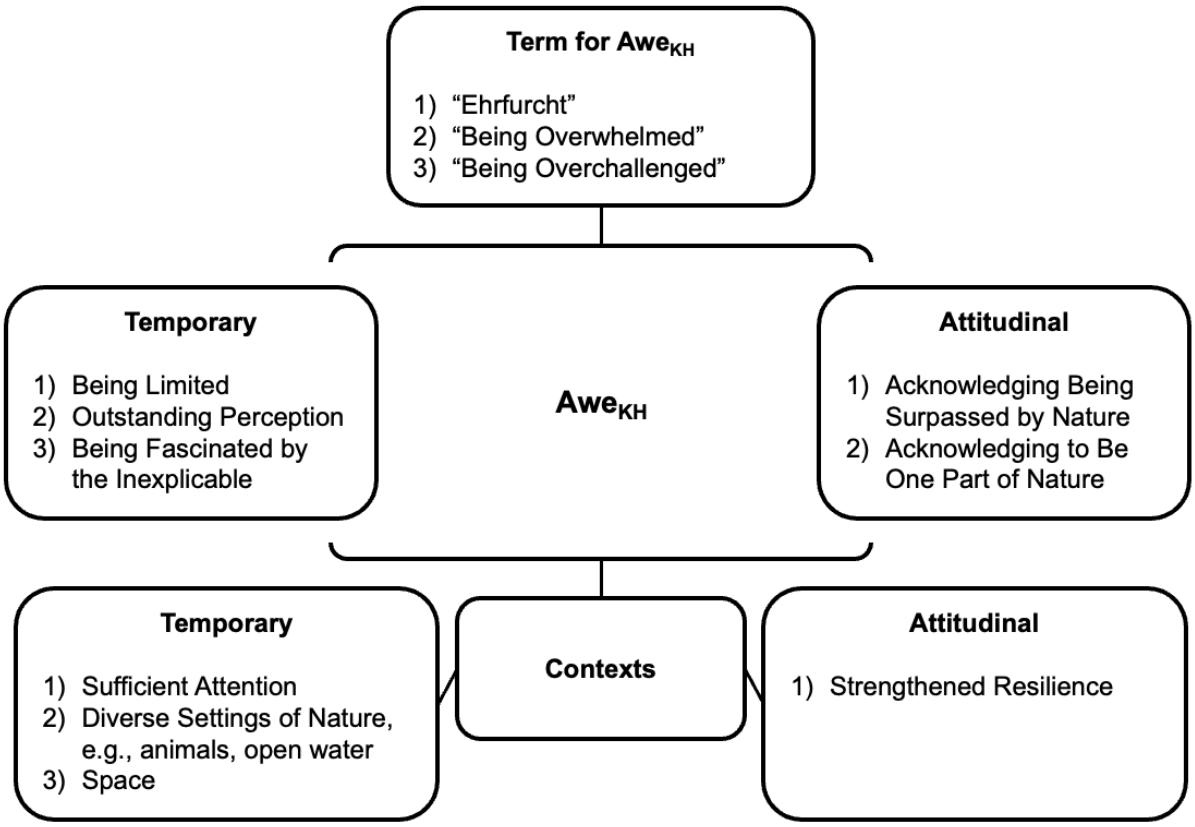
In this study, we explored awe_{KH}, i.e., the conceptualization of awe according to Keltner and Haidt (2003), in a German context. Furthermore, we examined the conceptual relationship between awe_{KH} and ehrfurcht, the German translation of awe. The results-section is organized at the highest level according to the research questions; at the next lower level (i.e., within the results for each research question), the structure is provided by the themes extracted from the interviews.

4.4.1 Terms that Express German Awe_{KH}

Regarding Research Question 1a, we found that awe_{KH} was represented by diverse terms in the German context and was throughout interpreted in terms of a psychological state.

Figure 4

Overview of all themes and subthemes of awe$_{KH}$



Note. Boxes on the same horizontal level refer to the same research question. Boxes on the same vertical level refer to the same type of ehrfurcht.

The terms that referred to awe$_{KH}$ cover the following three themes: Ehrfurcht, Overwhelmed, Overchallenged. The theme Ehrfurcht described that awe$_{KH}$ was interpreted as perfectly capturing participants' subjective meaning of ehrfurcht, such as it would have been experienced in the face of the beauty and uniqueness of a beautiful sunrise. In the theme Overwhelmed, participants referred to awe$_{KH}$ by perceptions of being overwhelmed in nature, which could be positive or negative in valence, such as by "überwältigt" ("overwhelmed") when being at the mercy of the power of the wind or by "übermannt" ("overpowered") when seeing the extent of a disastrous flood in Germany. Finally, the theme Overchallenged described awe$_{KH}$ by terms as "überforderung" ("being overchallenged") when referring to experiences that exceeded

participants' imagination (e.g., the distance between Mars probes and Earth) or "voraufklärungsgefühle" ("pre-enlightenment feelings") that were linked to attempts to reduce the complexity of perceptions (e.g., explaining the complexity of dynamics in nature with the help of religion).

Generally, most participants found it difficult to relate to awe_{KH}. Participants reported this was because they found it difficult to make sense of the term's definition. To overcome this uncertainty, they asked for further clarification of what was meant. Furthermore, it was difficult for participants to find an appropriate German term that could describe awe_{KH}. For instance, participants would take more than 10 seconds to think about a matching term or they would try to circumscribe what they understood. In addition, participants found it difficult to make sense of awe_{KH} with regard to their personal lives.

4.4.2 The Perception of Awe$_{KH}$

Based on Research Question 1b, we explored the perception of awe_{KH}. We found two types of awe_{KH} perception: One short-term type that occured in a specific situation and dissolved thereafter (i.e., Temporary Awe_{KH}), and one longer-lasting type that permeated all encounters of an individual and resembled an attitude (i.e., Attitudinal Awe_{KH}). First, we will address the following topics that characterized Temporary Awe_{KH}: Being Limited, Outstanding Perception, and Being Fascinated by the Inexplicable. After that, we will elaborate on the topics that characterized Attitudinal Awe_{KH}: Acknowledging Being Surpassed by Nature, Acknowledging to Be One Part of Nature.

Since we found diverse interpretations of awe_{KH} (i.e., ehrfurcht, overwhelmed, overchallenged) in the first research question, we will report the results separately for each of the interpretations. We will proceed by presenting the results along the

identified themes, discussing the characteristics of the individual interpretations of awe_{KH} for each theme. For the sake of clarity, the results on Temporary Awe_{KH} are shown in the Appendix in Table A1.

4.4.2.1 Temporary Awe_{KH}

Being Limited. First of all, we found Temporary Awe_{KH} to be characterized by Being Limited as major theme.

Limits of Mental Capacities. Participants who interpreted Temporary Awe_{KH} in terms of ehrfurcht, reported perceiving the limits of their mental capacities. This could be in terms of being mentally overchallenged by the complexity, dynamic, the dimensions or the amount of the perception, or being unable to make a mental representation of nature. However, some participants indicated that they would still experience themselves as capable to act as opposed to being passive and at the mercy of the situation. Participants did not block the complexity that they were faced with, neither did they report a need to fully understand the perception, as they were accepting to not understand certain things in nature.

For those participants who interpreted Temporary Awe_{KH} in terms of being overwhelmed, Temporary Awe_{KH} was also linked with the perception of limited mental capacities. Mental capacities seemed to be easily exceeded by complex, dynamic, huge or rich perceptions of nature. However, being mentally limited also came into play as participants indicated having been unable to make a mental representation of nature, to process the sensual perception because the scenery seemed unreal or incorrect, or to think at all in moments of awe_{KH}. One participant associated an incongruence with Temporary Awe_{KH} that they felt difficult to cope with, for instance in the simultaneous presence of threat due to climate change and little self-efficacy in stopping climate change.

Participants who interpreted Temporary Awe$_{KH}$ as being overchallenged reported mental limitations: They appeared to experience these limitations particularly in the form of being overchallenged by the complexity, dynamics, dimensions, or abundance of what they were trying to process. For instance, one participant described it like this:

> I immediately think of space. When I think about the fact that we are this small Earth and we are this small solar system, we are this small galaxy and so on. I think the overload is also: crazy. I don't understand at all how big all this is. (Ivy, pos. 28)

Participants who interpreted awe$_{KH}$ as being overchallenged either found it difficult to understand the connections between elements or to create a mental representation of what they had perceived. Some participants also stated that they were unable to think at all which was reflected by their use of onomatopoeia. However, a few participants described not experiencing these limitations of their mental capacities.

Limited Power. For those participants who interpreted Temporary Awe$_{KH}$ in terms of ehrfurcht, being limited was reported regarding physical power. It seemed that although they realized to be limited in power or knowledge, they considered themselves as able to act.

If Temporary Awe$_{KH}$ was interpreted as being overwhelmed or as being overchallenged, it appeared that individuals felt powerless in the face of nature because they realized that nature would exceed their abilities, for instance as they saw pictures of how the floodwaters had fundamentally changed the landscape.

Smallness. In Temporary Awe$_{KH}$ as ehrfurcht, we found reported smallness as a form of limited relevance in the face of the vastness of nature. Feeling small could also express realizing, in the face of the greater nature, that personal problems were less severe than initially thought.

If Temporary Awe$_{KH}$ was interpreted as being overwhelmed, smallness manifested in realizing one's little relevance compared to the vastness of nature as well as being irrelevant for nature's thriving.

Similarly, in Temporary Awe$_{KH}$ as being overchallenged, realizing to have little relevance and being less powerful compared to nature was dominant, however, mostly, this was built on the sensation of being physically smaller than the dimensions of nature.

Outstanding Perception. Across all interpretations of Temporary Awe$_{KH}$ we found that the perception of awe$_{KH}$ went beyond the usual dimensions, which are particularly evident in the subthemes of Beauty and Ambivalent Perception. In Temporary Awe$_{KH}$ as ehrfurcht, this referred to having extraordinary experiences that were, in part, only made because attention was directed to an everyday event, such as noticing birds communicating on rooftops during a walk in a residential area. Emotions that were associated with Temporary Awe$_{KH}$ as ehrfurcht were fascination and wonder in response to the unexpected character of nature. However, this unexpected character could also be associated with fear of the unpredictable dynamics of nature. Furthermore, we found that being moved was linked to the uniqueness and intimacy of nature. On a behavioral level, participants reported having been changed by the extraordinary perception. Specifically, in moments of Temporary Awe$_{KH}$, the individuals would have stopped talking, they would have walked slower and would have calmed down as these moments were perceived as space for reflection. These moments could also have been accompanied by chills. Furthermore, they reported having become motivated to change things to the better.

In awe$_{KH}$ as being overwhelmed, the extraordinariness of the dimension referred for instance to size or dynamic. Moreover, Temporary Awe$_{KH}$ as being overwhelmed comprised the realization that nature was unavailable and that moments of experience

could resemble gifts. One participant, for example, remembered how they, several decades ago, unexpectedly discovered a rainbow that disappeared again after a short time: They could not do anything to make it appear nor to make it last. It seemed that the extraordinary nature of the perceptions had filled individuals' awareness as participants reported having been "captured", or that the perception "came over them", with both descriptions having positive connotations. However, Temporary Awe_{KH} as being overwhelmed also revealed the potential for a traumatizing event. One participant reported particularly vividly how shocked she had been in the face of the destructive masses of water during the flood disaster in Germany in 2021. Generally, Temporary Awe_{KH} as being overwhelmed was associated with emotions as joy and wonder at the special character of nature as well as gratitude for the personal experiences. In addition, surprise seemed to be a relevant affective state, for example when experiencing nature's versatile character. On a behavioral level, participants reported having been incapable to find words for the perception and being left silent. This was the case when the perception had a positive or a negative valence.

In Temporary Awe_{KH} as being overchallenged, we found that the perception significantly exceeded the qualities of ordinary experiences. Additionally, individuals seemed mightily impressed by the realization that nature was unavailable to them. This was particularly evident in the metaphor of experiences of Temporary Awe_{KH} being like a gift. We found that the linked emotions were of positive and negative valence: On the one hand, individuals seemed to feel wonder in the face of the inexplicability of nature, on the other hand, they reported strong fear due to the complexity and vastness of nature whose dimensions were mostly unknown.

Beauty. Regardless of whether Temporary Awe_{KH} was interpreted as ehrfurcht, being overwhelmed or being overchallenged, perceiving extraordinary beauty played a central role. For example, participants who interpreted Temporary Awe_{KH} as

ehrfurcht or as being overwhelmed reported outstanding beauty in terms of the colors and composition of the landscape. In Temporary Awe$_{KH}$ as being overwhelmed, individuals' overwhelm and excitement at the extraordinary beauty of nature was also evident in onomatopoetic language. Participants who interpreted Temporary Awe$_{KH}$ as being overchallenged tended to speak of beauty in more general terms because they indicated having been unable to specify the details given the overwhelming nature of the experience.

Ambivalent Perception. Adding to the outstanding qualities of perception, we found perceptions to likely be ambivalent if Temporary Awe$_{KH}$ was interpreted as ehrfurcht or as being overwhelmed.

In awe$_{KH}$ as ehrfurcht, we found, on the one hand, that a person considered certain experiences of ehrfurcht as positively connoted, or rather negatively connoted. On the other hand, we also found that single experiences were perceived ambivalently, for example, when fear and wonder were felt simultaneously in the face of fungi that infest ants and render them helpless.

In Temporary Awe$_{KH}$ as being overwhelmed, we found that ambivalence was evident in various ways, for instance nature was experienced as stunningly beautiful, yet at the same time its destruction was obvious; or individuals enjoyed the beauty of nature in distant countries, while being aware that their travel behavior further exacerbated the climate crisis.

Being Fascinated by the Inexplicable. Across all interpretations of Temporary Awe$_{KH}$, we found the theme of fascination by the inexplicable, which is reflected in intangible dimensions, connectedness, resonance with nature, and spirituality, religiosity, and mindfulness.

Intangible Dimensions. In all interpretations of Temporary Awe$_{KH}$ we found fascination with the dimensions of nature that were perceived as intangible. Examples

of this are being fascinated by the complexity of material cycles (Temporary Awe$_{KH}$ as ehrfurcht), or by the uncontrollable power of a wave (Temporary Awe$_{KH}$ as being overwhelmed), or by the unimaginable distances between the planets of our solar system (Temporary Awe$_{KH}$ as being overchallenged). In Temporary Awe$_{KH}$ as ehrfurcht or as being overwhelmed, participants reported opening up to the inexplicable. In Temporary Awe$_{KH}$ as being overchallenged, however, sole focus was on the fascination *because* one cannot understand the inexplicable. Referring to publications by Stephen Hawking, a participant stated: "I find it absolutely fascinating because I don't understand it at all" (Frank, pos. 98). Furthermore, solely in Temporary Awe$_{KH}$ as being overchallenged, we found associations between the fascination with the inexplicable and wonder.

Connectedness. Perceived connectedness seemed to have contributed significantly to the inexplicable character of perception—however, this was especially true if Temporary Awe$_{KH}$ was interpreted as ehrfurcht. In this case, we found evidence for an emotional connectedness with individual elements of nature. Participants seemed having experienced themselves as a relevant part of nature, and more specifically, as part of nature's life cycle. In addition, we found perceived connectedness to be based on physical considerations as participants indicated having realized that humans and nature are made of the same material at the smallest level.

The meaning of connectedness in awe$_{KH}$ as being overwhelmed presented a heterogeneous picture: for some participants, connectedness was relevant in that it allowed them to place themselves within the larger system of nature, while other participants stated that they did not perceive any connectedness at all.

Resonance with Nature. In Temporary Awe$_{KH}$ being interpreted as ehrfurcht or being overwhelmed, participants described resonating with nature, i.e., feeling personally addressed in a pleasant way. One participant described it for Temporary

Awe$_{KH}$ as being overwhelmed: “When you somehow resonate with something magnificent you don't really feel ehrfurcht, but it's like nodding. I just nodded now. It's like saying yes and feeling this inner sense of, oh, wow. It's amazing.” (Hannah, pos. 57).

Spirituality, Religiosity, and Mindfulness. Spirituality, religiosity and mindfulness only came into play if Temporary Awe$_{KH}$ was interpreted in the sense of ehrfurcht or in the sense of being overwhelmed. In the sense of ehrfurcht, earthly and transcendental perceptions would oscillate and thus allow Temporary Awe$_{KH}$ to arise, which could result in becoming devout in nature. Similarly, we found spiritual aspects in Temporary Awe$_{KH}$ as being overwhelmed as participants would equate their perception of nature’s beauty with engaging in a church service.

4.4.2.2 Attitudinal Awe$_{KH}$

Besides Temporary Awe$_{KH}$, we found a form of awe$_{KH}$ that was long-term and resembled a basic attitude towards nature. Some participants described how this basic attitude would enable them to actively put themselves in a state of Temporary Awe$_{KH}$, for example when encountering other living beings. Though we found Attitudinal Awe$_{KH}$ across all interpretations of awe$_{KH}$ (i.e., ehrfurcht, being overwhelmed, being overchallenged), only a small group of participants did report on Attitudinal Awe$_{KH}$ and its characteristics varied. For an overview of the characteristics of Attitudinal Awe$_{KH}$ for each interpretation, see Table 3.

Table 3

Interpretations of Attitudinal Awe$_{KH}$ and the respective themes

Ehrfurcht	Overwhelmed	Overchallenged
Acknowledging Being Surpassed by Nature	**Acknowledging Being Surpassed by Nature**	**Acknowledging Being Surpassed by Nature**
Acknowledging to be only one part of bigger nature	Acknowledging nature's manifold qualities and its unavailability	Acknowledging being surpassed by nature in terms of unknown perceptions
Exploring nature	-	Linked to being tensed
Acknowledging to Be One Part of Nature	**Acknowledging to Be One Part of Nature**	**Acknowledging to Be One Part of Nature**
Acknowledging nature as entirety that also encompasses oneself	Not present	Not present

Note. Ehrfurcht = Awe$_{KH}$ being interpreted as ehrfurcht; Overwhelmed = Awe$_{KH}$ being interpreted as being overwhelmed; Overchallenged = Awe$_{KH}$ being interpreted as being overchallenged. - = Information not available. The order of themes appears in the order of their mentioning in the article.

Acknowledging Being Surpassed by Nature. If Attitudinal Awe$_{KH}$ was interpreted as ehrfurcht, participants acknowledged to be only one part of the system nature and that nature was exceeding them in physical size. However, acknowledging being surpassed by nature did not keep them from curiously exploring it. On a behavioral level, individuals would regularly bow down before nature to express acknowledging their position in the greater system of nature.

In Attitudinal Awe$_{KH}$ as being overwhelmed, individuals acknowledged being surpassed by nature in terms of its manifold qualities or its unavailability. For instance, perceiving the first rain after a long drought consolidated participants' Attitudinal Awe$_{KH}$ about nature surpassing their control.

In Attitudinal Awe$_{KH}$ as being overchallenged, we found a fundamental tension being linked to the idea that nature surpassed individuals. This was partly due to the unknown perceptions individuals could have in nature, and partly to the complexity of nature.

Acknowledging to Be One Part of Nature. Only for participants who interpreted Attitudinal Awe$_{KH}$ in the sense of ehrfurcht, we found a second theme: Acknowledging to Be One Part of Nature. Participants acknowledged nature as all-encompassing entirety in which they were a single part for instance by acknowledging the existence as well as the constant developing and degrading of living things. Furthermore, acknowledging to be a single part of nature inspired participants to take care of themselves just as a mother would support their kids' development.

4.4.2.3 Contexts of Awe$_{KH}$

Based on Research Question 1c, we examined which contexts were relevant in association with awe$_{KH}$. For Temporary Awe$_{KH}$, we found the themes Sufficient

Attention for Nature and Diverse Settings. For Attitudinal Awe$_{KH}$, we found the themes Diverse Settings and Strengthened Resilience.

Contexts Temporary Awe$_{KH}$. Across all interpretations of Temporary Awe$_{KH}$, sufficient attention seemed to allow perceptions of Temporary Awe$_{KH}$. However, there were differences in the role attention played: attention was seen as a facilitator of perceptions of Temporary Awe$_{KH}$ as ehrfurcht or as being overwhelmed. Likewise, attention was seen as a consequence of Temporary Awe$_{KH}$ as ehrfurcht or as being overchallenged. Furthermore, silence was reported to have supported attention towards nature. By this, silence facilitated perceptions of Temporary Awe$_{KH}$ as ehrfurcht and being overwhelmed. Participants referred to both, auditive silence (Temporary Awe$_{KH}$ as ehrfurcht) and being mentally calm (Temporary Awe$_{KH}$ as being overwhelmed). Similarly, solitude seemed to have facilitated perceptions of Temporary Awe$_{KH}$ as ehrfurcht.

Diverse settings of nature were associated with Temporary Awe$_{KH}$. Across all interpretations of Temporary Awe$_{KH}$, the settings included animals and open water. Additionally, settings of Temporary Awe$_{KH}$ as ehrfurcht and being overwhelmed were mountains, weather or climate, and forests.

The dominant setting for Temporary Awe$_{KH}$ was space. In awe$_{KH}$ as being over-challenged, most participants referred to the great dimensions of space and the difficulty of imagining or understanding them. However, one participant referred to space as a setting in Temporary Awe$_{KH}$ as ehrfurcht.

Contexts Attitudinal Awe$_{KH}$. As Attitudinal Awe$_{KH}$ resembled a fundamental attitude, it applied by definition to various contexts, such as consumption choices, education, or strengthened resilience. Strengthened resilience was reported to develop as individuals acknowledged their position in the greater system of nature, and were able to have a third-person view on themselves and their life.

4.4.2.4 Conceptual Link Between Awe$_{KH}$ and Ehrfurcht

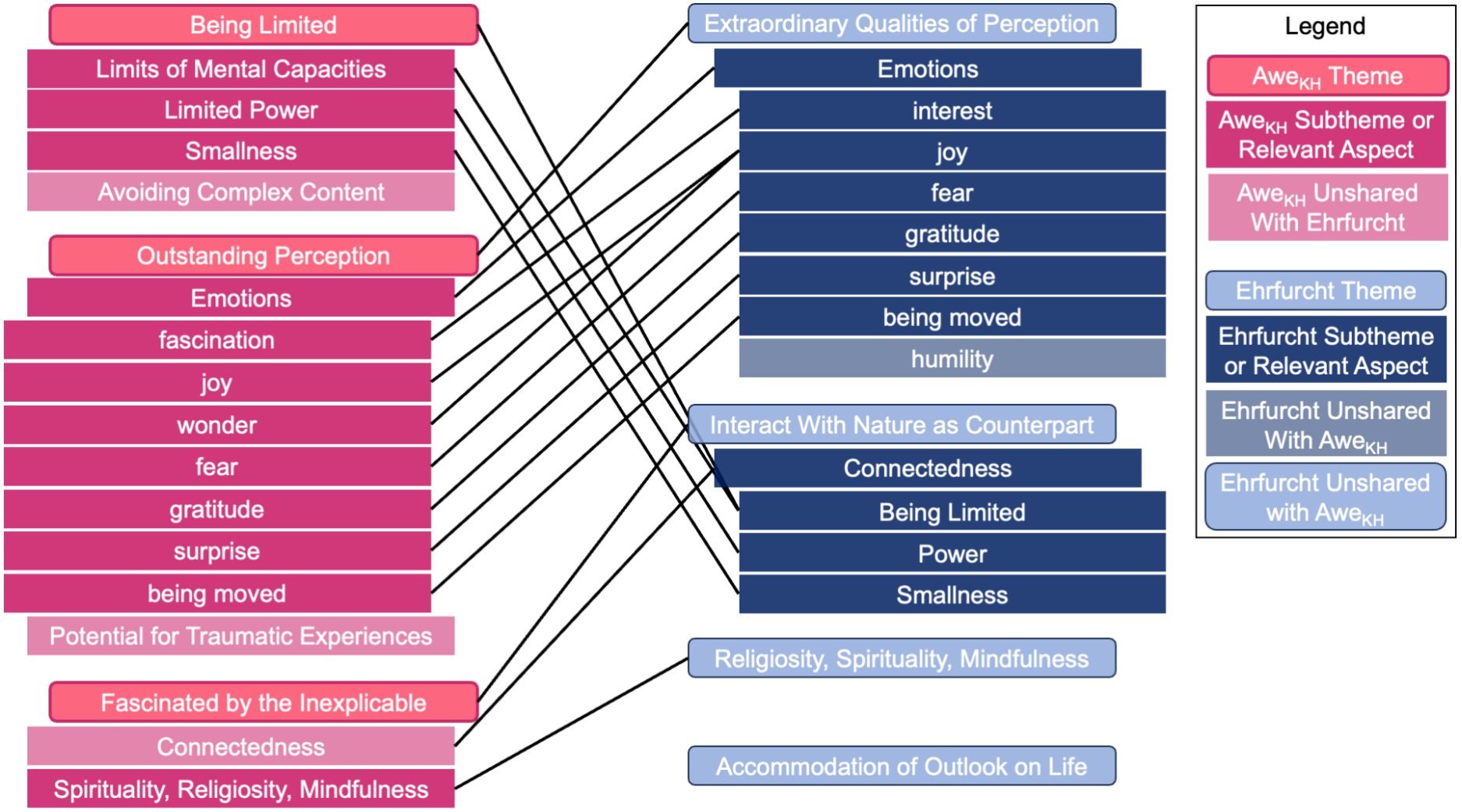
Referring to Research Question 2, we will now outline the links between awe$_{KH}$ and ehrfurcht on a conceptual level. We will first address the temporary and then attitudinal types.

Commonalities in Temporary Awe$_{KH}$ and Temporary Ehrfurcht. Interpretations of Temporary Awe$_{KH}$ and Ehrfurcht had the following characteristics in common: Both shared the theme Being Limited, including Limits of Mental Capacities, Power, and Smallness. Furthermore, both were characterized by Outstanding Perception (in ehrfurcht: Extraordinary Qualities of Perception) and Being Fascinated by the Inexplicable (in ehrfurcht: Interact with Nature as Counterpart). We found most emotions to be parallel in interpretations of Temporary Awe$_{KH}$ and Ehrfurcht, i.e., fascination, joy, fear, gratitude, surprise, being moved. The themes Religiosity, Spirituality, Mindfulness as well as Connectedness were present in interpretations of Temporary Awe$_{KH}$ and in Temporary Ehrfurcht. However, the theme Connectedness only played a marginal role in Temporary Awe$_{KH}$ as being overwhelmed and being overchallenged. For an overview, see Figure 5.

Differences Between Temporary Awe$_{KH}$ and Temporary Ehrfurcht. Interpretations of Temporary Awe$_{KH}$ differed from ehrfurcht in several characteristics. Since comparisons of Temporary Ehrfurcht and Temporary Awe$_{KH}$ as ehrfurcht refer to partly equal content, they would only lead to limited new insights. Therefore, the comparisons refer exclusively to Temporary Awe$_{KH}$ as being overwhelmed and as being overchallenged.

Figure 5

Conceptual links between Temporary Awe$_{KH}$ and Temporary Ehrfurcht



In interpretations of Temporary Awe$_{KH}$, we found robust evidence of avoiding complex content as part of the theme Being Limited. Avoidance was reported as a strategy for dealing with complex information as individuals realized to have limited mental capacities. For example, in awe$_{KH}$ as being overwhelmed, heuristics were used across the board to reduce ambivalence of information, and for awe$_{KH}$ as being over-challenged, individuals' own plans were enforced regardless of the complexity of nature. In contrast, we did not find evidence of avoiding complex content in ehrfurcht. Individuals seemed to accept the complexity of information and cope well with not understanding certain things in nature.

Furthermore, we found potential for traumatic experiences within the theme Outstanding Perception. Perceptions of awe$_{KH}$ as being overwhelmed could be so challenging that they were classified as traumatic, such as witnessing a flood disaster. However, in ehrfurcht, we did not find descriptions of trauma or the potential thereof.

While the emotion humility did not appear in interpretations of Temporary Awe$_{KH}$, humility appeared to be a central emotion in ehrfurcht. This was particularly evident in relation to the recognition that nature by far exceeded one's own abilities, or in the sense of interacting with nature on an equal footing, or in serving nature.

Moreover, Connectedness clearly played a minor role in Temporary Awe$_{KH}$. Only in Temporary Awe$_{KH}$ as being overwhelmed, we found references to connectedness in the sense of being part of nature. In contrast, connectedness with nature proved to be a central component of ehrfurcht, either on an emotional level, or on the level of identity. While Accommodation of Outlook on Life was a theme in Temporary Ehrfurcht, it was not present in Temporary Awe$_{KH}$.

Commonalities in Attitudinal Awe$_{KH}$ and Attitudinal Ehrfurcht. We found the theme Acknowledging Being Surpassed by Nature in Attitudinal Awe$_{KH}$ to relate to the theme Being Limited as Human Compared to Nature in Attitudinal Ehr-

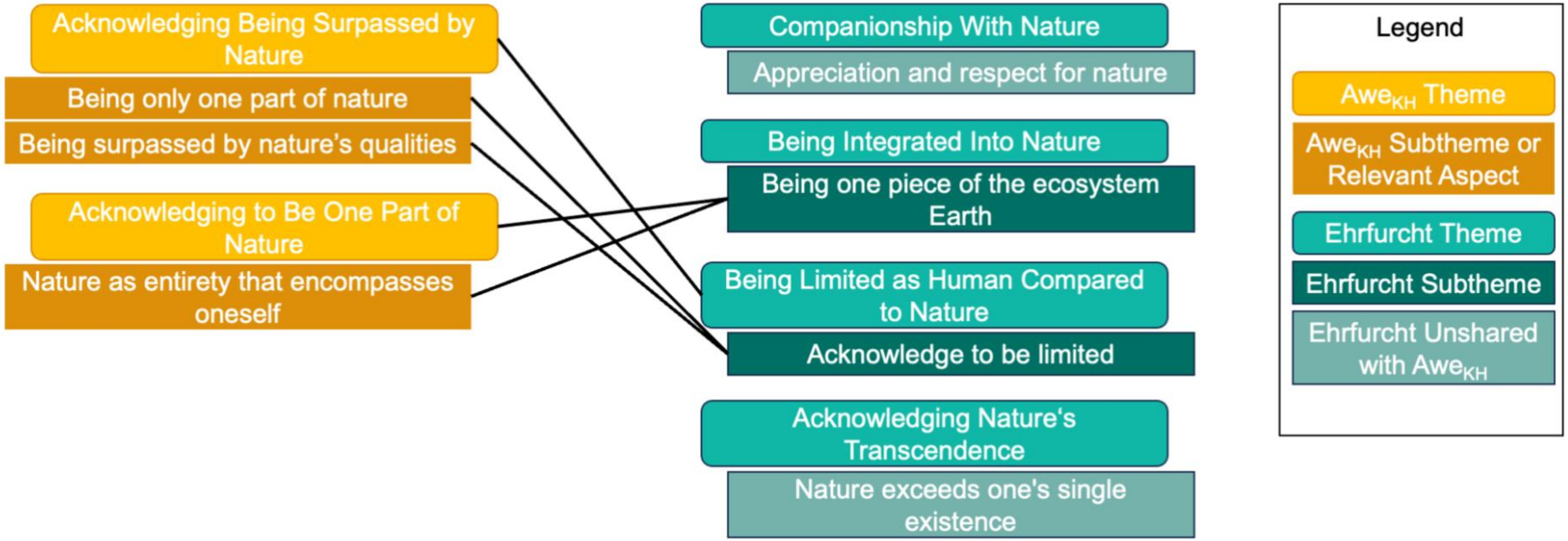
furcht. Although two different perspectives on the relationship between individuals and nature were described, they complemented each other. While Attitudinal Awe$_{KH}$ emphasized the greatness of nature, Attitudinal Ehrfurcht emphasized the limitations of the individual. For example, in Attitudinal Awe$_{KH}$ as being overwhelmed, participants described the characteristics of nature to go beyond their expectations, just as in Attitudinal Awe$_{KH}$ as being overchallenged, participants described the complexity of nature to overcharge them. Complementarily, in Attitudinal Ehrfurcht, participants reported acknowledging to not entirely know or understand nature.

Additionally, we found the theme Acknowledge to Be One Part of Nature in Attitudinal Awe$_{KH}$ to be similar to the theme Being Integrated Into Nature in Attitudinal Ehrfurcht. However, this was only the case if Attitudinal Awe$_{KH}$ was interpreted in the sense of ehrfurcht. For an overview, see Figure 6.

Differences Between Attitudinal Awe$_{KH}$ and Attitudinal Ehrfurcht. In contrast to interpretations of Attitudinal Awe$_{KH}$, descriptions of ehrfurcht featured Companionship with Nature, for example by facilitating nature's developments or having as little impact as possible on it. Similarly, interpretations of Attitudinal Awe$_{KH}$ did not reveal the theme Acknowledging Nature's Transcendence, that is manifest for example in acknowledging that nature would exceed the individual in terms of time as it would continue to exist even after the individual's death.

Figure 6

Conceptual links between Attitudinal Awe$_{KH}$ and Attitudinal Ehrfurcht



4.5 Discussion

Based on 21 qualitative interviews with German-speaking nature enthusiasts, we found multiple terms and conceptualizations attributed to awe$_{KH,}$ as well as diverse associated contexts. Furthermore, we found a distinction between a temporary (i.e., Temporary Awe$_{KH}$) and a longer-lasting type of awe$_{KH}$ (i.e., Attitudinal Awe$_{KH}$). Temporary Awe$_{KH}$ was characterized by the following themes: 1) Being Limited, 2) Outstanding Perception, 3) Being Fascinated by the Inexplicable. Attitudinal Awe$_{KH}$ was characterized by the themes 1) Acknowledging Being Surpassed by Nature and 2) Acknowledging to Be One Part of Nature. Although awe$_{KH}$ and ehrfurcht shared some of the themes, they differed in several themes too.

4.5.1 Awe$_{KH}$ in the German Context

Comparing awe$_{KH}$ with German ehrfurcht in the German context revealed fundamental differences in meaning. Accordingly, we are skeptical that study findings based on awe$_{KH}$ can be transferred to ehrfurcht in the German context, contrary to what, for instance, Possler (2021) suggested. Incorporating the subjective meanings that participants attached to awe$_{KH}$ and ehrfurcht allowed us to investigate awe$_{KH}$ and ehrfurcht in a contextualized way. Previous cross-cultural studies on awe have been centering solely around the term “awe” or its translations (e.g., Chirico et al., 2024; Razavi et al., 2016; Stellar et al., 2024), thus, any context that shapes the meaning of the concept has been removed. The term as a decontextualized expression of the concept is therefore likely to lose at least some of its meaning (Hutmacher & Franz, 2024). Accordingly, research that is based on the decontextualized expression of awe makes it difficult to interpret the data and eventually impedes theory building.

4.5.2 Different Meanings Attached to Awe$_{KH}$ in the German vs. the US-American Context

Generally, we found that the meanings attached to awe$_{KH}$ in the German context differed substantially from the meaning described in the US-American context. First of all, German participants mostly attached terms other than ehrfurcht to awe$_{KH,}$ such as "überwältigt sein" ("being overwhelmed") or "überfordert sein" ("being overchallenged"). It is therefore questionable whether awe$_{KH}$ can be accurately translated by ehrfurcht in the German context.

Second, other than proposed in awe$_{KH}$ from the US-American context, we did not find the combination of vastness and NFA in awe$_{KH}$ in this German sample – raising doubts about the applicability of awe$_{KH}$ in the German context. Though we found expressions of perceived vastness, we could not find expressions of perceived NFA. Rather, expressions of participants' inability to imagine or process something were present. Deviating from these findings, those participants who identified awe$_{KH}$ as ehrfurcht *did* interpret the combined presence of vastness and NFA as ehrfurcht. However, the combination of vastness and NFA was not recognizable in their reports of awe$_{KH}$.

Third, while awe$_{KH}$ was assigned to the psychological category of a state in the US-American context (Keltner & Haidt, 2003), our analysis showed that German participants classified awe$_{KH}$ as both a state and a trait. For instance, awe$_{KH}$ referred to childhood experiences of not understanding certain things in the world, or to the fundamental acceptance to be one part of the greater system of nature. Given these differences in interpretations of awe$_{KH}$, the research pratice that solely provides participants with a definition of a concept seems insufficient to make sure that researchers and participants share the same meaning of this concept (see Cong et al., 2022; Goldy, 2020). Without knowing the meaning of awe$_{KH}$ in a given context, it

remains very difficult for researchers to interpret the collected data in a meaningful way.

4.5.3 One Concept, Multiple Meanings

Furthermore, we found that participants attributed a whole range of different meanings to awe_{KH}. While for one participant awe_{KH} meant curiosity and respect when following an animal track in the forest, for another it was being shocked when confronted with the destructive forces of water during a flood disaster, and for yet another it was fear of the unknown that made people avoid going into the forest. Thus, even when awe_{KH} is examined only within a single culture as opposed to several cultures, meanings vary. This highlights the context-dependence of psychological concepts: as the meaning and use of psychological concepts are shaped by language and social processes, it follows that the meaning and use of psychological concepts vary between and within individuals and are subject to constant change (Baker & Hacker, 1982; Hutmacher & Franz, 2024; Wittgenstein, 1953).

4.5.4 No Connectedness with Space in Temporary Awe_{KH}

A large proportion of participants referred to space as context to explain their perception of Temporary Awe_{KH}. Participants particularly pointed out the vast physical dimensions of space, which were extremely difficult or impossible for them to comprehend. It seemed that the virtual intangibility of things in space was central to Temporary Awe_{KH}.

While connectedness played a fundamental role in ehrfurcht in terms of an emotional and identity-related connection with nature (Katz & Hicks, 2025), connectedness only played a marginal role in interpretations of awe_{KH}. This may be linked with the dominance of space as setting in awe_{KH}: the physical and mental

distance of space as context of awe_{KH} might go hand in hand with the difficulty to feel connected with space.

Similarly, resonance with nature as well as humility only played a minor role in Temporary Awe_{KH}. This may be explained in line with the marginal presence of connectedness. Without a connection perceived, it might be difficult to feel addressed by what is perceived and to resonate with it. Without a connection perceived, individuals might also find it difficult to acknowledge nature as counterpart but might rather consider it to be the setting for them to live in. In line with this, humility might not be a matching emotion.

4.5.5 The Role of Need for Accommodation (NFA) in Awe_{KH} and Ehrfurcht

With regard to the role of NFA, the following discrepancy arises: while our results did not indicate any significance of NFA in awe_{KH} or ehrfurcht, some participants identified awe_{KH} as ehrfurcht. It seemed that to them, the combined occurrence of vastness and NFA was a suitable description for ehrfurcht. In light of these findings, at least two explanations are plausible:

1) In our study, the NFA did not appear to be a necessary characteristic of awe_{KH} or ehrfurcht in the German context. From this follows that the NFA is not a necessary criterion for awe_{KH} or ehrfurcht in the German context. However, one could argue that 2) it is generally difficult to report on NFA. As our results show, participants found it difficult to understand and apply awe_{KH}. This may be partly because usually people are no experts in metacognitive thinking (Karpicke et al., 2009; Ku & Ho, 2010) such as monitoring mental accommodation. On the other hand, many people find it difficult to identify their needs with regard to personally relevant matters, such as their needs in their romantic relationships (Rosenberg, 2015). Identifying needs related to

personally less relevant matters as metacognitive processes might be all the more challenging. Assuming that individuals have succeeded to identify NFA, it may be an additional challenge to put the identified need into words that can adequately express them. In sum, reporting NFA seems to be a relatively demanding undertaking. Accordingly, it may be that NFA occurs in awe_{KH} or ehrfurcht and we were just not able to detect it. However, this raises the question of whether awe_{KH} is generally testable, since neither the participants' introspection nor the researchers' analysis was able to detect any evidence of the NFA.

4.6 Limitations

The participants in our study were exclusively nature enthusiasts. It therefore remains unclear what significance our study has for people who are not nature enthusiasts.

Furthermore, a few participants stated that they could not relate to awe_{KH} themselves, but could relate it to other people. Therefore, some of the participants' statements about awe_{KH} refer to attributions made about other people, potentially biasing the overall picture of awe_{KH}. Since these participants could not relate to their inner experience of awe_{KH}, details on perceptions of awe_{KH} are limited.

4.7 Implications

Our study shows that the meaning of awe_{KH} differs between the US-American context and the German context. Furthermore, our study shows that ehrfurcht, i.e., the German translation of awe, has a different meaning than awe according to the dominant definition awe_{KH}. We therefore propose the following implications:

First, we encourage to revisit the conceptualization of awe. As the concept of awe is yet unclear, awe research is built on a weak theoretical foundation and is linked to difficulties in interpreting empirical data (Katz & Franz, 2025). What is needed is

research that tests awe_{KH} as well as competing proposals for conceptualizing awe (Katz, in press).

Second, as part of this conceptualization process, we argue for a culturally sensitive investigation of awe. Our study results suggest that awe_{KH} cannot represent ehrfurcht in the German context. So, too, did researchers in a Japanese context have difficulties to find empirical evidence for the presence of NFA, one of the characteristics that is assumed to be necessary for awe_{KH} (Nakayama & Uchida, 2020). As the meanings of concepts also depend on the context in which they are applied (Hutmacher & Franz, 2024), it appears to be essential to take the linguistic and cultural context of a study into account. Given the limited applicability of awe_{KH} beyond the US-American context, studies from other languages and cultures are needed to investigate awe_{KH} in terms of its cross-cultural applicability and by this contribute to the much-needed fundamental empirical test of awe_{KH}. Possible approaches to researching awe in a culturally sensitive way include, for example, combining quantitative and qualitative research methods. This can reduce the uncertainties associated with applying only the term “awe” or its translations in studies (Franz, 2023; Hutmacher & Franz, 2024; Mason et al., 2023). Furthermore, mixed methods approaches can reveal in detail the subjective meanings that participants attach to awe or its translations and can integrate them into quantitative approaches.

Third, we encourage researchers to acknowledge the fuzziness and ever-changing nature of psychological phenomena when investigating awe and ehrfurcht. As awe and ehrfurcht are embedded in linguistic and social practices, their meaning shifts and is shaped by the given contexts (Brick et al., 2022; Hutmacher & Franz, 2024). Given the strong influence of US-American awe_{KH} in awe research, future research should specify the epistemological assumptions about awe_{KH} and reflect on the contexts under which awe_{KH} was originally developed. On the one hand, this allows us to identify the

scope and limitations of awe_{KH}. On the other hand, the epistemological assumptions about awe_{KH} may inform the selection of designs and methods for investigating and improving awe_{KH}.

Given the context-dependence of awe and ehrfurcht, both likely have multiple facets and modes of expression. A multitude of methodological approaches should be discussed (Bringmann et al., 2022) and tested, as "[each] approach [has] a certain perspective on the psychological phenomenon under investigation, meaning that it can address certain questions while it is blind to others" (Hutmacher & Franz, 2024, p. 8). This is in contrast to current approaches that investigate awe in a decontextualized way, such as in single-item assessments of "awe"or its translations (for more detail, see Katz & Franz, 2025). It is highly likely that these approaches can only reflect a fraction of the meaning of awe, but the part of the meaning that arises from the context is missing. Investigating awe and ehrfurcht in a contextualized way, that is including cultural sensitivity, may advance their conceptualizations. Specifically, one could ask questions such as: When is awe or ehrfurcht an attitude?; When is it a way of moving?; When is it an experience?

4.8 Conclusion

This study challenges the linguistic and cultural comparability of awe_{KH}, the dominant definition of awe in the research field. By this, it informs further cross-cultural investigations of awe. The results of our study suggest that the meaning of awe_{KH} differs between the German and the US-American context. Additionally, our results revealed that awe_{KH} differs from ehrfurcht, i.e., the German translation of awe. Since our study is only a first step toward more clarity about the conceptualization of awe, many questions remain. For instance, what is the role of connectedness and NFA in awe_{KH}, and, more generally, how applicable is awe_{KH} across further linguistic and

cultural contexts? We hope that our study will contribute to a growing body of research that focusses on the cross-cultural investigation of awe on the one hand, and to the general conceptualization process of awe on the other.

4.9 Bibliography Chapter 4

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4.10 Appendix Chapter 4

Appendix A

Table A1

Interpretations of Temporary Awe$_{KH}$ and the respective themes

Ehrfurcht	Overwhelmed	Overchallenged
Being Limited	**Being Limited**	**Being Limited**
Limits of Mental Capacities	**Limits of Mental Capacities**	**Limits of Mental Capacities**
Mentally overchallenged by the complexity, dynamic, dimensions or amount of the perception	Mentally overchallenged by the complexity, dynamic, dimensions or amount of the perception	Mentally overchallenged by the complexity, dynamic, dimensions or amount of the perception
-	-	Unable to understand the connections between the elements
Unable to make a mental representation of nature	Unable to make a mental representation of nature	Unable to make a mental representation of nature
-	Unable to think	Unable to think
-	-	Also: No limits of mental capacities
Capable to act in moments of limited mental capacities	-	-
-	Perception seems unreal or incorrect	-

Ehrfurcht	Overwhelmed	Overchallenged
-	Overchallenged by cognitive dissonance	-
No blocking of complexity	Avoid complexity of nature to satisfy need for control	Avoid complexity of nature to satisfy need for control
No need to fully understand	-	No need to fully understand
-	-	Basic trust allows to accept not-understanding certain things in nature
Limited Power	**Limited Power**	**Limited Power**
Capable to act in moments of limited power	-	-
-	Perception of being powerless in the face of nature	Perception of being powerless in the face of nature
Smallness	**Smallness**	**Smallness**
Realizing to be of little relevance compared to vastness of nature	Realizing to be of little relevance compared to vastness of nature	Realizing to be of little relevance compared to vastness of nature
Realizing that personal problems are less severe in the face of greater nature	-	-
-	Realizing to be irrelevant for nature's thriving	-

Ehrfurcht	Overwhelmed	Overchallenged
-	-	Realizing to be physically smaller than nature
Outstanding Perception	**Outstanding Perception**	**Outstanding Perception**
Perception goes beyond the usual dimensions, e.g., in terms of size (bigger than me), dynamic, ambiguity	Perception goes beyond the usual dimensions e.g., in terms of size (bigger than me), dynamic, ambiguity	Perception goes beyond the usual dimensions e.g., in terms of size (bigger than me), dynamic, ambiguity
-	Realize that nature is unavailable, rather, it is a gift	Realize that nature is unavailable, rather, it is a gift
-	High intensity of perception, e.g., being "captured"	-
-	Perception goes beyond the usual dimensions, resembling a traumatizing event	-
Emotions	**Emotions**	**Emotions**
Fascination	Joy	-
Wonder in the face of the unexpected character of nature	Wonder at the special character of nature	Wonder in the face of the inexplicability of nature
Fear of the unpredictable dynamics of nature	-	Fear in the face of complexity or vastness of nature, scared by the unknown dimensions of it

Ehrfurcht	Overwhelmed	Overchallenged
-	Gratitude for personal experiences in nature	-
-	Surprise at nature's versatile character	-
Being moved by the uniqueness of nature, by being allowed in nature‘s intimacy	-	-
Beauty	**Beauty**	**Beauty**
Beauty in colors and composition of nature	Beauty in colors and composition of nature	Unspecified beauty
Ambivalent Perception	**Ambivalent Perception**	**Ambivalent Perception**
Perceptions of awe_{KH} can be either positive in valence (e.g., beauty of nature) or negative (e.g., sadness about anthropogenic environmental crises) or both	Perceived ambivalence between nature’s beauty and its destruction	Not present
Perceived ambivalence between fear and wonder	-	-
Fascinated by the Inexplicable	**Fascinated by the Inexplicable**	**Fascinated by the Inexplicable**
Intangible Dimensions	**Intangible Dimensions**	**Intangible Dimensions**

Ehrfurcht	Overwhelmed	Overchallenged
Opening up to the inexplicable	Opening up to the inexplicable	Fascinated *because* one cannot understand the dimensions
Connectedness	**Connectedness**	**Connectedness**
Being emotionally connected to elements in nature	Not present	Not present
Perceiving oneself as relevant part of nature	Exception: considering oneself as a part of nature	-
Considering oneself to physically be part of nature as one's body is made from the same material	-	-
Resonance with Nature	**Resonance with Nature**	**Resonance with Nature**
Feeling personally addressed	Feeling personally addressed	Not present
Spirituality, Religiosity, Mindfulness	**Spirituality, Religiosity, Mindfulness**	**Spirituality, Religiosity, Mindfulness**
Earthly and transcendental perceptions oscillate and thus allow awe$_{KH}$	-	Not present
Becoming devout in nature	-	-
Calming down	-	-
Space for reflection	-	-

Ehrfurcht	Overwhelmed	Overchallenged
-	Perception of nature's beauty in awe_{KH} is equated with a church service	-

Note. Ehrfurcht = Awe_{KH} being interpreted as ehrfurcht; Overwhelmed = Awe_{KH} being interpreted as being overwhelmed; Overchallenged = Awe_{KH} being interpreted as being overchallenged. - = Information not available. The order of themes appears in the order of their mentioning in the article.

5. General Discussion

“Always Answer the Question, Better Than to Ask It All Your Life”

(Swift, 2025, ll. 48-49)

Psychological research on awe has sparked great interest in the past decades and continues to grow rapidly. Reports on associations with, for example, pro-environmental behavior (Gao, 2025) and connectedness to nature (Liu et al., 2023; Ng et al., 2023; Yan et al., 2025; Yang et al., 2018; Zhou et al., 2025 etc.) suggest that awe may hold great potential for addressing societal challenges such as the climate or biodiversity crisis. However, as I argue in this dissertation, current research lacks a precise conceptualization of awe which makes it difficult to interpret study results and to develop a sound theory of awe. In addition, the insufficient quantity and quality of cross-cultural awe research make it difficult to generalize conclusions from US-American dominated research on awe to Non-US-American contexts. Ehrfurcht, the German translation of awe, differs conceptually from US-American awe_{KH}, the dominant definition of awe in the research field. The meanings attributed to awe_{KH} differ between the German and the US-American context. In this dissertation, I highlighted the importance of advancing the conceptualization of awe, advocated for culturally sensitive research on awe, and strived to lay a foundation for researching awe in the German context.

5.1 Problems in Awe Research

The article presented in Chapter 2 asserts that awe is conceptually unclear, which impedes the integration of research on awe. The article builds on the review of 168 publications on awe and reveals four main problems: First, the vast majority of publications in the research field is based on the definition proposed by Keltner and

Haidt (2003), which has not been empirically tested. Second, the review shows the strong focus on the term "awe" in investigations which hinders the interpretation of the collected data. Third, the theoretical foundation of awe was in some cases incongruent with their empirical applications. Fourth, the review reveals that cross-linguistic, cross-cultural, and cross-temporal research on awe is scarce, and that only a few of the cross-cultural studies take the culture-specific understanding of awe into account. Based on the results of this review, the article illustrates the consequences associated with the vague conceptualization of awe. For example, tautologies may arise when examining the relationship between awe and connectedness: since Bonner and Friedman (2011) defined connectedness as one of the central characteristics of awe, the hypothesis that awe is associated with stronger connectedness cannot be false.

In the article, we have suggested that individual understandings of awe should be a part of scientific analysis. This would allow researchers to more closely examine the contextual factors that are related to the individual expression of the characteristics of awe. Furthermore, we propose that research examines the contexts in which the specific characteristics of awe come into play. Generally, we call for further work on the conceptualization of awe, e.g., proposals of competing accounts of awe_{KH}. Moreover, we advocate for greater efforts of researchers to ensure consistency between the theoretical foundations of their research and their empirical application. Additionally, more attention needs to be paid to the subjective understanding of the term "awe" by study participants to ensure the comparability of studies. To this end, we propose to complement quantitative approaches with qualitative ones (Franz, 2023; Hutmacher & Franz, 2024; Mason et al., 2023). Finally, we call for expanding research on the cross-linguistic, cross-cultural, and cross-temporal comparability of awe and its equivalents. This approach aims to overcome the problems identified in awe research in this article by examining awe in a contextualized manner.

5.2 Ehrfurcht in the German Context

Chapter 3 offers a culturally sensitive empirical study of awe in the German context based on its translation, ehrfurcht (Collins Dictionary, n.d.-b). Based on 21 qualitative interviews with nature enthusiasts, two types of ehrfurcht become apparent: a short-term type (i.e., Temporary Ehrfurcht) and a longer-lasting type that resembles an attitude (i.e., Attitudinal Ehrfurcht). Perceptions of both types reveal a close relationship between humans and nature that has a strong impact on humans. Despite these similarities, Temporary and Attitudinal Ehrfurcht differ. For example, the starting point of Temporary Ehrfurcht seems to be located outside the individual, while Attitudinal Ehrfurcht seems to be located within the individual. Additionally, this chapter suggests that the perception of ehrfurcht transforms over time. Only after an initial feeling of being flooded, individuals are able to describe in retrospect what exactly they perceived in the first moments. Based on this exploration of ehrfurcht, we recommend examining ehrfurcht more extensively, e.g., in further settings, in other target groups etc. Subsequently, a psychological instrument for assessing ehrfurcht may be developed so that ehrfurcht can be more easily related to other variables. Finally, the expansion of research that is sensitive to language, culture, and time will contribute to contextualizing and clarifying awe.

5.3 Awe$_{KH}$ and Ehrfurcht in the German Context

In Chapter 4, we draw on the common scientific practice of defining awe by awe$_{KH}$ to investigate awe in the context of the language and culture of the target group. This chapter focusses on three aspects: First, it maps out the meanings that individuals from a non-US-American context attach to awe$_{KH}$, i.e., awe$_{KH}$ as ehrfurcht, as being overwhelmed, or as being overchallenged. Second, it compares the meaning of US-American awe$_{KH}$ with German ehrfurcht. Third, it compares the meaning of US-

American awe_{KH} with the meaning of awe_{KH} in the German context. The article shows the meaning attributed to awe_{KH} in the German context is different from that attributed to ehrfurcht in the German context. Accordingly, awe_{KH} cannot serve as a sufficiently precise theoretical basis for the study of ehrfurcht in the German context. A different theoretical basis is needed for the study of ehrfurcht. Furthermore, the article shows that the meaning attributed to awe_{KH} in the US-American context is different from that attributed to awe_{KH} in the German context. This suggests that awe research based on awe_{KH} in the US-American context is incongruent with that in the German context. This conclusion gives rise to doubts as to how previous findings on awe from the US-American context are transferable to the German context. This article illustrates the need to investigate awe in a culturally sensitive way and invites researchers to embrace the context dependence and associated vagueness of psychological concepts, which is manifest also beyond the contexts of language or culture (Hutmacher & Franz, 2024; Hutmacher & Mayrhofer, 2021).

In summary, this dissertation identifies the problems in awe research that contribute to the lacking clarity of the concept and ultimately prevent the development of a strong theory. This dissertation contributes to advancing the concept of awe by investigating it in a contextualized manner. In addition, the way is paved for research on ehrfurcht in the German context. In exploring ehrfurcht in the German context, this dissertation extends cross-cultural research on the one hand and revisits the conceptualization of awe on the other hand. This initiates a process that may ultimately be able to describe the potentials of awe in a meaningful way.

5.4 Theoretical Implications and Avenues for Future Research

This dissertation identifies problems in awe research which lays the foundation for future research on awe. Since fundamental questions of awe research are addressed,

the implications for the near future are primarily research focused. However, considering the qualitative reports on awe and ehrfurcht so far, I believe that both phenomena may have great potential for application, for instance in promoting sustainable behavior or in facilitating individuals' search for meaning in life.

The exploration of ehrfurcht (Chapter 3) suggests that perceiving Temporary and Attitudinal Ehrfurcht in nature is closely tied to sustainable behavior. Participants reported that their Attitudinal Ehrfurcht was reinforced by experiences of Temporary Ehrfurcht, leading them to adopt pro-environmental behaviors, such as rather buying organic food than non-organic, as an integral aspect of their ehrfurcht. Similarly, US-American participants reported how perceptions of awe motivated them to volunteer for natural resource conservation (Hicks & Stewart, 2020). Given the need for action in the biodiversity and climate crisis (Calvin et al., 2023; Díaz et al., 2019), these findings may be incorporated in educational programs across the lifespan to facilitate interaction with nature and also perceptions of ehrfurcht and awe to a broad audience. Initiatives such as the “National Nature Work Days” in the Netherlands provide the general public across the country once per year with an accessible opportunity to engage with nature (LandschappenNL, 2025) and may serve as inspiration for more structured programs of nature interaction (for additional ideas, see Richardson, 2025).

Additionally, our exploration of ehrfurcht suggests that Temporary Ehrfurcht is linked to finding meaning in life. Given the widespread pursuit of self-actualization in westernized countries, there is a lack of orientation and fear of not fully realizing one's own potential (Strenger, 2011). Sources of meaning, such as perceptions of ehrfurcht, may be of particular relevance in this context. Participants reported perceptions of Temporary Ehrfurcht when consciously interacting with nature that would have conveyed a feeling of being integrated into the larger cycle of nature which

incorporated a sense of meaning in life. For example, activities such as forest bathing allow for attentive and considerate interaction with nature (Siah et al., 2023), which may likely be accompanied by Temporary Ehrfurcht and sensing meaning in life.

Despite the potential for application of awe and ehrfurcht, their thorough conceptualization is first required to establish solid theories on both. Consequently, these theories will be able to form the basis for application-oriented research that allows for meaningful interpretations.

5.5 Implications of the Unclarity of the Awe Concept

In order to address the current problems in awe research effectively, it is important to first identify them as precisely as possible. The article in Chapter 2 is dedicated to this initial phase of identifying the problems. First and foremost, the article in Chapter 2 identifies awe_{KH} as the dominant definition of awe in the research field. Since awe_{KH} has not been put to the test empirically and its application in theoretical frameworks of studies on awe has not been questioned, there is a need to resume the conceptualization process of awe, which is elaborated on in Chapter 5.5.1. This elaboration represents my reply (Katz, in press) to Friedman and Bonner's (2025) comment on the article presented in Chapter 2 (Katz & Franz, 2025).

5.5.1 Revisiting How We Conceptualize Awe: Reply to Friedman and Bonner (2025)

Tini L. C. Katz*

University of Kaiserslautern-Landau, Germany

*corresponding author

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Abstract

In this reply to Friedman and Bonner's (2025) comment on our article about the conceptual vagueness of awe (Katz & Franz, 2025), I express my gratitude for their supporting ideas and my appreciation for their newly suggested account on awe that is based on transpersonal self-expansiveness. I also clarify that we listed several alternative approaches to awe instead of only one in our original article. Moreover, I add nuance to Friedman and Bonner's (2025) classification of the currently dominant definition of awe as a theory, thus aiming to specify the current problems in awe research in order to be able to address them more accurately in the future. I welcome the renewed discussion on the conceptualization and exploration of competing accounts of awe, and emphasize the need to test the dominant definition of awe to allow for a sound theory of awe.

Keywords: awe, conceptual problems, conceptualization, theory building

Revisiting how we conceptualize awe: Reply to Friedman and Bonner (2025)

I am grateful to Friedman and Bonner (2025) for their supportive and inspiring comment on our article on the conceptual vagueness of awe (Katz & Franz, 2025). I especially appreciate their new competing account to Keltner and Haidt's (2003) approach to awe (i.e., perceiving the combination of vastness and the need for accommodation; awe_{KH} hereinafter). In their new account, Friedman and Bonner (2025) applied the framework of transpersonal self-expansiveness (i.e., expanding the self-concept spatially and temporally) as a new perspective on awe, aiming to depict awe regardless of whether something is perceived to be large or tiny. In light of our article's suggestion to fix the problems of current awe research, Friedman and Bonner's comment may be regarded as a first step to reinitiate the conceptualization process of awe in psychological research. Furthermore, the authors supported our assertion that it is difficult to develop a comprehensible theory of awe if the foundational concept is yet unclear.

In this reply, I aimed to resolve any misunderstandings and add nuance to clarify the problems of the research field so that they can be addressed precisely in the future. Other than stated in the comment (Friedman & Bonner, 2025), we listed several alternative approaches to awe instead of only theirs (i.e., Bonner & Friedman, 2011; Chirico et al., 2024; Halstead & Halstead, 2004; Konecni, 2005; Schneider, 2017; Sundararajan, 2002). This variety of approaches illustrates the multiple perspectives possible on awe and may inspire further work on competing accounts to awe_{KH}.

Furthermore, I want to add nuance to the fact that Friedman and Bonner (2025) labeled awe_{KH} as a theory. Awe_{KH} was intended as an approach to awe, but not as a theory in its own right. In their original publication, Keltner and Haidt (2003) indicated that awe_{KH} was an "approach" to awe that lacked "empirical evidence" (p.

311). It would therefore be doing Keltner and Haidt's intention an injustice to label it a theory. However, the point is that most scholars in awe research have not tested awe_{KH} and uncritically incorporated it into their own research (Katz & Franz, 2025). After more than 20 years of research based on awe_{KH} as the dominant definition, awe_{KH} might now easily be misclassified to be a theory, which can obscure the need to test it. Research is needed that puts awe_{KH} to the test, as well as competing conceptualization proposals that can "challenge, improve, or complement awe_{KH}" (Katz & Franz, 2025, p. 9). Discourse on this issue may provide the impetus to overcome uncritical adoption of awe_{KH}. Accordingly, I welcome Friedman and Bonner's new competing account that seeks to characterize awe from the perspective of transpersonal self-expansiveness, reviving the dormant discussion about the conceptualization of awe.

In summary, this reply clarifies the number of proposed conceptualizations of awe that we named in our original article, as well as it is underlining and elaborating on the problem in awe research that most publications uncritically refer to the untested awe_{KH} to define awe.

5.5.1.1 Bibliography Chapter 5.5.1

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Note. At the time of submission of this dissertation, this manuscript had been published online ahead of print. It has since been published in the *American Psychologist, 81*(1), 82–93. https://doi.org/10.1037/amp0001520

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5.5.2 Implications from Methodological Problems in Awe Research

In addition to the conceptual unclarity of awe, the article in Chapter 2 identifies methodological problems in awe research. These are evident, among others, in the inconsistency between conceptual approaches to awe and their respective empirical application. Greater attention is needed when transferring theoretical concepts into empirical implementation. This way, study designs can be more robust, allowing for a more meaningful interpretation of the data. Another methodological problem identified in Chapter 2 is that much of awe research centers around the term "awe" which makes it difficult to meaningfully interpret the data. We suggest to combine quantitative methodological approaches with qualitative ones to overcome this difficulty. For example, in a sequential exploration design (Fetters et al., 2013) quantitative research on awe can be comined with qualitative explorations of the meanings that participants attach to the term "awe". Furthermore, qualitative approaches hold the potential to improve existing quantitative instruments for assessing awe (see also Mason et al., 2023). For example, qualitative analysis of the frequently used *Awe Experience Scale* (*AWE-S*; Yaden et al., 2019) allows researchers to determine how well participants' interpretations of the items reflect researchers' intended meanings. Hence, appropriate adjustments of quantitative instruments are possible.

5.5.3 Implications from Problems Related to the Use of Concepts as Awe

Since the meaning of psychological concepts is shaped by the context in which they are dealt with, it is likely that awe_{KH} cannot describe awe fully and for all time. Rather, it is sensible to acknowledge that awe, being reported by laypeople, has a complex and ever-changing nature. This implies incorporating laypeople's rich and varying meanings of awe into scientific analyses. This means to explicitly combine the

perspectives of researchers with those of laypeople, as these can inform each other and, thus, better account for the complexity of awe. Accordingly, previous attempts to classify awe by major psychological entities (e.g., an emotion, an experience) lose relevance (Chirico & Gaggioli, 2018; Schneider, 2017, 2020), as awe in its complexity can potentially be classified by several psychological entities.

Given the context-dependence of psychological concepts such as awe, it is relevant to direct the research focus toward the contexts in which awe is reported. To examine approaches to awe such as awe_{KH}, it means to specify under which circumstances awe_{KH} reveals which aspects of awe. This approach is based on Wittgenstein's (1953) assumption that the entirety of concepts lies in their vagueness and complexity, which arises from their context-bound use (Wittgenstein, 1953). Therefore, "the only way to get a given psychological expression into sharp view is to elaborate in detail its manifold uses, to examine the circumstances of its employment" (Baker & Hacker, 1982, p. 229). Possible research questions against this background are, for example: Under which circumstances is awe_{KH} an experience?; Under what circumstances is awe_{KH} an attitude?; Under what circumstances is awe_{KH} a behavior?

Referring to methodological aspects and problems related to the use of concepts such as awe, the review presented in Chapter 2 implies the investigation of awe that is sensitive to language, culture, and time. Again, as contexts determine the meaning of concepts, it is essential to take linguistic and social circumstances into account when studying awe. Incorporating these contexts is essential for accurately assessing awe, ensuring the comparability of data within and between samples, establishing consistency between awe_{KH} and its equivalents in cross-cultural settings, and advancing the conceptualization of awe_{KH}.

5.6 Implications for Researching Awe and Ehrfurcht in the German Context

In order to examine awe in a culturally sensitive way, we explored ehrfurcht, the direct German translation of awe. Previous research on awe in the German context mostly used the term "awe" or referred to descriptions of awe_{KH} (Loy et al., 2024; Possler, 2021; Weger & Wagemann, 2021). However, the term "awe" does not exist in German language, and it was unknown whether there exists something like awe_{KH} in the German context. Hence, it is unclear what exactly was assessed in these studies with the dependent variable awe. Furthermore, it is extremely difficult to determine how the findings relate to ehrfurcht.

Based on the exploration of ehrfurcht in Chapter 3, however, a first step is done to investigate ehrfurcht in the German context and to relate it to awe in the future. Given the diversity of characteristics of ehrfurcht that emerged in our initial exploration, as well as the context-specific nature of the concept, further qualitative research on ehrfurcht is needed. Research on *meaning in life*, that is "a fundamental sense of meaning, based on an appraisal of one's life as coherent, significant, directed, and belonging" (Schnell, 2009, p. 487) can serve as a guiding light here (Schnell, 2009, 2016). In a large research project, researchers proceeded in multiple stages to arrive at an understanding of meaning in life, which eventually resulted in a questionnaire for assessing meaning in life that was validated in large samples. The conceptualization process of meaning in life was informed by extensive qualitative interviews and focus groups. Given that psychological research on ehrfurcht is still in its infancy, I recommend this combination of methods for further exploration of ehrfurcht. Qualitative interviews allow for a deeper understanding of the meaning and application of ehrfurcht in different contexts, as well as for a broader understanding of the multiple perspectives

on ehrfurcht. For this reason, it is particularly important to select a sample that is as diverse as possible. In a subsequent step, focus groups allow to identify the discourses in which ehrfurcht plays a role, as well as its linguistic specificities (e.g., relevant terms, conditions of use). Qualitative content analysis (e.g., according to Kuckartz & Rädiker, 2022) allows to reveal central themes that characterize ehrfurcht as well as its linguistic and situational contexts of application.

5.6.1 Implications for the Development of a Psychological Instrument to Quantitatively Assess Ehrfurcht

Based on these qualitative explorations of ehrfurcht, quantitative approaches can be developed to investigate ehrfurcht with larger samples. The identified themes may serve as a framework for item development, and the contexts may provide information about phrasing and relevant occasions of application. The main focus in this process is on the development of a valid psychological instrument to assess ehrfurcht. Based on the exploration of ehrfurcht (Chapter 3), the samples should be diverse, at least concerning the personal relevance of religiosity, spirituality or mindfulness, as well as their nature contact. However, further relevant factors should be identified.

In the following steps of instrument development, it is important to validate it both quantitatively and qualitatively. Quantitative validation can shed light on content validity (i.e., whether the relevant characteristics of a concept are represented by items), criterion validity (i.e., the correlation between the instrument results and relevant external criteria), and construct validity (i.e., the correlation between instrument results and the results of comparable instruments). However, it cannot reveal how well participants' view matches with the ones of researchers. As participants are mostly laypeople rather than experts, their view on a concept such as ehrfurcht may differ from the ones of ehrfurcht researchers (Hutmacher & Franz,

2024). It is generally reasonable to incorporate laypeople's perspectives on concepts for the reasons outlined in Chapter 5.5.3. Accordingly, it is sensible to also check the developed psychological instrument with participants. That is, to qualitatively validate whether the characteristics of ehrfurcht in the instrument represent participants' perceptions of ehrfurcht well and whether participants interpret items similarly to what is intended by researchers. Possible methods for this qualitative validation are sequential explanation (Fetters et al., 2013), think-aloud protocols or cognitive interviews (Wolcott & Lobczowski, 2021). Qualitative validation is an important step in the process given the multitude of psychological instruments that have been shown to mismatch with participants' interpretations in the past (e.g., Arro, 2013; Diriwächter et al., 2005; Mason et al., 2023; Rosenbaum & Valsiner, 2011).

Finally, as psychological concepts are embedded in social contexts and closely linked to language, their meaning and rules of application are subject to change over time. Thus, it is vital to regularly check the quantitative and qualitative validity of the instrument. Temporal changes in meaning of the term, concept or their application may be detected and hence be reacted to accordingly.

Though cross-cultural comparisons are relevant and possible to a sufficient degree for conceptualizing awe at this point, it will only be in the long run to make detailed and solid comparisons of awe, ehrfurcht, and their equivalents. To conduct these comparisons, a more advanced level of conceptualizing ehrfurcht and awe is required. Only if the conceptualizations of ehrfurcht and awe are sufficiently clear, it can be clarified on a large scale which characteristics they have in common, and which differ.

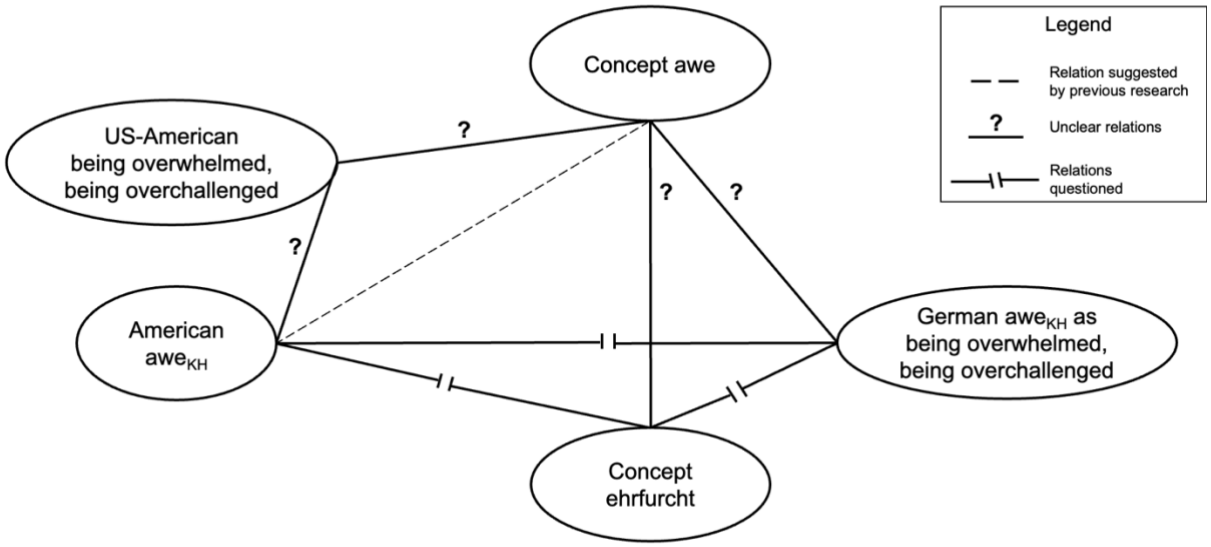
5.7 US-American Awe$_{KH}$ in the German Context

The majority of researchers have based their studies on awe$_{KH}$ to define awe. In Chapter 4, it is shown that the meaning of awe$_{KH}$, being developed in the US-American

context, differs significantly from the attributed meaning of awe_{KH} in the German context. Thus, it is likely that findings from the US-American context based on awe_{KH} are not applicable to the German context. If the meanings attributed to awe_{KH} differ between the respective cultural and linguistic contexts, study findings from one cultural and linguistic context are likely not applicable in another one. Furthermore, Chapter 4 shows that the meaning of awe_{KH} in the German context differs from ehrfurcht. This suggests that the currently dominant definition of awe is likely to not be applicable in the German context. Being overwhelmed and being overchallenged are attributed meanings of awe_{KH} in the German context. This leads to questions as to the extent to which these attributed meanings correspond better with awe than German ehrfurcht does. However, the question is also whether being overwhelmed and being overchallenged in the US-American context are also associated with awe_{KH}, or with awe, or with none of these (for an overview, see Figure 7).

Figure 7

Possible relations between awe, ehrfurcht, German awe_{KH} and US-American awe_{KH}



Since it is still unclear what awe is, none of the relationships between awe and other concepts can be tested at this stage. Once again, it becomes clear how far-reaching the fundamental problems in awe research are and how pressing the need to restart the process of conceptualizing awe. In addition, research designs are needed that can clarify the present conceptual confusion. For example, in order to determine the significance of awe_{KH} for cross-cultural research, it makes sense to first gain a richer understanding of the meanings that laypeople attribute to awe_{KH} in the US-American context. In contrast to awe researchers who are experts by definition, laypeople's perspectives form the basis of much psychological research data (Hutmacher & Franz, 2024). Due to the co-presence of expert and lay perspectives in studies, it is sensible to be familiar with both perspectives and to take them into account when interpreting the data.

An insightful study design may be the qualitative investigation of awe_{KH} in a US-American sample, paralleling the study from the German context presented in Chapter 3. Based on the meaning that laypeople from the US-American context attribute to awe, it is possible to investigate the applicability of awe_{KH} for describing awe. Based on the meaning that laypeople attribute to awe_{KH}, awe_{KH} can be complemented or modified, which advances the conceptualization process of awe. In addition, this design allows for comparisons of the meanings attributed to awe_{KH} between different cultural contexts, e.g., awe_{KH} in the US-American context compared to awe_{KH} in the German context. The enriched understanding of awe and awe_{KH} also facilitate the differentiation of awe from other concepts such as being overwhelmed or being over-challenged.

5.8 Cross-Temporary Changes of Psychological Concepts

Cross-temporary studies of awe and its equivalents are needed to ensure the applicability of assumptions about psychological concepts. Psychological concepts are embedded in social contexts that are constantly changing, as is the language used to express them (e.g., Baker & Hacker, 1982; Hutmacher & Franz, 2024; Wittgenstein, 1953). This raises the question as to whether people today still attach the same meaning to awe or ehrfurcht as people did for instance in 2003 or in 1917. The history of other psychological concepts, such as stress, reveals a change in meaning over time: while Hans Selye, one of the pioneers of stress research, referred to stress as "the state of an organism in adaptation and response to the environment" (Viner, 1999, pp. 393-394) at the beginning of the 20th century, various groups adapted the stress concept to underpin their own ideas, such as stress as a "unifying slogan for the unnatural effects of modern industrial civilization" (Viner, 1999, p. 401) as critics of the cultural and societal developments in the US described it at the time. Given the changeability of psychological concepts, there is a need to examine their meaning over time. Hence, large-scale longitudinal studies are needed that map the meaning of awe and ehrfurcht over time. A proxy for this admittedly financially and structurally intensive approach could be, for example, a qualitative study of psychological instruments for assessing awe or ehrfurcht. This would allow researchers to determine the meaning attributed to the items of a scale which, in turn, would allow them to clarify how well the meaning of awe or ehrfurcht in scientific discourse matches with that of study participants at a given point in time. Given this knowledge, the collected data can be interpreted meaningfully.

5.9 Conditions Linked to Types of Ehrfurcht or Awe$_{KH}$

The study presented in Chapter 3 and Chapter 4 reveals a distinction between a temporary and a longer-lasting type of ehrfurcht or awe$_{KH}$ (i.e., Temporary Ehrfurcht or Awe$_{KH}$ vs. Attitudinal Ehrfurcht or Awe$_{KH}$) in the German context. This fundamental distinction goes beyond previous research on the nature of awe or its equivalents, which has primarily been based on the conceptualization according to awe$_{KH}$, being a state. It might seem that previous research that has differentiated between a state and a trait manifestation of awe (e.g., Shiota et al., 2006, 2007) parallels with the temporary and attitudinal type of awe$_{KH}$ or ehrfurcht in the German context. However, while the attitudinal type refers to "the way individuals look at the world or nature and how they interact with it" (Katz & Hicks, 2025a, p. 16), trait awe is described as high frequency and/or intensity with which state awe, as suggested by awe$_{KH}$, is experienced (Shiota et al., 2007).

Given the fundamental differences in the character of ehrfurcht or awe$_{KH}$ in the German context, it is important to determine the conditions under which these concepts are described as the temporary or the attitudinal type. This knowledge can provide insights into the facets of the two types, as well as their rules of application. Relevant questions are: Under which conditions are ehrfurcht or awe$_{KH}$ described as the temporary type? Under which conditions are ehrfurcht or awe$_{KH}$ described as the attitudinal type? Which characteristics of the individual are relevant for descriptions of either type? Given the robust link between ehrfurcht and religiosity or spirituality (Chapter 3), spirituality seems to be a relevant aspect to consider in the further exploration of ehrfurcht, both as a condition of a situation and as a characteristic of an individual. Specifically, it is relevant to explore, among others, the meaning of reporting spirituality in association with ehrfurcht in nature; for instance, exploring

the facets of ehrfurcht that are revealed if ehrfurcht is described as a spiritual experience, or if spirituality is described as an access to ehrfurcht in nature. In addition, it should be investigated how well the temporary and attitudinal types of ehrfurcht or awe$_{KH}$ can be transferred from the setting of nature to other settings. It seems plausible that in a different setting such as music, attitudinal factors could play less of a role because music may be seen less as a counterpart to humans than nature is.

5.10 Interdisciplinary Perspectives on the Link Between Ehrfurcht and Religiosity, Spirituality, and Mindfulness

Given the robust link between religiosity or spirituality and ehrfurcht, as well as the shared interest of the disciplines of theology and psychology in ehrfurcht, interdisciplinary research on ehrfurcht in the German context is encouraged to complement the purely psychological perspective. Religion and spirituality have been shaping German culture (Weiss & Bungert, 2019); thus, individuals interact with religious and spiritual elements of culture regardless of whether they personally attach meaning to religion or spirituality. Theology can draw on its long tradition of research on ehrfurcht to broaden the comparably narrow perspective of psychology and formulate relevant research questions that may reveal further characteristics of ehrfurcht.

Future research avenues should first of all deepen and broaden scientific knowledge about ehrfurcht. One guiding question may be, for instance: What are the settings that people report in relation to ehrfurcht? This aims to identify the religiously or spiritually shaped cultural elements, which are associated with ehrfurcht. Reports on these cultural elements may be able to reveal more characteristics of ehrfurcht. The significance of such cultural elements was first revealed in the exploration of ehrfurcht (Chapter 3). For instance, Attitudinal Ehrfurcht was described in the context of

hunting deer, whose dead bodies were given special attention and decoration as a recognition of the shared creatureliness.

In this context, another guiding question arises that may deepen the understanding of ehrfurcht: What are the biographical specificities of individuals reporting on ehrfurcht? As individuals with an affinity for religiosity or spirituality have attributed experiences of Temporary Ehrfurcht in religious or spiritual terms (Chapter 3), this guiding question may shed light on the biographical context that individuals report ehrfurcht in. For instance, experiences of Temporary Ehrfurcht were interpreted as indications of the actions of a deity among those individuals having indicated religiosity or spirituality to be personally relevant.

5.11 Limitations

This dissertation reveals limitations that shall be discussed in greater detail. In the study on the exploration of ehrfurcht and awe_{KH} (Chapters 3 and 4), only nature enthusiasts were interviewed. Nature enthusiasts are defined as individuals who were members of a nature conservation organization in Germany at the time of the interviews. Although this selection of participants involved the potential that interviewees could relate to ehrfurcht and awe_{KH} in nature at all, statements about non-nature enthusiasts are inadmissible. Against this background, it seems sensible to conduct additional studies that shed light on the perspectives of people without a strong affinity for nature. This would allow the characteristics of ehrfurcht and awe_{KH} to be expanded and the themes identified based on the current sample to be put into context.

The exploration of ehrfurcht and awe_{KH} presented in Chapter 3 and 4 only addresses natural settings. Therefore, the findings cannot directly be transferred to other settings. For example, ehrfurcht has also been reported in the context of, for

instance, music (Weidringer, 2024) or architecture (Torkar, 2021). However, the characteristics of ehrfurcht that are identified in the setting of nature are by definition not applicable in the setting of music, as some of them directly refer to nature (e.g., Interact With Nature as Counterpart). Given this explicit reference to the setting of nature, it is unlikely that this theme plays a role in the setting of music. However, it could be insightful to investigate the similarities and differences in the characteristics of ehrfurcht in multiple settings. Possibly, there are characteristics of ehrfurcht that appear in modified form across settings. These could provide new insights into the characteristics of ehrfurcht and thus contribute to its fundamental conceptualization.

In the exploration of ehrfurcht and awe$_{KH}$ (Chapters 3 and 4), there is a congruence between the chosen setting of nature and participants' affinity for nature. However, it is unclear how the identified themes of ehrfurcht and awe$_{KH}$ are linked to this congruence. It is to be determined what an incongruence between individuals' affinity and the setting under investigation would imply. Such an incongruence would arise, for example, if ehrfurcht were examined in the setting of nature among individuals without a particular affinity for nature. In order to better understand the role of congruence between personality traits and setting, further studies are needed that systematically test this link.

Some of the interviewees referred to awe$_{KH}$ based on observations of other people, but not with reference to themselves. It cannot be ruled out that this interpretation of other people's behavior may have caused bias in the identified themes of awe$_{KH}$. Additionally, this outside perspective on other people is likely to having involved less differentiation in relating to awe$_{KH}$ since it is likely very difficult to get access to the inner perspective of other individuals purely by observing them. Furthermore, the fact that awe$_{KH}$ was in some cases reported with reference to other individuals does reveal information about individuals’ approaches to the US-American concept in the German

context. However, there may be bias in the merging of data from interviewees who attributed awe_{KH} to themselves and those who attributed awe_{KH} to other people. Further cross-cultural research should specifically address this varying attribution. One possible approach is to ask directly in an interview setting whether awe_{KH} is attributed to oneself. This may help to gain more insight into the rules of application of awe_{KH}.

5.12 Conclusion

"It Was the End of a Decade But the Start of an Age" (Swift, 2023b, ll. 10-11)

For more than two decades, awe has been extensively researched in psychology. Therefore, one might assume that research has developed a sufficiently clear understanding of awe. This dissertation argues that this is not the case. Based on the review of 168 publications on awe, it is shown why it is unclear what awe is: 1) The influential approach of awe_{KH} as definition of awe has not been put to the test, 2) the inconsistencies between a given theoretical approach and its application in the respective stimulus material complicate theory building, 3) the heavy reliance on the term "awe" in study designs impedes comparability of data across studies, and 4) the little attention to the variation in the meaning of awe and its equivalents across languages, cultures, and time do not allow to identify context-specific characteristics of awe and its equivalents. This dissertation lays the foundation for revisiting the conceptualization process of awe, which has already been positively received and continued by other researchers (Friedman & Bonner, 2025). The aim of developing a solid theory of awe will allow for the meaningful interpretation of study data.

This dissertation addresses the identified problems by first examining awe in a culturally sensitive manner in the German context, i.e., exploring ehrfurcht, the German translation of awe. Second, it examines the meaning attributed to awe_{KH} in

the German context. And third, it shows that ehrfurcht and the German meaning of awe_{KH} differ, which is why awe_{KH} is not suitable for researching ehrfurcht in German context.

I propose several ways to overcome the current problems in awe research: revisiting the conceptualization of awe, greater attention to the transfer of theoretical approaches into study material, and a stronger focus in study designs on the variability of awe across languages, cultures, and time. Approaches to account for the variability in the meaning of awe include combining quantitative methods with qualitative ones. This allows researchers to take into account the meanings that mostly lay study participants attach to awe.

Many people wonder why Taylor Swift is so successful. One of the main reasons is that she engages in an active relationship with her fans: Not only do her fans pick up on her songs and performances to create a picture of her, but she also responds to her fans' messages and actions (Beckett, 2024). For example, the initial version of the song "All Too Well" was the shortened version of a 10-minute long song, as Swift reported in an interview (Swift, 2021c). Since it was not only her favorite song of the album, but also her fans liked it a lot, she recorded the 10-minute version of the song later on, the story of which is played out in a short film (Derschowitz & Lamphier, 2021). At this point, Taylor Swift's art is co-created: inspired by her fans, she develops new art.

Similarly, when awe researchers incorporate the meanings that participants attach to awe into their scientific analyses, it can get much clearer what awe is. Given a reasonably precise conceptualization of awe in the future, its application in societally relevant domains is enabled.

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Original Publications and Contribution Statement

Katz, T. L. C., & Franz, D. J. (2025). What is awe? On an uncontested definition, conceptual ambiguities, and cultural limitations. *American Psychologist*. https://doi.org/10.1037/amp0001520

CRediT Role	Author 1: Tini L. C. Katz	Author 2: David J. Franz
1. Conceptualization	☒ equal	☒ equal
2. Data curation	☐ --	☐ --
3. Formal analysis	☒ --	☐ --
4. Funding acquisition	☐ --	☐ --
5. Investigation	☐ --	☐ --
6. Methodology	☒ equal	☒ equal
7. Project administration	☐ --	☐ --
8. Resources	☐ --	☐ --
9. Software	☐ --	☐ --
10. Supervision	☒ --	☐ --
11. Validation	☐ --	☐ --
12. Visualization	☒ --	☐ --
13. Writing – original draft	☒ equal	☒ equal

14. Writing – review & editing	☒ equal	☒ equal

Tini L. C. Katz David J. Franz

Katz, T. L. C., & Hicks, J. R. (2025). Surpassed by Nature: A Qualitative Exploration of Ehrfurcht (Awe) in German Context. [Manuscript under review for publication].

CRediT Role	Author 1: Tini L. C. Katz	Author 2: Jonathan R. Hicks
1. Conceptualization	☒ equal	☒ equal
2. Data curation	☒ --	☐ --
3. Formal analysis	☒ --	☐ --
4. Funding acquisition	☐ --	☐ --
5. Investigation	☒ --	☐ --
6. Methodology	☒ equal	☒ equal
7. Project administration	☒ --	☐ --
8. Resources	☒ --	☐ --
9. Software	☐ --	☐ --
10. Supervision	☒ lead	☐ supporting
11. Validation	☐ --	☐ --
12. Visualization	☒ --	☐ --
13. Writing – original draft	☒ --	☐ --
14. Writing – review & editing	☒ equal	☒ equal

Tini L. C. Katz Jonathan R. Hicks

Katz, T. L. C., & Hicks, J. R. (2025). Two words, one soul? English Awe and German Ehrfurcht in German Context and their Conceptual Link. Manuscript in preparation.

CRediT Role	Author 1: Tini L. C. Katz	Author 2: Jonathan R. Hicks
1. Conceptualization	☒ equal	☒ equal
2. Data curation	☒ --	☐ --
3. Formal analysis	☒ --	☐ --
4. Funding acquisition	☐ --	☐ --
5. Investigation	☒ --	☐ --
6. Methodology	☒ equal	☒ equal
7. Project administration	☒ --	☐ --
8. Resources	☒ --	☐ --
9. Software	☐ --	☐ --
10. Supervision	☒ lead	☒ supporting
11. Validation	☐ --	☐ --
12. Visualization	☒ --	☐ --
13. Writing – original draft	☒ --	☐ --
14. Writing – review & editing	☒ equal	☒ equal

Tini L. C. Katz Jonathan R. Hicks

Declaration

Declaration of Originality

I declare that I have written the submitted dissertation independently and without unauthorized external assistance, that I have not used any literature other than that specified in the dissertation and that I have marked all completely or approximately adopted text passages as well as graphics and tables. Furthermore, I confirm that the dissertation has not already been submitted and assessed elsewhere in this or a similar form.

Declaration of Generative AI and AI-assisted Technologies in the Writing Process

During the preparation of this work, I used DeepL Translate to improve readability and language. After using this tool, I reviewed and edited the content as needed and take full responsibility for the content of this dissertation.

November 22, 2025

Curriculum Vitae

Tini (Laura Christin) Katz

Education

PhD student November 2022 - present	**Surpassed by Nature: Awe, Ehrfurcht, and Their Conceptual Relationship** Supervisors: Prof. Dr. Gerhard Reese, Prof. Dr. Jonathan R. Hicks, RPTU University of Kaiserslautern-Landau Landau, Germany
Erasmus exchange August 2019 – January 2020	**MSc Psychology** University of Amsterdam, Amsterdam, Netherlands
Master's Degree April 2018 – August 2021	**MSc Psychology – 1.3** (very good; German scale: 1.0 = best, 4.0 = pass) University of Würzburg, Würzburg, Germany Focus: Developmental and Educational Psychology
Bachelor's Degree April 2016 – March 2018 October 2014 – March 2016	**BSc Psychology – 2.0** (good) University of Würzburg, Würzburg, Germany University of Ulm, Ulm, Germany Focus: Social Psychology
Abitur 2004-2013	**Allgemeine Hochschulreife – 1.4** (very good) Evangelisches Gymnasium Siegen, Siegen, Germany

Work Experience

Research Associate September 2021 - present	**Research Associate in the Research Group for Environmental Psychology** Prof. Dr. Gerhard Reese, RPTU University of Kaiserslautern-Landau Landau, Germany

Visiting Lecturer April 2019 – March 2022	**Visiting Lecturer for Teachers in Training** University of Würzburg, Würzburg, Germany
Research Intern February – March 2019	**Research Internship in the Research Group for Environmental Psychology** Prof. Dr. Gerhard Reese, University of Koblenz-Landau Landau, Germany
Research Assistant April 2018 – August 2021	**Research Assistant at the Chair for Educational Psychology** Prof. Dr. Tobias Richter, University of Würzburg, Würzburg, Germany
Intern December 2017 – February 2018	**Internship at the Interdisciplinary Center for Sustainable Development** Prof. Dr. Peter Schmuck University of Göttingen, Göttingen, Germany
Intern September - November 2017	**Internship at the Department of Decentralized Energy Economy** Dr. Ines Wilkens University of Kassel, Kassel, Germany

Teaching Experience

2025-2026	Seminar *Case Study in cooperation with "Bergwaldprojekt e.V.": Meaning in Life* (BSc Humans and the Environment, 5th semester, 2 ECTS, RPTU University of Kaiserslautern-Landau)
2025-2026	Seminar *Environmental education* (BEd Educational sciences, 1st semester, 3 ECTS, RPTU University of Kaiserslautern-Landau)
2025	Seminar *Psychological principles of acting under uncertainty* (BSc Humans and the Environment, 4th semester, 2 ECTS, RPTU University of Kaiserslautern-Landau)
2024-2025	Seminar *Case Study in cooperation with "Bergwaldprojekt e.V.": Awareness of Dependence on Nature* (BSc Humans and the Environment, 5th semester, 2 ECTS, RPTU University of Kaiserslautern-Landau)

2023-2024	Seminar *Case Study in cooperation with "Bergwaldprojekt e.V.": Sufficiency & wellbeing* (BSc Humans and the Environment, 5th semester, 2 ECTS, RPTU University of Kaiserslautern-Landau)
2023	Seminar *Psychological principles of acting under uncertainty* (BSc Humans and the Environment, 4th semester, 2 ECTS, RPTU University of Kaiserslautern-Landau)
2022-2023	Seminar *Introduction to academic working and writing in an interdisciplinary context* (BSc Humans and the Environment, 3th semester, 2 ECTS, RPTU University of Kaiserslautern-Landau)
2022	Seminar *Psychological principles of acting under uncertainty* (BSc Humans and the Environment, 4th semester, 2 ECTS, University of Koblenz-Landau)
2021-2022	Seminar *Environmental education* (BEd Educational sciences, 1st semester, 3 ECTS, University of Koblenz-Landau)

Supervision

2021 - present	Supervision of 16 Bachelor's Theses Supervision of 1 Master's Thesis Supervision of 9 Student Assistants

Awards & Scholarships

2025	Teaching Award of the Center for University Teaching (500€), RPTU University of Kaiserslautern-Landau
2024	Open Science Award (Gold) of the Open Science Commission, Department for Psychology, RPTU University of Kaiserslautern-Landau
2024	Research Fund for the Promotion of Young Scientists (750€ for conference participation), RPTU University of Kaiserslautern-Landau
2023	Research Fund for the Promotion of Young Scientists (750€ for conference participation), RPTU University of Kaiserslautern-Landau

Engagement

2022 - present	Sustainability Committee Member at the Royal Netherlands Institute for Sea Research (NIOZ), Texel, Netherlands

Other Qualifications

Language skills	**German** Native **Dutch** Fluent **English** Fluent **French** Basic skills
Methods	MAXQDA Survey Software *SoSci Survey* R, SPSS
Clinical Skills	Systemic counselor (Certified by the German Association for Systemic Therapy and Family Therapy, DGSF e.V.)

Publications

Katz, T. L. C. (in press). Revisiting the conceptualization of awe: Reply to Friedman and Bonner (2025). *American Psychologist*. https://doi.org/10.1037/amp0001649

Katz, T. L. C., & Franz, D. J. (2025). What is awe? On an uncontested definition, conceptual ambiguities, and cultural limitations. American Psychologist. https://doi.org/10.1037/amp0001520

Reese, G., Oettler, L. M. S., & **Katz, L. C.** (2019). Imagining the loss of social and physical place characteristics reduces place attachment. *Journal of Environmental Psychology*, *65*, 101325. https://doi.org/10.1016/j.jenvp.2019.101325

Manuscripts Under Review and in Preparation

Katz, T. L. C., & Hicks, J. R. (2025). Surpassed by nature: A qualitative exploration of ehrfurcht (awe) in German context. [Manuscript under review for publication].

Katz, T. L. C., & Hicks, J. R. (2025). *Two words, one soul? English awe and German ehrfurcht in German context and their conceptual link* [Unpublished manuscript].

Invited Talks

Katz, T. L. C. (2023). *Positive Emotionen im Klimawandel – Eine umweltpsychologische Perspektive [Positive emotions in climate change – An environmental psychology perspective]*. Invited talk at the Archdiocese Bamberg, Ipsheim, Germany.

Katz, T. L. C. (2021). *Welt neu denken – Need for accommodation bei Awe Erlebnissen [Rethinking the world - The role of need for accommodation in awe experiences].* Invited talk at the 57. Initiative Psychologie im Umweltschutz-Congress: Nature Connectedness und Nature Alienation, Schernbach, Germany.

Conference Contributions

Katz, T. L. C. & Franz, D. J. (2024, September). *The Puzzle of Awe: A Critical Analysis of Awe's Meaning in Psychological Discourse*. Talk at the Conference of the German and Austrian Psychological Societies (DGPs/ÖGP), Vienna, Austria.

Katz, T. L. C. & Schöwel, A. C. (2024, July). *We Need Nature to Exist – A Qualitative Exploration of the Awareness of Dependence on Nature*. Poster presentation at the 28th International Association People-Environment Studies (IAPS) Conference, Barcelona, Spain.

Katz, T. L. C. & Halbritter, P. (2023, June). *Does it Challenge Your Worldview? – The Role of Need for Accommodation for Awe*. Talk at the International Conference on Environmental Psychology (ICEP), Aarhus, Denmark.

Katz, T. L. C. & Halbritter, P. (2023, June). *Does it Challenge Your Worldview? – The Role of Need for Accommodation for Awe*. Talk at the 4th Summer School on Environmental Psychology, Isle of Vilm, Germany.

Katz, T. L. C., Seger, B. T., & Loy, L. S. (2022, July). *You get what you define - Operationalizations induce different forms of awe experiences and partly predict pro-environmental behavior*. Talk at the Conference of the German Psychological Society, Hildesheim, Germany.

Katz, T. L. C., Seger, B. T., & Loy, L. S. (2022, July). *You get what you define - Operationalizations induce different forms of awe experiences and partly predict pro-environmental behavior*. Talk at the 27th International Association People-Environment Studies (IAPS) Conference, online.