

**Speechlessness:
A new psychological concept**



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Erklärung über den Eigenanteil

Die vorliegende Inauguraldissertation ist publikationsbasiert (kumulativ) und umfasst insgesamt drei empirische Arbeiten, welche als wissenschaftliche Originalarbeiten im Rahmen eines Peer-Review-Verfahrens begutachtet und in internationalen Journalen (zugehörig zu SpringerNature, als auch Elsevier) veröffentlicht wurden.

Die innerhalb der Publikationen verwendeten Daten wurden in zwei verschiedenen Forschungsprojekten (Erstes Projekt: „*Alexithymie – Gefangen in der Sprachlosigkeit*“; zweites Projekt „*Gefangen in der Sprachlosigkeit*“), beide gefördert von der Barbara und Wilfried Mohr-Stiftung, erhoben. Die Umsetzung dieser Projekte erfolgte durch die Mitarbeitenden der AG Psychoonkologische Versorgungsforschung der Klinik I für Innere Medizin des Universitätsklinikums unter der Leitung von Priv.-Doz. Dr. phil. Michael Kusch.

In zwei dieser Publikationen (vgl. Dietz et al., 2022; Dietz et al., 2023) liegt die Erstautorenschaft bei meiner Person. Die Verteilung der Aufgaben innerhalb des Publikationsprozess kann den jeweiligen „*Author Contributions*“ entnommen werden. Die dritte empirische Arbeit erfolgte in geteilter Erstautorenschaft mit Frau Hülya Öztürk-Arenz (vgl. Öztürk-Arenz et al., 2023).

Die systematische Literaturrecherche der ersten Publikation (Dietz et al., 2023) erfolgte eigenständig. Die Sichtung sowie der Einschluss der finalen Quellen erfolgte in Zusammenarbeit mit Frau Vera Schiewer. Die finale Verschriftlichung, die Ausarbeitung des Konzepts und die grafische Darstellung dieses erfolgte eigenständig. Die finalen Ergebnisse wurden vor Einreichung mit den Co-Autoren (Frau Vera Schiewer, Herr Priv.-Doz. Dr. phil. Michael Kusch und Frau Priv.-Doz. Dr. rer. pol. Ute Karbach) begutachtet und diskutiert.

Der Eigenanteil der zweiten Publikation (Dietz et al., 2022) umfasst neben der Verschriftlichung des Manuskripts und der Koordination des Publikationsprozesses primär die Datenerhebung, -aufbereitung und -analyse sowie die grafische und inhaltliche Aufbereitung der Ergebnisse. Diese wurden gemeinsam mit den beteiligten Co-Autoren (vorrangig Herr Priv.-Doz. Dr. phil. Michael Kusch und Frau Vera Schiewer) diskutiert und Interpretationsansätze herausgearbeitet. Die weiteren angeführten Co-Autoren waren maßgeblich an der operativen Umsetzung des Forschungsprojekts („*Alexithymie – Gefangen*

in der Sprachlosigkeit“) beteiligt und nahmen an konstruktiven, inhaltlichen Sitzungen teil, deren Resultate in das finale Manuskript der Originalarbeit eingeflossen sind. Frau Sally Tavenrath war zudem maßgeblich an der Formulierung der Fragebogenitems beteiligt.

Der Eigenanteil der dritten Publikation (Öztürk-Arenz et al., 2023) umfasste neben dem Management der Studienumsetzung die Datenaufbereitung, -analyse und -interpretation, sowie die grafische Aufarbeitung und Verschriftlichung der Ergebnisse. Die Literaturrecherche und die konzeptionelle Ausarbeitung der psychologischen Grundlage der Studie erfolgte primär durch Frau Hülya Öztürk-Arenz auf Grundlage eines skizzierten Konzepts von Frau Sally Tavenrath und Herrn Priv.-Doz. Dr. phil. Michael Kusch. Die Erläuterung der Interventionen innerhalb der Publikation erfolgte ebenfalls durch Frau Hülya Öztürk-Arenz. Die erfassten Ergebnisse und Schlussfolgerungen wurden gemeinsam mit den Co-Autoren (primär Herr Priv.-Doz. Dr. phil. Michael Kusch, Frau Vera Schiewer) diskutiert. Die Einreichung und die Koordination des Veröffentlichungsprozess erfolgten durch meine Person.

Das Forschungsteam arbeitete über den gesamten Prozess der Veröffentlichung der einzelnen Originalarbeiten zusammen. Während des Verfassens des Manteltextes wurde ich von Frau Priv.-Doz. Dr. rer. pol. Ute Karbach (Erstbetreuung) und Herrn Priv.-Doz. Dr. phil. Michael Kusch (Zweitbetreuung) unterstützt. Weitere Personen waren an der vorliegenden, kumulativen Inauguraldissertation nicht beteiligt.

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Abstract

Background

Physician-patient communication is critical in modern medicine. To address these aspects, verbal communication between patient and healthcare provider is necessary. Verbal communication involves multiple, sequenced levels and is a highly complex process that can be influenced by a variety of external factors. Emotions and emotion regulation strategies have a significant impact on the process of speech production, and extreme emotions can even lead to speechlessness. Patients in emotionally distressing situations may experience speechlessness, reticence, or avoidance of certain topics when communicating with healthcare providers. Cancer patients are a particularly vulnerable group of patients, as they suffer from increased psychological distress due to the burden of the disease and the constant threat of death, and are less likely to share their feelings with those around them and their physicians. For this group of patients, shared decision making is particularly important and can be compromised by a lack of verbal communication between both parties.

This non-speaking or silence in communication situations is to be perceived as the observable phenomenon of speechlessness. In the scientific literature, speechlessness has hardly been studied from a non-pathological, psychological point of view. Also, only limited explanatory approaches for patients' non-speech or silence in medical conversational situations have been investigated. However, based on previous research, it can be assumed that a lack of verbal communication interferes with the functioning of physician-patient communication and is associated with negative consequences for the patient's treatment and quality of life.

Three research papers investigated the phenomenon of speechlessness using different scientific methodologies and attempted to explain this phenomenon conceptually, measure it empirically and situate it in the context of clinical care.

Research

- (1) A systematic literature search using theory-based search terms identified a total of $N = 7$ publications that examined the phenomenon of speechlessness. Based on these findings, a conceptual framework of the emergence of speechlessness was developed. The core element of this framework is formed by “meaningful emotions”

which are perceived and processed by the speechless individual and result in a dimension of *intentional speechlessness*, as a conscious silence of the person, or a dimension of *non-intentional speechlessness*, as a verbal inhibition to speak.

- (2) The *Cologne Questionnaire on Speechlessness* (ger.: *Kölner Fragebogen zur Sprachlosigkeit; KFS*), which was developed to address the relevance of emotional perception, contains a total of $N = 19$ items in four subscales: “General Emotion Description”, “Emotional Awareness”, “Emotional Uncertainty”, and “Positive Emotion Description”. The KFS allows quantification of emotional speechlessness as a difficulty in communicating and perceiving one's emotional state and has been validated in a sample of $N = 1,293$ clinician and non-clinician participant groups. The KFS and its factorial structure indicated a high model fit (χ^2 (df, 146) = 953.856; $p < .001$; *Tucker-Lewis-Index* = .891; *Comparative Fit Index* = .916; *Root Mean Square Error of Approximation* = .065; $p < .001$; $N = 1293$), suggesting an adequate and robust measurement of the phenomenon of (emotional) speechlessness.
- (3) The results of a pilot study with $N = 22$ cancer patients in music and art therapy showed increased emotional speechlessness (measured by the subscales of the KFS) in both creative art therapy groups at baseline. Specifically designed interventions to promote patients' own emotional awareness in combination with each creative arts therapy program indicated a nonsignificant reduction in emotional speechlessness and maladaptive cancer coping strategies for participants in the music therapy group ($N = 8$) at the end of the study.

Conclusion

These results and the overall discussion of them against the background of physician-patient communication, considering linguistic theories of the speech process, indicate that the phenomenon of speechlessness has a scientific justification. The explanatory approaches for the developmental process of intentional and non-intentional speechlessness, as well as an increased emotional speechlessness as an upstream element in its emergence, can be identified in clinical samples and allow the conclusion that an existing speechlessness can potentially negatively influence the communication between physician and patient. Furthermore, the dimensions of speechlessness can be incorporated into the speech process and provide an explanatory approach as to why individuals, especially those who have no concept or words for their emotions, remain verbally silent about their emotional state in communication situations.

This dissertation identifies a first theory-driven and empirically measurable concept that can be applied to explain and define the psychological phenomenon of speechlessness. The results of the individual papers suggest that the primary elements of each study (e.g., the conceptual framework or the KFS) can be operationalized in the context of health care and indicate the need for future studies in this area of research.

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List of abbreviations

AT	Art Therapy
CFA	Confirmatory Factor Analysis
CFI	Comparative Fit Index
CR	Cognitive Reappraisal
DDF	Difficulty in Describing Feelings
df	Degree of Freedoms
DIF	Difficulty in Identifying Feelings
EA	Emotional Awareness
EFA	Exploratory Factor Analysis
engl.	English
EOT	Externally-Oriented Thinking Style
ERQ	Emotion Regulation Questionnaire
ES	Expressive Suppression
EU	Emotional Uncertainty
GED	General Emotion Description
ger.	German
KFS	Kölner Fragebogen zur Sprachlosigkeit (engl. Cologne Questionnaire on Speechlessness)
M	Mean
MI	Measurement Invariance
Mini-MAC	Mini-Mental Adjustment to Cancer Scale
ms	Milliseconds
MT	Music Therapy
N	Number of cases
p	P-Value
PAQ	Perth Alexithymia Questionnaire
PED	Positive Emotion Description
PPMC	Pearson-Product-Moment-Correlation
RMSEA	Rooted Mean Square Error of Approximation
SD	Standard Deviation
SEM	Structural Equation Modeling
sig.	Significance
TAS-26	Toronto-Alexithymie-Skala 26
TLI	Tucker-Lewis Coefficient

1. Introduction and Objectives

„Without good communication neither a diagnosis nor a treatment plan can be established“ (cf. De Haes & Bensing, 2009, p. 287).

Our language is the foundation of communication and therefore an existential part of our social coexistence (Levelt, 1999). If we look at this quote in the light of the German healthcare reality, it no longer seems so trivial. In 2021, for example, a total of 1,887 hospitals with approximately 483,600 beds were available to care for the population in Germany. A total of 16,724,244 cases were treated, with an average length of stay of 7.2 days. Patients were cared for by 203,286 physicians and 1,156,608 non-medical staff (Statistisches Bundesamt, 2022).

There are many studies on the adequacy and the optimization of communication, technology, and training, with a focus on communication, and numerous others that examine communication within and between professional teams and between professional teams and patients. These publications focus on the whole spectrum of patient care (cf. Gagnon et al., 2012; Newell & Jordan, 2015; Sigl et al., 2023; Trevena et al., 2006) as well as on individual specialties (cf. Jünger et al., 2020; Lammert et al., 2022). So far, there are only a few studies that consider the elements of non-speech or silence as influencing parameters of conversational or communicative situations in patients (cf. Koskinen et al., 2016; Kummer et al., 2008). More broadly, the phenomenon of speechlessness is one that has hardly been studied in science outside of organic, psychopathological and psychosomatic illnesses.

This thesis investigates the phenomenon of speechlessness from the perspectives of health services research and psychology. Based on existing literature and empirical studies on cancer patients, a non-pathological, psychological concept of speechlessness is derived that can be applied within and outside of a clinical care context. Furthermore, the development of an empirical survey instrument to measure speechlessness is described, and the design and implementation of specific intervention and therapy methods in the context of speechlessness are evaluated. The assessment of these objectives is based on hypotheses, which represent the research question underlying the thesis and are derived from the following theory. The dissertation is divided into three consecutive peer-reviewed journal articles published in English. The first publication includes the definition of speechlessness and the development of a framework model to describe the emergence of the phenomenon

of speechlessness. The second publication deals with the development of a psychometric self-report instrument based on the relevance of emotional perception, description and processing identified in the first publication. The core element of this article is the description of the questionnaire construction as well as the validation on a clinical and non-clinical sample. In the third and final publication, the findings of the first publication and the questionnaire developed and validated in the second article have been applied in the clinical care context of creative arts therapies. In addition, the third publication explores whether creative arts therapy care in combination with complementary interventions focusing on emotional awareness and processing has a positive impact on reducing emotional speechlessness. Finally, all three studies are discussed in relation to the research question, whether hypotheses need to be rejected, and to what extent the findings and results of the present study can be replicated. In addition, implications for future research on the psychological phenomenon of speechlessness are expressed.

2. Background

Speech is an existential component of human interaction. The ability to speak and the development of written language are two of six system functions that characterize the uniqueness of *Homo sapiens* (Premack, 2004). We communicate our experiences, stories, information, and emotions through written or oral language (Lingsom, 2008). It is not just the ability to speak, but rather the recursiveness of language that makes humans unique.

2.1 The Process of Speech Production

The speech process itself is a relatively slow process (Levinson, 2016). For example, the average time to prepare the articulation of a single word is 600 ms (Indefrey, 2011; Indefrey & Levelt, 2004) and about 1500 ms for a short phrase (Griffin & Bock, 2000). The process of speech development, as well as the speech act itself, can be illuminated by various scientific disciplines (Hickok, 2014). The speech process begins with the conceptualization, content, and meaning of what is to be said (see Figure 1). In a subsequent step, syntactic processes and surface structures are activated, which in a final step result in a phonetically expressible form of the grasped concept (Kerr et al., 2023; Levelt, 1989, 2001; Levelt et al., 1999). Specifically, the individual needs to understand a concept (e.g. health and disease understanding) on the basis of which the lemma¹ is selected. Levelt (2001) classifies these processes under the level of lexical selection². After the lemma associated with the concept has been selected, the phonological structure is retrieved. This process involves the structuring of speech sounds (syllabification) with a final motor command of articulation (phonetic encoding) (Kerr et al., 2023; Levelt, 2001). Levelt's model is characterized by its sequential structure (see Figure 1), within which specific brain regions perform hierarchically assigned processes (Kerr et al., 2023).

¹ In linguistics, a lemma is the basic form of a word (e.g., health).

² The process described here can be illustrated by the example of naming physical well-being: A person has a concept of health as the absence of pain and physical/mental discomfort. If this person is asked by another person in a conversation whether he or she is well, the person will refer to this concept (his or her subjective understanding of health) and choose a word that, if he or she is well, expresses his or her own health. This lemma would be, for example, "*health*", where the use of this concept could be used in a concrete verbal statement in the sentence "I am *healthy*".

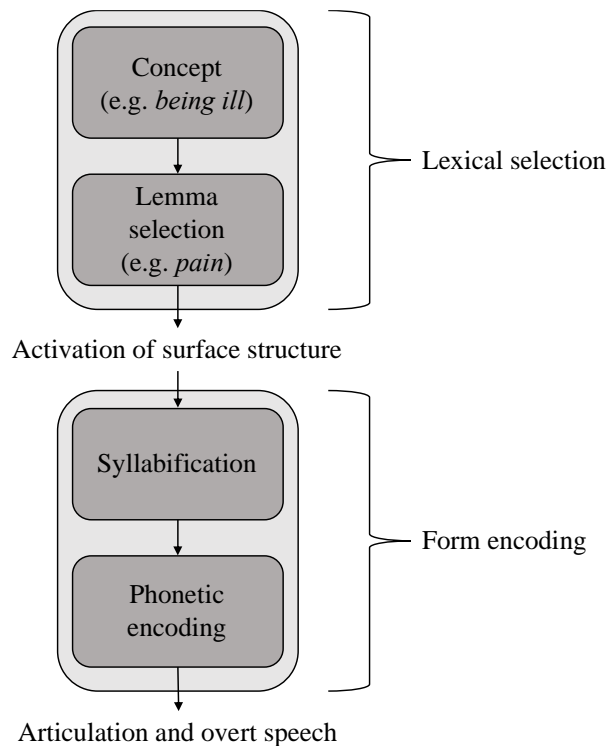


Figure 1: Levels of Speech Production (adapted from Kerr et al., 2023; Levelt, 1999)

In addition, there are other neurological models that describe the language process in terms of the interaction of different brain regions. Of particular note are the Wernicke-Geschwind model (Geschwind, 1965a, 1965b, 1970) and the dual-stream model (Hickok & Poeppel, 2000, 2004, 2007)³.

2.2 Emotion, Speech and Speechlessness

The regulation of emotion and one's expression of it, is a comparably important aspect of communication as language itself (Roche & Arnold, 2018). The perception and evaluation of emotions proceeds in a linear process: (1) a specific *situation* (e.g., a diagnostic interview), (2) attention to the situation and the goal of influencing the emotions associated with the situation (*attention*), (3) evaluation and cognitive modification of the influence of the perceived emotions (*appraisal*), and (4) reaction and the associated emotional/physiological experience and behavior (*response*) (Gross, 1998, 2014, 2015). To regulate one's emotions and their expression, individuals can thus distinguish between (a) *antecedent-focused* strategies of cognitive reappraisal and (b) *response-focused* regulatory strategies of expressive suppression (Gross, 2014). In this context, the former modulates the

³ A detailed description of this model is omitted as it is discussed in detail in the first publication "Speechlessness: A conceptual framework".

individual's emotional perception within the appraisal stage, whereas expressive suppression involves the suppression of already fully formed emotions (cf. stage 4 - *response*) (Gross, 2014; Gross & Levenson, 1993, 1995). Studies (Roche & Arnold, 2018; White et al., 2017) indicate that emotions can significantly influence the process of speech production. In this regard, highly emotional words that represent a taboo (e.g. "breast" or "orgasm"; White et al., 2017, p. 491) delay the speech process more than semantically similar words (White et al., 2017). Adding or excluding emotional information from an individual's verbal expression also causes dysfluency (Roche & Arnold, 2018). This effect is more likely to occur when attempts are made to suppress emotions rather than to express them explicitly. Roche & Arnold (2018) attribute their findings to the fact that emotions and language production require similar cognitive resources, and the activation of both systems creates an overlap that influences each other.

Furthermore, other studies can be found in the literature that link faulty or dysfunctional emotional perception to reduced verbal expression. Thus, on the one hand, there is a factorial and correlative relationship between the psychosomatic concept of alexithymia and the maladaptive emotion regulation strategy of expressive suppression (Kessler et al., 2010; Schiewer et al., 2022), as well as an observable, reduced verbal behavior of alexithymic individuals (Overbeck, 1977). Alexithymia is a psychosomatic concept first coined by the authors Nemiah and Sifneos (1970). Individuals affected by alexithymia exhibit dysfunction in the perception, description, and identification of emotions (Bagby et al., 2020; Messina et al., 2014; Preece et al., 2017; Taylor, 2000; Taylor et al., 1999). Current research (Lee et al., 2022) reveals⁴ that alexithymia has a much more complex impact on the language process than just a dysfunction in identifying and defining emotions and a resulting problem in social interactions.

Emotions not only have an impact on the speech process, but the occurrence of extreme emotions can even lead to speechlessness of the individual (Berger, 2004, 2015; Lindquist, 2017; Roche & Arnold, 2018). A lexical definition of speechlessness describes it as an individual's response triggered by a state of shock or the perception of extreme emotion (Guralnik, 1980). Berger (2004, 2016) is one of the few authors to address the phenomenon of speechlessness outside of neurological (see aphasia; cf. Damasio, 1992; Dronkers &

⁴ A detailed description of the concept of alexithymia will not be given here, as it is described in detail within the publication "Speechlessness: A conceptual framework" (First publication).

Baldo, 2009; Weismer, 2006), psychosomatic (e.g. alexithymia, etc.) or psychopathological (e.g. selective mutism; cf. Muris et al., 2021) theories. He describes speechlessness as “(...) *an involuntary state* (...)” that extends beyond the duration of normal pauses in conversation (Berger, 2004, p. 154). Berger (2004) focuses on exploring the situations and causes that can lead to the development of speechlessness. He further differentiates speechlessness into an involuntary and a voluntary dimension. However, the work shows that emotions play a central role in the development of speechlessness (Berger, 2004).

2.3 Emotions and their impact in patient care

Emotionally distressing situations (e.g. diagnosis of a serious disease) are common in everyday clinical care and are associated with multiple consequences for all involved (Brunton, 2005; Dekker et al., 2020). On the patient side, emotional distress is associated with various forms of speechlessness, such as reticence to speak (Burrige et al., 2011; Keaten & Kelly, 2000; Kelly, 2008; Price, 2020), remaining silent and not speaking (Gross & Levenson, 1993, 1995), or remaining silent and avoiding talking about certain disease-related topics (Gonzalez et al., 2015; Kummer et al., 2008; Zhang & Siminoff, 2003). Patients' reasons for concealing a diagnosis included increased perceived shame (Gonzalez et al., 2015). The behavior of avoiding emotionally distressing topics can be found in the concepts of topic avoidance (Dailey & Palomares, 2004; Donovan-Kicken & Caughlin, 2011) or self-concealment (Larson, 1993).

2.4 Physician-patient communication as an essential component of modern medicine

Beyond acute medical care, physician-patient communication is a fundamental aspect of caring for patients and has been the focus of national and international research for several decades (Inui & Carter, 1985; Stewart, 1995; Street Jr et al., 2009). In their review of the goals and functions of physician-patient communication, authors De Haes and Bensing (2009) developed a framework model with a total of six key elements consisting of (1) *forstering a relationship*, (2) *gathering informations*, (3) *information provision*, (4) *decision making*, (5) *enabling disease and treatment-related behavior*, and (6) *responding to emotions*. Respect and trust are the key elements of the first function of vital communication. Without a functioning relationship, satisfactory implementation of the other components cannot be achieved (De Haes & Bensing, 2009). Functions two and three form a symbiosis of information giver and information receiver on the part of both the clinician and the patient. The communication of symptoms to establish a diagnosis is the primary

communication content on the part of the patient (function 2), while the communication of disease-specific knowledge and treatment-specific information is the focus of physician communication (function 3) (Bird & Cohen-Cole, 1990; De Haes & Bensing, 2009). The fourth function, shared decision making, is a separate concept defined in research. Here, the term encompasses the approach of making the optimal (treatment) decision for both parties, with the physician acting on behalf of the patient (Elwyn et al., 2010; O'Connor et al., 2007). The basic premise of shared decision making is patient self-determination. This self-determination represents autonomy, which is simultaneously supported by the interdependent relationship between physician and patient in the form of information exchange (Elwyn et al., 2012; Entwistle et al., 2010; Ryan & Deci, 2000).

Patients remain empowered as individuals to make the best decision for their life situation, supported by the professional side of the clinician. Study results indicate that shared decision making is associated with a heightened understanding of the patient's disease and increased adherence to therapy (Stacey et al., 2017). Based on this relevance, De Haes and Bensing (2009) integrate the concept of (shared) decision making into their six functions of physician-patient communication. The fifth function includes educating the patient about the risks of unhealthy behaviors and changing attitudes and promoting adaptive health behaviors (Bird & Cohen-Cole, 1990; De Haes & Bensing, 2009; Epstein & Street Jr, 2007). Responding to emotions is cited as the final function of vital physician-patient communication. On the part of the patient, the context of care is almost always associated with a primarily negative emotional experience in the form of fear, anger, worry, and/or sadness. However, this distress is rarely directly articulated by the patient (Finset, 2012), but only indirectly revealed to providers through patient statements and behaviors (Levinson et al., 2000; Lussier & Richard, 2009; Zimmermann et al., 2007). At the same time, these negative emotions work against communication and therapy (Hurtado-de-Mendoza et al., 2019; Santana & Fontenelle, 2011; Sofia et al., 2018).

The effectiveness of a functioning physician-patient communication has been identified in several studies (Belasen & Belasen, 2018; Ha & Longnecker, 2010). This is reflected in a shorter length of stay and fewer complications (Trummer et al., 2006), as well as increased patient adherence, self-determination, and compliance (Matusitz & Spear, 2014). At the same time, psychological comorbidities in the form of depressive symptomatology can negatively influence physician-patient communication (Schenker et

al., 2009). However, concealment or non-disclosure of information also creates a potential for conflict in communication between the treating and the treated (Faden et al., 1981; compare paragraph on self-concealment and topic avoidance, cf. Dailey & Palomares, 2004; Donovan-Kicken & Caughlin, 2011; Larson, 1993). Further research supports the notion that verbal expression forms an important part of communication and related consequences (e.g., treatment goals, adherence) (Belasen & Belasen, 2018; Ha & Longnecker, 2010; Matusitz & Spear, 2014; Van Oorschot et al., 2004; Wedler, 2002)

2.5 Speechlessness in oncology

Oncological diagnosis and therapy are often extremely stressful for patients and their social environment (Chambers et al., 2012; Götze et al., 2020; Mehnert et al., 2018; Preisler & Goerling, 2016). Increasingly, younger and single patients want social support at the time of treatment (van Scheppingen et al., 2011). In addition, half of patients experience emotional distress (anxiety and depression) at the time of acute therapy (Mehnert et al., 2018). Increased psychosocial distress in patients is associated with reduced adherence, longer length of stay, and increased mortality (Batty et al., 2017; Estes & Karten, 2014; Pirl et al., 2007). This situation requires individualized, transparent and detailed discussions between physicians and patients (Jünger et al., 2020).

The importance of appropriate patient communication in oncology is undisputed (Hack et al., 2012). To meet these demands, modern cancer care therefore considers the patient as an active part of care (Adler & Page, 2008; Bundesministerium für Gesundheit, 2017) and implements elements of shared decision-making (Covvey et al., 2019). While research exists regarding (intrafamilial) topic avoidance (cf. Dailey & Palomares, 2004; Donovan-Kicken & Caughlin, 2011) in communication of psychological distress associated with oncologic disease, research into speechlessness in the context of health care has been lacking. Furthermore, there is a lack of a systematic, structured approach to the phenomenon of speechlessness as a lack of verbal expression conditioned by the care and/or treatment context of a (serious) illness.

3. Question and Objective

There has been limited research on the extent to which communication between individuals, or between medical staff and patients, is affected by silence, speechlessness, or nonspeaking (see Berger, 2004, 2015; Dailey & Palomares, 2004; Donovan-Kicken & Caughlin, 2011; Lindquist, 2017; Roche & Arnold, 2018). Silence and non-speaking are also often discussed in terms of psychological distress, emotional dysregulation, and disorders such as alexithymia, avoidance, suppression, and concealment/hiding (Caughlin et al., 2011; Gonzalez et al., 2015; Gross & Levenson, 1993, 1995; Kessler et al., 2010; Larson, 1993; Larson et al., 2015; Schiewer et al., 2022; Swart et al., 2009). Examining a concept from a pathological perspective also invariably involves stigmatizing the individual through the potential diagnosis of mental, psychosomatic, or organic pathology. Thus, individuals with mental illness are shunned or discriminated against (Corrigan et al., 2004; Hinshaw & Cicchetti, 2000; Sendera & Sendera, 2016). Similar dynamics apply to patients with organic diseases, clearly visible in obesity (Hilbert, 2015; Hilbert et al., 2013) or HIV (Malcolm et al., 1998; Parker & Aggleton, 2003; Whetten et al., 2008). Analogous dynamics were also apparent for certain groups of people during the COVID-19 pandemic (Teng et al., 2021).

The aim of the present dissertation is to develop a psychological, non-pathological concept of the phenomenon of speechlessness, which is expressed by the silence or non-speaking of an individual. This objective is based on the following research question:

Can the phenomenon of speechlessness be developed as an independent concept and operationalized in the context of patient care?

Four hypotheses (H1 – H4) operationalize the answer to the research question:

H1: *An independent and reliable model of the phenomenon of speechlessness can be constructed on the basis of the existing research.*

H2: *A psychometric survey instrument for the assessment of speechlessness can be constructed and validated based on a defined concept of the phenomenon of speechlessness.*

H3: *The phenomenon of speechlessness can be measured empirically in patient care.*

H4: *The phenomenon of speechlessness can be influenced by targeted interventions.*

4. Methods

The hypothesis testing of the present work is presented in the form of a cumulative dissertation with a total of three English-language publications. Each of these publications focuses on a different methodological issue. The choice of the methodological focus was guided by the hypotheses.

4.1 Systematic literature review

The first methodological focus is a systematic literature search in relevant databases (*PubMed* and *APA PsychInfo*) using predefined search terms. These search terms were formulated based on the reviewed literature. The aim was to identify scientific literature on speechlessness, including notions of non-speaking or silence outside of a pathological context (cf. Dietz et al., 2023).

For the first publication, the design of a systematic literature review was chosen under the aspects of presenting the current state of research and determining whether and to what extent theories and concepts on the phenomenon of speechlessness as non-speaking or silence already exist. Furthermore, a model of speechlessness should be derived from the identified literature. The developed model should serve as a basis for further research as well as for answering the research question and for hypothesis testing.

4.2 Questionnaire development and validation

The second publication covers the entire psychometric process of questionnaire development and validation. Questionnaires are useful instruments of empiricism — especially self-report instruments or self-administered questionnaires — and allow for a targeted assessment of a specific aspect of research. Before a psychological questionnaire can be used in a clinical setting, it must undergo psychometric testing (Kubinger, 2003).

In the context of hypothesis testing and investigation of the phenomenon of speechlessness, a self-report instrument was developed with a focus on the verbalization of emotions in semantic alignment with questionnaires on emotional perception, processing, and suppression (cf. Dietz et al., 2022). The validation process of the questionnaire included a comprehensive examination of quality criteria (cf. Kubinger, 2003; Moosbrugger & Kelava, 2020) of reliability and validity (including item discriminatory power, item difficulty, confirmatory factor analysis, construct validity, etc.). The background of the

chosen research/study design was the creation of an instrument to empirically measure the previously developed concept and theoretical background of the phenomenon of speechlessness.

4.3 Prospective, longitudinal survey of a clinical sample

The research design of the third publication included the use of the previously constructed and validated self-report instrument. In order to capture the theoretical concept of emotional speechlessness and to determine whether it can be reduced or influenced by targeted interventions, a prospective, longitudinal study of cancer patients in outpatient creative arts therapy care was carried out (cf. Öztürk-Arenz et al., 2023). Prospective, longitudinal surveys involve data collection over an extended period of time with accompanying data analysis, allowing the evaluation of the impact of an intervention through pre-post analysis. Furthermore, a clinical sample of oncological patients was selected to test previously formulated associations between extreme emotional situations and oncological disease. In addition, the use of the developed self-report instrument in a clinical sample allowed a comparison with the samples of the validation process (cf. Dietz et al., 2022).

To test the hypothesis that targeted interventions can reduce speechlessness in individuals with severe expressions of speechlessness, the study was conducted in a group of patients receiving art therapy and a group of patients receiving music therapy. In accordance with the theoretical concept of the development of speechlessness (cf. Dietz et al., 2023), interventions in the form of informational materials and visual representations were designed and provided to patients in both groups in an identical form. This step served to test the fourth hypothesis. As an additional step, the art and music therapy group were surveyed in order to determine possible differences in the effectiveness of the respective creative therapy methods and to obtain a differentiated view of the care of speechless individuals.

5. First Publication: Speechlessness: a Conceptual Framework (Dietz et al., 2023)

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Abstract

The phenomenon of speechlessness has hardly been considered in the literature from a psychological point of view. Previous research on speechlessness is limited to the fields of neurology, medicine or psychopathology. The present review aims to consider speechlessness from a psychological perspective distinct from pathology, and to highlight its observability and possible connections to existing research in the context of emotional cognition and processing. Search terms were developed and a comprehensive, systematic literature search was conducted in various databases based on previous scientific work on the understanding of non-speech, silence and speechlessness. Only results that examined the phenomenon of speechlessness from a non-pathological or non-neurological perspective were included. A total of $N = 7$ publications matching the inclusion criteria were identified. The results were used to develop a procedural model for the phenomenological definition of speechlessness. The developed model differentiates the observable phenomenon of speechlessness into a non-intentional, unconscious form and an intentional, conscious form. The present work suggests that meaningful emotions and their perception and processing is a core element in the emergence of speechlessness and provides a first, psychological, non-pathological explanation of speechlessness.

6. Second Publication: Cologne questionnaire on speechlessness: Development and validation (Dietz et al., 2022)

Authors

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Abstract

Speechlessness forms a psychological concept that describes non-speaking or silence in different situations. Speechlessness occurs in particular during emotional stress. The Cologne Questionnaire on Speechlessness (ger.: Kölner Fragebogen zur Sprachlosigkeit) is an instrument for measuring speechlessness as a function of emotional perception and processing in situations of emotional stress or existing emotional dysregulation. The questionnaire was developed in theoretical proximity to the constructs of alexithymia and expressive suppression. Item selection was performed on a first line sample of $N = 307$ individuals of a normal population. Acquisition of an exploratory model to classify the phenomenon was conducted within four samples in clinical and non-clinical settings. Validation of the factorial structure was performed using an overarching dataset ($N = 1293$) consisting of all samples. The results of a confirmatory factor analysis (CFA) indicated the best model fit (χ^2 (df, 146) = 953.856; $p < .001$; Tucker-Lewis-Index = .891; Comparative Fit Index = .916; Root Mean Square Error of Approximation = .065; $p < .001$; $N = 1293$) with a four-factorial structure of the questionnaire. Both the overall acceptable validity and reliability recommend the application of KFS on individuals of the normal population as well as clinical subgroups. In addition, the questionnaire can also be used in the context of research on the regulation of emotions.

7. Third Publication: The impact of creative arts therapies on emotional speechlessness in cancer: A pilot study (Öztürk-Arenz et al., 2023)

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Keywords

Creative arts therapies, Art therapy, Music therapy, Emotions, Cancer, Psychooncology

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Abstract*Background*

Music (MT) and art therapy (AT) have a positive effect on the regulation of emotions in patients with cancer. Our aim was to investigate whether these creative arts therapies can reduce emotional speechlessness and use of maladaptive coping strategies.

Methods

We conducted a pilot study using a pre-post design with a total of $N = 22$ patients who received creative arts therapy (MT or AT) and additional interventions for emotional perception and processing. Emotional speechlessness, cancer-specific coping strategies, and subjective benefit and acceptance of the interventions from the patients' perspective were assessed to measure the impact of MT and AT.

Results

A total of 19 patients participated in all assessments, with an average of $M = 7.53$ therapy sessions. Non-significant results indicated a trend toward a decrease in emotional speechlessness for MT participants and an increase for AT participants. Patients reported positive subjective benefits from interventions and participating in creative arts therapy.

Conclusion

Our results suggest that interventions focusing on emotional perception and processing in the context of creative arts therapy care can positively influence the reduction of emotional speechlessness and that patients accept this form of therapy.

8. Summary

The following section provides a summary of the methodology and the main findings of each of the three publications. The main purpose of this summary is to highlight important information necessary to facilitate the critical discussion of the answer to the research question as well as hypothesis testing in chapter 9.

8.1 Summary of the first publication

For the first publication (Dietz et al., 2023), a systematic literature review was conducted in two relevant databases using theory-based search terms. These search terms were developed based on the background of existing non-pathological literature on the phenomenon of speechlessness, non-speaking and silence. The first publication addresses hypothesis H1 of this dissertation (see chapter 3).

A fundamental part of the study are the results of the empirical study by Berger (2004) and the causes of speechlessness identified therein. In addition, the work introduces the need for a definition and explanation of the phenomenon of speechlessness that uses a non-pathological origin in order not to stigmatize those affected by speechlessness.

In total, seven of the 78 identified literature sources were included in the analysis. These publications, both empirical and non-empirical, were reviewed for Berger's (2004) findings and the definitions of speechlessness in these publications were noted. A frequently observed feature in the context of speechlessness was the emotional overwhelming of and coping with such a situation, a difficulty in putting a concept (of pain) into words, or an active concealment of factors/causes by '*keeping quiet about physical conditions*' (cf. Table 3; Dietz et al., 2023).

In addition to the literature reviewed, (social) psychological concepts and theories were considered in the context of the identified and interpreted literature. These collected findings, the interpretations of the results of the systematic literature review, and the literature on the current state of research described in the introduction served to conceptualize the framework model of speechlessness. This conceptual framework forms the core element of the first publication (Dietz et al., 2023), on the basis of which the developmental process of speechlessness and the distinction between intentional and non-

intentional speechlessness can be described. Central to this model is the perception of “meaningful emotions” (cf. Ekström et al., 2020; Fredrickson, 2004; Park & Folkman, 1997) that precede categorization into intentional and non-intentional speechlessness. The consideration of emotional perception already took place within the methodology of the literature review, since the previous research on speechlessness (Berger, 2004) allowed the conclusion that especially negatively evaluated emotions show a connection to speechlessness (Dietz et al., 2023). Emotional processing, meaning and regulation are different for each individual (Fredrickson, 2004). Within the model, this is the starting point that triggers the development of speechlessness. Based on the evaluation of “meaningful emotions”, the individual may be overwhelmed or overpowered by emotional perception; in this situation, one can speak of non-intentional speechlessness (see Figure 2 and Example 1 of the first publication; Dietz et al., 2023). On the other hand, if the person fears the subjective perception of (primarily negative) emotions such as shame or guilt through an answer or statement within the conversational situation, the person may decide to remain silent in order to avoid this very perception (see Figure 2 and Example 2 of the first publication; Dietz et al., 2023).

In summary, the first publication contains an initial definition of the phenomenon of speechlessness, differentiated into an intentional and non-intentional dimension. Furthermore, it contains a framework model that can be used as an explanatory approach to the developmental process of speechlessness. Following Berger (2004) and Schiewer et al. (2022), the relevance of emotional perception as an upstream process for the emergence of speechlessness as an involuntary result of the conversation situation (non-intentional speechlessness) or as a volitional silence (intentional speechlessness) is emphasized. The theoretical and conceptual proximity to emotional perception and evaluation also shows an analogy to the lexical definition of speechlessness, which defines it as the result of an extreme emotional experience (trauma) or an extreme emotional situation (Guralnik, 1980).

8.2 Summary of the second publication

The second publication (Dietz et al., 2022) presents the development of the *Cologne Questionnaire on Speechlessness* (ger.: *Kölner Fragebogen zur Sprachlosigkeit*; KFS) and addresses the second hypothesis (H2) of this dissertation (see chapter 3).

The KFS was developed by a multidisciplinary team in semantic proximity to the Emotion Regulation Questionnaire (ERQ; Abler & Kessler, 2009), Toronto-Alexithymie-

Skala 26 (TAS-26; Kupfer et al., 2001), and Perth Alexithymia Questionnaire (PEQ; Preece et al., 2017) survey instruments. A total of 24 items were developed, of which a total of 19 items were included in the final version of the KFS after testing item properties, reliability, and validity. The aforementioned survey instruments focus on emotional perception, processing and regulation. These aspects were specifically selected because emotions are a relevant factor in the emergence of speechlessness, based on the current state of research (Dietz et al., 2023; Dietz et al., 2022; Schiewer et al., 2022). In addition, the development of the KFS aimed to metrically operationalize various facets of difficulty verbalizing emotions and to identify individuals with increased expression of these difficulties/limitations.

The KFS was validated on four samples. The participants of these samples were recruited via online surveys and included students and employees of the University of Cologne and the University Hospital of Cologne. In addition, a large sample of oncology patients was recruited through contact with self-help groups (see Figure 1 of the second publication; Dietz et al., 2022).

The analysis of the KFS was conducted from a psychometric point of view and included the step-by-step process of questionnaire construction and validation described in the literature (Moosbrugger & Kelava, 2020). It should be emphasized that these steps were carried out in parallel and identically for the clinical and non-clinical samples. Exploratory factor analyses were performed on all samples to identify the phenomenon of speechlessness. The exploratively extracted four-factor model in the first sample (N = 226; students and staff of the University of Cologne/University Hospital Cologne; Table 1 and Table 2; Dietz et al., 2022) achieved the highest model fit in the confirmatory factor analysis of the non-clinical, clinical, and pooled total samples. Accordingly, this factor structure was adopted for the construction and naming of the subscales.

The four factors with their corresponding item assignments form the subscales (1) “General Emotion Description” (GED), (2) “Emotional Awareness” (EA), (3) “Emotional Uncertainty” (EU), and (4) “Positive Emotion Description” (PED) (Dietz et al., 2022, p. 6). The GED subscale quantifies a person's difficulty in (verbally) describing subjective, emotional feelings. The items have neutral to negative connotations and refer to a situational, emotional experience. The EA subscale quantifies an individual's involvement in the perception of their own emotions. The assessment utilizes situations with negative and positive connotations in which the individual's own emotional perception is assessed. The

EU subscale quantifies the uncertainty of the emotions perceived by the individual. The measurement of uncertainty varies between physiological and cognitive-behavioral states that the individual can be in and within which the emotional perception of the subjective emotional state takes place. The PED subscale quantifies the difficulty of (verbally) describing situations of positive emotional experience, with the items having an exclusively positive connotation (cf. Dietz et al., 2022). The naming of the subscales was based on the thematic focus of the items in the respective factors/subscales. The reliability of the subscales reached Chronbach's alpha values of .75 (subscale EU) and .89 (subscale GED). In addition, participants in the clinical sample (oncology patients) scored significantly higher on the subscales and total score of the KFS.

In summary, the second publication (Dietz et al., 2022) illustrates that the development of a psychometric survey instrument focusing on emotional perception, processing, and regulation in the context of the phenomenon of speechlessness is possible and that the characteristic values of the instrument are consistent with the specifications of the literature, thus legitimizing the application of the questionnaire.

8.3 Summary of the third publication

The third publication, co-authored with Hülya Öztürk-Arenz (see chapter 7 for detailed information; Öztürk-Arenz et al., 2023), addressed hypotheses H3 and H4 (cf. chapter 3) of the present dissertation and, as a pilot study, represented the first experimental approach to consider the psychological phenomenon of speechlessness in everyday outpatient clinical care and to address it specifically through interventions.

Based on the findings of the second publication (Dietz et al., 2022) on the clinical sample of oncological patients with significantly increased (emotional) speechlessness and difficulties in identifying, describing and regulating emotions, the pilot study focused on this group of individuals. The aim was a longitudinal data collection of oncological patients in art and music therapy care with accompanying interventions focusing on the patients' emotional perception and processing, in addition to care-specific creative arts therapy interventions.

The setting of a creative-therapeutic treatment was deliberately chosen because studies indicate that such forms of therapy with accompanying interventions have a positive effect on the handling of emotions in oncological patients (see Table 1; Öztürk-Arenz et al.,

2023). Furthermore, considering the theoretical overlap of (emotional) speechlessness and dysfunctional emotion regulation as well as the operationalization of expressive suppression and alexithymia in the KFS (Dietz et al., 2022), it was assumed that creative arts therapies can also influence the speechlessness of oncological patients.

To answer the research hypotheses H3 and H4 as well as the aim of the third publication, a pre-post design was chosen, whereby data collection on (emotional) speechlessness by means of the KFS took place after each creative therapy session (Öztürk-Arenz et al., 2023). Supplementary interventions included the “Support Book” (engl. title: “*Around the theme of emotions - companion book to creative arts therapy*”; ger. title: “*Rund um das Thema Emotionen – Begleitbuch zur Kreativtherapie*”), which also incorporated the “Emotion Star” (Stavemann, 2013) as a separate, additional intervention. In order to evaluate the overall creative therapy care as well as a possible positive benefit of the additional interventions, the Mini Mental Adjustment to Cancer Scale (Mini-MAC; Cwik et al., 2021; Watson et al., 1988) was administered at baseline and at the end of the study as a supplement to the KFS (Dietz et al., 2022). In addition, the subjective benefits of the creative arts therapies, the study setting, and the complementary interventions from the patient's perspective were assessed at the end of study participation. The evaluation was done by analyzing the specific questions asked during the survey (see chapter: Supplementary Material Third Publication - Appendix B).

A total of $N = 22$ patients was included in the study, 19 of whom participated in data collection at all time points. The mean duration of data collection and creative arts therapy treatment was $M = 124.53$ ($SD = 52.5$; range: 21 - 205; $N = 19$) days, with participants attending a mean of $M = 7.53$ sessions (Öztürk-Arenz et al., 2023). The total sum score at baseline averaged $M = 39.85$ ($SD = 19.1$; $N = 19$) (Öztürk-Arenz et al., 2023), which was only two points lower than the mean score of the clinical sample used to validate the KFS (Dietz et al., 2022). The impact of creative arts therapy in combination with the complementary interventions was assessed using repeated measures analysis of variance (rmANOVA). The results of the analysis indicated a non-significant increase in the KFS total sum score for the art therapy participants and a non-significant decrease in the KFS total sum score for the music therapy participants (see Table 5; Öztürk-Arenz et al., 2023). Even when maladaptive coping strategies (Mini-MAC; Cwik et al., 2021; Watson et al., 1988) were considered, there was no significant reduction between the beginning of the study (pretest) and the end of the study (posttest).

Notable are the results of the patient survey regarding the subjective benefits of participating in the study or receiving creative arts therapy. Overall, 58% of respondents indicated that art/music therapy helped them become more aware of their emotions. In addition, 60% of respondents indicated that they talked more about their emotions since receiving creative arts therapy care/participating in the study. In addition, the patient survey revealed that the majority of patients (approximately 95%) would take the opportunity to participate in this study again, or in art/music therapy in combination with the complementary interventions, even after the study was completed (see Figure 3 and 4; Öztürk-Arenz et al., 2023).

9. Discussion

Despite extensive research in the disciplines of linguistics, neurology, neuropsychology, psychology and health services research, the phenomenon of speechlessness, presented in this dissertation as non-pathological non-speaking or silence, embodies a new, relevant aspect of patient care. The aim was to answer the research question whether the phenomenon of speechlessness can be operationalized as an independent psychological concept within the context of patient care. To answer this question, four hypotheses were formulated to operationalize the research question (cf. chapter 3).

According to the lexical definition, speechlessness is a phenomenal response to extreme emotional situations (Guralnik, 1980). The systematic literature review conducted within the framework of the first publication, the results obtained, and the concept of speechlessness derived from it, not only indicate a clear relationship between emotions and their perception in relation to the development of speechlessness. The first hypothesis (H1) cannot be rejected on the basis of these study results. The developed concept forms a tangible explanatory approach that can be applied to communication situations and, taking into account the subjective perception of meaningful emotions of the speechless individual, forms a potential interpretation of the perceived speechlessness. This result supports the decision not to reject hypothesis.

The Cologne Questionnaire on Speechlessness (KFS; Dietz et al., 2022) quantifies the relevance of the perception, description and regulation of emotions as well as the verbal expression of these emotions, which were recorded and theoretically derived in the first publication. The item development and scale construction of the KFS is guided by the conceptual framework of speechlessness (Dietz et al., 2023) as well as relevant theories on the difficulties and dysregulation of emotions (Bagby et al., 2020; Lane et al., 2020; Nemiah & Sifneos, 1970, Goerlich-Dobre et al., 2014; Peters et al., 2014; Roche & Arnold, 2018), which can negatively affect the speech process (Butler et al., 2003; Gross, 2002; Kim, 2008; Richards et al., 2003). This relationship with non-speech or silence, which has been described in the literature and documented empirically, is operationalized by the items of this self-report instrument. Furthermore, the four subscales of the KFS allow for a nuanced differentiation of potential impairments in the perception and description of emotions. Referring to the process of speech production (cf. Kerr et al., 2023; Levelt, 1989, 2001; Levelt et al., 1999), the difficulties in verbalizing emotional states identified by the subscales

of the KFS may indicate a lack of concept of certain emotions, or a lack of words to describe them (see Figure 1; cf. Kerr et al., 2023; Levelt, 1999). Given this and the psychometric properties of the KFS, hypothesis H2 cannot be rejected.

The aspects of empirical evidence of the phenomenon of speechlessness in patient care, and the potential reduction of it through specific interventions investigated in the third study, provide divergent findings. With reference to the present results, the statement postulated in hypothesis H3 of empirical evidence of speechlessness in patient care cannot be refuted. As can be seen from the results of the second study (Dietz et al., 2022), oncology patients show higher scores on the KFS total score and subscales compared to participants from non-clinical samples. The results of the third publication (Öztürk-Arenz et al., 2023) on oncological patients in creative therapy care also showed increased scale scores of the KFS compared to the non-clinical samples of the second publication (Dietz et al., 2022) and strengthen the postulated assumption of the third hypothesis.

With regard to hypothesis H4, the results of the third study (Öztürk-Arenz et al., 2022) indicate that a reduction in speechlessness through targeted interventions focusing on the perception, processing, and regulation of emotions, in combination with creative arts therapy in the form of art therapy and music therapy, do not result in a significant reduction in speechlessness (as measured by the scales of the KFS; cf. Dietz et al., 2022). Regarding the study results, hypothesis H4 is rejected. However, it should be emphasized that the small number of participants and the implementation of the interventions in the context of a pilot study limit the results collected. In particular, regarding the trajectory of speechlessness in music therapy participants, a tendency to decrease between the beginning and end of study participation can be observed. A comparison of the trajectories of the art therapy participants shows an opposite trajectory with an increase in speechlessness towards the end of the study. This trend indicates a potential bias in the results, since the literature (cf. Table 1; Öztürk-Arenz et al., 2023) confirms a significant positive benefit of art therapy as well as music therapy in dealing with emotions in oncological patients, and no causal explanation can be used for a corresponding increase in speechlessness.

9.1 Overall theoretical classification and key findings

The main findings of this dissertation can be categorized considering both, the theoretical background of the process of speech production (Kerr et al., 2023; Levelt, 1989, 1999, 2001; Levelt et al., 1999) and the physician-patient communication as a fundamental

element of modern patient care (De Haes & Bensing, 2009; Inui & Carter, 1985; Stewart, 1995; Street Jr et al., 2009).

The process of speech production (Figure 1; Kerr et al., 2023; Levelt, 1999) includes the four sequential steps of conceptualization, lemma selection, syllabification, and phonetic encoding. The concept underlying the phenomenon of speechlessness and the empirical quantification of emotional speechlessness as measured by the KFS (Dietz et al., 2022) allow for a classification of the process of speech production both at the level of conceptualization and at the higher level of “form encoding” (cf. Figure 1; Kerr et al., 2023; Levelt, 1999). If the individual perceives an emotion that has not previously occurred (e.g., grief, because the person has not yet experienced a loss), or cannot differentiate this emotion due to perceptual dysfunction, the individual lacks a concept for this emotion. This lack of concept is expressed in a lack of verbal expression, because the individual is unable to select appropriate lemmas and express them in the consecutive speech process. However, if one takes into account the perception of meaningful emotion and the dimensions of intentional and non-intentional speechlessness that may result from it, this perception may lead to an involuntary inhibition of verbal expression or to an arbitrary silence in the process of phonetic encoding. These findings and their embedding in existing theories and constructs of the speech process and speech again emphasize the relevance of the phenomenon of speechlessness.

Placing the study results of the three publications in the context of theoretical approaches to physician-patient communication, important conclusions can be drawn for health services research and practice. On the one hand, the results of the second publication (Dietz et al., 2022) were able to replicate the increased prevalence of alexithymia in oncology patients already identified in previous studies (Castelli et al., 2012; De Vries et al., 2012; Porcelli et al., 2007); on the other hand, the results indicate that the same patients of the clinical sample also showed an increased expression of the scale scores of the KFS. This correlation, in combination with the research of Overbeck (1977), who found an increased duration of speechless situations during therapy sessions with alexithymic patients, suggests that the lack of verbal communication (about emotions) is a real factor influencing physician-patient communication. In this context, communication about the patient's emotional state is relevant to both the physician and the patient (De Haes & Bensing, 2009). Limited or absent expression of emotions is associated with an increased prevalence of depressive symptoms (Larson, 1993), which leads to increased psychological distress and

negatively affects patient adherence to treatment (Batty et al., 2017; Estes & Karten, 2014; Pirl et al., 2007). Furthermore, when considering the dimensions of speechlessness in the context of physician-patient communication and studies of patient communication behaviors, these very dimensions of intentional and non-intentional speechlessness can be recognized. For example, study results indicate that concealing or altering relevant patient information by patients is not an uncommon phenomenon (Levy et al., 2018; Lewis et al., 2011). This behavior can be explained by the dimension of intentional speechlessness if the disclosure of personal information represents an emotion with primarily negative connotations for the patient (Dietz et al., 2023). On the other hand, speechlessness emanating from the patient during the diagnostic interview can be attributed to an extreme emotional perception prevailing in the patient, which can occur, for example, during an oncological diagnosis (Mehnert et al., 2018).

Withholding information and the limited or absent communication of the emotional state correlate negatively with the important aspects of physician-patient communication (cf. in particular the functions of (1) *forstering a relationship*, (2) *gathering informations*, (4) *decision making*, and (6) *responding to emotions*; De Haes & Bensing, 2009). The conceptual framework of speechlessness forms an intersection that can be put forward as an explanatory approach for the limited communication between the two sides. The results of the second (Dietz et al., 2022) and third (Öztürk-Arenz et al., 2023) study also indicate that reduced communication and limited access to one's own emotional state exist in clinical populations, especially in oncological patients. These new hypotheses need to be tested in future studies. In conclusion, it is recommended that the phenomenon of speechlessness described in detail in this dissertation be recognized as an important phenomenon in the context of patient care, particularly in physician-patient communication, and be considered in future research and care.

9.2 Limitations

This dissertation has limitations. The limitations of the individual studies will not be discussed here, as they can be found in the appropriate section within the individual articles.

The present work is oriented towards different scientific disciplines, including psychology and linguistics in addition to health services research. A causal relationship can be established between this interdisciplinarity and the various theories and concepts involved. However, it needs to be considered that the complexity of the individual theories

cannot be presented in its entirety. In addition, various aspects (e.g., neurological processes that may influence language and/or emotion regulation) are only touched upon.

The methodology used to answer the research question is robust, but the second (Dietz et al., 2022) and third (Öztürk-Arenz et al., 2023) studies only pick up selected elements of the conceptual framework model of the phenomenon of speechlessness developed in the first study (Dietz et al., 2023). There is a clear focus on the perception of "meaningful emotions". While this is a concept that has been studied and described in the literature, individual definitions vary. The conceptual framework model for speechlessness and the *Cologne Questionnaire on Speechlessness* (ger.: *Kölner Fragebogen zur Sprachlosigkeit*; KFS; Dietz et al., 2022) certainly offer explanatory approaches for the occurrence of speechlessness, as well as for the observation of this phenomenon, but causal connections of the influence on doctor-patient communication can primarily only be postulated. Despite the aforementioned limitations, this dissertation provides a comprehensive and detailed insight as well as the derivation of a non-pathological, psychological approach to interpreting the phenomenon of speechlessness. Future research should address these limitations, empirically test the aforementioned relationships, and lead to further development of the concept. In particular, when testing intervention approaches, attention should be drawn to a sufficient number of subjects, as the results of the third study in particular illustrate that a small sample size is associated with reduced conclusions about efficacy and effectiveness for practice.

9.3 Further Outlook

Future research should focus on exploring the dimensions of intentional and non-intentional speechlessness, as noted in the limitations. A potential approach to operationalize this relationship would be to develop a survey instrument to empirically measure intentional and non-intentional speechlessness.

Additionally, the phenomenon of speechlessness should be investigated in clinical and non-clinical samples to determine if and to what extent there are differences between these groups of individuals and situations in which speechlessness may occur. In particular, different care settings (outpatient and inpatient) should be investigated with regard to care and the potential negative impact of speechlessness on the interaction between healthcare professionals and patients. These studies could identify care and treatment situations in

which speechlessness may occur so that direct intervention by the medical professional can be provided in these situations.

Despite the mixed results of the creative arts therapy pilot study, these approaches should be considered in future research, as these forms of intervention may prove particularly helpful for patients who are unable to access their emotions directly through therapeutic dialogue, or who do not benefit from therapeutic dialogue.

In conclusion, the psychological phenomenon of speechlessness is a current and exciting area of research that needs to be further explored in both clinical and non-clinical settings.

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