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Age Discrimination in Acute Care Hospital Settings? Focus on Verbal Care Interactions With Cognitively Impaired Older Patients

presented by
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“We cannot choose *not* [emphasis added] to be old. And once we are considered ‘old’ in important settings, no amount of theoretical deconstruction or individual behavior or good attitude makes it reversible for any of us.”	“Now, if it is accepted that all behavior in an interactional situation has message value, i.e., is communication, it follows that no matter how one may try, one cannot *not* communicate.”
Gullette (2017, p. xix)	Watzlawick et al. (2011, pp. 29–30)

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Acknowledgments

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Extended Abstract

Objective: Acute care hospital settings represent a challenging environment for vulnerable older patients such as those with dementia. In particular, ageist behavior as reflected in so-called elderspeak communication has been considered as a crucial factor contributing to neuropsychiatric symptoms, suboptimal medical decision making, and poorer treatment outcomes in patients with dementia. Despite its linkage with negative health outcomes, the bulk of previous research on elderspeak has been conducted in nursing home settings and did not simultaneously consider multiple contextual conditions. Following a contextually-driven framework, the present dissertation concentrated on everyday care interactions between older patients and nurses (micro-level) in two German acute hospital settings differing in patient characteristics and geriatric expertise (macro-level). Paper 1 focused on the communication behavior of cognitively impaired (CI) versus cognitively unimpaired (CU) older inpatients. Paper 2 investigated nurses' emotional tone toward older inpatients with a particular focus on the role of the acute hospital setting and patients' cognitive impairment. Paper 3 examined the role of proximal (cognitive and functional impairment) and distal contextual factors (acute hospital setting, psychogeriatric knowledge, and evaluative age stereotypes) in predicting the occurrence of elderspeak.

Method: Data of all three papers were based on a cross-sectional study focusing on elderspeak in an acute internal medicine ward (n = 36 beds, mean length of stay = 4.9 days) and an acute geriatric ward (n = 35 beds; mean length of stay = 16.5 days). A total of 106 older patients participated in the study. Patients were between 66 and 96 years old ($M \pm SD_{\text{Years}}$ = 83.08 ± 6.19). Half of the patients (49%) were severely cognitively impaired ($M \pm SD_{\text{6CIT}}$ = 10.80 ± 8.60) and 56% were female. In total, 34 registered nurses took part in the study. Nurses were between 22 and 59 years old ($M \pm SD_{\text{Years}}$ = 38.93 ± 12.30). The majority of nurses were female (79%). Based on a mixed methods design, three types of data sources were used: (a) audio-recordings during the morning (49%) or evening care (51%), (b) patient data from the medical information system, and (c) standardized interviews with patients and nurses. The first paper was based on a psychometric study validating a tool to assess communication behavior in dementia (CODEM) for use in CI patients in the acute care hospital setting. Patients were observed by trained research assistants during a standardized interview situation and rated afterward. In the second paper, an emotional tone rating procedure was performed to differentiate between a person-centered and a controlling tone of nurses' voice toward older inpatients (Cronbach's α = .98 for both subscales). A total number of 92 audio-recorded clips

were evaluated by 12 naïve raters ($M \pm SD_{Age} = 32.75 \pm 9.33$ years) based on their impressions of nurses' vocal qualities. The third paper was driven by psycholinguistic analysis using manual coding (κ = .85–.97) and computer-assisted procedures for extracting likely harmful (diminutives, collective pronoun substitutions, tag questions) and hybrid features of elderspeak (sentence fragments, mean length of utterances, speech rate, type-token ratio, complex units).

Results: The first paper demonstrated that CODEM is a reliable and valid tool to examine the communication behavior of CI patients in the acute care hospital setting. CI patients significantly differed from CU patients in terms of an overall lower frequency of communication behavior as well as a higher occurrence of nonverbal when compared to verbal communication behavior. The second paper revealed that the emotional tone of nurses' voice toward older patients was perceived as largely person-centered and not so much as control-centered. Finally, the third paper provided further evidence on the existence of likely harmful diminutives (61%), collective pronouns substitutions (70%), and tag questions (97%). An important finding of Paper 2 and 3 was that functional impairment more strongly contributed to controlling tones of nurses' voice and elderspeak than cognitive impairment and acute hospital setting. Whereas a low percentage of older patients reported perceived age discrimination (2%), more than one third of older patients (36%) endorsed at least one type of ageist event during their hospital stay. Overall, nurses' views on aging were largely negative.

Conclusions: A large interindividual variability of communication resources and deficits has been demonstrated in acutely ill older inpatients. Furthermore, key features of elderspeak have been identified at the verbal and nonverbal communication level. Taken together, the present dissertation provides initial evidence for the occurrence of ageism and elderspeak in acute care hospital settings. Furthermore, it extends previous elderspeak research by discovering the dominant role of functional impairment that may be more strongly involved in the process of negative stereotype activation than cognitive impairment. The present work also provides a unique, multi-level, and interdisciplinary measurement approach for examining ageism in naturally occurring interactions. Such an ecologically valid approach may inform future studies and help to systematically combat ageism in high-risk groups. Finally, the current outbreak of ageism underpins that evidence-based interventions are urgently needed to overcome ageism and to establish a new narrative on aging in the public discourse.

Keywords: acute care hospital, geriatric patients, ageism, age stereotypes, elderspeak, emotional tone, cognitive impairment, functional impairment, domain-specific approach

List of Publications of the Cumulative Dissertation

1st Publication

Schnabel, E.-L., Wahl, H.-W., Penger, S., & Haberstroh, J. (2019). Communication behavior of cognitively impaired older inpatients: A new setting for validating the CODEM instrument. *Zeitschrift für Gerontologie und Geriatrie, 52*(Suppl 4), S264-S272. https://doi.org/10.1007/s00391-019-01623-2

2nd Publication

Schnabel, E.-L., Wahl, H.-W., Schönstein, A., Frey, L., & Draeger, L. (2020). Nurses' emotional tone toward older inpatients: Do cognitive impairment and acute hospital setting matter? *European Journal of Ageing, 17*(3), 371-381. https://doi.org/10.1007/s10433-019-00531-z

3rd Publication

Schnabel, E.-L., Wahl, H.-W., Streib, C., & Schmidt, T. (2020). Elderspeak in acute hospitals? The role of context, cognitive and functional impairment. *Research on Aging.* Advance online publication. https://doi.org/10.1177/0164027520949090

Overview of the Present Dissertation

The present dissertation was part of the interdisciplinary graduate program "People with Dementia in Acute Care Hospitals[1]" funded by the Robert Bosch Foundation Stuttgart. This overarching program aimed to improve the quality of care for patients with dementia in acute hospital settings by developing innovative approaches. The present dissertation specifically focused on elderspeak as a subtle form of ageist behavior in acute hospital settings. Chapter 1 will provide an overview of the theoretical and empirical background. After a general introduction, age-related declines in language production and comprehension over the course of normal and pathological aging will be described to characterize the complex communication needs of the heterogeneous older patient population. In the subsequent section, conceptual definitions and theories related to ageism will be provided followed by a brief overview of existing tools to examine self-reported ageism and perceived age discrimination. Next, the available empirical evidence on ageist behaviors in acute hospital settings will be presented. Particular emphasis will be placed on contextual constraints and key features of ageist language among healthcare professionals. Based on fundamental communication models and previous conceptualizations of elderspeak, an overarching conceptual framework will be presented that fills major conceptual and empirical gaps in previous elderspeak research. This framework comprises factors at the micro- and macro-level of contextual embeddedness of elderspeak and drives the empirical work of the three publications. At the micro-level, naturally occurring interactions between older patients and nurses were taken into account. At the macro-level, an acute general versus acute geriatric hospital setting were contrasted differing in patient characteristics and geriatric expertise. In Chapter 2, an overview of the mixed methods design, the assessment of individual-level and contextual variables as well as data analytic procedures will be given. The three publications will be presented in Chapters 3–5. Chapter 6 provides an integrative discussion of the findings of the three publications and concludes with implications at the theoretical and practical level.

[1] To improve reading fluency, the term "acute hospitals" will be used throughout the text of the present dissertation.

Abbreviations

General Abbreviations

AD	Alzheimer's disease
ADLs	Activities of daily living
ASI	Age stereotypes in interactions
CI	Cognitively impaired/cognitive impairment
6CIT	6-Item Cognitive Impairment Test
CODA	Context dynamics in aging
CODEM	Communication behavior in dementia
COVID-19	Coronavirus disease 2019
CPA	Communication predicament of aging
CPS	Collective pronoun substitutions
CU	Cognitively unimpaired
ELAN	Eudico Linguistic ANotator
EXMARaLDA	Extensible Markup Language for Discourse Annotation
FOLKER	FOLK EditoR
MCU	Mean number of clauses per utterance
MLU	Mean length of utterances
MMSE	Mini-Mental State Examination
NPS	Neuropsychiatric symptoms
PCM	Pulse code modulation
PEACE	Positive education about aging and contact experiences
PwD	Patients with dementia
ROPE	Relating to Older People Evaluation
TTR	Type-token ratio
VoA	Views on aging
WIC	Written informed consent

Statistical Abbreviations

ANCOVA	Analysis of covariance
ANOVA	Analysis of variance
BCA	Bias-corrected and accelerated
CFA	Confirmatory factor analysis
CFI	Comparative fit index
CI	Confidence interval
EFA	Exploratory factor analysis
ICC	Inter-rater consistency
ITC	Item-total correlations
KMO	Kaiser-Meyer-Olkin
RMSEA	Root-mean-square error of approximation
SRMR	Standardized root-mean-square residual
TLI	Tucker-Lewis index

Chapter 1

Theoretical and Empirical Background

1.1 Introduction

Over the past years, the awareness of the acute hospital setting as a challenging environment for vulnerable older patients, especially those with comorbid cognitive impairment (CI) and dementia, has internationally increased (Briggs et al., 2016; George et al., 2013; Røsvik & Rokstad, 2020; Teichmann et al., 2019). The demographic change confronts the healthcare system with high proportions of patients with dementia (PwD). In the upcoming years, the amount of PwD can be expected to further increase all over the world such as in the United Kingdom (Mukadam & Sampson, 2011; Reynish et al., 2017), the United States (Beydoun et al., 2015), and in Ireland (Briggs et al., 2016; Briggs et al., 2017). However, more recent studies pointed to a slightly less dramatic increase in high-income countries such as Germany (Langa et al., 2017; Nerius et al., 2020; Roehr et al., 2018). Research ambitions and political actions have been pushed forwards by three primary reasons.

First, there is an urgent need for global strategies to improve the care and treatment conditions in acute hospital settings considering the twofold higher risk of PwD of being hospitalized compared to those without dementia (Alzheimer's Association, 2019). In Germany, a representative study has demonstrated that 40% of older patients showed CI of whom 18% had dementia (Bickel et al., 2018). High-risk groups were patients older than 80 years, coming from nursing home settings, needing assistance in activities of daily living (ADLs), and being admitted to internal medicine wards (Bickel et al., 2018). From a socioeconomic perspective, the hospitalization of PwD is associated with enormous healthcare costs (Brüggenjürgen et al., 2015; Motzek et al., 2017).

Second, the hospital stay is a critical event for PwD and often marks the starting point of an irreversible downward circle. Inappropriate assessments and treatments, poor medical counseling, age discrimination, and lack of hospital staff knowledge on dementia have been identified as factors contributing to a longer length of hospital stay, readmissions, and higher mortality rates (for reviews, see Dewing & Dijk, 2016; Fogg et al., 2018; George et al., 2013; Möllers, Stocker, et al., 2019; Möllers, Perna, et al., 2019). Adverse events are common during hospitalization including a cascade of hospital-acquired complications such as pneumonia (Bail et al., 2015; Thornlow et al., 2009) and delirium (Fick et al., 2013; Möllers, Perna, et al., 2019). A further issue is the rapid decline in functional status (*hospital-associated deconditioning*) caused by overly sedentary behavior (Armstrong-Esther et al., 1989; Belala et al., 2019; Hartley et al., 2017; Heldmann et al., 2019; Kortebein, 2009; Pedone et al., 2005). This decline has been shown to increase the risk of subsequent nursing home admission (Fortinsky et al., 1999; Luppa

et al., 2008). Finally, an increased co-occurrence (76%) of neuropsychiatric symptoms (NPS) such as nighttime disturbances and aggression has been observed in hospitalized PwD (Hendlmeier et al., 2019; Hessler et al., 2018). According to the unmet needs model (Cohen-Mansfield et al., 2015), it can be assumed that NPS are indicators of perceived discomfort of PwD. Research supported that NPS are triggered by unrecognized pain (Sampson et al., 2015), social and physical deprivation (Belala et al., 2019), and elderspeak communication (Herman & Williams, 2009; Williams et al., 2009; Williams & Herman, 2011). *Elderspeak* describes an infantilizing and patronizing speech register directed to older adults. This specialized speech register typically includes inappropriate semantic categories as well as so-called overaccommodations such as exaggerated prosody, slow speech rate, limited vocabulary, syntactic simplifications, short sentences, and repetitions (Samuelsson et al., 2013).

Third, the evident discrepancy between scarce resources, that is, lack of time and staff on the one hand (Eriksson & Saveman, 2002; Tropea et al., 2017) and an increased need for person-centered care of vulnerable older patients on the other hand (Digby et al., 2017; Hendlmeier et al., 2019; Røsvik & Rokstad, 2020) is a difficult challenge in acute hospital settings. It can be assumed that such contextual conditions create an environment that likely triggers ageist behaviors and perceived age discrimination (Stepanikova, 2012; Voss, Bodner, et al., 2018; Voss & Rothermund, 2019). As dementia-friendly hospital environments are still lacking (Büter et al., 2017; Kirchen-Peters & Krupp, 2019), the patient needs to be "adapted" to the acute hospital system to manage the high working demands at least to some extent (Digby et al., 2017; Eriksson & Saveman, 2002).

To summarize, the frequent admission of PwD to acute hospital settings is a major and to a large extent unsolved public health issue. The relevance of this topic will remain high as long as no effective treatment option is found (Alzheimer's Association, 2019).

1.2 Communication With Older Adults With and Without Dementia

According to Hummert (2017), *communication with older adults* has been defined as "face-to-face or mediated interactions between individuals or within groups in which at least one of the individuals meets—or is perceived to meet—the cultural standard for classification as an 'older adult'. The specific standard varies across cultures and is generally based on chronological age (actual or perceived) or another demographic factor such as retirement status" (p. 1). Communication with others is important in every domain of life for maintaining health, well-being, and quality of life in older adults (Hummert, 2017; Kuemmel et al., 2014; Schall et

al., 2015). Following the lifespan theory of control (Heckhausen & Schulz, 1995), communication enables older adults to exert personal control despite age-related losses.

Interactions with older adults are shaped by expectations toward older adults, contextual factors, and specific communication skills of older adults. Hence, communication difficulties in interactions with older adults may arise from normal and pathological age-related losses, which can affect the sensory, cognitive, and psychosocial functioning of older adults (for reviews, see Harwood et al., 2012; Thompson et al., 2004). These trajectories will be described in the following sections in more detail. However, two aspects should be kept in mind when explaining the communication behavior of older adults. First, older adults are a rather heterogeneous group with large interindividual differences in sensory functions, cognitive performance, and coping strategies (Hummert, 2017; Lowsky et al., 2014). Second, communication represents a bidirectional process involving a sender and a receiver (Kuemmel et al., 2014). Substantial evidence exists that successful interactions also depend on the communication skills of healthcare professionals (Herman & Williams, 2009; Williams & Herman, 2011).

1.2.1 Effects of Normal Aging on Language Production and Comprehension

Regarding sensory functions, hearing deficits deserve particular attention due to their high prevalence in old age and their fundamental role in shaping successful social interactions (Heine & Browning, 2004; Heinrich et al., 2016; Heyl & Wahl, 2014; Schneider et al., 2016; Wettstein & Wahl, 2016). It is well known that sensory deficits and particularly hearing loss can have detrimental effects for older adults such as communication breakdowns, social isolation, and mental health problems (Heine & Browning, 2004; Mick & Pichora-Fuller, 2016).

In the course of age-related cognitive trajectories, the processing speed, executive functions, and particularly the working memory can be affected (Kemper et al., 1989; Kemper et al., 2009; Kemper, Thompson, et al., 2001; Wingfield & Tun, 2007), which play an important role in the communication process (Kuemmel et al., 2014). At the level of language production, working memory impairments and processing speed limitations were linked with reduced grammatical complexity, that is, a lower mean number of embedded and subordinate clauses per utterance (Kemper, Ferrell, et al., 1998; Kemper et al., 1989; Kemper, Othick, et al., 1998; Kemper et al., 2009; Kemper & Sumner, 2001; Kemper, Thompson, et al., 2001). Processing speed limitations were also associated with a reduced fluency such as a slower word-per-minute speech rate and a reduced mean length of utterances indicating overall difficulties in word retrieval and sentence planning (Kemper et al., 2009; Kemper & Sumner, 2001). At the level

of language comprehension, working memory impairments can reduce comprehension because the temporary storage and manipulation of information become more difficult (Norman et al., 1992; for a review, see Baddeley, 2003). Furthermore, older adults have an increased risk for difficulties in spoken language comprehension in noisy environments such as in acute hospital settings due to auditory and inhibitory deficits (Heinrich et al., 2016; Schneider et al., 2016; Wingfield & Tun, 2007).

1.2.2 Effects of Alzheimer's Disease on Language Production and Comprehension

The aforementioned communication challenges become particularly pronounced in older PwD showing substantial deficits across the whole communication process (for a review, see Haberstroh et al., 2011). PwD are characterized by a progressive loss in multiple cognitive functions including memory, executive functions, attention, language, social cognition and judgment, psychomotor speed, visuoperceptual or visuospatial abilities as defined by the World Health Organization's (2019) *International Statistical Classification of Diseases and Related Health Problems* (11th ed.). Importantly, the type of dementia can differentially affect language production and comprehension depending on the location, scope, and progression of the neuropathology (Kemper & Altmann, 2009). However, the bulk of previous studies examining the effects of dementia on language has focused on the most common form of dementia, that is, Alzheimer's disease (AD), which is estimated to account for 60% to 80% of all cases (Alzheimer's Association, 2019; Harwood et al., 2012). Research on other types of dementia such as vascular dementia and Lewy body disease is limited so far (Kemper & Altmann, 2009; Macoir et al., 2014). Therefore, the next section will mainly focus on communication resources and deficits in individuals with AD.

Focus on Different Stages of the Communication Process

Applying the communication model of Rüttinger and Sauer (2000) in dementia research, Haberstroh et al. (2011) described distinct resources and deficits in AD, which can be allocated to four major stages of the communication process: presentation, attention, comprehension, and remembering.

At the level of presentation, robust evidence exists showing specific changes in language production that occur across different linguistic domains in the course of AD. Within the domain of verbal fluency, word-finding difficulties (de Lira et al., 2011; Kemper, Lyons, et al., 1995; Lukatela et al., 1998; Pekkala et al., 2013), also known as the tip-of-the-tongue phenomenon (Astell & Harley, 1996; Juncos-Rabadán et al., 2013), have been described as an early sign of AD. This phenomenon emerged in spontaneous speech behavior as well as in neuropsychological naming tests (Dos Santos et al., 2011). Furthermore, sentence fragments

(Lyons et al., 1994), a reduced sentence length (Lyons et al., 1994), and temporal parameters such as a slower speech rate (Fraser et al., 2016; Meilán et al., 2014) are early markers of AD. Within the domain of grammar, the production of complex and coherent syntactic constructions remains relatively preserved in the early stages of AD (Lyons et al., 1994), whereas syntactic complexity rapidly declines in more advanced stages of AD (de Lira et al., 2011; Haberstroh et al., 2011; Kemper, Greiner, et al., 2001; Kemper, Thompson, et al., 2001; Lyons et al., 1994). Within the domain of semantics, a reduced lexical diversity (Kavé & Dassa, 2018) and a lower propositional density, that is, a lower complexity of content (Kemper, Thompson, et al., 2001; Lyons et al., 1994) have been described. The reduced lexical diversity and lower propositional density may be attributed to a higher number of repetitions (de Lira et al., 2011). Furthermore, the spontaneous speech of individuals with AD is characterized by empty phrases and semantically empty words such as general nouns (e.g., thing) and verbs (e.g., do) as well as an overuse of pronouns (Hier et al., 1985; Kavé & Dassa, 2018; Kemper, Lyons, et al., 1995; Visch-Brink et al., 2009). A linguistic analysis of biographical interview data from the Interdisciplinary Longitudinal Study of Adult Development and Aging has shown that changes in fluency (sentence fragments) and semantics (reduced lexical diversity, lower propositional density, overuse of pronouns) can already be found in the preclinical stage of AD (Wendelstein, 2016).

At the level of attention, the middle stage of dementia is characterized by problems in shifting and dividing attention such as in dual-task situations (Cocchini et al., 2004; Filoteo et al., 1992; Haberstroh et al., 2011; Vasquez et al., 2011). This may interrupt communication and negatively affect the next stages of the communication process, that is, comprehension and remembering (Smith et al., 2011). In severe stages of dementia, the ability of attentional focusing is also limited (Perry & Hodges, 1999). To reduce the cognitive effort in AD, it has been recommended in the literature to attract attention as well as to avoid distractions and dual-task situations (Bayles, 2003; Haberstroh et al., 2011; Smith et al., 2011). For example, there should be only one question at a time (de Vries, 2013).

At the level of comprehension, difficulties may arise in understanding verbal utterances due to grammatical complexity (Kemper & Harden, 1999; Kemper et al., 1996; Small et al., 1997), complex content, and nonliteral language such as irony (Gaudreau et al., 2013; Rapp & Wild, 2011). In line with the findings on syntactic language production, it has been shown that syntactic comprehension is only slightly impaired in the early stages of AD but strongly affected in advanced stages of AD (Bickel et al., 2000). However, previous research suggests that sentence comprehension problems might be more strongly be driven by working memory

deficits than by syntactic processing deficits per se (Bickel et al., 2000; Kempler et al., 1998; Kempler & Goral, 2008; Rochon et al., 2000; Small et al., 1997).

At the level of remembering, memory loss as a typical marker of AD can contribute to communication breakdowns and caregiver burden (Savundranayagam et al., 2005; Small et al., 2000; Small et al., 2003). For example, deficits in the retention of newly learned information may lead to difficulties to remain on a topic and repetitive questions (Haberstroh et al., 2011; Small et al., 2000; Small et al., 2005). The same applies to a series of actions such as preparing a meal, which may be interrupted in the middle of the process (Small et al., 2000). Further, impaired orientation may be associated with confusion about the start of a planned activity such as going for a walk (Small et al., 2000). In particular, working memory deficits can have widespread effects on communicative functions (for a review, see Bayles, 2003).

Focus on Different Communication Channels

Considering specific communication deficits and resources over the course of AD, two axioms of Watzlawick et al. (2011) deserve particular attention. In line with Watzlawick et al.'s (2011) widely acknowledged first axiom, "one cannot *not* communicate" (p. 30), it can be assumed that even individuals in advanced stages of AD can communicate, albeit by other channels (Ellis & Astell, 2017). The second axiom of Watzlawick et al. (2011) proposes a content and a relationship aspect of communication. The *content aspect* refers to the production and comprehension of mainly verbal utterances. The *relationship aspect* refers to the emotional tie between speakers and the underlying affective qualities of communication (Frank et al., 2015). The verbal content channel strongly declines in the course of AD including deteriorations in verbal fluency, grammatical complexity, lexical diversity, and the understanding of verbal messages (Kemper, Thompson, et al., 2001; Kuemmel et al., 2014; Lyons et al., 1994), which may finally end up in echolalia and mutism (Appell et al., 1982). Even though verbal communication skills may be lost in the final stages of AD, the nonverbal relationship channel can be preserved for a longer time (Ellis & Astell, 2017; Kuemmel et al., 2014). At the level of presentation, individuals with AD are still able to express their feelings and needs via a broad repertoire of nonverbal cues such as eye gaze, emotional expression, and movement (Ellis & Astell, 2017). Such signals may be used to communicate and to initiate social interactions with others (Astell & Ellis, 2006; Ellis & Astell, 2017). For example, substantial evidence exists that individuals with AD can signal pain by a set of facial expressions, body movements, and vocalizations (Feldt, 2000; Kunz et al., 2020). At the level of comprehension, individuals with AD remain the ability to process the relationship aspect of communication. For example, the ability to decode facial emotional expressions and emotional

prosody remains relatively preserved in individuals with AD (Bucks & Radford, 2004; Burnham & Hogervorst, 2004; Roudier et al., 1998).

1.2.3 Existing Tools for Examining the Communication Behavior of PwD

Overall, validated tools to assess the communication behavior of PwD in terms of verbal versus nonverbal subchannels are lacking so far (Kuemmel et al., 2014). Most of the existing tools solely capture the functional communication deficits of individuals with AD such as naming, verbal fluency, and reading ability (Haberstroh et al., 2013). Such tools have mainly been applied to examine functional communication ability as an outcome measure in AD clinical trials (Haberstroh et al., 2013). In this context, functional communication has been defined as "the ability to receive or to convey a message, regardless of the mode, to communicate effectively and independently in a given [natural] environment" (Frattali et al., 1995, p. 12). However, this operational definition does not sufficiently describe the communication behavior of individuals with AD, which is more important for well-being. Previous research has demonstrated that the communication behavior of individuals with AD in everyday interactions is much more complex depending on the context, characteristics of the sender, and the communication channel (Kuemmel et al., 2014).

The CODEM instrument (Kuemmel et al., 2014), an observational tool to assess communication behavior in dementia, considers the contextual embeddedness of communication as well as different stages of the communication process and different communication channels. Psychometric analysis of Kuemmel et al. (2014) suggested a two-factor solution with Factor 1 representing the Verbal Content Aspect (e.g., "She/he uses a sensible sentence structure") and Factor 2 representing the Nonverbal Relationship Aspect (e.g., "She/he signalizes the need to communicate"). However, previous efforts to validate the CODEM instrument were conducted only in the nursing home setting (Kuemmel et al., 2014) and the ambulatory setting (Knebel et al., 2016) but not in the acute hospital setting.

1.3 Concepts and Theories Related to Ageism

1.3.1 Age Discrimination and Ageist Behavior

In the ageism literature, a broad variety of terms such as stereotypes, prejudices, discrimination, and ageist language can be found for describing the inappropriate and unfair treatment of older adults (for reviews, see Pasupathi & Löckenhoff, 2002; Rothermund & Mayer, 2009b; São José et al., 2019; Voss, Bodner, et al., 2018). According to the first definition of ageism coined by Butler (1969), the term *ageism* refers to "prejudice by one age group

toward other age groups" (p. 243). Following Butler's subsequent work (1980) and more recent definitions (Chasteen et al., 2017; Marcus, 2017; Voss, Bodner, et al., 2018), ageism represents a more complex construct that comprises three major components: (a) age stereotypes as the cognitive component of ageism, (b) prejudices as the affective component of ageism, and (c) age discrimination as the behavioral component of ageism. Such components can become manifest in self-directed or other-directed, implicit or explicit, positive or negative forms of ageism (São José et al., 2019). Furthermore, they can occur at the individual (*micro-level*), societal/structural (*meso-level*) as well as the cultural, institutional, and policy level (*macro-level*; Ayalon & Tesch-Römer, 2018c; Rothermund & Mayer, 2009b; São José et al., 2019). Following Butler's seminal definition of ageism as prejudice against older adults (1969), *self-reported ageism* refers to perceptions of ageist events, whether positive or negative, that are based on stereotypical assumptions about older adults (Cherry & Erwin, 2019; Cherry & Palmore, 2008).

Regarding the behavioral component of ageism, the terms *age discrimination* (e.g., Rothermund & Mayer, 2009b; Voss, Bodner, et al., 2018) and *ageist behavior* (e.g., Pasupathi & Löckenhoff, 2002) are commonly used. The behavioral component of ageism deserves particular attention because the present dissertation mainly concentrates on *ageist language* in terms of infantilizing and patronizing speech patterns toward older patients in naturally occurring care interactions. Ageist language can be seen as a subtle and implicit component of ageism, which is likely to be unconsciously enacted (Gendron et al., 2018; Gendron et al., 2016; São José et al., 2019; Williams et al., 2004). The term ageist language includes the phenomenon of elderspeak and will be introduced in Section 1.6 in more detail.

Age stereotypes, prejudices, and age discrimination are closely related constructs (Voss, Bodner, et al., 2018) that are "mutually reinforcing to one another" (Butler, 1980, p. 8). The conceptual linkage between age stereotypes and age discrimination also becomes evident from the following definition. According to Marcus (2017), "age discrimination refers to behaviors that unfairly discriminate against individuals and groups, either positively or negatively, on the basis of actual or perceived age, acting either implicitly or explicitly, and expressed at either the individual or institutional level" (p. 75). This definition underscores that the occurrence of age discrimination is not sufficiently explained by an individual's actual age but rather depends on age-related prejudices and age stereotypes, that is, the perception of cues associated with old age (Voss, Bodner, et al., 2018). Furthermore, the comprehensive definition based on five key concepts underpins that age discrimination is a complex phenomenon that can be triggered by

age stereotypes, individual-level variables, and contextual conditions (Voss, Bodner, et al., 2018).

According to Pasupathi and Löckenhoff (2002), three types of ageist behaviors can be distinguished: (a) devaluating and damaging, (b) ignoring and excluding, as well as (c) helping and patronizing. In the following, examples for each type of ageist behavior will be given referring to the micro-level. As an example of the first type of ageist behavior, PwD in acute hospitals run the risk of being exposed to physical (e.g., bedrails, belts, locked doors) and chemical (e.g., psychotropic drugs) restraints (Isfort et al., 2014; Krüger et al., 2013). As an example of the second type of ageist behavior, healthcare professionals have been shown to spend less time with older patients compared to younger patients (Adelman et al., 2000). As an example of the third type of ageist behavior, elderspeak communication can be named (Kemper, 1994). Although such differentiation can be heuristically helpful to explain the origin of ageism at different levels, ageist behavior may also be influenced by two or three levels at the same time. For example, there is evidence that the use of restraints is increased in PwD but also depends on structural (time and personnel) and institutional characteristics (general medicine vs. geriatric wards). Detailed information on the evidence of ageist behaviors in acute hospital settings across different levels will be provided in Section 1.5.

Finally, it is important to differentiate between *ageist behavior* versus *age-differentiated behavior* as recommended by Pasupathi and Löckenhoff (2002). Hence, age-based differences in the provider-patient interaction between younger and older patients may reflect appropriate accommodations to the specific communication needs of older adults (see again Section 1.2). However, it is rather difficult to differentiate between age-differentiated behavior and ageist behavior due to the large heterogeneity in old age (Lowsky et al., 2014). Most of the age-differentiated behaviors incorporate both negative and positive components depending on the individual and the context.

1.3.2 Antecedents and Moderators of Ageist Behavior

As potential antecedents of ageist behavior, terms like age stigma, age stereotypes, prejudices against older adults, attitudes toward older adults/aging have been named in the literature (for reviews, see Chasteen & Cary, 2015; Chasteen, Cary, & Iankilevitch, 2017; Rothermund & Mayer, 2009b; Voss, Bodner, et al., 2018). Figure 1.1 gives an overview of these concepts and their interplay. Figure 1.1 illustrates three points: (a) the concepts are empirically correlated to some extent, (b) they are characterized by different causes and mechanisms, and (c) they unfold a differential impact on the activation of behavioral responses. These constructs might be antecedents of ageist behavior but do not represent a sufficient

condition for the occurrence of ageist behavior. Hence, it may be the case that age stereotypes are activated but do not result in ageist behavior (Voss, Bodner, et al., 2018). In the following, these concepts will find in-depth treatment by highlighting their specificities and commonalities. Furthermore, important moderators of the association between age stereotypes and ageist behavior (*stereotype-discrimination relation*) will be introduced.

Age Stigma, Age Stereotypes, and Prejudices

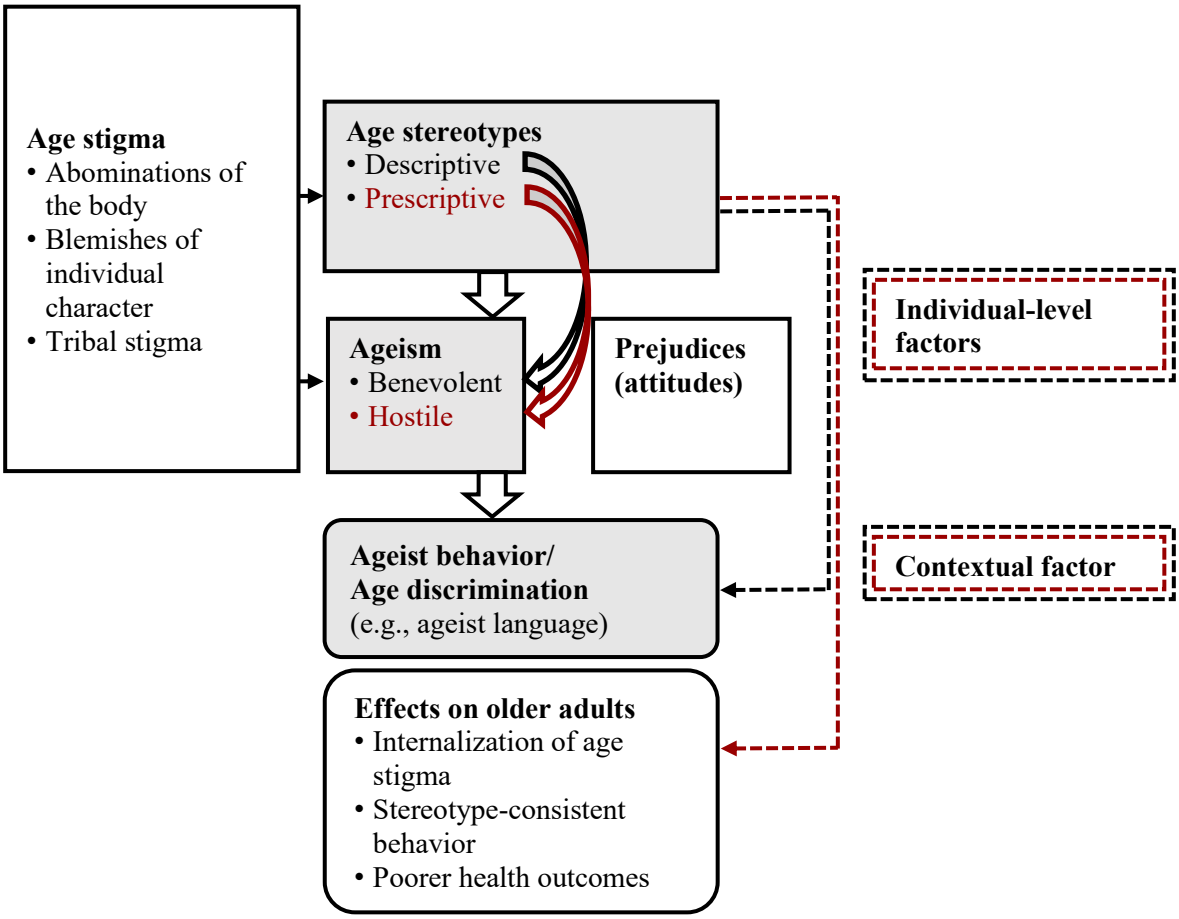
Age stigma may be seen as a superordinate construct manifesting in age stereotypes and prejudices, and finally in ageist behavior (Chasteen & Cary, 2015). According to Goffman (1963), stigma has been defined as an "attribute that is deeply discrediting" (p. 3) generalized to the body, individual character, and the whole in-group. Stigmatizing an individual as "old" can activate age stereotypes and prejudices associated with the group of older adults such as being in a poor physical and mental health status (Fineman, 1994). Older adults with dementia are facing the risk of "double stigmatization", that is, to be discriminated against due to old age *and* mental illness (Bodner et al., 2018; Evans, 2018; Urbańska et al., 2015). The stigmatization of PwD has been described as a serious issue that occurs at the individual, family, professional, and social level (Werner, 2014).

North and Fiske (2013) distinguished between two types of age stereotypes (see also Figure 1.1): (a) *descriptive age stereotypes* containing characteristics that are typically attributed to older adults such as being warm and incompetent (Fiske et al., 2002) and (b) *prescriptive age stereotypes* based on beliefs how older adults should be. For example, it is supposed that older adults should not work after reaching the retirement age due to limited flexibility, slow thinking, and poor health status (North & Fiske, 2013). North and Fiske (2013) further argue that descriptive age stereotypes result in benevolent ageism, whereas prescriptive age stereotypes facilitate hostile ageism (for a review, see Chasteen & Cary, 2015). Examples of *benevolent ageism* are the use of ageist language and overprotective behavior such as unwanted help (Chasteen et al., 2020; Ryan et al., 2006; Vale et al., 2020). Examples for *hostile ageism* are the exclusion of older adults such as in the work environment and healthcare settings (Cary et al., 2017).

Whereas stereotypes are defined as "beliefs and opinions about the characteristics, attributes, and behaviors of members of various groups" (Kite and Whitely, 2016, p. 13), *prejudice* is known as "an attitude directed toward people because they are members of a specific social group" (Kite and Whitely, 2016, p. 15). Hence, prejudices comprise affective evaluations of older adults, which may lead to an increased readiness to behavioral responses when compared to cognitive representations (Rothermund & Mayer, 2009b).

Figure 1.1

Overview of Concepts Related to Ageist Behavior



Note. Concepts of main interest for the present study are highlighted in grey (own illustration). The impact of potential moderator variables on the relation between age stereotypes and ageist behavior is indicated by the black arrow. The impact of mediator variables on the relation between age stereotypes and stereotype-consistent behavior/perceived age discrimination is illustrated by the red arrow.

In fact, a current review focusing on the existing evidence for age stereotypes as a predictor of ageist behavior pointed to a limited empirical association between age stereotypes and age discrimination (Voss, Bodner, et al., 2018). In line with previous work on predictors of discrimination (Cuddy et al., 2007; Talaska et al., 2008), the authors concluded that ageist behavior is more strongly driven by affective prejudices than age stereotypes (Voss, Bodner, et al., 2018). Further, it can be assumed that age stereotypes and prejudices predict different types of age discrimination. Whereas prejudices emerged as important predictors of ageist behavior, age stereotypes may become more relevant when it comes to perceived age discrimination (Voss, Bodner, et al., 2018). To conclude, it is important to consider the perceptions of older

adults related to age discrimination and to examine the impact of variables moderating the stereotype-discrimination relationship (Hess, 2006; Voss, Bodner, et al., 2018).

Moderators of the Stereotype-Discrimination Relation

Moderators can operate at the micro-, meso-, or macro-level but may differ in their impact on the association between age stereotypes and age discrimination (Voss, Bodner, et al., 2018). Whereas individual-level variables of older adults and healthcare professionals mostly moderate the linkage between age and stereotypes, structural and institutional variables more likely influence the stereotype-discrimination relation (Voss, Bodner, et al., 2018).

At the micro-level, characteristics of the older patient such as advanced chronological age, CI as well as poor physical and functional health status can facilitate negative stereotype activation (for reviews, see Hess, 2006; Wyman et al., 2018). In healthcare contexts, stereotype activation may strongly be driven by geriatric symptoms and the medical history of an older patient (Wyman et al., 2018). Hess (2006) also argues that negative stereotypes are more likely activated when individual information is absent and stereotype-consistent behavior becomes dominant. Going further, it can be expected that age-related cues become more salient in PwD because personal information is hardly available or overshadowed by the disease. Furthermore, a study contrasting three groups of older adults in the rural area (older patients in general, older patients > 85 years, nursing home residents) revealed that negative attitudes of physicians were most prevalent in the group of nursing home residents, followed by the oldest group of community-dwelling older adults (Gunderson et al., 2005). Hence, particularly vulnerable older patients have a high risk of facing ageist behaviors.

Next, characteristics of healthcare professionals[2] such as chronological age, gender, and views on aging (VoA) have been named as moderators of attitudes at the micro-level (for reviews, see Hess, 2006; Wyman et al., 2018). For example, older age and female gender of nurses and physicians were associated with a more differentiated VoA as well as more positive attitudes toward one's own aging and older adults (Chasteen, 2000; Lambrinou et al., 2009; Leung et al., 2011; Lookinland & Anson, 1995; Söderhamn et al., 2001). Furthermore, better knowledge about aging, higher exposure to older adults, and preference to work with older adults contributed to more positive attitudes toward older adults (Leung et al., 2011; Liu et al., 2013; Meisner, 2012b). However, the systematic review of Liu et al. (2013) focusing on nurses' attitudes toward older adults revealed that most of these variables failed to show robust associations with nurses' attitudes. Only two variables emerged as consistent predictors of

[2] For a more detailed overview on nurses' attitudes toward older adults, please see Liu et al. (2013); for a more detailed overview on physicians' attitudes toward older adults, please see Meisner (2012b).

attitudes, namely preference to work with older adults and knowledge about aging (Liu et al., 2013, 2015). To summarize, previous findings on healthcare professionals' characteristics are mixed and require further investigation.

At the meso- and macro-level, the relation between age stereotypes and age discrimination further depends on situational and contextual conditions of healthcare settings (Voss, Bodner, et al., 2018; Wahl & Gerstorf, 2018). Hence, attitudes and behaviors toward older patients may be influenced by the nature of acute hospital wards differing in routines, resources, architecture, and care culture. For example, geriatric wards are usually characterized by specifically trained hospital staff and offer a dementia-friendly environment (Zieschang et al., 2019; Zieschang et al., 2010). Thus, geriatric wards may come with higher psychogeriatric expertise and a more differentiated view on older patients when compared to general medical wards (for more details, see also Section 1.7). In fact, a lower use of physical restraints has been observed in geriatric wards (Weiner et al., 2003) when compared to general medical wards and intensive care units (Krüger et al., 2013). Furthermore, attitudes have been found to differ between wards serving different medical domains. For instance, attitudes toward geriatric patients (Ahmed et al., 1987; Krain et al., 2007) and PwD (Kang et al., 2011) were found to be less favorable in surgical when compared to general medical wards such as internal wards. Finally, structural barriers such as lack of time and hospital staff (Hinton et al., 2007) are also assumed to strengthen the linkage between age stereotypes and age discrimination (Voss, Bodner, et al., 2018). Detailed information on the role of individual-level and contextual variables related to the use of ageist language will be provided in Section 1.7.

1.3.3 Consequences of Ageist Behavior and Mediating Pathways

Being confronted with ageist behaviors can have crucial implications for older adults affecting psychological, behavioral, and health outcomes (for reviews, see Chang et al., 2020; Kotter-Grühn, 2015; Rothermund & Mayer, 2009a). A robust finding is that negative VoA and high levels of ageism are significantly linked with undesired developmental outcomes such as physical and mental illness, poor quality of life and well-being, cognitive and functional decline as well as higher all-cause mortality (Chang et al., 2020; Diehl & Wahl, 2019; Lamont et al., 2015; Levy et al., 2020; Westerhof et al., 2014; Wurm et al., 2017). The recently published systematic review by Chang et al. (2020) focusing on the global consequences of ageism in the healthcare system also revealed that the linkage between ageism and such adverse health outcomes has increased from 1970 to 2017.

According to the stereotype embodiment theory (Levy, 2009), age stereotypes, VoA, and age discrimination may unfold their negative impact on developmental outcomes via

psychological, behavioral, and physiological pathways. The systematic review by Chang et al. (2020) provided empirical support for the mediating role of the three pathways in the association between ageism and adverse health outcomes. For the *psychological pathway*, robust evidence exists that ageism and negative self-perceptions of aging can reduce self-efficacy (Dutt & Wahl, 2019; Klusmann et al., 2019; Tovel et al., 2019), control beliefs (Levy et al., 2002), and future time perspective (Dutt & Wahl, 2019), which in turn exert a negative impact on developmental outcomes (for a review, see Chang et al., 2020). According to the *behavioral pathway*, negative age stereotypes and negative self-perceptions of aging can result in a lower engagement in health-promoting behaviors such as physical activity, which then increases the risk of cognitive, functional, and physical decline (Beyer et al., 2015; Wurm et al., 2010). At the level of the *physiological pathway*, negative age stereotypes and negative self-perceptions of aging may come along with an increased physiological stress response such as higher levels of C-reactive protein, which is a stress-related inflammation marker and linked with longevity (Levy & Bavishi, 2018).

A meta-analysis on the effects of positive versus negative age stereotype priming on behavioral outcomes revealed that age stereotypes can directly influence older adults' performance via the *assimilation effect* (Meisner, 2012a). Hence, research has shown that negative age priming can lead to behavior that is consistent with the negative stereotype (O'Brien & Hummert, 2006). An important finding of this meta-analysis was that negative age priming unfolded a three times larger effect on behavior when compared to positive age priming (Meisner, 2012a). However, the effects of ageist behavior on older adults' behavior also depend on interindividual differences in vulnerability to ageism. Three psychological mechanisms deserve particular attention, which are proposed to mediate the relationship between age stereotypes, stereotype-consistent behavior, and perceived age discrimination (Voss, Bodner, et al., 2018): (a) self-stereotyping, (b) stigma consciousness, and (c) stereotype threat.

First, according to the stereotype embodiment theory, negative age stereotypes are internalized over the life span, come along with stereotype-driven expectations, and finally turn into self-fulfilling prophecies (Levy, 2009; Levy, 2003). Although the exposure to negative age stereotypes and negative self-perceptions of aging increases with age, the degree of internalization largely varies between older adults (Chasteen & Cary, 2015; Kornadt & Rothermund, 2012; Levy, 2009). Importantly, older adults may only react in a stereotype-consistent manner, if the activated stereotype is *self-relevant*, that is, consistent with an individual's current self-view (Hess et al., 2004; Kornadt & Rothermund, 2012; Levy, 2009; O'Brien & Hummert, 2006).

Second, older adults may differ in their individual expectations of which stereotypes are held by others toward their own age group and to which extent they anticipate to be rejected due to old age. These meta-stereotypes are also known as *stigma consciousness/age-based stigma sensitivity* (Chasteen et al., 2015; Pinel, 1999) and *age-based rejection sensitivity* (Kang & Chasteen, 2009). Previous empirical work has shown that older were more susceptible to these meta-stereotypes (Chasteen et al., 2015; Kang & Chasteen, 2009), which in turn predicted lower hearing and memory performance via negative self-perceived abilities (Chasteen et al., 2015). Age-based stigma sensitivity has also been shown to be linked with increased negative affect and perceived age discrimination (Voss, Bodner, et al., 2018).

Third, interindividual differences in feelings of stereotype threat can mediate the relation between age stereotypes and stereotype-consistent behavior (Chasteen et al., 2005). The term *stereotype threat* refers to the fear of confirming a negative group stereotype in a situation that likely elicits negative stereotype activation such as a cognitive testing situation (for reviews, see Chasteen & Cary, 2015; Lamont et al., 2015). Again, previous research has shown that older adults are more susceptible to feelings of stereotype threat, which led to self-fulfilling prophecies in terms of a lower memory performance when compared to younger adults and to older adults who did not perceive stereotype threat (Chasteen et al., 2005; Desrichard & Köpetz, 2005; Hess et al., 2003; Hess et al., 2009).

Finally, the relation between age stereotypes, stereotype-consistent behavior, and perceived age discrimination does not only depend on individual-level factors but also on situational and contextual characteristics (see also Figure 1.1). According to the *stereotype-asymmetry assumption* (O'Brien et al., 2008), stereotype threat is assumed to be increased under conditions that more likely elicit negative age stereotypes about older adults than positive age stereotypes. In fact, previous research demonstrated that stereotype threat is increased in certain contexts such as hospital settings when compared to community-dwelling settings (Hummert et al., 1998). Furthermore, stereotype threat can be enhanced in specific situations such as a cognitive testing situation (Hess et al., 2003) or a medical, deficit-oriented interview situation (Auman et al., 2005). At the macro-level, societal norms, roles, and regulations can also play a role in perceived age discrimination due to their linkage with self-perceptions on aging (Kornadt & Rothermund, 2015).

To summarize, research has demonstrated that negative age priming, negative self-perceived abilities and contextual factors at different levels can lead to stereotype-consistent behavior, and adverse health outcomes of older adults.

1.4 Assessment of Self-Reported Ageism and Perceived Age Discrimination

The bulk of previous studies examining the prevalence of ageism has been conducted in North America (particularly in the United States) and in Europe (particularly in the United Kingdom; de São José, 2019). In North America, the Ageism Survey (McGuire et al., 2008; Palmore, 2001; Palmore, 2004) and the Relating to Older People Evaluation (ROPE) questionnaire (Allen et al., 2009; Cherry et al., 2016; Cherry & Palmore, 2008) have mainly been used as self-report measures of ageism. The Ageism Survey (Palmore, 2001) represents a well-established and standardized instrument for measuring the frequency of 20 negative types of ageism across different domains of life such as public space, work, finances, and health. The ROPE questionnaire (Cherry & Palmore, 2008) also examines the frequency of 20 types of ageism but extended the Ageism Survey by considering six *positive* as well as 14 negative types of ageism.

Studies applying Palmore's Ageism Survey revealed a high prevalence of ageism in America (McGuire et al., 2008; Palmore, 2001; Palmore, 2004) and Canada (Palmore, 2004). The percentages of older patients who reported at least one event of ageism ranged between 77% and 84% in the American samples (McGuire et al., 2008; Palmore, 2001; Palmore, 2004), whereas even 91% of the Canadian sample were affected by at least one event of ageism (Palmore, 2004). The differences between the American and the Canadian sample were explained by a higher occurrence of ageism in Canada, a greater awareness of ageism in Canada, or a higher willingness of older adults to admit ageist experiences in Canada (Palmore, 2004). Furthermore, studies applying the ROPE questionnaire (Cherry et al., 2016; Cherry & Palmore, 2008) have shown that participants more frequently endorsed positive than negative forms of ageism.

In Europe, the European Social Survey represents a well-established and valid tool for examining self-reported ageism and perceived age discrimination that has been developed for cross-country comparisons (Ayalon, 2014, 2018; Bratt et al., 2018; Swift et al., 2019; Swift et al., 2018). The ageism module of the European Social Survey contains three items rated on a 5-point scale from 0 (*never*) to 4 (*very often*; Bratt et al., 2018). The first item refers to perceived age discrimination in general: "Please tell me how often, in the past year, anyone has shown prejudice against you or treated you unfairly because of your age?" (Bratt et al., 2018). The second item captures more subtle and benevolent forms of ageism: "And how often, if at all, in the past year have you felt that someone showed you a lack of respect because of your age; for

instance, by ignoring or patronizing you?" (Bratt et al., 2018). The third item addresses hostile forms of ageism: "How often in the past year has someone treated you badly because of your age; for example, by insulting you, abusing you, or refusing you services?" (Bratt et al., 2018).

Studies using the first item of the European Social Survey (Ayalon, 2014) revealed higher levels of perceived age discrimination (mean prevalence rate across countries = 35%) when compared to perceived gender and ethnic discrimination (mean prevalence rate across countries = 25% and 17%, respectively). However, there was a large variability of perceived age discrimination across the 28 European countries ranging from 17% in Portugal and Cyprus to 33% in Germany, and finally to 54% in the Czech Republic (Ayalon, 2014).

1.5 Evidence on Ageist Behaviors in Acute Hospitals

A large body of research has demonstrated the occurrence of different types of ageist behaviors toward older patients in acute hospital settings (for a review, see George et al., 2013). For describing hospitalized older adults, insulting labels such as "acopia", "social admission", "bed-blocker", or "atypical representation" (Oliver, 2008) have been used. Ageism can occur at any stage of the hospital stay: It may negatively affect clinical assessments, the access to healthcare services and treatments, the quality of provider-patient interactions, and the autonomy of older adults. These types of ageist behaviors facing older adults in the acute hospital setting will be explained below in more detail.

First, although geriatric assessments may help to recognize vulnerable patient groups and to adjust medical procedures to the specific needs of geriatric patients at early stages of hospitalization, they still have a low priority in the fast-paced daily routines of the acute hospital system (Schönstein et al., 2019). In general, older adults are at high risk to be exposed to *therapeutic nihilism* (Anderson, 2001; Butler, 1975; Chodosh et al., 2004; Oliver, 2008) in the acute hospital setting. This term describes the reluctant attitude of healthcare professionals toward the assessment and treatment of geriatric syndromes among older patients, which are attributed to their age and not seriously taken into account (Skirbekk & Nortvedt, 2014). Such attitudes can lead to the underdiagnosis and undertreatment of geriatric syndromes such as dementia (Hessler et al., 2017; Timmons et al., 2015), delirium (Rockwood, 2003; Timmons et al., 2016), and pain (Isfort et al., 2014; Timmons et al., 2016). Importantly, a large analysis of claims data focusing on risk factors for length of hospital stay revealed that delirium was one of the strongest determinants for a prolonged length of stay (Möllers, Perna, et al., 2019). In 84.6% of a total of 141 studies, evidence on denied access to services and treatments in the

healthcare system has been found (Chang et al., 2020). Such studies pointed to a less rigorous, less high-tech, less integrative, and less expensive treatment of older patients when compared to younger patients (Adelman et al., 2000; Brockmann, 2002; Greene & Adelman, 2003; Greenfield et al., 1987; Kane et al., 2007; Oliver, 2008; Rudd et al., 2007; Skirbekk & Nortvedt, 2014). These types of undertreatment have been observed within different disciplines of medicine (for a review, see Wyman et al., 2018). However, overdiagnosis and overtreatment are also a problem (Skirbekk & Nortvedt, 2014) such as unnecessary prescriptions of antibiotics in case of a supposed urinary tract infection (Woodford & George, 2009), unnecessary urinary catheters (Inouye & Charpentier, 1996), and polypharmacy including antipsychotics, which can increase mortality (Gill et al., 2007; White et al., 2017; for a review, see Fialová et al., 2018).

Second, a major ethical issue during the hospital stay is the widespread use of freedom-depriving measures (Ritzi & Kruse, 2019). In many countries, physical and chemical restraints have been criticized, for example, in Germany (Hendlmeier et al., 2019; Hendlmeier et al., 2018; Isfort et al., 2014; Krüger et al., 2013), Japan (Nakanishi et al., 2018), Sweden (Eriksson & Saveman, 2002), Israel (Weiner et al., 2003), and the United Kingdom (White et al., 2017). Such freedom-depriving measures were more frequently applied in dependent and noncompliant older patients to manage their NPS and to ensure patient safety (Hendlmeier et al., 2019; Hendlmeier et al., 2018; Norman, 2006). In particular, psychotic symptoms (delusions) and expansive symptoms (aggression and nighttime disturbances) of dementia were perceived as uncontrollable by acute hospital staff (Hessler et al., 2018). Furthermore, freedom-depriving measures were more commonly used by healthcare professionals with negative attitudes toward patients with aggressive symptoms of dementia (Nakahira et al., 2009).

Third, ageism can affect provider-patient interactions at the micro-level (for reviews, see Adelman et al., 2000; Rothermund & Mayer, 2009a; Thompson et al., 2004). Several studies demonstrated that physicians spend less time with older patients when compared to younger patients (Adelman et al., 2000; Hansen et al., 2016; Keeler et al., 1982). Furthermore, studies contrasting the frequency of nurse-patient interactions between older patients with and without CI revealed fewer and shorter interactions in case of those with CI (Armstrong-Esther & Browne, 1986; Armstrong-Esther et al., 1989; Ekman et al., 1991; Norbergh et al., 2001). Nurses spent less time with PwD even if they had the same level of functional capacity as patients without dementia (Ekman et al., 1991). However, PwD typically need more help in ADLs requiring more intensive care interactions (Hendlmeier et al., 2019). The reduced interaction times were partly explained by the severe communication deficits of PwD (Norbergh et al., 2001), which were perceived as a major burden in the daily care by caregivers

(Ekman et al., 1991; Small et al., 2000). Some authors also argued that higher priority is given to physical care as the main job of nursing staff and not so much to the psychosocial and spiritual needs of a patient (Armstrong-Esther & Browne, 1986; Jensen et al., 2018; Norbergh et al., 2001). Indeed, content analysis revealed that communication with nursing home residents is strongly task-oriented, whereas person-centered topics addressing resident's personal history, interests, or current needs are often neglected (Williams et al., 2011; Williams et al., 2005; Williams et al., 2018). Overall, older patients are frequently ignored by healthcare professionals (Eriksson & Saveman, 2002; Higgins et al., 2007; Österholm & Samuelsson, 2015) and less involved in medical decision making (Adelman et al., 2000; Hansen et al., 2016). A comparison of matched cases of dyadic versus triadic interactions revealed that the risk of being ignored and excluded from decision making further increased in the presence of a third person (Greene et al., 1994). A common interactional phenomenon of triadic interactions is that healthcare professionals talk *about* instead of *with* the older patient (Ben-Harush et al., 2017; Greene et al., 1994; Österholm & Samuelsson, 2015; Samuelsson et al., 2015). A qualitative study revealed that the most common reasons for omitting older adults were (a) a lack of awareness that this reflects ageist behavior, (b) the assumption that talking to a younger family member is more efficient for medical decision making, and (c) the expectation that older adults are incompetent communication partners (Ben-Harush et al., 2017). Abundant research exists on the double stigmatization of PwD showing that particularly older individuals with CI are excluded from conversation (for a review, see Evans, 2018). Hence, healthcare professionals frequently commented on the perceptions, views, and competence of PwD when talking with family members and relatives (Hasselkus, 1994; Österholm & Samuelsson, 2015; Samuelsson et al., 2015). PwD were even ignored when they actively attempted to participate in the conversation (Österholm & Samuelsson, 2015).

Finally, all previously mentioned ageist behaviors have in common that they neglect older adults' autonomy, competence, and available resources providing further support for prevailing tendencies toward dependence-supportive interaction styles as supposed by the seminal work of Baltes and Wahl (1992; 1996). The so-called *dependency-support script* describes the robust phenomenon that independent behaviors of older adults are often ignored whereas dependent behaviors are supported regardless of the functional status and the care setting (Baltes, 1995; Baltes et al., 1994; Hasselkus, 1994; Lukas, 2007; Ryan et al., 2006; Wahl, 1991). Importantly, dependence-supportive behaviors were most strongly determined by time pressure and low levels of patience among nurses associated with a lower intention to foster independent behaviors in a hospital setting when compared to a nursing home setting

(Lukas, 2007). To conclude, dependence-supportive ageist behaviors can be seen as contributory environmentally induced risk factors for withdrawal, sedentary behavior, and functional decline of older adults contributing to learned helplessness, feelings of incompetence, dependence, and loneliness in the long run (Baltes, 1995; Belala et al., 2019; Coudin & Alexopoulos, 2010; Wahl & Gerstorf, 2018).

1.6 Evidence on Ageist Language in Healthcare Settings

Ageism does not only shape the external conditions of care interactions such as the time spent with older patients but also the language used by younger adults when addressing or talking about older adults (Schaie, 1993). Available research provides robust evidence on the pervasive use of ageist language across different life domains, countries, and populations of older adults (for reviews, see Draper, 2005; Hummert, 2017; Hummert et al., 2004; Lowery, 2013; Nussbaum et al., 2005; Ryan et al., 1995). Research on ageist language in healthcare settings has regained strong interest over the past years (de Medeiros, 2019; Gendron et al., 2018; Gendron et al., 2016; Schroyen et al., 2018; Williams, Shaw, et al., 2017). Contemporary work on ageism and finally the outbreak of the coronavirus disease 2019 (COVID-19) pandemic illustrate the persistent use of ageist language in society all over the world (Ayalon, 2020b; Ayalon, Chasteen, et al., 2020; Ehni & Wahl, 2020; Jimenez-Sotomayor et al., 2020; Previtali et al., 2020; Reynolds, 2020; Spuling et al., 2020). In the current public discourse, older adults are portrayed as a homogeneous group, being highly vulnerable, multimorbid, and less worthy of receiving treatment under scarce resources (Ayalon, 2020b; Ehni & Wahl, 2020). Numerous examples of ageist language can be found in the daily press, social media channels such as Twitter and Facebook (Jimenez-Sotomayor et al., 2020; Meisner, 2020), and public statements of government agencies (Ayalon, Chasteen, et al., 2020). The spread of COVID-19 has been described as the ‘problem of older adults’ who should be separated from younger adults (Ayalon, 2020b, p. 1). In the social media discourse, older adults have more than 4.000 times been termed as “boomerremover” on Twitter during a period of nine days (Jimenez-Sotomayor et al., 2020; Meisner, 2020). Furthermore, potential intergenerational conflicts are depicted in the use of divisive language such us versus them, young versus old and healthy versus vulnerable (Ayalon, 2020b; Kessler & Gellert, 2020, April 1; Meisner, 2020).

1.6.1 Previous Research Approaches and Terms of Ageist Language

A substantial body of research focusing on intergenerational interactions in a variety of settings revealed that younger adults often use patronizing, controlling, and simplified speech

patterns toward community-dwelling older adults (Kemper, 1994; Kemper, Finter-Urczyk, et al., 1998; Kemper et al., 1996; Kemper, Vandeputte, et al., 1995), older oncology patients (Schroyen et al., 2018), and nursing home residents (Caporael, 1981; Sachweh, 1998; Williams, 2006; Williams et al., 2009). Such stereotype-driven speech accommodations have been labeled as (secondary) baby talk, patronizing talk, or elderspeak. The different terms are often used interchangeably but can be allocated to different research periods.

The term *secondary baby talk* was first coined to characterize overly simplified speech patterns toward older adults that were quite similar to those addressed to young children (Ferguson, 1964; Fernald & Simon, 1984; Grieser & Kuhl, 1988). Typical markers of secondary baby talk are syntactic and semantic simplifications in terms of less complex and shorter utterances, more repetitions, interrogatives, childish terms, and exaggerated praise (Ashburn & Gordon, 1981; Caporael, 1981; Culbertson & Caporael, 1983; Sachweh, 1998). The most dominant feature of secondary baby talk is a high pitch and increased pitch variability (Caporael, 1981; Sachweh, 1998), also known as "hallmarks of baby talk" (Caporael, 1981, p. 880).

The term *patronizing talk/speech* describes similar speech accommodations but mostly refers to evaluative judgments of intergenerational communication largely driven by experimental research (Edwards & Noller, 1993; Harwood et al., 1993; La Tourette & Meeks, 2000; Ryan, Hamilton, et al., 1994; Ryan et al., 2000; Ryan, Meredith, et al., 1994). Typically, the research design was as follows: Different groups of participants (e.g., community-dwelling older adults vs. nursing students; Edwards & Noller, 1993) were instructed to evaluate neutral versus patronizing vignettes depicting intergenerational interactions from a variety of environmental contexts (e.g., community-dwelling setting vs. nursing home setting; La Tourette & Meeks, 2000).

The term *elderspeak* has originally been introduced by Kemper (1994) who considered elderspeak as an ambivalent construct. In line with the first research period dominated by Caporael and colleagues (Caporael, 1981; Caporael & Culbertson, 1986; Caporael et al., 1983), it is argued that elderspeak is a simplified speech register that may help to improve older adults' comprehension. Nevertheless, such speech accommodations are often perceived as patronizing, as demonstrated by the second research period. Research on elderspeak has extensively been driven by the seminal work of Kemper and colleagues (Kemper, 1994; Kemper, Ferrell, et al., 1998; Kemper & Harden, 1999; Kemper et al., 1996). In the following, the term elderspeak will be used because it refers to the potential ambiguity of effects and is most frequently used in the

contemporary literature on ageist language (Cockrell, 2020; Corwin, 2018; Schroyen et al., 2018; Williams, Shaw, et al., 2017).

Most of the existing studies on baby talk and elderspeak are based on naturally occurring care interactions between nursing home staff and older nursing home residents (for a review, see Grainger, 2004). Elderspeak has been investigated by the use of different methods of communication analysis including (a) psycholinguistic analysis, (b) emotional tone coding, (c) behavioral analysis, and (d) content analysis (Williams et al., 2018). In the following, only psycholinguistic analysis and emotional tone coding will be elaborated because these techniques were applied in the present dissertation.

1.6.2 Psycholinguistic Analysis of Elderspeak

Psycholinguistic analysis can be seen as the most important category in elderspeak research. Based on psycholinguistic analysis, which has originally been derived from research on life-span developments of language (Kemper et al., 1989), a specialized speech register across different linguistic domains (semantics, fluency, grammar, prosody) has been extracted (for an overview, see Table 1.1). Elderspeak is characterized by inappropriate semantic categories as well as overaccommodations in terms of limited vocabulary, reduced fluency, simplified grammar, and exaggerated prosody. In the following paragraphs, only those features of elderspeak will be described in more detail that are part of the present dissertation.

Table 1.1 provides an in-depth overview of the elderspeak features analyzed in Paper 2 (imbalance in the emotional tone of voice) and Paper 3 (diminutives, collective pronoun substitutions, tag questions, sentence fragments, mean length of utterances, speech rate, type-token ratio, and grammatical complexity). The selection of these features was driven by three conceptual considerations. First, the selected features reflect key features of elderspeak, which are well-established in the previous literature. Second, the selected elderspeak features cover different linguistic domains, that is, semantics, fluency, grammar, and prosody. Third, the selected elderspeak features comprise verbal and nonverbal indicators of different communication channels. Finally, the present dissertation also strives to better structure previous research findings by differentiating between four groups of potential elderspeak receivers: (a) younger versus older adults without dementia, (b) older adults with versus without dementia, (c) older adults without dementia, and (d) nursing home residents (mostly with dementia). Tables 1.1 offers a comprehensive overview of the manifestation of elderspeak within these groups.[3]

[3] Tables 1.1 presents the main studies in this field but may not provide a fully exhaustive list. If there were no empirical studies available for one of the categories, the category is missing in Table 1.1.

Focus on Different Linguistic Domains

Semantics. Three key verbal features of elderspeak (Kemper, Vandeputte, et al., 1995; Williams et al., 2003; Williams et al., 2018) deserve particular attention: diminutives, collective pronoun substitutions, and tag questions.[4]

Diminutives comprise intimate forms of address (i.e., first names, pet names, nicknames, and terms of endearment) as well as childish vocabulary (i.e., oversimplified terms and exaggerated praise; Sachweh, 1998; Williams et al., 2003; Williams, 2006; Williams, Shaw, et al., 2017). *Collective pronoun substitutions* (CPS; also known as "nurse's we") characterize nurses' use of plural ("we"/"our") instead of singular pronouns ("you"/"your") during care activities, which are either performed by the patient or the nurse alone but not together (Hummert & Ryan, 1996; Sachweh, 1998; Williams et al., 2003; Williams, Shaw, et al., 2017). *Tag questions* such as "right?", "isn't it?" (German examples: "ne?", "gell?") have been defined as rhetorical questions guiding older adults' answers and behaviors in the desired direction (Herman & Williams, 2009; Kemper, 1994; Williams, Shaw, et al., 2017).

As a measure of lexical diversity, *type-token ratio* (TTR) refers to the number of different word types divided by the total number of word tokens (Kemper, 1994; Kemper, Finter-Urczyk, et al., 1998). Higher values indicate a greater lexical diversity. However, it has been shown that lexical diversity is negatively associated with the total number of tokens (Richards, 1987).

As can be seen in Table 1.1, diminutives, CPS, and tag questions have been found to occur frequently in interactions between caregivers and older nursing home residents. However, the occurrence of these features did not consistently differ between younger and older adults, which may be explained by the overall low use of diminutives, CPS, and tag questions in these target groups (see Table 1.1). Table 1.1 also illustrates that TTR did not significantly differ between younger and older adults in previous studies, albeit it is commonly used as a measure of elderspeak (Schroyen et al., 2018; Williams, 2006; Williams et al., 2009). The inability to discriminate between these groups in previous research might be caused by a lack of control for corpus length (Richards, 1987).

Fluency. A lower number of words per minute (*speech rate*[5]), fewer words per utterance (*mean length of utterances*; MLU), and a higher number of non-sentential and abandoned units (*sentence fragments*) can be named as nonverbal stylistic and verbal features of elderspeak

[4] Collective pronoun substitutions and tag questions have also been considered as features of grammar in the previous literature (Samuelsson et al., 2013).
[5] Speech rate has also been considered as a measure of prosody in previous research (Kemper & Harden, 1999; Samuelsson et al., 2013).

belonging to the domain fluency (Kemper, 1994; Kemper, Ferrell, et al., 1998; Kemper & Harden, 1999; Kemper et al., 1996). Speech rate and MLU represent general measures of fluency, whereas the use of sentence fragments has been considered as a more specific measure of fluency (Kemper, 1994). As evident from Table 1.1, previous research has consistently shown a slower speech rate, a reduced MLU, and a higher number of sentence fragments toward older adults when compared to younger adults.

Grammar. Within the domain grammar, elderspeak is characterized by a lower *mean number of clauses per utterance* (MCU), that is, a reduced syntactic complexity (Kemper, 1994; Kemper et al., 1996; Kemper, Vandeputte, et al., 1995). Most of the existing studies revealed a reduced MCU toward older adults as compared to younger adults (see Table 1.1).

Prosody. Within the domain prosody, acoustic features such as *high pitch* and *exaggerated intonation*, that is, a greater pitch variability need to be briefly introduced as key nonverbal features of elderspeak (Kemper, Othick, et al., 1998; Kemper et al., 1996; Sachweh, 1998; Samuelsson et al., 2013), albeit they were not analyzed in the present dissertation. Both high pitch and exaggerated intonation can be seen as nonverbal correlates of controlling communication (Hummert & Ryan, 1996; Ryan, Maclean, et al., 1994).

Table 1.1
Overview of the Selected Key Features of Elderspeak

Elderspeak feature	Linguistic domain	Communication channel	Manifestation of elderspeak within different groups of receivers
<u>Diminutives</u> • Intimate forms of address (i.e., first names, pet names, nicknames, and terms of endearment such as "honey", "sweetie", "dearie", "grandma") • Childish vocabulary (i.e., oversimplified terms and exaggerated praise)	Semantics	Verbal content ("key verbal feature"; Williams et al., 2018, p. 1013)	<u>Younger versus older adults without dementia</u> • The use of diminutives by younger speakers as well as service providers and caregivers *did not differ* when addressing younger versus older adults (Kemper, 1994; Kemper, Vandeputte, et al., 1995). <u>Older adults with versus without dementia</u> • Younger speakers as well as caregivers used diminutives relatively *infrequently* when addressing older adults without dementia (Cockrell, 2020; Kemper, 1994; Kemper, Vandeputte, et al., 1995; Samuelsson et al., 2013). • Caregivers *used more* diminutives when interacting with individuals with dementia as compared to individuals without dementia (Kemper, 1994). <u>Nursing home residents (mostly with dementia)</u> • Diminutives were *frequently used* by caregivers when addressing older nursing home residents (Sachweh, 1998; Verstraeten et al., 2016; Williams et al., 2003; Williams, 2006; Williams et al., 2018; Williams, Shaw, et al., 2017).

(Continued)

Table 1.1
Overview of the Selected Key Features of Elderspeak (Continued)

Elderspeak feature	Linguistic domain	Communication channel	Manifestation of elderspeak within different groups of receivers
Collective pronoun substitutions (CPS) • Use of plural ("we"/"our") instead of singular pronouns ("you"/"your") • e.g., "Are *we* [emphasis added] ready for *our* medicine?" (Williams, 2006, p. 126)	Semantics/ grammar	Verbal content ("key verbal feature"; Williams et al., 2018, p. 1013)	Older adults without dementia • Caregivers used CPS relatively *infrequently* when addressing older adults without dementia (Samuelsson et al., 2013). • CPS emerged as *the most frequent feature* of elderspeak in simulated encounters between chiropractic students and older patients without dementia (Cockrell, 2020). Older adults with dementia • CPS occurred in assessment meetings with older adults with dementia serving to discuss the need for care services (Österholm & Samuelsson, 2015; Samuelsson et al., 2015). Nursing home residents (mostly with dementia) • CPS were *frequently used* by caregivers when addressing older nursing home residents (Sachweh, 1998; Verstraeten et al., 2016; Williams et al., 2003; Williams, 2006; Williams et al., 2018; Williams, Shaw, et al., 2017). • CPS emerged as *the most frequent feature* of elderspeak in care interactions with nursing home residents (Williams, Shaw, et al., 2017). • Higher cognitive impairment was linked with *higher use* of CPS (Williams et al., 2009).

(Continued)

Table 1.1
Overview of the Selected Key Features of Elderspeak (Continued)

Elderspeak feature	Linguistic domain	Communication channel	Manifestation of elderspeak within different groups of receivers
<u>Tag questions</u> • Rhetorical questions to push older adults' answers and behaviors in the desired direction • Occur in the right outer field of an imperative or declarative utterance with a rising intonation • e.g., "Take your medicine, *won't you*?" (Kemper, 1994, p. 20)	Semantics/ grammar	Verbal content ("elderspeak marker"; Kemper, Vandeputte, et al., 1995, p. 51)	<u>Younger versus older adults without dementia</u> • Service providers' and caregivers' use of tag questions *did not differ* when interacting with younger versus older adults (Kemper, 1994). • Younger speakers *used more* tag questions when addressing older adults as compared to younger adults in a referential communication task (Kemper, Vandeputte, et al., 1995). <u>Older adults with versus without dementia</u> • Tag questions were relatively *infrequently used* by service providers and caregivers when addressing older adults without dementia (Cockrell, 2020; Kemper, 1994). • Caregivers' use of tag questions *did not differ* when interacting with older adults with versus without dementia (Kemper, 1994). <u>Nursing home residents (mostly with dementia)</u> • Tag questions were *frequently used* when addressing older nursing home residents (Verstraeten et al., 2016; Williams, Shaw, et al., 2017).

(Continued)

Table 1.1
Overview of the Selected Key Features of Elderspeak (Continued)

Elderspeak feature	Linguistic domain	Communication channel	Manifestation of elderspeak within different groups of receivers
Sentence fragments • More non-sentential units (i.e., without a finite verb) • More abandoned units (i.e., syntactically and/or pragmatically incomplete structure)	Fluency (specific measure of fluency)	Verbal linguistic feature	Younger versus older adults without dementia • Younger speakers' use of sentence fragments *did not differ* when addressing younger versus older adults in a referential communication task (Kemper, Vandeputte, et al., 1995). • Service providers and caregivers as well as younger speakers *used more* sentence fragments when addressing older adults as compared to younger adults (Kemper, 1994; Kemper et al., 1996). Older adults with versus without dementia • Caregivers' use of sentence fragments *did not differ* when interacting with individuals with versus without dementia (Kemper, 1994). • Younger speakers *used more* sentence fragments in scripted interactions, in which older adults were instructed to simulate dementia as compared to the control condition (Kemper, Finter-Urczyk, et al., 1998). Older adults without dementia • Younger speakers *used more* sentence fragments after repeated exposure to older adults during referential communication tasks (Kemper, Othick, et al., 1998).

(Continued)

Table 1.1
Overview of the Selected Key Features of Elderspeak (Continued)

Elderspeak feature	Linguistic domain	Communication channel	Manifestation of elderspeak within different groups of receivers
Mean length of utterances (MLU) • Fewer words per utterance/shorter utterances • Reduced sentence length	Fluency (general measure of fluency)	Verbal linguistic feature	Younger versus older adults without dementia • Younger speakers' MLU *was shorter* when addressing older adults as compared to younger adults in a referential communication task (Kemper et al., 1996; Kemper, Vandeputte, et al., 1995). • Service providers' and caregivers' MLU *was shorter* in interactions with older adults as compared to younger adults (Kemper, 1994). • Healthcare professionals *used shorter* utterances when explaining a medical treatment procedure to an older patient as compared to a younger patient (Schroyen et al., 2018). • Caregivers' MLU *was shorter* when interacting with older adults as compared to their younger colleagues (Samuelsson et al., 2013). Older adults with versus without dementia • Younger speakers' MLU *did not differ* in scripted interactions, in which older adults were instructed to simulate dementia as compared to the control condition (Kemper, Finter-Urczyk, et al., 1998). • Younger speakers' MLU *was shorter* when addressing cognitively impaired listeners as compared to cognitively unimpaired listeners in a simulated referential communication task (Kemper, Ferrell, et al., 1998). • Caregivers' MLU *was shorter* when interacting with individuals with dementia as compared to individuals without dementia (Kemper, 1994; Williams, 2006). Older adults without dementia • Younger speakers' MLU *was shorter* when addressing older targets representing a negative stereotype as compared to older targets representing a positive stereotype (Hummert & Shaner, 1994). Nursing home residents (mostly with dementia) • Caregivers' MLU *was reduced* in interactions with older nursing home residents (Williams et al., 2003).

(Continued)

Table 1.1
Overview of the Selected Key Features of Elderspeak (Continued)

Elderspeak feature	Linguistic domain	Communication channel	Manifestation of elderspeak within different groups of receivers
Speech rate Lower number of words per minute	Fluency (general measure of fluency)/ prosody	Nonverbal stylistic feature of the voice	Younger versus older adults without dementia • Service providers and caregivers *spoke more slowly* when interacting with older adults as compared to younger adults (Kemper, 1994). • Younger speakers *spoke more slowly* when addressing older adults as compared to younger adults in a referential communication task (Kemper et al., 1996; Kemper, Vandeputte, et al., 1995). • Caregivers *spoke more slowly* when interacting with older adults as compared to their younger colleagues (Samuelsson et al., 2013). • Healthcare professionals *spoke more slowly* when explaining a medical treatment procedure to an older patient as compared to a younger patient (Schroyen et al., 2018). Older adults with versus without dementia • Younger speakers' speech rate *did not differ* in scripted interactions, in which older adults were instructed to simulate dementia as compared to the control condition (Kemper, Finter-Urczyk, et al., 1998). • Caregivers' speech rate *did not differ* when interacting with individuals with versus without dementia (Kemper, 1994).

(Continued)

Table 1.1
Overview of the Selected Key Features of Elderspeak (Continued)

Elderspeak feature	Linguistic domain	Communication channel	Manifestation of elderspeak within different groups of receivers
Type-token ratio (TTR) • Simple vocabulary • Lower lexical diversity (i.e., a lower number of different word forms related to the total number of words)	Semantics	Verbal linguistic feature	Younger versus older adults without dementia • Service providers' and caregivers' TTR *did not differ* when interacting with younger versus older adults (Kemper, 1994). • Healthcare professionals' TTR *did not differ* when explaining a medical treatment procedure to an older patient as compared to a younger patient (Schroyen et al., 2018). • Younger speakers' TTR *did not differ* when addressing younger versus older adults in a referential communication task (Kemper et al., 1996). • Younger speakers' TTR *was higher* when addressing older adults as compared to younger adults in a referential communication task (Kemper, Vandeputte, et al., 1995). Older adults with versus without dementia • Caregivers' TTR *did not differ* when interacting with older adults with versus without dementia (Kemper, 1994). • Younger speakers' TTR *did not differ* when addressing cognitively impaired listeners as compared to cognitively unimpaired listeners in a simulated referential communication task (Kemper, Ferrell, et al., 1998; Kemper, Finter-Urczyk, et al., 1998). • Caregivers' TTR was *marginally reduced* when interacting with residents with dementia as compared to residents without dementia (Williams, 2006).

(Continued)

Table 1.1
Overview of the Selected Key Features of Elderspeak (Continued)

Elderspeak feature	Linguistic domain	Communication channel	Manifestation of elderspeak within different groups of receivers
Mean number of clauses per utterance (MCU) • Reduced grammatical complexity • Fewer clauses per utterance	Grammar	Verbal linguistic feature	Younger versus older adults without dementia • Service providers and caregivers used *fewer clauses per utterance* when interacting with older adults as compared to younger adults (Kemper, 1994). • Younger speakers used *fewer clauses per utterance* when addressing older adults as compared to younger adults in a referential communication task (Kemper et al., 1996; Kemper, Vandeputte, et al., 1995). • Healthcare professionals' MCU *did not differ* when explaining a medical treatment procedure to an older patient as compared to a younger patient (Schroyen et al., 2018). Older adults with versus without dementia • Caregivers' MCU *did not differ* when interacting with individuals with versus without dementia (Kemper, 1994). • Younger speakers' MCU *did not differ* when addressing cognitively impaired listeners as compared to cognitively unimpaired listeners in a simulated referential communication task (Kemper, Ferrell, et al., 1998; Kemper, Finter-Urczyk, et al., 1998). • Higher levels of cognitive impairment were *associated with a reduced* MCU (Kemper, 1994).

(Continued)

Table 1.1
Overview of the Selected Key Features of Elderspeak (Continued)

Elderspeak feature	Linguistic domain	Communication channel	Manifestation of elderspeak within different groups of receivers
Imbalance in the emotional tone of voice • Underlying affective qualities of communication • Overly controlling but less person-centered tones of voice	Prosody	Nonverbal tonal feature of the voice	Nursing home residents (mostly with dementia) • Nursing home staffs' emotional tone of voice was rated as *overly controlling but less person-centered* toward residents with dementia (Williams et al., 2012; Williams et al., 2018).

Focus on Different Levels of Harmfulness

Although arguments for the ambiguity of elderspeak have been brought forward (Kemper, 1994; Kemper & Harden, 1999), there is still a large consensus in the literature (e.g., Corwin, 2018) that elderspeak is an overall negative speech register driven by three major empirical findings.

First, there is substantial evidence from experimental judgment studies indicating that elderspeak is mostly perceived as patronizing, disrespectful, and demeaning by older recipients but also by younger raters (Edwards & Noller, 1993; La Tourette & Meeks, 2000; Ryan, Hamilton, et al., 1994). Second, elderspeak has been shown to reduce the communication satisfaction and the self-rated communicative competence of older adults leading to lower subjective well-being, self-esteem, and finally to the social withdrawal of older adults (Bradford & End, 2010; Kemper & Harden, 1999; Ryan, Hummert, et al., 1995; Ryan, Maclean, et al., 1994). Third, behavioral analysis has demonstrated that elderspeak was linked with NPS of dementia such as aggression and shouting, which are also known as resistiveness to care behaviors in the literature (Cunningham & Williams, 2007; Herman & Williams, 2009; Williams et al., 2009; Williams & Herman, 2011; Williams, Perkhounkova, et al., 2017). To sum up, there is robust evidence on the negative effects of elderspeak affecting the mental health of older adults, their social behaviors, and the completion of care procedures.

However, despite the overall negative effects of elderspeak, the available research points to ambiguous effects for some components of elderspeak. To date, only a few studies differentiated between potentially beneficial and harmful features of elderspeak (Kemper & Harden, 1999; Lowery, 2013; Schroyen et al., 2018). Nevertheless, some features of elderspeak may enhance older adults' communication performance, particularly in the case of CI. To contribute to a more differentiated understanding of elderspeak, linguistic components will be categorized into likely harmful versus hybrid features of elderspeak incorporating beneficial *and* harmful aspects depending on contextual characteristics. Table 1.2 provides a detailed overview of likely harmful versus hybrid aspects of elderspeak features differentiating between (a) older adults with and without dementia, (b) individuals with AD, and (c) nursing home residents (mostly with dementia).[6]

Likely Harmful Features of Elderspeak. The semantic features diminutives, CPS, and tag questions can be considered as patronizing, conveying the message that older adults are incompetent and dependent.

[6] Tables 1.2 presents the main studies in this field but may not provide a fully exhaustive list. If there were no empirical studies available for one of the categories, the category is missing in Table 1.2.

Diminutives have been defined as inappropriate elements by large parts of the previous literature because they suggest a rather intimate relationship such as between children and parents that is typically not the case in healthcare encounters (Brown & Draper, 2003; Draper, 2005; Hummert & Ryan, 1996; Nussbaum et al., 2005; Williams et al., 2003; Williams, 2006; Williams, Shaw, et al., 2017). Furthermore, diminutives can reinforce hierarchical dependencies and power differentials between patients and healthcare professionals inherent in institutional settings (Ryan et al., 2008; Savundranayagam et al., 2007; Williams, Shaw, et al., 2017). Across different settings, intimate forms such as "good girl" and "sweetheart" were perceived as disrespectful and intrusive by older adults themselves (Digby et al., 2012; Ryan, Hamilton, et al., 1994; Woolhead et al., 2004; Woolhead et al., 2006) but also by younger raters (Edwards & Noller, 1993; Ryan, Hamilton, et al., 1994).

In line with research on dependency-supportive and overprotective behaviors toward older adults (Baltes & Wahl, 1992; Ryan et al., 2006) as well as work on elderspeak in nursing homes (Verstraeten et al., 2016; Williams, 2006; Williams, Shaw, et al., 2017), CPS can also be considered as patronizing because the autonomy of an older person is largely ignored regardless of individually available resources.

Similarly, tag questions can be judged as likely harmful because prescribed answers and behaviors undermine meaningful conversations and the agency of older adults by implying that they are not able to make their own decisions (Williams et al., 2004).

Importantly, all previously mentioned features might be particularly harmful to PwD as demonstrated by an increase in resistive behaviors during care activities following the use of likely harmful features of elderspeak (Herman & Williams, 2009; Williams et al., 2009; Williams, Perkhounkova, et al., 2017). The use of likely harmful features of elderspeak even doubled the likelihood of resistive behaviors (Williams et al., 2009).

Finally, high pitch and exaggerated intonation can be seen as likely harmful features of elderspeak for two reasons. First, previous research has shown that high pitch and exaggerated intonation were perceived as patronizing by older adults themselves as well as by younger students (Edwards & Noller, 1993). Second, high pitch contributed to more subjective and objective communication problems (Kemper & Harden, 1999; Kemper, Othick, et al., 1998; Kemper et al., 1996).

Hybrid Features of Elderspeak. Some studies found that simple vocabulary and a reduced fluency led to improvements in communication tasks (Kemper et al., 1996; Kemper, Vandeputte, et al., 1995) and better recall of medical instructions (Gould & Dexon, 1997; Gould et al., 2002; McGuire et al., 2000), but it was nevertheless judged as patronizing by older adults

(Gould & Dexon, 1997; Gould et al., 2002). Importantly, beneficial effects were only observed in older individuals with a high working memory capacity (Gould & Dexon, 1997; Gould et al., 2002). Other work even reported an increase in older adults' subjective and objective communication problems (Kemper & Harden, 1999; Kemper, Othick, et al., 1998; Kemper et al., 1996; Small et al., 1997). Whereas slowing down speech rate might be an effective communication strategy for older adults without dementia, it emerged as an ineffective communication strategy for individuals with AD (see Table 1.2). It is assumed that speaking too slowly places a greater burden on working memory because the information has to be maintained for a longer time (Kemper & Harden, 1999; Small et al., 1997; Tomoeda et al., 1990). Finally, reduced grammatical complexity can be seen as a likely beneficial feature of elderspeak (Schroyen et al., 2018). Research has shown that it indeed improved the subjective and objective communication performance in older adults without dementia as well as individuals with AD (see Table 1.2).

Table 1.2
Differentiation Between Likely Harmful and Hybrid Features of Elderspeak

Elderspeak feature	Harmfulness	Main findings related to different groups of receivers
Diminutives	Likely harmful	Older adults with and without dementia in different settings • Diminutives suggest an inappropriately intimate relationship, which may reinforce power differentials between healthcare professionals and older patients (Brown & Draper, 2003; Draper, 2005; Nussbaum et al., 2005; Ryan et al., 2008; Savundranayagam et al., 2007; Williams et al., 2003; Williams, 2006; Williams, Shaw, et al., 2017). • Intimate forms of address were perceived as disrespectful and intrusive (Digby et al., 2012; Edwards & Noller, 1993; Ryan, Hamilton, et al., 1994; Woolhead et al., 2004; Woolhead et al., 2006). Nursing home residents (mostly with dementia) • The use of elderspeak features including diminutives *increased the likelihood of resistive behaviors* during care activities (Herman & Williams, 2009; Williams et al., 2009; Williams, Perkhounkova, et al., 2017).
CPS	Likely harmful	Older adults with and without dementia in different settings • CPS largely ignore the autonomy of an older person regardless of individually available resources and thus support dependency (Baltes & Wahl, 1992; Ryan et al., 2006; Verstraeten et al., 2016; Williams, 2006; Williams, Shaw, et al., 2017). Nursing home residents (mostly with dementia) • The use of elderspeak features including CPS *increased the likelihood of resistive behaviors* during care activities (Herman & Williams, 2009; Williams et al., 2009; Williams, Perkhounkova, et al., 2017).
Tag questions	Likely harmful	Older adults with and without dementia in different settings • Tag questions imply that older adults are not able to make their own decisions and need help in ADLs (Herman & Williams, 2009; Kemper, 1994; Williams et al., 2004; Williams, Shaw, et al., 2017). Nursing home residents (mostly with dementia) • The use of elderspeak features including tag questions *increased the likelihood of resistive behaviors* during care activities (Herman & Williams, 2009).

(Continued)

Table 1.2
Differentiation Between Likely Harmful and Hybrid Features of Elderspeak (Continued)

Elderspeak feature	Harmfulness	Main findings related to different groups of receivers
Sentence fragments	Hybrid	<u>Older adults without dementia</u> • Younger speakers' higher use of sentence fragments in a referential communication task *was not associated* with older adults' self-reported communicative competence (Kemper, Othick, et al., 1998; Kemper et al., 1996). • Younger speakers' use of sentence fragments *was not associated* with older adults' performance in a referential communication task (Kemper et al., 1996; Kemper, Vandeputte, et al., 1995).
MLU	Hybrid	<u>Older adults without dementia</u> • Younger speakers' reductions in MLU toward older adults rather depended on *comprehension cues* of listeners than on chronological age per se (Lineweaver et al., 2011). • A reduced MLU *did not improve performance* in a referential communication task and was linked with *more self-reported communication problems* in older adults (Kemper & Harden, 1999; Kemper, Othick, et al., 1998). • A reduced MLU *improved performance* in a referential communication task, but it was linked with *more self-reported communication problems* in older adults (Kemper et al., 1996; Kemper, Vandeputte, et al., 1995). <u>Individuals with AD</u> • Improvements in sentence comprehension were rather explained by a reduced MCU than by a reduced MLU (Kemper et al., 1994; Small et al., 1997). <u>Nursing home residents (mostly with dementia)</u> • The use of elderspeak features including a shorter MLU *increased the likelihood of resistive behaviors* during care activities (Williams et al., 2009).
Speech rate	Hybrid	<u>Older adults without dementia</u> • A slower speech rate *did not improve performance* in a referential communication task and was linked with *more self-reported communication problems* in older adults (Kemper & Harden, 1999). • A slower speech rate *improved performance* in a referential communication task, but it was linked with *more self-reported communication problems* in older adults (Kemper et al., 1996; Kemper, Vandeputte, et al., 1995). • A slower speech rate *improved the recall of medical information* in older adults (McGuire et al., 2000).

(Continued)

Table 1.2
Differentiation Between Likely Harmful and Hybrid Features of Elderspeak (Continued)

Elderspeak feature	Harmfulness	Main findings related to different groups of receivers
Speech rate	Hybrid	<u>Individuals with AD</u> • Presenting audio-recordings at a slower rate *did not improve sentence comprehension* in individuals with AD (Small et al., 1997; Tomoeda et al., 1990). • Spousal caregivers' reduction in speech rate was related to a *higher number of communication breakdowns* in interactions with individuals with AD (Small et al., 2003). • Formal caregivers' reduction in speech rate *was not related to the successful completion of a handwashing task* (Wilson et al., 2012).
TTR	Hybrid	<u>Nursing home residents (mostly with dementia)</u> • The use of elderspeak features including TTR *increased the likelihood of resistive behaviors* during care activities (Williams et al., 2009).
MCU	Hybrid	<u>Older adults without dementia</u> • A reduced MCU *improved the performance* in a referential communication task and was *not linked with self-reported communication problems* (Kemper et al., 1996). • A reduced MCU *improved the performance* in a referential communication task and was linked with *fewer self-reported communication problems* in older adults but only when presented with a neutral pitch (Kemper & Harden, 1999). • A reduced MCU *improved the performance* in a referential communication task, but the simplified speech pattern including reductions in MCU, MLU, and speech rate was linked with *more self-reported communication problems* in older adults (Kemper, Vandeputte, et al., 1995). <u>Individuals with AD</u> • Reducing grammatical complexity in a sentence comprehension task *improved sentence comprehension* in individuals with AD (Small et al., 1997). • Caregivers' reductions in MCU were associated with *better performance* in a picture description task (Kemper et al., 1994).
Imbalance in the emotional tone of voice		<u>Nursing home residents (mostly with dementia)</u> • Nursing home staffs' use of controlling tones of voice *increased the likelihood of resistive behaviors* during care activities (Williams & Herman, 2011).

Note. CPS = collective pronoun substitutions; ADLs = activities of daily living; MLU = mean length of utterances; AD = Alzheimer's disease; TTR = type-token ratio; MCU = mean number of clauses per utterance.

1.6.3 Emotional Tone Coding

Whereas psycholinguistic analysis focuses mainly on verbal features of elderspeak (i.e., the content aspect of communication), emotional tone coding evaluates the underlying affective qualities of communication (i.e., the relationship aspect of communication).

An imbalance in the emotional tone of voice represents a typical nonverbal element of elderspeak (Williams et al., 2012; Williams et al., 2018). According to the model of Hummert & Ryan (1996), two types of patronizing talk deserve particular attention. First, directive talk, which is characterized by a high degree of control and a low degree of care; second, baby talk, which simultaneously reflects high levels of control and care. Studies conducted in nursing homes have examined nurses' emotional tone of voice toward residents via proximal percepts, that is, voice quality ratings of naïve listeners (see also Bänziger et al., 2015). Such emotional tone rating procedures revealed overly controlling but less person-centered communication toward residents with dementia (Williams et al., 2012; Williams et al., 2018). *Person-centered communication* has been characterized by caring (nurturing, caring, warm, supportive) and respectful (polite, affirming, respectful) tones of voice (Williams et al., 2012; Williams et al., 2018). Furthermore, person-centered communication was negatively correlated with *controlling communication* involving dominating, controlling, directive, bossy, and patronizing tones of voice (Williams et al., 2012).

Overly controlling tones of voice can be seen as a likely harmful feature of elderspeak, which may be particularly harmful to PwD for the following reasons. First, studies have shown that controlling tones of nurses' voice increased the likelihood of resistive behaviors during care activities such as turning away (Williams & Herman, 2011). Second, as introduced in Section 1.2, it can be expected that PwD react more sensitive to controlling tones of voice because the nonverbal relationship channel remains relatively preserved and becomes more important in the course of dementia when compared to the verbal content channel (Ellis & Astell, 2017; Kuemmel et al., 2014). Furthermore, the beneficial effect of person-centered tones of voice has been indicated by positive associations between person-centered communication styles and residents' cooperation during care activities (Savundranayagam et al., 2016).

To summarize, person-centered communication plays a key role in the care of PwD by affirming personhood and offering meaningful social interactions (Buron, 2008), whereas controlling communication contributes to negative affective states and social withdrawal (Williams & Herman, 2011).

1.7 Toward a Conceptual Framework of Elderspeak in Acute Hospitals

This section serves to introduce fundamental communication models and to highlight conceptual and empirical gaps in previous elderspeak research. Drawing from previous conceptualizations of elderspeak and a recent model on context dynamics in aging, a more comprehensive and contextually-driven framework will be presented driving the work of the three publications of the present dissertation.

Considering previous conceptual considerations on the role of age stereotypes in communication, two theoretical models deserve particular attention: the communication predicament of aging model (Ryan, Hummert, et al., 1995) and the age stereotypes in interactions model (Hummert, 1994b). Both models are grounded in the communication accommodation theory (Dragojevic et al., 2015; Giles et al., 1991; Giles & Ogay, 2007). The communication accommodation theory is a prominent interpersonal and intergroup theory that describes how and why individuals (e.g., younger adults) accommodate their communication behavior toward different groups of addressees (e.g., older adults). According to the communication accommodation theory, speakers may either adapt their communication behavior to the one used by the other interaction partner (*converge*) or activate/maintain another speech style (*diverge*) to reduce or increase group differences depending on the attitudes toward the other group. Communication accommodation may also be driven by stereotypes toward a specific group. For example, negative age stereotypes can result in an over-accommodated speech style toward older adults based on the assumption that older adults have a lower communicative competence. Third, the communication predicament of disability model (Ryan et al., 2005) will be introduced because older adults do not only differ in age and communication skills but also in disability. "Disability is defined as difficulty or dependency in carrying out activities essential to independent living, including essential roles, tasks needed for self-care and living independently in a home, and desired activities important to one's quality of life" (Fried et al., 2004, p. 255). Hence, disability is considered as an important variable for explaining differences in negative stereotype activation between younger and older adults as well as between older adults with and without dementia.

1.7.1 The Communication Predicament of Aging Model

Theoretical considerations on elderspeak have mostly been embedded into the communication predicament of aging model (CPA; Ryan et al., 1995). A citation analysis via the database Web of Science Core Collection in May 2020 revealed 155 citations in journal articles published between 1999 and 2020 (average citations per year: 5.96). A core assumption

of the CPA model is that elderspeak is based on *negative age stereotypes*. A negative feedback loop is proposed that begins with the recognition of stereotype-consistent age cues such as hearing or memory deficits, which then triggers a modified speech behavior toward older adults. In line with the reasoning of the communication accommodation theory, the CPA model claims that younger individuals adapt their communication toward older adults to converge to the specific communication needs of older adults by three strategies: (a) restricting communication to task-oriented communication, (b) simplifying speech, and (c) exaggerating intonation. As the CPA model also argues, the frequent exposure to stereotype-driven communication may in turn lower opportunities for meaningful and stimulating social interactions. This may finally lead to the reinforcement of stereotype-consistent behavior such as social withdrawal accompanied by sedentary, depressive, and dependent behavior. At the level of personhood and self-concept, the CPA model claims that self-esteem may be lowered in the long run because elderspeak suggests that older adults are incompetent and helpless (see again Section 1.3). These theoretical considerations have been empirically underpinned by a solid body of research on elderspeak (see again Tables 1.1 and 1.2; for a review, see Hummert et al., 2004). Although the CPA model certainly is a well-established and robust framework, two issues are noteworthy. First, the CPA model only applies to negative age stereotyping. Second, it follows a strong target person orientation and thus underrates factors with potential relevance for elderspeak such as the social-physical-organizational context and characteristics of the perceiver.

1.7.2 The Age Stereotypes in Interactions Model

The age stereotypes in interactions model (ASI) suggested by Hummert (1994b) points to the importance of (a) perceiver's self-system, (b) older target person's characteristics, and (c) the context. As the ASI model assumes, these factors play a crucial role in whether *positive* or negative age stereotyping is activated. It thus brings additional differentiation to the CPA model. Empirical support for the predictions of the ASI model and the role of the three factors has been provided by numerous studies (e.g., Anderson, 2005; Bieman-Copland & Ryan, 2001; Chen et al., 2017; Schroyen et al., 2018; for a review, see Hummert et al., 2004), which will be discussed in the following in more detail.

The first factor *perceiver's self-system* refers to the characteristics of the perceiver. Age, cognitive complexity, and quality of prior contact with older adults have found particular attention in the ASI model. As the ASI model argues, these characteristics enable a perceiver to associate old-age-related cues rather with positive age stereotypes than with negative age stereotypes. Empirical research has corroborated the assumption that advanced age, high cognitive complexity, and high quality of prior contact with older adults might help to

counteract negative stereotype activation (for a review, see Hummert, 1994b). Older perceivers have been shown to develop a more differentiated and positive view on older target persons when compared to younger perceivers (Chasteen, 2000; Heckhausen et al., 1989; Hummert et al., 1994; Hummert et al., 1998). Cognitive complexity has been defined by the number of psychological constructs someone uses to describe others such as the construct "friendly" (Medvene et al., 2006). A higher number of psychological constructs has been linked with a more differentiated view on other individuals and a higher likelihood to provide person-centered care (Grosch et al., 2011; Medvene et al., 2006). Furthermore, research has demonstrated that high quality of interpersonal contacts with older adults in the past was associated with better knowledge about aging, more positive attitudes toward older adults, and a lower likelihood of negative age stereotyping (Hale, 1998; Schwartz & Simmons, 2001).

The second factor *older target person's characteristics* describes potentially elderspeak-relevant features of older targets. For example, stereotype-consistent mental, physical, or functional cues of aging such as repetitious communication behavior (Bieman-Copland & Ryan, 2001), facial and vocal cues of old age (Hummert, 1994a; Hummert et al., 1997; Hummert et al., 1999), as well as slow gait speed (Montepare & Zebrowitz-McArthur, 1988) can be seen as antecedents of negative stereotype activation. It can be assumed that stereotype-consistent cues become particularly salient in PwD who are typically characterized by repetitious communication behavior, multimorbidity, and functional impairment (Powell et al., 1995; Zieschang et al., 2010).

The third factor *context* applies to setting characteristics, which may differ in eliciting age stereotypes. For example, negative cues of old age may become more salient in institutional settings such as a nursing home when compared to a community-dwelling setting (Baltes & Wahl, 1992; Hummert et al., 1998). Institutional settings are closely linked with negative age stereotypes such as illness and dependency (Hummert, 2017; Kornadt & Rothermund, 2015). In medical settings, older adult's health status may impair their communication skills and thus trigger the negative feedback cycle (Hummert, 2017). In particular, nursing home residents represent a highly vulnerable group characterized by old age and severe impairments in mental, physical, and functional status (Jansen et al., 2017). As demonstrated by a large body of elderspeak studies (see again Tables 1.1 and 1.2), there is substantial evidence that nursing home environments increase the salience of negative age stereotypes for both healthcare professionals and patients (Hummert, 2017).

1.7.3 The Communication Predicament of Disability Model

Conceptual considerations on the role of disability in communication were based on the empirically supported CPA model. The communication predicament of disability model developed by Ryan et al. (2005) extends the CPA model by focusing on individuals with physical and/or mental disabilities. Similarly, a negative feedback cycle is proposed that begins with cues of disability such as dependency in ADLs, which then evokes a *dependency-inducing talk* toward individuals with disabilities. Being exposed to such communication may lead to passive or aggressive reactions of individuals with disabilities. Finally, this may negatively affect social identity and reinforce disability by contributing to low mastery beliefs, negative self-perceptions of aging (see again Section 1.3), social withdrawal, and dependent behaviors, as demonstrated by a large body of research (Baltes, 1995; Beyer et al., 2015; Coudin & Alexopoulos, 2010; Emry & Wiseman, 1987; Fox & Giles, 1996; Wahl & Gerstorf, 2018). Importantly, selective assertiveness has been added as a key factor by which the cycle can be interrupted. *Selective assertiveness* refers to individual or group-based strategies to regain control and achieve individual goals in critical situations (Ryan et al., 2008). There is evidence that selective assertiveness is limited in institutional settings, which are characterized by hierarchical dependencies (Grainger, 2004; Hummert & Mazloff, 2001; Ryan et al., 2008). In particular, so-called “total institutions” such as hospitals and nursing homes are prone to the use of dependency-inducing talk (Goffman, 1961; Grainger, 2004; Marson & Powell, 2014). Furthermore, patronizing talk was rated as more positive in the hospital when compared to the community-dwelling setting indicating that institutional and medical settings may not only increase the likelihood of negative stereotype activation but also legitimate the use of dependency-inducing talk (Hummert & Mazloff, 2001).

The predictions of the communication predicament of disability model have received empirical support (e.g., Ryan et al., 2006; for a review, see Grainger, 2004). In particular, it was found that institutionalized older adults in nursing homes and individuals with disabilities are frequently exposed to dependency-inducing talk and overprotective behaviors (Baltes & Wahl, 1992; Braithwaite & Eckstein, 2003; Ryan et al., 2006; Wahl, 1991; Williams, Shaw, et al., 2017). For example, it has been shown that an adult in a wheelchair is addressed in a similar manner as a child (Liesener & Mills, 1999).

1.7.4 Context Dynamics in Aging Model

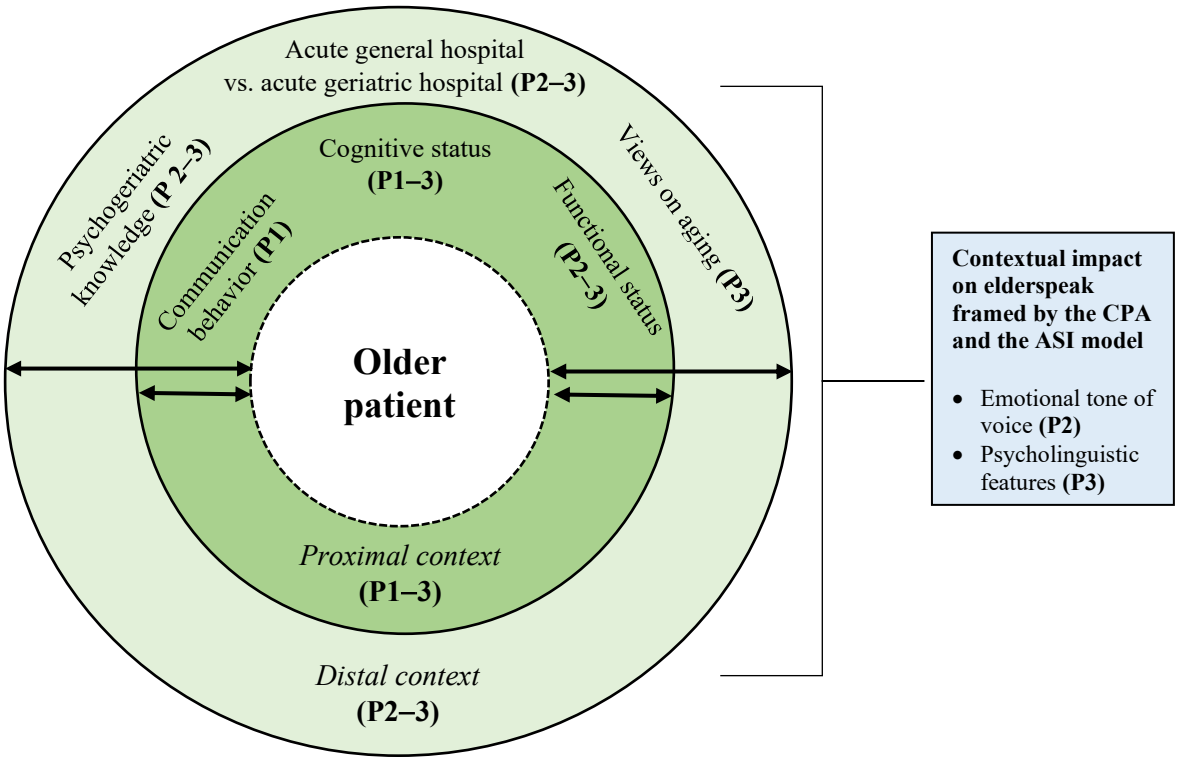
Both the CPA and the ASI model are well-established and heuristically fruitful models with a long research tradition in the elderspeak literature. Nevertheless, neither the CPA nor the ASI model considers the full heterogeneity of contextual dynamics in which elderspeak is embedded. As introduced in Chapter 1.3, ageism represents a complex phenomenon that can occur at different levels at the same time (e.g., micro-level and macro-level). Hence, elderspeak as a subtle form of ageism needs to be integrated into a framework considering the contextual dynamics at different levels of granularity. In previous conceptualizations of elderspeak, the role of different contextual factors at the micro- and macro-level in predicting elderspeak outcomes remained limited. To date, it remains also unclear how both levels together shape elderspeak in naturally occurring interactions. Empirically, only a few elderspeak studies pursued an integrative approach to test the role of person and contextual variables at the same time (Anderson et al., 2005; Schroyen et al., 2018).

To address this gap and to anchor elderspeak in contextual spaces, the present dissertation refers to the recently introduced conceptual framework for studying context dynamics in aging (CODA; Wahl & Gerstorf, 2018). CODA, much driven by the seminal work of Bronfenbrenner (1999), provides an integrative and comprehensive model that shifts the focus from person variables to a broad set of contexts divided into proximal versus distal contextual zones of five life domains, that is, socio-economic, physical, social, care/service, and technology.

The present dissertation addresses the social and care/service dimensions and integrates them into established communication models of aging (CPA/ASI model) and disability (communication predicament of disability model). Figure 1.2 illustrates how the three studies of the present dissertation are embedded in the conceptual framework and shows the linkage between the three papers. Paper 1 focused on the proximal contextual level, namely the communication behavior of cognitively impaired versus cognitively unimpaired (CU) older patients in the acute hospital setting, whereas Paper 2 and 3 considered nurses' communication behavior toward older patients in the acute hospital setting at the proximal and distal contextual level. Both Paper 2 and 3 investigated the role of patients' cognitive and functional status (proximal contextual level) as well as the role of the acute hospital setting and nurses' psychogeriatric knowledge (distal contextual level) for the use of elderspeak, which will be explained in the following in more detail.

Figure 1.2

Conceptual Framework of Elderspeak in Acute Hospitals



Note. The extended conceptual framework of elderspeak communication integrates parts of the context dynamics in aging model (CODA; Wahl & Gerstorf, 2018) into the age stereotypes in interactions model (ASI; Hummert, 1994b), a modified version of the communication predicament of aging model (CPA; Ryan et al., 1995). Proximal contextual factors directly shaping the patient-nurse interaction are illustrated in the inner circle (dark green color). Distal contextual factors in terms of different acute hospital settings and individual-level variables of nurses are displayed in the outer circle (light green color). The numbers in brackets indicate which variable was used in Paper 1 (P1), Paper 2 (P2), and Paper 3 (P3).

At the micro-level of proximal context, the present dissertation concentrates on direct interactions between older patients and nurses in acute hospital settings (see Figure 1.2, inner circle). The present dissertation also considered central individual-level variables such as older target person's characteristics by which immediate care conditions may be shaped. Following the CPA model and the communication predicament of disability model, it can be assumed that elderspeak behaviors are driven by two proximal cues of disability.

First, cognitive impairment may be an important factor for triggering likely harmful features of elderspeak as demonstrated by empirical studies contrasting individuals with and without CI (see Table 1.1). Such studies have shown that individuals with CI are more exposed to harmful features of elderspeak in terms of CPS (Williams et al., 2009) and diminutives (Kemper, 1994). However, the role of cognitive impairment is somewhat unclear in the case of hybrid features of elderspeak due to inconsistent findings in the previous literature (see Table 1.1). With respect to perceived vocal features, differences in nurses' emotional tone between individuals with and without CI have to the best of my knowledge not been examined so far.

Second, functional impairment deserves particular attention as a key factor of the communication predicament of disability model. Typically, nursing home residents need help in ADLs (Hendlmeier et al., 2019). Although empirical research has shown that nursing home residents are often exposed to dependency-inducing talk (for a review, see Grainger, 2004), the role of functional impairment in eliciting elderspeak has only been considered by a few studies (Caporael & Culbertson, 1986; Lombardi et al., 2014; Sachweh, 1998). Hence, it remains unclear from the previous empirical research whether elderspeak is triggered by typical dementia behaviors or by functional impairment in general. Williams et al. (2009) using timed-event sequential analysis of elderspeak toward nursing home residents found that elderspeak rather caused resistive behaviors during care activities and not the other way around.

At the macro-level of distal contexts, it can be expected that different acute hospital environments, and in a larger sense psychogeriatric knowledge, and VoA are also important predictors of elderspeak but produce lower effect sizes when compared to proximal contextual factors (Baltes & Wahl, 1992; Liu et al., 2013, 2015; Schroyen et al., 2018; Wahl, 1991). Although previous conceptualizations of elderspeak have mostly been drawn from the CPA model predicting a relationship between negative age stereotypes and elderspeak, the empirical linkage between VoA and elderspeak has to the best of my knowledge been investigated in only one study so far (Schroyen et al., 2018). The present work differentiates between an acute general versus acute geriatric hospital environment for two primary reasons (see Figure 1.2, outer circle). First, acute geriatric wards host on average a higher share of severely cognitively

and functionally impaired older patients when compared to acute general hospital wards (Pedone et al., 2005; Zieschang et al., 2010). Usually, patients of acute geriatric wards have a longer length of stay compared to patients of acute general hospital wards due to the need for early complex geriatric rehabilitation therapy (Grund et al., 2020; Kolb et al., 2014; Zieschang et al., 2010). Second, acute geriatric hospital staff should be better prepared to deal with vulnerable older patients through specialized psychogeriatric training and professional expertise (Zieschang et al., 2010). Furthermore, acute geriatric wards may offer a more dementia-friendly environment, with some of them including a specialized care unit for acutely ill older patients with CI and NPS (Rösler et al., 2010; Zieschang et al., 2019; Zieschang et al., 2010). Briefly, specialized care units are characterized by an extended geriatric assessment, dementia-specific training of staff, and a dementia-friendly architecture (Büter et al., 2017; Rösler et al., 2010; Zieschang et al., 2019). Positive effects on mobility as well as reductions in NPS and restraint use have been reported (Rösler et al., 2012; Zieschang et al., 2010).

To summarize, the investigated acute hospital settings in this work strongly differ in their contextual characteristics in terms of the patient population, the environment, and the psychogeriatric training of hospital staff. Hence, such a constellation is particularly interesting for contextual analysis allowing the integrative considerations of multiple contextual conditions at the proximal (i.e., cognitive and functional impairment) and distal level (i.e., psychogeriatric knowledge, VoA). It may be the case that the continuous exposure to vulnerable older patients, as it is the case in acute geriatric hospital settings, may trigger elderspeak even when high professional expertise in geriatric medicine is available. Due to the complex interplay between contextual features, it is an open question whether both acute hospital settings indeed differ, and the present dissertation is the first addressing this issue.

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1.8 Open Research Questions and Hypotheses

Research on ageism has regained much interest in healthcare settings in the last decades. However, implicit forms of ageism emerging in naturally occurring interactions in everyday life have received limited attention so far (Busso et al., 2019; Chang et al., 2020; de São José, 2019; São José et al., 2019). The present dissertation aims to contribute to the renewed boost in ageism research by focusing on elderspeak as an implicit and so far less explored component of ageist behavior in acute hospital settings. Extending previous conceptualizations of elderspeak, the present dissertation simultaneously considers its contextual embeddedness at the micro- and macro-level. Taken together, the present dissertation strives to fill four major research gaps in previous research on ageism and elderspeak:

1. To validate an observational tool for use in the acute hospital setting to assess the communication behavior of potential receivers of elderspeak, that is, acutely ill older patients with and without CI.
2. To examine elderspeak as an implicit component of ageism in naturally occurring interactions while considering its antecedents, manifestation, and consequences.
3. To investigate elderspeak in the so far under-researched acute hospital setting.
4. To anchor elderspeak in a more comprehensive, contextually-driven approach (a) by differentiating between an acute general versus acute geriatric hospital environment, (b) by testing the role of proximal and distal contextual predictors of elderspeak at the same time, and (c) by considering different types of elderspeak outcomes such as likely harmful versus hybrid features.

Table 1.3 gives an overview of the specific research questions and hypotheses, which were addressed in the three papers of the present dissertation. In all three papers, the reciprocal nature of communication involving a sender and a receiver has been taken into account by focusing on different groups of speakers and their interplay.

A unique feature of the present dissertation is the interdisciplinary research approach. First, the present work was embedded into the interdisciplinary graduate program “People with Dementia in Acute Care Hospitals” bringing young scholars of different disciplines together. Second, the present dissertation itself focused on an interdisciplinary issue covering the field of gerontology (acutely ill older patient population with and without CI), linguistics (spoken language data from naturally occurring care interactions), psychology (conceptual framework

largely derived from developmental psychology), medicine (acute general vs. acute geriatric hospital environment), and nursing science (different types of nursing professions). This interdisciplinary research approach allowed the differentiated assessment of various components of ageism (explicit vs. implicit), contextual levels (proximal vs. distal) as well as aspects of communication (verbal vs. nonverbal) relying on a broad repertoire of methods of communication analysis. In the following chapter, these methods will be described in more detail. The first section provides an overview of the recruitment procedure and introduces distinct differences between the acute general versus acute geriatric hospital environment. The subsequent sections present the general procedure of the psycholinguistically driven approach based on a mixed methods design. The linguistic part comprised the collection of audio-recordings during care interactions, which were combined with well-established geriatric and psychological assessments. Finally, data analytic strategies will be described including the psycholinguistic analysis, the emotional tone coding procedure, and advanced statistical data analysis techniques.

Table 1.3
Overview of the Research Questions and Hypotheses Addressed in the Present Dissertation

Paper / chapter	Specific research questions and hypotheses
Paper 1 / Chapter 3	• What is the underlying factor structure of the CODEM instrument when applied in a population of older patients with CI in the acute hospital setting? **H 1a)** A two-factor solution is expected representing a verbal content and a nonverbal relationship aspect of communication. • How does the communication behavior differ between CI and CU patients? **H 1b)** Overall, mean ratings for CU patients are assumed to be higher when compared to CI patients. **H 1c)** Mean ratings for the nonverbal relationship aspect are expected to be higher than mean ratings for the verbal content aspect in CI patients. • How do associations with the CODEM factors vary between convergent, divergent as well as socio-contextual variables? **H 1d)** Convergent indicators (MLU and speech rate) are expected to be moderately to strongly associated with CODEM scores. **H 1e)** Low correlations are expected between divergent indicators (subjective hearing capacity, verbal memory recall) and CODEM scores. **H 1f)** Nurses' emotional tone is expected to be more strongly associated with the nonverbal factor when compared to the verbal factor.
Paper 2 / Chapter 4	• Does nurses' emotional tone differ between CI versus CU patients? **H 2a)** More controlling and less person-centered tones of nurses' voice are expected toward CI patients when compared to CU patients. • Does the discrepancy in emotional tone patterns between CI and CU patients differ between the acute general versus acute geriatric hospital setting? **H 2b)** A lower discrepancy in emotional tone patterns between CI and CU patients is expected in the acute geriatric hospital setting when compared to the acute general hospital setting.
Paper 3 / Chapter 5	• Which role do proximal contextual factors play in predicting likely harmful as well as hybrid features of elderspeak? **H 3a)** Lower levels of cognitive and functional status are expected to be significantly associated with a higher use of likely harmful as well as hybrid features of elderspeak. • Do distal contextual factors account for significant amounts of explained variance in likely harmful as well as hybrid elderspeak features over and above proximal contextual variables? **H 3b)** Acute hospital setting, psychogeriatric knowledge, and views on aging are expected to play an additional role as predictors of elderspeak over and above proximal contextual variables. • To what extent does the magnitude of effect differ for proximal versus distal contextual factors when predicting likely harmful as well as hybrid features of elderspeak? **H 3c)** Stronger effect sizes are expected for proximal than distal contextual variables in predicting likely harmful as well as hybrid features of elderspeak.

Note. CODEM = communication behavior in dementia; CI = cognitively impaired/cognitive impairment; CU = cognitively unimpaired; H = hypothesis; MLU = mean length of utterances.

Chapter 2

Methods

2.1 Recruitment and Sample

The present dissertation focused on an acute general versus acute geriatric hospital setting. Both hospitals were affiliated with the university and part of a medium-sized southwestern city in Germany (> 100.000 inhabitants) around 4 km apart. As an acute general hospital setting (n = 114 beds), an internal medicine ward (n = 36 beds, mean length of stay = 4.9 days) with expertise in cardiology, angiology, and pulmonology was chosen because internal medicine wards can be expected to have among the highest proportions of CI patients when compared to other wards (Bickel et al., 2018; Karlsson et al., 2017). Further, internal medicine wards in Germany provide standard care for younger *and* older patients. As an acute geriatric hospital setting (n = 105 beds), one ward providing treatment for geriatric patients was selected (n = 35 beds, mean length of stay = 16.5 days), which also offered a dementia-friendly environment in terms of a specialized care unit for patients with CI and NPS.

Data were collected in alternating cycles in both acute hospital settings from September 2017 to March 2018. Before the assessments, I spent two months as an intern in both acute hospital environments to analyze the daily routines under natural conditions and to habituate nurses to my presence, which is regarded as an efficient strategy to reduce changes in behavior because of being observed (*participant reactivity*; Lann-Wolcott et al., 2011; Ostrov & Hart, 2013). In the next step, the ward directorship as well as the staff of the ward were informed about the project by a presentation. The study was approved by the ethical board of the Faculty of Behavioral and Cultural Studies at Heidelberg University in July 2017 as well as by hospital staff leadership and staff councils.

Detailed information on the recruitment procedure can be found in Supplementary Figure A1 (Appendix). All registered nurses who were willing to participate were eligible for study inclusion. Other types of nurses such as nursing students were excluded to reduce the heterogeneity in this relatively small subsample (Lalouschek & Menz, 2002). Considering the processes of observational learning and professional socialization, it can further be expected that nursing students adopt the attitudes and behaviors of more experienced nurses (Gibbs & Kulig, 2017). According to the research design, inclusion criteria for patients were a minimum age of 65 years and severe CI in 50% of the patient sample in both hospital settings. The allocation to the CI group was based on the 10/11 cutoff of the 6-Item Cognitive Impairment Test (6CIT; Hessler et al., 2017) for three reasons. First, medical records of both acute hospital settings did not consistently provide information on patients' cognitive status and dementia-related diagnoses. Second, previous research has shown that medical records may

underestimate the proportion of PwD in acute hospital settings (Hessler et al., 2017; Mukadam & Sampson, 2011). Third, a German validation study has demonstrated that the 6CIT represents a time-efficient screening instrument (< 5 min), with the 10/11 cutoff showing the best sensitivity-specificity ratio (88% and 95%, respectively) as well as a higher sensitivity when compared to medical records and nurses' ratings (Hessler et al., 2017). To realize the balanced research design (50% of patients with CI), the 6CIT was used as a pre-screening tool during the final recruitment phase. Hence, only patients with a 6CIT error score > 10 were included in the study. Medical records were only preferred in 10% of cases in which screenings were entirely not feasible due to advanced CI. As a dementia diagnosis was only partly available (14% of patients with a formal dementia-related diagnosis; 19% with suspected dementia), the more cautious term CI instead of dementia will be used throughout the dissertation. Exclusion criteria for patients were terminal illness, isolation, insufficient knowledge of the German language, and impending discharge or transfers.

In the first step, patients of the ward were screened for the above-mentioned eligibility criteria by means of patient lists, medical records, and the consultation with nurses. In the second step, all eligible patients were visited in their room and informed about the study. Written informed consent (WIC) was obtained by all participants or the legal representatives of CI participants. In the third step, the WIC of all other patients in the room such as younger patients had to be obtained because their utterances might have become part of the audio-recordings. Finally, if all these steps were successful, registered nurses who were responsible for eligible patient rooms as well as their accompanying nursing aides were asked for WIC. Approximately 27% of the screened patients participated in the study resulting in a sample of 106 patients (49% with CI, 6CIT error score: $M = 10.80$, $SD = 8.60$, range = 0–28).

Sample characteristics of patients and nurses are displayed in Supplementary Tables A1 and A2. With respect to differences between CI versus CU patients at the proximal contextual level, typical differences were found (see Supplementary Table A1). CI patients showed a significantly lower cognitive and functional status, a lower frequency of communication behavior, a lower proportion of complex units as well as a slower speech rate (all p values < .05; η_p^2 between .11 and .77). With respect to differences between the acute general versus acute geriatric hospital setting at the distal contextual level, patients of the acute geriatric hospital setting were as expected more vulnerable as indicated by a significantly lower functional status, a longer hospital stay as well as a slower speech rate (all p values < .05; η_p^2 between .08 and .34). Furthermore, nurses in the geriatric hospital setting indeed reported better psychogeriatric knowledge and more than 50% were geriatric-trained nurses (see Supplementary Table A2). At

the social-contextual level, audiotaped interactions in the acute geriatric hospital more commonly took place in the bathroom when compared to the acute general hospital setting (see Supplementary Table A1). In the acute general hospital ward, there were either one or two bedrooms, whereas the acute geriatric hospital ward also comprised three and four bedrooms. Hence, the number of other patients in the room was higher in the geriatric hospital ward, whereas the number of accompanying nursing aides was higher in the general hospital ward.

The sample sizes slightly varied between the three studies due to missing data (Paper 1: $n = 93$ patients, $n = 31$ nurses), specific eligibility criteria for the emotional tone rating material (Paper 2: $n = 92$ patients, $n = 34$ nurses), and limited interaction times (Paper 3: $n = 105$ patients, $n = 34$ nurses). Detailed information on study samples is provided in the respective Chapters 3–5 (Paper 1–3).

2.2 Mixed Methods Design

Following methodological recommendations for studies including PwD (Goldberg & Harwood, 2013; Hubbard et al., 2003), the interdisciplinary research approach was based on three major data sources: (a) audio-recorded care interactions, (b) standardized interviews with nurses and patients combined with an observational procedure, and (c) patient data from the medical information system (i.e., age, gender, functional status, and length of hospital stay).

2.2.1 Audio-Recordings

With respect to the implicit component of ageism, audio-recordings were collected during the morning (49%) or evening care (51%). A non-participant observation approach was used to gain full control over the audio recording process and to gather field notes about the environment (patient room/bathroom), the number of individuals in the room as well as ADLs. After informing responsible nurses, PCM digital audio recorders (Olympus LS-12 and LS-5) were placed in the patient rooms and immediately started before the nurse entered the room. The audio recording was stopped as soon as the morning or evening care was finished in the respective room. Audio files were recorded and saved in an uncompressed linear PCM mode (48 kHz, 16 bit), as recommended by the guidelines on technical standards and tools in the assessment of speech corpora of the German Research Foundation released in 2015 and updated in 2019.

It should be noted that the routines of the morning care differed between both hospital settings. Mostly, there was one continuous morning round in the acute geriatric hospital setting, whereas care in the acute general hospital was divided into two different morning rounds. The

first round (7.00–8.00 am) served to manage the most essential care tasks such as monitoring vital signs and administering medication. The second round (9.00–11.00 am) comprised the assistance in ADLs such as washing. When possible, both morning rounds were recorded to increase the comparability between both hospital settings in terms of care tasks and length of interactions. Indeed, speech time as well as the total number of utterances and tokens of both nurses and patients did not significantly differ between acute hospital settings (all p values > .05; see Supplementary Table A1).

As a typical feature of research on naturally occurring care interactions (Baltes et al., 1987; Baltes & Wahl, 1992; Williams et al., 2012), a disproportion in sample size between interacting groups in terms of a smaller number of nurses versus a larger number of patients was expected. Hence, most of the nurses were recorded during more than one patient interaction either on the same or different days of assessment; 24% of nurses were recorded once, 47% two to four times, and 29% five to six times. However, the number of repeated care interaction measurements was a priori limited to a maximum of six patients per nurse to gather a rather heterogeneous sample of care interactions. There was only one assessment day for each patient being observed either during the morning care (first, second, or both rounds) or during the evening care (one round).

2.2.2 Standardized Interviews

Patients' Measures and Observational Procedure

Interviews with patients were conducted by three trained psychology students and one trained sociology student. Interviewers underwent a communication training conveying evidence-based strategies for interactions with older adults with and without CI (Harwood et al., 2012). The training also served to recognize potentially doubtful answers. Whenever interviewers assumed that the patient was not able to understand the item, the answer was coded as missing. Patients were interviewed to examine additional sociodemographic (educational level, mother tongue, marital status, housing situation), health-related (subjective health indicators), and hospital-related variables (satisfaction with hospital care, perceived age discrimination) that were not consistently available from the medical information system (see also Table 4.1).

With respect to the explicit component of ageism, patients' perceptions of ageism during their hospital stay were operationalized by a modified version of the Ageism Survey (Palmore, 2001). In the present dissertation, only those types of ageism were included that were considered as relevant for the acute hospital setting (see Supplementary Table A5). Overall, ten items of the original scale were included. Patients were asked to indicate how often they have

experienced these ageist behaviors (0 = *never*, 1 = *once*, 2 = *more than once*). Patients' perceptions of age discrimination related to the antecedent care interaction as well as the hospital stay as a whole were measured with the single item "During the visit of the nurse/your hospital stay, did you experience any discrimination due to your age?" offering a yes/no dichotomous response format (modified from Hudelson et al., 2010). According to the procedure of Sousa and Rojjanasrirat (2011), all English items were translated into German following a forward-backward procedure. In the first step, items were translated by two, bilingual, independent individuals with different backgrounds. One translator was familiar with the construct of the instrument, whereas the other translator was not. Both translators had excellent knowledge of the English language but their mother tongue was German. Discrepancies in translations were resolved by a third independent, bilingual individual and myself. In the second step, an English native speaker back-translated the items. Comparing the back-translated version with the original one revealed a high conceptual equivalence.

Standardized interviews with patients were combined with an observational procedure to assess the frequency of communication behavior in older patients with and without CI. Based on the manual of Kuemmel et al. (2014), research assistants were trained to observe the communication behavior of patients during the standardized interview situation (M = 21 min) and to rate it afterward. More information about the observational procedure and the psychometric analysis of this tool in the acute hospital setting can be found in Chapter 3 (Paper 1).

Nurses' Measures

I conducted the interviews with the nurses because nurses were more familiar with me than with students due to the extensive time I spent in both acute hospital settings for preparing the field and recruiting patients. At the first measurement occasion, I assessed nurses' sociodemographic and professional background as well as their evaluative age stereotypes. With respect to the explicit component of ageism, evaluative age stereotypes were examined by a domain-specific questionnaire asking nurses about their beliefs about age and aging in four selected life domains, that is, "friends and acquaintances", "leisure activities and social or civic commitment", "personality and way of living", and "physical and mental fitness, health, and appearance" (Kornadt & Rothermund, 2011). Nurses' evaluative age stereotypes within each life domain were operationalized by 8-point bipolar items ranging from negative to positive statements, with lower values indicating a tendency toward more negative evaluations. The internal consistency of subscales was acceptable to good in the present study (Cronbach's α = .76–.83). However, the item "physical appearance" had to be removed from its subscale to

improve internal consistency (Cronbach's α > .60). Additionally, nurses were asked to rate their psychogeriatric knowledge on a scale from 1 (*very low*) to 5 (*very high*) by use of a single-item question ("How would you rate your knowledge of how to care for people with dementia"; Tropea et al., 2016).

Interviews with nurses referring to the specific care interaction focused on the number of previous care interactions with the patient, their evaluation of a patient's cognitive status, their current stress level as well as participant reactivity, that is, perceptions of changes in their own behavior because of being observed (see Table 4.3 as well as Supplementary Tables A1 and A2).

2.3 Data Analytic Procedures

2.3.1 Psycholinguistic Analysis

Audio-recorded material comprised 106 care interactions. In the first step, I pre-structured all audio-recordings by use of the audio software Audacity (Version 2.1.3; https://www.audacityteam.org/). More precisely, I determined speakers by editing labels to facilitate the transcription procedure for research assistants as well as to estimate the length of interaction time between target patients and target nurses. For example, audio-recorded utterances of younger patients and nursing aides in the room were qualified as "non-relevant". Furthermore, utterances directed to more than one recipient such as general greetings were classified as "non-relevant" because a distinct allocation to a specific individual was not possible. Speech pauses longer than one minute as well as time slots where the nurse left the room or interacted with non-relevant individuals in the room were subtracted from interaction times. Following these rules, I roughly divided care interaction into three categories: (a) 0–10 min (56%), (b) 11–20 min (28%), and (c) > 20 min (16%). Further, I defined systematic rules for data reduction because psycholinguistic procedures are known to be quite time-consuming requiring intensive training of research assistants in transcription and segmentation procedures, close supervision, the computation of interrater reliability as well as the discussion of divergent codings (Williams et al., 2018). In line with previous research, the first 5 min (category b; Williams, 2006) or first 10 min of longer interaction times (category c; Lann-Wolcott et al., 2011; Williams et al., 2009) were considered as habituation phases with a higher risk of participant reactivity (Ostrov & Hart, 2013) and excluded from further analyses. This procedure slightly differs from previous approaches in allowing a comparison between the fully transcribed data material (category a) and the reduced data material (category b and c) to test

for potential effects of participant reactivity. Due to a higher number of utterances for categories b and c, relative frequencies were computed. The relative frequencies of elderspeak features did not significantly differ between both categories (all Bonferroni-Holm corrected *p* values > .05).

In the second step, the pre-structured data material was transcribed by myself, two trained psychology students, one trained sociology student as well as one trained linguist using the FOLK EditoR (FOLKER; Schmidt, 2012). Minimal transcripts were created following the cGAT conventions as recommended in the transcription guideline for German spoken language corpora (Schmidt et al., 2015, November). Briefly, words were transcribed in modified orthography (literary transcription) providing full information on typical features of spoken language such as elisions, dialectal pronunciations, and spontaneous vocal communication behavior like laughter, sighs, and giggling. Some types of audible nonverbal events such as the measurement of blood pressure were also transcribed if they were considered as meaningful for the later interpretation. According to the cGAT rules, features that require interpretational efforts such as the extraction of prosodic information were not considered at this stage. Conformance with the cGAT conventions was automatically checked by FOLKER. Additionally, I performed the final proofreading of all transcripts via FOLKER's contribution view (Schmidt, 2012) to review whether the text was correctly transcribed and speakers were correctly allocated.

In the third step, transcriptions were segmented into maximal syntactic units (*utterances*) according to the segmentation guideline for German spoken language interactions (Westpfahl & Gorisch, 2018). Four types of utterances were annotated: (a) simple sentential units without dependent structures, (b) complex sentential units with dependent structures, (c) non-sentential units without a finite verb, and (d) abandoned units with a syntactically and/or pragmatically incomplete structure. Two minor adjustments were made to align the German guideline with the well-established English guideline used in previous studies (Kemper et al., 1989). First, vocatives and forms of address occurring at the beginning or the end of a sentence were annotated as part of the antecedent or subsequent utterance (English Guideline) and not separately (German Guideline). Second, tag questions occurring at the end of a sentence were annotated as a distinct utterance (English Guideline) and not as part of the antecedent utterance (German Guideline). Segmentation was performed by myself and a linguistic expert who was originally involved in the development of the applied German Guideline. Interrater reliability was determined by the Eudico Linguistic ANotator tool (ELAN; www.lat-mpi.eu/tools/elan) based on 10% of the data that were independently processed. Segmentation agreement based

on the chance-corrected Staccato algorithm (Lücking et al., 2012) was high with an average degree of organization of 87%. To determine the annotator agreement for the four different types of utterances (Holle & Rein, 2013), Cohen's Kappa (κ) was computed. Cohen's Kappa coefficients ranged between κ = .77 and κ = .98 indicating a moderate to substantial annotator agreement (Shrout, 1998). Final inconsistencies were rechecked by the linguistic expert for all transcripts.

In the fourth step, nurses' utterances toward older patients were manually coded for likely harmful features of elderspeak (i.e., diminutives, CPS, and tag questions) using the Extensible Markup Language for Discourse Annotation system (EXMARaLDA; Schmidt, 2012) and well-established operational definitions of previous studies (Kemper, 1994; Sachweh, 1998; Williams, 2006; Williams, Shaw, et al., 2017). Coding was done by two trained research assistants who were blinded to the patients' cognitive group and the acute hospital setting. The first ten percent of the material was independently coded resulting in a substantial agreement for all measures (Cohen's κ = .85–.97; Shrout, 1998).

In the fifth step, the absolute numbers of annotated elderspeak features (i.e., diminutives, CPS, tag questions, simple sentential units, complex sentential units, non-sentential units, and abandoned units) as well as a series of linguistic measures (i.e., the number of utterances, TTR, MLU, speech time, and speech rate) were automatically quantified for each transcript via EXMARaLDA and FOLKER. These counts were finally entered into IBM SPSS version 25 (Armonk, NY, USA) for statistical data analyses.

2.3.2 Emotional Tone Coding Procedure

Audio-recorded clips of care interactions (n = 106) were also evaluated by 12 naïve raters (M_{age} = 32.8 years, SD = 9.3). In the first step, a segment was labeled as eligible for the rating procedure when the following criteria were met: (a) dyadic nurse-patient interaction, (b) high quality of audio-signal, (c) length of conversation of at least one minute, and (d) maximum continuous pause duration of 15 s (Williams, 2006). In the second step, one segment was randomly selected from eligible segments (n = 92) to get a representative sample of audio-recordings. Following the procedure of Williams and Herman (2011), longer segments were limited to the first minute to reduce rater burden. In the third step, personal information was removed to ensure the anonymization of participants.

Based on the perceived vocal qualities, raters judged nurses' emotional tone by use of the emotional tone rating scale in three 1-h rating sessions (30–32 clips per session; Williams et al., 2012). The emotional tone rating scale consists of 12 adjectives rated on a 5-point Likert-type scale (1 = *not at all* and 5 = *very*). Psychometric analysis in the current sample supported

the previously found two-factor solution (Williams et al., 2012), with the items “nurturing”, “affirming”, “respectful”, “supportive”, “polite”, “caring”, “warm” belonging to the subscale person-centered communication and the items “directive”, “patronizing, “dominating”, and “controlling” to the subscale control-centered communication (Cronbach’s α = .98 for both subscales). More details can be found in Chapter 4 (Paper 2).

2.3.3 Statistical Data Analysis Techniques

The quantitative statistical part of data analyses included comprehensive descriptive statistics to analyze differences at the proximal contextual level (CI vs. CU patients) as well as differences at the distal contextual level (acute general vs. acute geriatric hospital setting) with respect to a large set of individual-level and socio-contextual variables (Paper 1–3; see Supplementary Tables A1 and A2). For comparing means, analyses of variance (ANOVA) and analysis of covariance (ANCOVA) were conducted (Paper 1–2). For analyzing underlying factor structures and associations, exploratory and confirmatory factor analyses (Paper 1–2) as well as hierarchical regression analyses (Paper 2–3) were performed. Although patients’ reduced communication behavior represents a key feature of CI patients (see again Section 1.2), this variable was not entered as a predictor variable in the regression analyses of Paper 2 and 3 due to its strong correlation with the construct of cognitive impairment ($r = -.82$ and $r = -.70$, respectively). Given the relatively small sample sizes, only the most important variables were included in the models that were assumed to play a major role in elderspeak communication based on the conceptual framework presented in Section 1.7.

In the following chapters, the three individual publications will be presented. Paper 1 starts with the communicative characteristics of potential receivers of elderspeak, that is, the communication behavior of CI versus CU patients and its observational assessment in acute hospital settings. Paper 2 and 3 primarily concentrate on the communicative features of nurses, that is, the senders of elderspeak at the verbal and nonverbal level. Paper 2 focused on nonverbal elements of the voice (relationship aspect of communication), whereas Paper 3 mainly examined verbal features of communication (content aspect of communication). Paper 2 examined nurses’ emotional tone by emotional tone coding procedures. Paper 3 investigated nurses’ use of likely harmful versus hybrid features of elderspeak by psycholinguistic analyses.

Chapter 3

1st Publication

Communication Behavior of Cognitively Impaired Older Inpatients: A new Setting for Validating the CODEM Instrument

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[7] Only formal changes have been made to adapt the accepted manuscript to the latest APA Style of the Publication Manual of the American Psychological Association (2020).

Abstract

Background and objective: Acutely ill older patients with cognitive impairment represent a major subgroup in acute care hospitals. In this context, communication plays a crucial role for patients' well-being, healthcare decisions, and medical outcomes. As validated measures are lacking, we tested the psychometric properties of an observational instrument to assess communication behavior in dementia (CODEM) in the acute care hospital setting. As a novel feature, we were also able to incorporate linguistic and social-contextual measures.

Material and methods: Data were drawn from a cross-sectional mixed methods study that focused on the occurrence of elderspeak during care interactions in two German acute care hospitals. A total of 43 acutely ill older patients with severe cognitive impairment (CI group, $M_{age} \pm SD$ = 83.6 ± 5.7 years) and 50 without cognitive impairment (CU group, $M_{age} \pm SD$ = 82.1 ± 6.3 years) were observed by trained research assistants during a standardized interview situation and rated afterwards by use of CODEM.

Results: Factor analysis supported the expected two-factor solution for the CI group, that is, a verbal content and a nonverbal relationship aspect. Findings of the current study indicated sound psychometric properties of the CODEM instrument including internal consistency, convergent, divergent, and criterion validity.

Conclusion: CODEM represents a reliable and valid tool to examine the communication behavior of older patients with CI in the acute care hospital setting. Thus, CODEM might serve as an important instrument for researcher and healthcare professionals to describe and improve communication patterns in this environment.

Keywords: acute care hospital, psychometrics, psycholinguistics, geriatric patients, observational tool

Introduction

Older adults with cognitive impairment are frequently admitted to acute care hospitals (Mukadam & Sampson, 2011). A representative study in Germany reported cognitive impairment in 40% of older inpatients (Bickel et al., 2018). There is strong evidence that hospitalization is associated with harmful consequences in this population, such as subsequent nursing home admission and mortality (Mukadam & Sampson, 2011). Therefore, becoming aware of unmet needs of cognitively impaired older patients, such as assistance in activities of daily living, hunger or thirst is a major public health issue in the acute care hospital setting due to substantial language impairments and challenging neuropsychiatric symptoms (Cohen-Mansfield et al., 2015). It is also well known that inefficient communication can negatively affect patients' cooperation (Williams et al., 2009; Williams & Herman, 2011), their well-being (Bradford & End, 2010), and healthcare decisions (George et al., 2013); however, validated tools for measuring communication behavior in older patients with cognitive impairment in the acute care hospital setting are lacking so far.

Communication With People With Dementia: Empirical and Theoretical Aspects

When explaining the communication behavior of people with dementia, three theoretical considerations deserve particular attention. First, communication has been defined as a context-dependent construct, which is closely related to well-being and distinct from functional linguistic skills of an individual (Haberstroh et al., 2011; Knebel et al., 2016; Kuemmel et al., 2014). In line with Watzlawick et al.'s widely acknowledged first axiom (2011) "one cannot *not* communicate" (p. 30), it can be assumed that even patients with strongly impaired linguistic skills are able to communicate, albeit by other channels. Second, communication has been considered as a process that can be divided into four stages: presentation, attention, comprehension, and remembering (Rüttinger & Sauer, 2016). This differentiation becomes important in people with dementia because distinct patterns of resources and deficits for each stage have been found (Haberstroh et al., 2011). At the level of presentation, for example, word finding failures, sentence fragments as well as reductions in grammatical complexity represent linguistic characteristics of people with dementia (Kemper, Thompson, et al., 2001; Lyons et al., 1994). Third, the second axiom of Watzlawick et al. (2011) proposes a content versus a relationship aspect. The content aspect refers to the production and understanding of mainly verbal utterances; the relationship aspect refers to the underlying affective qualities of communication conveyed by mainly nonverbal stylistic (e.g., speech rate) and tonal features of communication (e.g., emotional tone of voice; Frank et al., 2015). The

verbal content channel strongly declines in the course of dementia (Kemper, Thompson, et al., 2001; Kuemmel et al., 2014; Lyons et al., 1994), whereas the nonverbal relationship channel can be preserved for a longer time (Ellis & Astell, 2017; Kuemmel et al., 2014). The ongoing functioning of the nonverbal relationship channel has also been supported by dementia-related challenging behavior occurring after the use of controlling tones (Williams & Herman, 2011). Haberstroh et al. (2011) integrated the aforementioned three theoretical considerations within the so-called TANDEM model to describe the communication behavior of people with dementia.

Measurement Issues and Gaps

To date, there is a clear lack of suitable tools to measure communication behavior in people with dementia in a differentiated way. A shortcoming is that the existing tools operationalized communication rather as a functional skill and not as a context-dependent behavior related to well-being (for a review, see Haberstroh et al., 2013). Furthermore, previous instruments focused more on the verbal content than on the nonverbal relationship aspect. The CODEM instrument (Kuemmel et al., 2014), an observational tool to assess communication behavior in dementia, considers both the verbal content and the nonverbal relationship aspect inherent in communication behavior. In terms of previous CODEM validation efforts (Knebel et al., 2016; Kuemmel et al., 2014), divergent validity was tested by correlations with the Barthel Index (Mahoney & Barthel, 1965) examining functional performance in basic activities of daily living. Although functional status and communication behavior are considered as theoretically distinct constructs, there is an empirical overlap between both constructs in cognitively impaired older patients requiring other methods, such as factor analysis for determining divergent validity (Carless, 2004). A further limitation of previous studies (Knebel et al., 2016; Kuemmel et al., 2014) may be seen in the fact that linguistic features as well as social-contextual variables have not been considered as validation measures for CODEM so far. To date, the CODEM instrument has been validated in the nursing home and the ambulatory setting but not in the acute care hospital setting. Given that older patients with cognitive impairment meanwhile play a relatively prominent role in acute care, this is an important missing link in the existing CODEM literature.

Objectives and Hypotheses

The current study aims to address this gap and to examine the psychometric properties of CODEM as a diagnostic and interventional tool in the acute care hospital setting, particularly for use in patients with severe cognitive impairment. As a novel feature, verbal and nonverbal

linguistic features as well as social-contextual variables will be included in the validation analysis.

In line with previous research conducted in the nursing home setting (Kuemmel et al., 2014), we assume to find support for a two-factor solution representing a verbal content and a nonverbal relationship component of communication, with higher ratings for the relationship compared to the content aspect in severely cognitively impaired (CI) patients but not in cognitively unimpaired (CU) patients. In terms of linguistic indicators, we expect moderate to strong correlations with patients' linguistic features in terms of sentence length and speech rate. Regarding divergent validity, we expect low correlations with subjective hearing capacity that captures the sensory loss of an individual and not necessarily the communication behavior when compensatory strategies are used (Gomez & Madey, 2001). We also expect low correlations between verbal memory recall and the nonverbal relationship aspect. With respect to social-contextual variables, we assume that nurses' emotional tone is more strongly associated with the nonverbal relationship aspect when compared to the verbal content aspect as conveying affective information.

Methods

Recruitment

The data were part of a larger cross-sectional study on elderspeak in the acute care hospital setting conducted from September 2017 to March 2018. Detailed information on the study design and recruitment procedure can be found elsewhere (Schnabel, Wahl, Schönstein, et al., 2020). Briefly, participants were recruited from a general internal medicine ward ($n = 36$ beds, mean length of stay = 4.9 days) and a geriatric ward ($n = 35$ beds; mean length of stay = 16.5 days) of two acute care hospital settings ($n = 114$ and 105 beds, respectively). Both hospitals were affiliated with the university located in the city center of a medium-sized town in southwest Germany. A two-month internship by the first author in both hospitals served to prepare the assessments. The study was approved by the local ethics committee of the Faculty of Behavioral and Cultural Studies at Heidelberg University in July 2017, as well as by hospital staff leadership and staff councils.

All registered nurses were eligible for study inclusion. Inclusion criteria for patients were a minimum age of 65 years and CI in 50% of the patient sample. Allocation to the CI group was based on the 10/11 cutoff of the 6-Item Cognitive Impairment Test (6CIT; Hessler et al., 2017) covering the domains orientation, calculation, and verbal memory recall. This tool was chosen because it represents a validated and time-efficient screening instrument in the acute

care hospital setting with higher sensitivity (sensitivity and specificity 0.88 and 0.95, respectively) compared to medical records (Hessler et al., 2017). As a dementia diagnosis was only partially available, the more cautious term CI instead of dementia will be used in the following. Exclusion criteria were terminal illness, isolation, insufficient German language skills, and impending discharge. Patients of the wards were screened for the abovementioned eligibility criteria using the patient lists, medical records, and consulting nurses. All participants or legal representatives of CI patients included in the study as well as all individuals in the audio recording room (e.g., co-patients, nursing aides) had to provide written informed consent (WIC) prior to the assessments. Approximately 27% of the screened patients participated in the study resulting in a sample of 106 patients (49% with CI, 6CIT error scores: $M = 10.8$, $SD = 8.6$, range = 0–28). In total, 34 registered nurses who were responsible for the respective patient rooms took part in the study. This corresponds to the precalculated sample size of at least 50 patients (50% with CI) per hospital setting. For further information on sampling see Schnabel, Wahl, Schönstein, et al. (2020).

Observational Procedure and Sample

In this study, three different data sources were used: (a) audio recordings during the morning or evening care, (b) standardized interviews with patients and nurses, and (c) extracting basic patient information from the medical information system. The linear Pulse Code Modulation (PCM) digital audio recorders (48 kHz, 16 bits) located in the patient rooms were immediately started before the nurse entered the room. Each patient was only recorded once, whereas 76% of the nurses were recorded several times but not more than six times.

Patients' communication behavior was examined by three trained psychology students and one sociology student via the CODEM instrument (Kuemmel et al., 2014). The training was performed in the field based on the manual of Kuemmel et al. (2014). Research assistants conducted standardized interviews with patients while they observed their communication behavior. Interviews focused on sociodemographic, health and hospital-related variables as well as cognitive status. Immediately after the standardized observational situation (M = 21 min), interviewers rated patients' communication behavior within 3 min; however, interviews were not feasible in 10% of the patients due to refusal, transfers, or advanced stages of CI and thus the evaluation of CODEM was also not possible. Furthermore, CODEM data were missing for the first two pilot trials. In total, observational data on patients' communication behavior were available for a sample of 43 CI patients and 50 CU patients associated with a sample of 31 nurses. As can be seen in Table 3.1, CI patients did not differ from CU patients in basic sociodemographic, health, hospital-related and contextual variables;

however, CI patients showed prototypical differences in terms of significantly lower communication behavior, lower cognitive and functional status as well as reduced linguistic skills. Nurses' characteristics of the analyzed sample are displayed in Table 3.2.

Table 3.1
*Patients' Characteristics (*N = *93)*

Variable	CI (*n* = 43)			CU (*n* = 50)			*p*
	M	*SD*	%	*M*	*SD*	%	
Age (years)	83.6	5.7	—	82.1	6.3	—	.212
Gender (female/male)	—	—	51/49	—	—	56/44	.641
Mother tongue (German/non-German)	—	—	95/5	—	—	96/4	.858
Lower/intermediate/upper secondary school	—	—	62/23/15	—	—	71/10/19	.297
Private/nursing/retirement/residential home	—	—	87/10/0/3	—	—	92/0/2/6	.090
Hospital (general/geriatric)	—	—	53/47	—	—	54/46	.961
Shift (morning/evening)	—	—	56/44	—	—	38/62	.086
Length of hospital stay (days)	14.9	7.4	—	13.3	6.6	—	.271
Admission to examination (days)	7.3	6.5	—	6.4	4.9	—	.432
CODEM (total mean score; 0-5)[a]	3.2	1.1	—	4.8	0.2	—	**<.001**
Cognitive status (6CIT error sum scores; 0-28)[b]	19.0	5.3	—	3.9	3.1	—	**<.001**
Functional status (sum scores; 0-100)[c]	48.6	26.0	—	75.9	23.3	—	**<.001**
Subjective hearing capacity (1-5)[d]	2.8	1.0	—	2.7	1.0	—	.696
Speech rate (words per min)	122.3	32.8	—	146.5	23.4	—	**<.001**
Mean length of utterances (words per utterance)[e]	2.4	0.7	—	3.1	0.9	—	**<.001**

Note. p values for interval-scaled variables from *t* tests and for dichotomous variables from χ^2-tests; significant *p* values are in boldface.
CI = severely cognitively impaired patients (6CIT > 10); CU = cognitively unimpaired patients (6CIT ≤ 10); *M* = mean; *SD* = standard deviation.
[a] CODEM = observational tool to assess the frequency of communication behavior in dementia (Kuemmel et al., 2014) ranging from 0 (*never*) to 5 (*always*).
[b] 6CIT = 6-Item Cognitive Impairment Test (Hessler et al., 2017); lower error scores indicate a better cognitive status.
[c] Barthel Index (Mahoney & Barthel, 1965); higher values indicate a better functional status.
[d] Single item (Wahl et al., 2012) ranging from 1 (*very good*) to 5 (*very poor*).
[e] Segmentation into utterances (i.e., syntactic units) was based on German guidelines (Westpfahl & Gorisch, 2018).

Table 3.2
*Nurses' Characteristics (*N = *31)*

Variable	*M*	*SD*	%
Age (years)	39.2	12.5	—
Gender (female/male)	—	—	84/16
Mother tongue (German/non-German)	—	—	63/37
Lower/intermediate/qualification for applied upper secondary studies/upper secondary school	—	—	3/47/27/23
Registered nurse/geriatric trained nurse	—	—	73/27
Experience as a nurse (<5/5-10/11-15/>15 years)	—	—	23/30/3/44

Measures

Communication Behavior, Functional and Sensory Indicators

The CODEM instrument consists of 15 items rated on a 6-point Likert scale (0 = *never* and 5 = *always*). Higher values indicate a higher frequency of communication behavior. Previous exploratory and confirmatory factor analyses (Kuemmel et al., 2014) revealed two subscales: verbal content and nonverbal relationship aspects. Previous reliability analysis showed an excellent internal consistency (Cronbach's α = .95), whereas construct validity in terms of convergent and divergent validity revealed high correlations for both constructs (r = .88 for communication abilities and .63 for functional status).

Patients' functional status in this and previous studies was evaluated by nurses using the Barthel Index (Mahoney & Barthel, 1965). Patients' subjective hearing capacity was operationalized by a well-established (Wahl et al., 2012) single item ("how would you rate your current hearing capacity?") ranging from 1 (*very good*) to 5 (*very poor*). Visual acuity was not assessed because it is more related to the use of the physical environment than to social communication (Wahl et al., 2012).

Linguistic and Social-Contextual Indicators

Well-established verbal and nonverbal linguistic measures (Kemper, 1994; Kemper & Harden, 1999; Lyons et al., 1994) were extracted for patients as well as for nurses. As a nonverbal stylistic feature of the voice, the speech rate was quantified as words per min rate using the FOLKER transcription tool (Schmidt, 2016). As a verbal feature, syntactic complexity was operationalized by the mean length of utterances (Kemper & Harden, 1999). Segmentation into utterances (i.e., syntactic units) was based on German guidelines for spoken language interactions (Westpfahl & Gorisch, 2018). In accordance with magnitudes used in previous studies (Williams et al., 2003; Williams et al., 2009), 10% of the data (n = 926 utterances for patients, n = 1455 utterances for nurses) were independently processed by two trained individuals. Segmentation agreement was determined by the chance-corrected Thomann method using the segmentation agreement calculator in ELAN (Lücking et al., 2012). The degree of agreement was high for patients' (88%) and nurses' (86%) utterances. To assess the underlying affective qualities of social communication in terms of a controlling and a person-centered tone of voice, nurses' emotional tone was judged by naïve raters using the two subscales (Cronbach's α = .98 for both) of the Emotional Tone Rating Scale (Williams et al., 2012). Detailed information on the rating procedure can be found elsewhere (Schnabel, Wahl, Schönstein, et al., 2020).

Data Analysis

Psychometric testing was only performed in the target group of CI patients as the CU group exhibited strong ceiling effects (i.e., highest possible CODEM score) varying between 62% and 96% across all items. Data analyses were conducted by IBM SPSS version 25 (Armonk, NY, USA). Missing values for single items of the CODEM occurred only in 2% of the participants resulting in a total sample of 42 CI patients for the factor and the reliability analyses.

Exploratory Factor Analysis

In order to test the underlying factor structure of the CODEM as applied in this completely new setting, an exploratory factor analysis (EFA) was conducted using a principal component analysis with oblique (Promax) rotation ($\kappa = 4$) due to expected correlations between factors (Kuemmel et al., 2014). The Kaiser-Meyer-Olkin (KMO) procedure (Kaiser, 1970) supported that data for the CI group were appropriate for conducting a factor analysis ($KMO \geq 0.8$). The number of factors was tested by the Kaiser's eigenvalue > 1 criterion (Kaiser, 1960) and the scree test (Cattell, 1966).

Reliability

As an indicator of reliability, internal consistency was measured by Cronbach's alpha for both subscales separately. Interpretation was based on established rules of thumb: $\alpha > .9$ for excellent, $\alpha > .8$ for good, $\alpha > .7$ for acceptable, $\alpha > .6$ for questionable, and $\alpha > .5$ for poor reliability (George & Mallery, 2016). Furthermore, corrected item-total correlations (ITCs) were examined to identify items that did not sufficiently contribute to the respective subscale.

Validity

Given the results of the factor and reliability analyses, mean scores were calculated for both subscales as well as a total mean score. For construct validity testing, Spearman correlations with convergent (patients' linguistic indicators) and divergent (subjective hearing capacity, verbal memory recall) measures as well as with social-contextual variables (nurses' linguistic indicators, time of day) were computed. Spearman correlations were chosen because normal distribution was not given for all variables. The effect sizes of correlation coefficients were interpreted as follows: .10 small, .30 medium and .50 large (Cohen, 1992). Differences in the magnitude of the associations with the content versus the relationship aspect of communication were examined by testing the difference between two dependent correlations based on Fisher's *r*-to-*z* transformations (Eid et al., 2011). To control for multiple pairwise comparisons, the Bonferroni-Holm correction was used.

For criterion validity testing, differences in communication behavior between CI and CU patients were examined using an analysis of variance with repeated measurements, with the aspect of communication (content vs. relationship) as a within-subject factor and cognitive group (CI vs. CU) and hospital setting (general vs. geriatric) as between-subject factors. As effect size indicator, partial eta squared (η_p^2) was used (.01 small effect, .06 medium effect, .14 large effect; Cohen, 1988).

Results

Factorial Structure

Both the Kaiser's criterion and the scree test supported a two-factor solution in the CI sample as found by Kuemmel et al. (2014). As expected, both factors were strongly correlated (r = .69). The total explained variance was 74%. The Promax rotated matrix of factor loadings and the communalities also confirmed the expected patterns (see Table 3.3). In line with previous research (Kuemmel et al., 2014), the first factor was labelled "content aspect" and the second factor "relationship aspect".

Reliability

Internal consistency reliability and ITCs for CI patients are displayed in Table 3.3. Subscale reliability coefficients indicated excellent reliability for both subscales (α = .95 for the content aspect and α = .93 for the relationship aspect). The ITCs ranged between r = .73 and .86 for the content aspect and between r = .67 and .87 for the relationship aspect indicating high discriminatory power of the items for both subscales. With respect to the different hospital settings, internal consistency for both subscales did not differ between the general and the geriatric acute care hospital.

Validity

The examination of convergent validity showed moderate to strong correlations between patients' linguistic indicators and CODEM scores of comparable magnitude for the verbal content and the nonverbal relationship aspect (see Table 3.4). In terms of divergent indicators, correlations with subjective hearing capacity and verbal memory recall were relatively low, particularly between verbal memory recall and the relationship aspect (r = −.08). With respect to social-contextual variables, the evening shift was associated with an increased nonverbal communication behavior of patients; however, nurses' verbal and nonverbal linguistic indicators were not substantially associated with CODEM dimensions with the exception of a moderately high correlation between the mean length of utterances and the verbal content component.

Table 3.3
Results of the Exploratory Factor Analysis and Reliability Statistics for Severely Cognitively Impaired Patients (n = *42)*

Items	Rotated factor loadings			Item reliability
	Factor 1 Content	Factor 2 Relationship	Communality	ITCs
Presentation				
03. She/he uses a sensible sentence structure.	**.70**	.26	.81	.86
04. She/he uses words according to their meaning.	**.66**	.23	.70	.80
05. She/he comes up with the right words.	**.64**	.23	.67	.77
01. She/he signalizes the need to communicate.	.27	**.61**	.67	.76
02. She/he shows interest in the interaction partner.	.02	**.89**	.81	.86
06. She/he shows emotions.	-.16	**1.01**	.82	.83
Attention				
07. She/he can make eye contact.	-.22	**.93**	.63	.67
08. She/he maintains eye contact appropriately.	.23	**.61**	.61	.72
Comprehension				
09. She/he understands complex questions and sentences.	**1.01**	-.18	.81	.83
10. She/he responds sensibly to what is said.	**1.04**	-.23	.81	.82
11. She/he demonstrates appropriate nonverbal responses to what is said.	.33	**.60**	.74	.79
12. She/he reacts to the feelings of the other.	.11	**.83**	.82	.87
Remembering				
13. She/he performs the task independently.	**.81**	.13	.81	.86
14. She/he communicates without memory aids from the other.	**.80**	.10	.77	.83
15. She/he remains on an issue.	**.82**	-.04	.63	.73

(Continued)

Table 3.3
*Results of the Exploratory Factor Analysis and Reliability Statistics for Severely Cognitively Impaired Patients (*n = *42) (Continued)*

Factor statistics	Rotated factor loadings			Item reliability
	Factor 1 Content	Factor 2 Relationship	Communality	ITCs
Cronbach's α [CI 95%]	.95 [.92,.97]	.93 [.90, .96]	—	—
Initial eigenvalue	9.65	1.45	—	—
Initial variance (%)	64.36	9.66	—	—

Note. Factor analysis using principal component analysis with oblique (Promax) rotation revealed a two-factor solution (content and relationship aspect of communication), explaining 74% of the variance. Bold letters indicate the highest standardized factor loadings for each item. One patient was excluded from factor analysis due to a missing CODEM item resulting in a sample of 42 severely cognitively impaired patients. ITC = corrected item-total correlations. CI = 95% confidence interval.

Table 3.4

*Construct Validity: Spearman Correlations of CODEM (Total and Subscales) With Convergent, Divergent, and Social-Contextual Constructs for Severely Cognitively Impaired Patients (*n = *43)*

Measures	*n*	*M*	*SD*	Level	CODEM $_{total}$ (*r*)	CODEM $_{content}$ (*r*)	CODEM $_{relationship}$ (*r*)	Corrected *p*-value
Convergent validity								
Speech rate (words per minute)	43	122.3	32.8	Patients	.51**	.50**	.49**	1
Mean length of utterances (in words)	43	2.4	0.7	Patients	.38*	.36*	.40**	1
Divergent validity								
Subjective hearing capacity (1–5)[a]	36	2.8	1.0	Patients	−.14	−.12	−.16	1
Verbal memory recall (6CIT $_{error\ scores;}$ 0–10)[b]	43	8.2	2.4	Patients	−.17	−.21	−.08	.868
Social-contextual constructs								
Speech rate (words per minute)	43	156.1	22.3	Nurses	.18	.21	.15	1
Mean length of utterances (in words)	43	3.3	0.7	Nurses	.24	.33*	.12	.256
Controlling tone of voice (1–5)[c]	38	2.5	0.6	Nurses	−.19	−.14	−.25	1
Person-centered tone of voice (1–5)[d]	38	3.6	0.5	Nurses	.02	−.01	.09	1
Shift (morning/evening)	24/19	—	—	Organization	.12	−.01	.31*	**.027**

Note. Variables describing features on the patient, nurses, and organizational level are displayed; *p* values refer to differences in the magnitude of associations for the verbal versus the relationship aspect adjusted by the Bonferroni-Holm correction for multiple univariate comparisons; significant *p* values after correction are in boldface.

[a]Single item (Wahl et al., 2012) ranging from 1 (*very good*) to 5 (*very poor*).

[b]6CIT = 6-Item Cognitive Impairment Test (Hessler et al., 2017); lower error scores indicate a better verbal memory recall.

[c-d]Mean emotional tone ratings of naïve judges (Schnabel, Wahl, Schönstein, et al., 2020) ranging from 1 (*not at all*) to 5 (*very*).

n varies due to [(a)] difficulties to answer the question or [(c, d)] not fulfilling criteria for rating procedure.

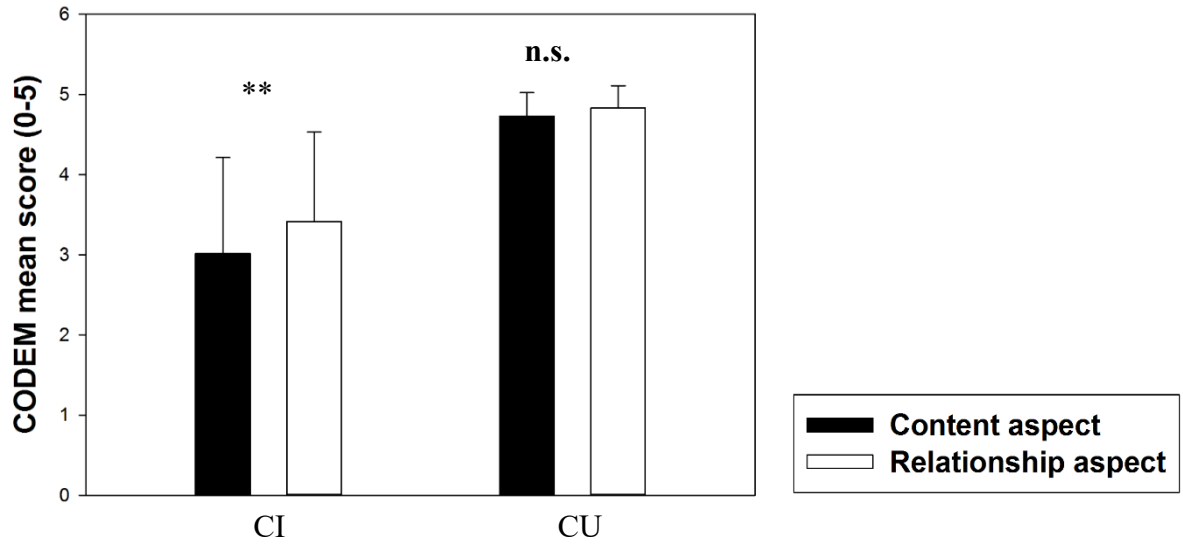
* p <.05. ** p < .01. *** p < .001.

Nurses' emotional tone was also not significantly correlated with the relationship aspect. The correlations with patients' functional status were also checked and were substantial for both CODEM components ($r > .5$, $p < .001$).

As can be seen in Figure 3.1, mean ratings for CU patients were consistently higher when compared to CI patients. In fact, the ANOVA revealed a significant main effect of cognitive group on communication behaviour, $F(1, 89) = 97.16$, $p < .001$, $\eta_p^2 = .522$. The main effect of hospital setting on communication behavior was not significant ($p = .589$), indicating similar patterns for both hospital settings. Importantly, criterion validity was confirmed by a significant interaction effect between cognitive group and communication aspect, $F(1, 89) = 5.46$, $p = .022$, $\eta_p^2 = .058$. Post hoc dependent t tests using bootstrapping procedures to estimate the bias-corrected and accelerated 95% confidence interval (BCa 95% CI) showed that the difference between the content and relationship aspect (−0.40, BCa 95% CI [−0.64, −0.16]) was significant for CI patients, $t(42) = -3.30$, $p = .002$, but not for CU patients, $t(49) = -1.90$, $p = .062$. As evident from Figure 3.1, ratings for the relationship aspect were higher than for the content aspect in CI patients.

Figure 3.1

Mean Differences in the Frequency of Communication Behavior Between Severely Cognitively Impaired (CI, n *= 43) and Cognitively Unimpaired (CU;* n *= 50) Patients for the Content and the Relationship Aspect Ranging From 0 (never) to 5 (always)*



Note. Higher values indicate a higher frequency of communication behavior. Standard deviations are represented by error bars. CODEM = observational tool to assess communication behavior in dementia (n.s. not significant, ** $p < .01$).

Discussion

To our knowledge, this is the first study that tested the psychometric properties of the CODEM instrument for use in the acute care hospital setting. Considering linguistic as well as contextual variables was also a novel step compared to previous CODEM validation studies (Knebel et al., 2016; Kuemmel et al., 2014). The current study was able to show that communication behavior can also be assessed in a psychometrically sound way in acutely ill older patients with CI.

Exploratory factor analysis supported the fit of the previously found two-factor solution (Kuemmel et al., 2014) for the acute care hospital setting reflecting a verbal content and a nonverbal relationship aspect of communication. Comparing both factors also revealed typical patterns (Knebel et al., 2016; Kuemmel et al., 2014) with higher ratings for the relationship aspect when compared to the content aspect in the CI group but similarly high ratings for both aspects in the CU group. The strong ceiling effects in the CU group suggest that CODEM may be a useful and informative measure in CI patients but does not provide additional benefit in CU patients.

With respect to validity testing, the different indicators provided support for convergent and divergent validity of CODEM. As expected, associations with patients' linguistic indicators showed moderate to strong effect sizes, whereas associations with divergent measures were relatively low. In line with previous research (Knebel et al., 2016; Schulz et al., 2011), correlations between verbal memory recall and the relationship aspect were relatively low when compared to other variables, which are more strongly related to language than to memory. With respect to differences in the strength of associations with the verbal content versus the nonverbal relationship aspect, verbal and nonverbal linguistic features in terms of mean length of utterances and speech rate were not differentially associated with both aspects. An explanation for this finding might be that both measures contain verbal as well as nonverbal elements. For example, speech rate is considered as a nonverbal stylistic measure (Frank et al., 2015) but likewise depends on the number of words. Surprisingly, support for the assumption that nurses' emotional tone is more strongly associated with the relationship aspect could not be found. Most of the nurses' measures were not significantly correlated with the CODEM factors. An explanation may rely on previous findings in the acute care hospital setting indicating that factors such as the salient functional status of patients might play a more important role in eliciting nurses' communication behavior than cognitive impairment per se (Schnabel, Wahl, Schönstein, et al., 2020). With respect to social-contextual variables, patients' nonverbal

communication behavior increased during the evening shift. This finding might find at least a partial explanation by the sundown syndrome coming along with challenging behavior (Cipriani et al., 2015).

From a practical point of view, the findings suggest that CODEM could be a promising measure to describe and improve communication patterns in the acute care hospital setting. With respect to diagnostic issues, CODEM allows communication resources and deficits of acutely ill older patients to be detected at different stages of the communication process. This may enable hospital staff to accommodate their communication behavior in a specific manner leading to more efficient and enriching social interactions. Shifting the focus from verbal to nonverbal communication behavior may also raise the awareness of essential current needs of older CI patients. The identification of unmet needs is highly important in this vulnerable sample due to the linkage with negative cognitive-affective states and neuropsychiatric symptoms (Cohen-Mansfield et al., 2015). In line with previous research (Knebel et al., 2016; Kuemmel et al., 2014), CODEM was shown to be a largely feasible and time-efficient instrument to examine the communication behavior of CI patients. In past research, the training was not only successful for observing research assistants (Knebel et al., 2016) but also for observing nurses (Kuemmel et al., 2014). Thus, CODEM might be easily implemented into the hospital routines by combining the observational phase with established screening procedures. The rating process per se requires only 3 min.

With respect to interventional issues, the relationship aspect as a crucial resource of CI patients might serve not only as an important patient outcome for future psychosocial interventions but also as an indicator of the quality of hospital care due to its linkage with well-being. In fact, first psychosocial intervention studies supported that individual music therapy is able to stimulate the nonverbal relationship channel by increasing the communication behavior, well-being, and positive affects of people with advanced dementia (Schall et al., 2015). Future research should explore whether reductions of elderspeak features, such as controlling tones of nurses' voice can facilitate positive nonverbal communication behavior of CI patients in acute care hospitals.

Limitations

Limitations of the current study are the relatively small sample size based on two acute care wards and the lack of a standardized interview situation in some patients. Nevertheless, this study was able to replicate earlier findings and to link the observational findings with innovative linguistic and social-contextual data. Another limitation is that divergent measures were based on single items; however, previous studies indicated that subjective hearing capacity

can reliably be assessed by a single item, even in multimorbid older adults (Wahl et al., 2012). Furthermore, the present study did not assess interrater and retest reliability for CODEM as the primary focus was on elderspeak; however, raters underwent standardized training based on earlier manuals and received supervision at the beginning. Interrater and retest reliability were shown to be high in previous research (Knebel et al., 2016; Kuemmel et al., 2014). Finally, this study was only able to differentiate between a verbal content versus a nonverbal relationship aspect because the shorter version of the CODEM instrument developed for use in nursing home settings was applied (Kuemmel et al., 2014). Although the relationship aspect refers to the nonverbal channel of communication, it does not capture nonverbal content aspects such as reactions to gestures or pictures (Knebel et al., 2016).

Practical Conclusion

- The CODEM instrument is a largely feasible and easily applicable instrument to assess the verbal and nonverbal communication behavior of older patients with CI in the acute care hospital setting.
- CODEM enables the examination of communication in terms of behavior that is relevant for well-being.
- Applying CODEM does not require more than 3 min when combined with established screening routines.
- CODEM revealed sound psychometric properties including internal consistency, convergent, divergent, and criterion validity.
- CODEM might serve as an important diagnostic and interventional tool for acutely ill older patients with CI if it is administered by trained hospital staff.
- Further studies including larger samples and a more heterogeneous set of acute care hospital settings are required.

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Author Contribution

Study concept and design: E.-L. Schnabel and H.-W. Wahl. Data collection and preparation: E.-L. Schnabel. Statistical analysis and interpretation of data: E.-L. Schnabel, S. Penger, H.-W. Wahl, and J. Haberstroh. Preparation of the manuscript: E.-L. Schnabel, H.-W. Wahl, S. Penger, and J. Haberstroh.

Compliance with Ethical Guidelines

Conflict of Interest

E.-L. Schnabel, H.-W. Wahl, S. Penger and J. Haberstroh declare that they have no competing interests.

All procedures performed in the study were in accordance with the ethical standards of the ethics board of the Faculty of Behavioral and Cultural Studies at Heidelberg University and with the 1964 Helsinki declaration and its later amendments or comparable ethical standards. Informed consent was obtained from all individual participants included in the study. The supplement containing this article is not sponsored by industry.

Chapter 4

2nd Publication

Nurses' Emotional Tone Toward Older Inpatients: Do Cognitive Impairment and Acute Hospital Setting Matter?

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[8] Only formal changes have been made to adapt the accepted manuscript to the latest APA Style of the Publication Manual of the American Psychological Association (2020).

Abstract

The emotional tone of nurses' voice toward residents has been characterized as overly controlling and less person-centered. However, it is unclear whether this critical imbalance also applies to acutely ill older patients, who represent a major subgroup in acute hospitals. We therefore examined nurses' emotional tone in this setting, contrasting care interactions with severely cognitively impaired (CI) versus cognitively unimpaired older patients. Furthermore, we included a general versus a geriatric acute hospital to examine the role of different hospital environments. A mixed-methods design combining audio-recordings with standardized interviews was used. Audio-recorded clips of care interactions between 34 registered nurses (M_{age} = 38.9 years, SD = 12.3) and 92 patients (M_{age} = 83.4 years, SD = 6.1; 50% with CI) were evaluated by 12 naïve raters (M_{age} = 32.8 years, SD = 9.3). Based on their impressions of the vocal qualities, raters judged nurses' emotional tone by an established procedure which allows to differentiate between a person-centered and a controlling tone (Cronbach's α = .98 for both subscales). Overall, findings revealed that nurses used rather person-centered tones. However, nurses' tone was rated as more controlling for CI patients and in the geriatric hospital. When controlling for patients' functional status, both effects lost significance. To our knowledge, this is the first study that examined nurses' emotional tone in the acute hospital setting. Findings suggest that overall functional status of older patients may play a more important role for emotional tone in care interactions than CI and setting differences.

Keywords: inpatient, cognitive impairment, functional status, elderspeak, person-centered communication

Introduction

The international literature indicates that acute hospitals are not adapted to the needs of older patients, particularly of those with cognitive impairment (George et al., 2013; Mukadam & Sampson, 2011). In fact, age discrimination including elderspeak has been identified as underlying factor, which might contribute to inefficient communication, mental health problems, and eventually to adverse outcomes such as longer length of stay, institutionalization, and increased mortality (Digby et al., 2012; George et al., 2013). However, most of the existing studies on elderspeak such as research on the emotional tone of nurses' voice were derived from care interactions in the nursing home setting (Williams et al., 2012; Williams et al., 2018). Surprisingly, an in-depth examination of elderspeak in the acute hospital setting has not been undertaken so far. However, the identification of potentially controlling tones of voice toward older patients is highly relevant considering their high share in the total patient population in acute hospitals. For example, a recent representative study conducted in Germany has estimated that 65% of the hospital population is older than 65 years, of whom 40% showed cognitive impairment (Hendlmeier et al., 2018). Substantial proportions of acutely ill older patients with cognitive impairment have also been reported for other countries, which are expected to further increase (Mukadam & Sampson, 2011). Thus, this paper strives to fill an important gap in the international research by examining differences in nurses' emotional tone in terms of a controlling versus a person-centered tone toward older patients in the acute hospital setting. As a novel approach, we also considered the role of older patients' characteristics and different hospital environments for explaining nurses' emotional tone.

Previous Research and Conceptual Considerations on Emotional Tone

An imbalance in the emotional tone of voice (i.e., underlying affective qualities of communication) represents one crucial element of elderspeak (Williams et al., 2012; Williams et al., 2018). Studies examining nurses' emotional tone of voice toward residents with dementia-related disorders in the long-term care setting via proximal percepts (i.e., voice quality ratings of naïve listeners; Bänziger et al., 2015) have demonstrated overly controlling, but less person-centered communication (Williams et al., 2018). More precisely, person-centered communication has been characterized by caring (nurturing, caring, warm, supportive) and respectful (polite, affirming, respectful) tones of voice (Williams et al., 2012; Williams et al., 2018). Furthermore, person-centered communication was negatively correlated with controlling communication, which involves dominating, controlling, directive, bossy, and patronizing tones of voice (Williams et al., 2012).

In the previous literature (Williams et al., 2012), the imbalance in the emotional tone of nurses' voice toward older residents has been explained via negative age stereotypes relying on the communication predicament of aging model (CPA; Ryan et al., 1995). The negative feedback loop starts with the recognition of stereotype-consistent cues such as memory deficits, which then trigger controlling tones of voice toward older adults. However, the frequent exposure to controlling tones may restrict meaningful social interactions and reinforce stereotype-consistent behavior of older adults such as withdrawal (Williams & Herman, 2011). Particularly in individuals with dementia-related disorders, controlling tones of voice are assumed to have harmful effects. First, studies have shown that controlling tones increased the likelihood of residents' challenging behavior (Williams & Herman, 2011). Second, individuals with cognitive disorders might react more sensitive to controlling tones of voice because the nonverbal communication pathway becomes more important in the course of dementia when compared to the verbal pathway (Kuemmel et al., 2014). The positive effect of person-centered tones of voice has also been indicated by studies showing positive associations between person-centered communication and residents' cooperation during care (Savundranayagam et al., 2016). This corroborates the general assumption that person-centered communication plays a key role in the care of older adults with dementia-related disorders by affirming personhood (Buron, 2008), whereas controlling communication may threaten it (Williams et al., 2018).

Although the CPA model is a well-established framework, it likely underrates factors that might be relevant for nurses' emotional tone of voice toward older adults. The age stereotypes in interactions model (ASI; Hummert, 1994b) points to the importance of three factors, which have not been considered in the empirical research on emotional tone so far: (a) the perceiver's self-system, (b) the older target person's characteristics, and (c) the context.

First, in terms of perceiver's characteristics, advanced age, high cognitive complexity, and high quality of previous contacts with older adults were shown to counteract negative stereotype activation (Hummert, 1994b).

Second, characteristics of older target persons need to find consideration. Research in German nursing homes, for example, has shown that particularly female and physically vulnerable residents were exposed to patronizing talk (Sachweh, 1998). The concept of physical disability comprises functional impairment in terms of a dependency in performing activities of daily living such as dressing or bathing (Fried et al., 2004). Although functional impairment represents a typical feature of cognitively impaired older patients (Pedone et al., 2005), it remains unclear from the previous literature whether the controlling tone of nurses' voice toward residents with dementia-related disorders is elicited by typical dementia behaviors or

rather by cues of disability in general. Furthermore, differences in emotional tone toward severely cognitively impaired versus cognitively unimpaired older adults have not been examined so far.

Third, the context such as different acute hospital environments can be expected to play a role. For example, geriatric hospitals may have more patients with severe functional impairment, but also more psychogeriatrically trained staff (Zieschang et al., 2010). The training may lead to less negative age stereotyping and less controlling tones of geriatric compared to general hospital staff. However, being continuously confronted with vulnerable older patients might also contribute to more negative attitudes (de Almeida Tavares et al., 2015).

Objectives and Hypotheses

We examined differences in the (im)balance of nurses' emotional tone between a cognitively unimpaired group (CU), that is, patients with no or minor cognitive impairment, and a severely cognitively impaired group (CI) in a general versus a geriatric acute hospital. We hypothesize that encounters with CI patients are associated with increased negative age stereotyping which may lead to more controlling and less person-centered tones of nurses' voice when compared to CU patients (Hypothesis 1). In terms of context, we expect a lower discrepancy in emotional tone patterns between CU and CI patients in the geriatric hospital setting, because both typically show a rather low functional status (Hypothesis 2). At the exploratory level, nurses' characteristics in terms of perceived stress level, self-rated psychogeriatric knowledge, and chronological age will find consideration.

Methods

Recruitment

Data were collected in two academic acute hospitals from September 2017 to March 2018, which were both affiliated with the university. Both hospitals were located in the city center of a medium-sized (> 100.000 inhabitants) southwestern town in Germany, around 4 km apart. For the general acute hospital setting, an internal medicine ward (n = 36 beds, mean length of stay = 4.9 days) of the department for cardiology, angiology, and pulmonology (n = 114 beds) was chosen providing care for younger and older patients. For the geriatric acute hospital setting (n = 105 beds), one ward providing treatment for geriatric patients was selected (n = 35 beds; mean length of stay = 16.5 days). The first author completed a two-month internship in both hospitals to prepare the assessments.

The study was approved by the ethical board of the Faculty of Behavioral and Cultural Studies at Heidelberg University in July 2017, as well as by hospital staff leadership and staff councils. Detailed information on the recruitment procedure is presented in Supplementary Figure A1. All registered nurses who were willing to participate were eligible for inclusion. Other types of nurses such as nursing aides were excluded in order to analyze a more homogeneous subgroup. In the first step, all patients of the wards were screened for eligibility. Inclusion criteria for patients were a minimum age of 65 years and severe cognitive impairment in 50% of the sample. As medical records did not consistently provide information on patients' cognitive status, the assignment to the CI group was based on the 10/11 cutoff of the 6-Item Cognitive Impairment Test (6CIT; Hessler et al., 2017). This screening tool was chosen because it represents a validated and time-efficient instrument in the acute hospital setting, with the 10/11 cutoff showing the best sensitivity–specificity ratio (88% and 95%, respectively). For the final recruitment phase, the 6CIT was used as a pre-screening tool. That is, only patients who exceeded the cutoff were included in the study. Exclusion criteria were terminal illness, isolation, insufficient knowledge of the German language, and impending discharge or transfers. All eligible patients were visited in their rooms and informed about the study. Written informed consent (WIC) was obtained by all participants or the legal representatives of CI participants. Furthermore, the WIC of all co-patients in the room was obtained because their utterances might have become part of the audio-recordings. This applies, for example, to younger co-patients in the room. If these steps were successful, registered nurses who were responsible for eligible patient rooms including accompanying nursing aides were asked for their WIC (see Supplementary Figure A1).

Data collection consisted of three parts: (a) audio-recordings during the morning (49%) or evening care (51%); (b) standardized interviews with patients and nurses; and (c) extracting basic patient information including age, gender, functional status, and length of hospital stay from the medical information system. PCM digital audio-recorders (48 kHz, 16 bits) were placed in the patient rooms and immediately started before the nurse entered the room. Most of the nurses (76%) were recorded during more than one patient interaction, but not more than six times. Each patient was only measured once.

Interviews with patients were conducted by trained research assistants to assess additional sociodemographic (educational level, mother tongue, marital status, housing situation), health-related (subjective health indicators), and hospital-related variables (satisfaction with hospital care, perceived age discrimination) that were not consistently available from the medical information system. The training, for example, included

communication strategies for CI patients. Whenever interviewers assumed that the patient was not able to understand the item, the answer was coded as missing. After the first measurement, nurses' sociodemographic and professional background was examined. Interaction-related interviews focused on nurses' evaluation of a patient's cognitive status, nurses' perceived stress level, and participants' reactivity.

Measures

Patients' functional status was evaluated by nurses using the Barthel Index (Mahoney & Barthel, 1965). Patients' communication behavior was examined by trained interviewers using an observational communication behavior assessment tool for dementia patients (CODEM; Kuemmel et al., 2014). This tool showed excellent internal consistency (Cronbach's $\alpha = .95$) as well as convergent and discriminant validity (Pearson's $R = .88$ and .63, respectively). CODEM consists of 15 items rated on a 6-point Likert scale (0 = *never* and 5 = *always*) within 3 min. Higher values represent a better functional status as well as a higher extent of communication behavior.

Nurses' evaluation of a patient's cognitive status was examined by a single item ranging from 1 (*no cognitive impairment*) to 4 (*severe cognitive impairment*; Hessler et al., 2017). This global measure was used because nurses' evaluation of a patient's cognitive status might be more strongly linked with nurses' behavior when compared to the underlying cognitive performance. Nurses were also asked for their current stress level using an 11-point scale from 0 (*not at all*) to 10 (*extremely*). Self-rated psychogeriatric knowledge was operationalized by a single item ranging from 1 (*very low*) to 5 (*very high*; Tropea et al., 2017).

Emotional Tone Rating Procedure

Raters' Characteristics

Thirteen raters participated in the study. One was excluded due to unexpected inter-item correlations. The 12 remaining raters were between 25 and 53 years old ($M_{age} = 32.8$ years, $SD = 9.3$, 83% female).

Due to data protection requirements, raters were recruited from the local university environment of the first author. Raters provided WIC and received a lottery incentive. Educational level was high, with 92% of raters having a university degree. Individuals with a non-German mother tongue and knowledge of the study's goals were excluded. In line with previous studies (Williams et al., 2012), there was no specific training, because naïve raters were expected to have sufficient semantic knowledge. In fact, Williams et al. (2012), demonstrated an excellent inter-rater consistency among untrained raters, ICC (2,1) = .95. We also calculated ICC estimates and their 95% confidence intervals for the two subscale means

based on a mean rating (k = 12), consistency, two-way random effects model. According to the guideline of Koo and Li (2016), inter-rater consistency was also excellent in our study with ICC (2,12) = .91 for the person-centered subscale and ICC (2,12) = .90 for the control-centered subscale.

Emotional Tone Rating Scale

The emotional tone of nurses' voice was operationalized by the emotional tone rating scale (Williams et al., 2012). More precisely, the emotional tone rating scale consists of 12 adjectives rated by naïve listeners on a 5-point Likert-type scale (1 = *not at all* and 5 = *very*). Psychometric analysis of Williams et al. (2012) suggested a two-factor solution with the items "nurturing", "affirming", "respectful", "supportive", "polite", "caring", "warm" belonging to the subscale person-centered communication (α = .98) and the items "directive", "patronizing", "bossy", "dominating", "controlling" to the subscale control-centered communication (α = .94). According to the guideline of Sousa and Rojjanasrirat (2011), forward translation into German was done by two bilingual, independent translators for whom German was their mother tongue. Both had also excellent knowledge of the English language. Discrepancies in translations were resolved by the first author and a third independent, bilingual individual. In the second step, a native English speaker back-translated the adjectives, revealing a conceptually equivalent version to the original one.

We conducted a confirmatory factor analysis (CFA) of emotional tone ratings using R (Version 3.5.1) and the lavaan package (Version 0.6-3; Rosseel, 2012) to test the fit of the two-factor solution in the current sample. Due to nonnormally distributed data, maximum likelihood estimation with robust standard errors was used for correction (Rosseel, 2012). According to widely used rules of thumb (Schermelleh-Engel et al., 2003), a good fit was defined as follows: Tucker-Lewis index (TLI) and comparative fit index (CFI) ≥ .97; root-mean-square error of approximation (RMSEA) ≤ .05; and standard root-mean-square residual (SRMR) ≤ .05. CFA based on the full dataset of all care interactions and raters (N = 1104 cases) revealed a poor model fit when single indicators were uncorrelated. Modification indices suggested that correlations between two pairs of person-centered indicators (i.e., caring–warm, respectful–polite) should be allowed. This step led to an improved, but still not an acceptable model fit. Further inspection revealed high modification indices for all inter-indicator correlations with bossy as well as double loadings for bossy, and therefore this item was eliminated from the model and all further data analyses. After this step, indices pointed to a rather good model fit, with Robust TLI = .961, CFI = .971, RMSEA = .079 (left boundary of the 90% confidence interval = 0.070), and SRMR = .048.

Furthermore, an exploratory factor analysis supported a strong first factor (eigenvalue = 9.73, explaining 81% of variance) and a weaker second factor (eigenvalue = 1.32, explaining 11% of the variance) as found by Williams et al. (2012). The internal consistency was also excellent in our sample (Cronbach's α = .98 for both subscales).

Data Preparation and Material

Material consisted of 106 care interactions varying in conversation time: (a) 0–10 min (56%), (b) 11–20 min (28%), and (c) > 20 min (16%). First, relevant speakers were identified using Audacity (Version 2.1.3; https://www.audacityteam.org/). For instance, utterances of younger co-patients in the room were part of the audio-recording, although they did not belong to the target group. Following the procedure of Williams (2006), a segment was eligible for the rating material when the following criteria were met: (a) dyadic nurse–patient interaction, (b) high quality of audio-signal, (c) length of conversation of at least 1 min, and (d) maximum continuous pause of 15 s. Thirteen percent of the material was excluded resulting in a sample of 92 patients and 34 nurses. Second, one segment was randomly selected from eligible segments of a care interaction to get a representative sample of audio-recordings. According to Williams and Herman (2011), longer segments were limited to the first minute to reduce rater burden. Finally, personal information was removed to ensure the anonymization of participants.

Transcriptions were based on the cGAT conventions using the FOLK EditoR (FOLKER; Schmidt & Schütte, 2015). The clips covered typical daily care tasks such as washing (15%), dressing (10%), transferring (15%), using the toilet (4%), monitoring vital signs (24%), task-oriented communication (31%), and interpersonal communication (1%). The broad range of care activities indicates that we were able to capture the full heterogeneity of care interactions by including the morning and evening care.

Rating Procedure

Sessions were conducted from May to June 2018 in the morning or the afternoon. Raters underwent three 1-hr rating sessions on different days in order to reduce cognitive fatigue, which emerged as manageable from previous research (Williams et al., 2012). Sessions took place in a quiet room in groups of one or two raters. In the first session, raters were familiarized with the material and rating procedure in one test trial. Raters were instructed to carefully listen to audio-recorded clips of care interactions and to evaluate the tone of nurses' voice for each adjective.

Setting (general vs. geriatric hospital) and cognitive group (CU vs. CI) were counterbalanced across sessions. Within each session, the standardized set of 30–32 clips was randomly presented using OpenSesame (Version 3.2.4; Mathôt et al., 2012). Raters could listen

to each clip for a second time. This option was used in 0%–15% of cases. Raters were informed about the progress at intervals of five clips to keep motivation high. After half of the trials, there was a break of 5 min to minimize cognitive fatigue.

Data Analysis

The main analyses were conducted using IBM SPSS version 24. Emotional tone (im)balance was quantified for each clip by dividing the mean ratings of the person-centered scale by those of the control-centered scale (1 = *balance*, < 1 = *tendency toward a controlling tone of voice*, > 1 = *tendency toward a person-centered tone of voice*). Further analyses were conducted by ratios because this transformation led to normally distributed data and a reduced number of variables.

In order to detect group differences at a medium effect size level (d = 0.50, α = .05; power = .80), a number of at least 50 care interactions with n = 25 CU and n = 25 CI patients per hospital setting were predetermined by an a priori G*Power analysis (Faul et al., 2007). The effects of cognitive group and setting on emotional tone (im)balance were evaluated using a two-factorial analysis of variance. Additionally, an analysis of covariance (ANCOVA) was conducted with patients' functional status as a covariate. For F tests, partial eta squared (η_p^2) was considered as an effect size indicator (.01: small effect; .06: medium effect; and .14: large effect; Cohen, 1988). For pairwise comparisons of parametric and nonparametric data, t tests and Mann–Whitney U tests as well as their respective effect size indicators Cohen's d (0.20: small effect; 0.50: medium effect; and 0.80: large effect) and Pearson r (.10: small effect; .30: medium effect; and .50: large effect) were computed (Cohen, 1992).

For analyzing the role of different blocks of predictors (block 1: cognitive group and acute hospital setting; block 2: patients' functional status; and block 3: nurses' self-rated psychogeriatric knowledge), a hierarchical regression analysis was performed. Given our relatively small sample size, only those variables were included in the model that were assumed to play a dominant role based on the theoretical framework. A significance level of $p < .05$ was set throughout.

Results

Sample Description

Tables 4.1 and 4.2 display the sample characteristics of patients and nurses. For most of the variables, comparisons of patients' data between the general versus the geriatric hospital setting yielded no group differences. Importantly, patients in the geriatric hospital setting showed a significantly lower functional status in general (CU: M = 61.00, SD = 23.38; CI: M =

40.21, *SD* = 23.84) when compared to those of the general hospital (CU: *M* = 86.20, *SD* = 17.16; CI: *M* = 52.50, *SD* = 26.94). Higher functional impairment was also associated with a significantly longer hospital stay (see Table 4.1). As evident from Table 4.2, 50% of the nurses had specific geriatric training.

Effect of Cognitive Impairment and Setting on Emotional Tone

As can be seen in Figures 4.1a and b, mean ratings for person-centered tones of voice were consistently higher when compared to controlling tones. In the majority of cases (78%), emotional tone ratios indicated a strong tendency toward person-centered tones (see Figure 4.1c). In 15% of cases, ratios pointed toward controlling tones. A balanced emotional tone only appeared in 7% of cases. Ratios did not significantly differ between the morning and the evening care, $t(90) = -0.14$, $p > .005$.

The ANOVA revealed a significant main effect of cognitive group, $F(1,88) = 7.10$, $p = .009$, $\eta_p^2 = .075$, and setting, $F(1,88) = 5.39$, $p = .023$, $\eta_p^2 = .058$, on emotional tone (im)balance. Ratios pointed to a stronger tendency toward person-centered tones in CU (*M* = 1.82) compared to CI patients (*M* = 1.48). Post hoc Mann–Whitney *U* tests showed a significant group difference for the control-centered (*U* = 719.000, *p* = .008, *r* = .28), but not for the person-centered subscale (*U* = 838.500, *p* = .086).

With respect to hospital setting, a strong use of person-centered tones was observed in the geriatric hospital (*M* = 1.50), albeit with a lower level when compared to the general hospital setting (*M* = 1.79). Post hoc Mann–Whitney *U* tests showed a significant group difference for the control-centered (*U* = 792.500, *p* = .038, *r* = .22), but not for the person-centered subscale (*U* = 828.500, *p* = .074). Furthermore, we found a lower imbalance in emotional tone between CI and CU patients in the geriatric hospital, $t(34) = 1.01$, $p = .283$, which was only significant in the general hospital, $t(45) = 2.72$, $p = .009$, $d = 0.80$.

Further ANCOVA analyses controlling for differences in functional status revealed a significant main effect of this variable on emotional tone (im)balance, $F(1,87) = 11.19$, $p = .001$, $\eta_p^2 = .114$. Indeed, the main effects of cognitive group and setting were no longer significant ($p = .502$ and .332, respectively).

Table 4.1
Patients' Characteristics of the General Versus the Geriatric Acute Hospital Setting

Variable	General acute hospital					Geriatric acute hospital					
	n	*M*	*SD*	%	Range	*n*	*M*	*SD*	%	Range	*p*
Age (years)	47	82.6	5.6	—	66–93	45	84.3	6.5	—	71–96	.173
Female/male	47	—	—	43/57	—	45	—	—	71/29	—	.006
Cognitive status (6CIT error scores; 0-28)[a]	45	10.0	7.5	—	0–25	38	11.7	9.5	—	0–28	.341
Cognitive group (CI/CU)[b]	47	—	—	47/53	—	45	—	—	53/47	—	.532
Normal/specialized care unit	—	—	—	—	—	45	—	—	84/16	—	—
Length of hospital stay (days)	47	10.5	4.5	—	3–23	45	17.2	5.9	—	6–38	**<.001**
Admission to examination (days)	47	5.2	3.5	—	0–17	45	8.4	6.4	—	0–24	.004
Lower/intermediate/upper secondary school	39	—	—	82/5/13	—	31	—	—	55/29/16	—	.016
German/non-German mother tongue	46	—	—	98/2	—	44	—	—	98/2	—	.975
Married/divorced/widowed/unmarried	31	—	—	52/0/35/13	—	36	—	—	42/3/44/11	—	.661
Private/nursing/retirement/residential home	47	—	—	94/4/0/2	—	41	—	—	81/7/3/9	—	.242

(Continued)

Table 4.1
Patients' Characteristics of the General Versus the Geriatric Acute Hospital Setting (Continued)

Variable	General acute hospital					Geriatric acute hospital					
	n	*M*	*SD*	%	Range	*n*	*M*	*SD*	%	Range	*p*
Functional status (Barthel Index; 0-100)[c]	47	70.4	27.8	—	0–100	45	49.9	25.6	—	10–100	**<.001**
Communication behavior (CODEM; 0-5)[d]	46	4.0	1.1	—	1.4–5.0	38	3.8	1.3	—	0.3–5.0	.509
Subjective health (1-5)[e]	44	2.8	0.9	—	1–5	37	3.1	0.9	—	1–5	.106
Subjective hearing (1-5)[f]	43	2.7	0.8	—	1–4	35	2.7	1.2	—	1–5	.900
Satisfaction with hospital care (1-5)[g]	42	1.8	0.7	—	1–3	37	2.1	0.8	—	1–4	.137
Perceived age discrimination (yes/no)[h]	41	—	—	0/100	—	37	—	—	5/95	—	.132

Note. The sample size varies depending on the data source, with the smallest numbers for self-reported data due to refused interviews, transfer to medical intervention, or severe cognitive impairment. *p* values for interval-scaled variables from *t* tests and for dichotomous variables from χ^2-tests; *p* values were adjusted using the Bonferroni-Holm correction for multiple univariate comparisons; significant *p* values are in boldface.
[a]6CIT = 6-Item Cognitive Impairment Test (Hessler et al., 2017); lower error scores indicate better cognitive performance.
[b]CI = severely cognitively impaired patients (6CIT > 10); CU = cognitively unimpaired patients (6CIT ≤ 10).
[c]Functional status was operationalized as the sum score of the Barthel Index (Mahoney & Barthel, 1965); higher values indicate better performance.
[d]Communication behavior was operationalized as the CODEM total mean score (Kuemmel et al., 2014); higher values indicate a higher extent of communication behavior.
[e-g]Subjective health, hearing capacity, and satisfaction with hospital care (Keller et al., 2014) were operationalized by single items ranging from 1 (*very good*) to 5 (*very poor*).
[h]Perceived age discrimination was assessed by use of a dichotomous single item (modified from Hudelson et al., 2010).

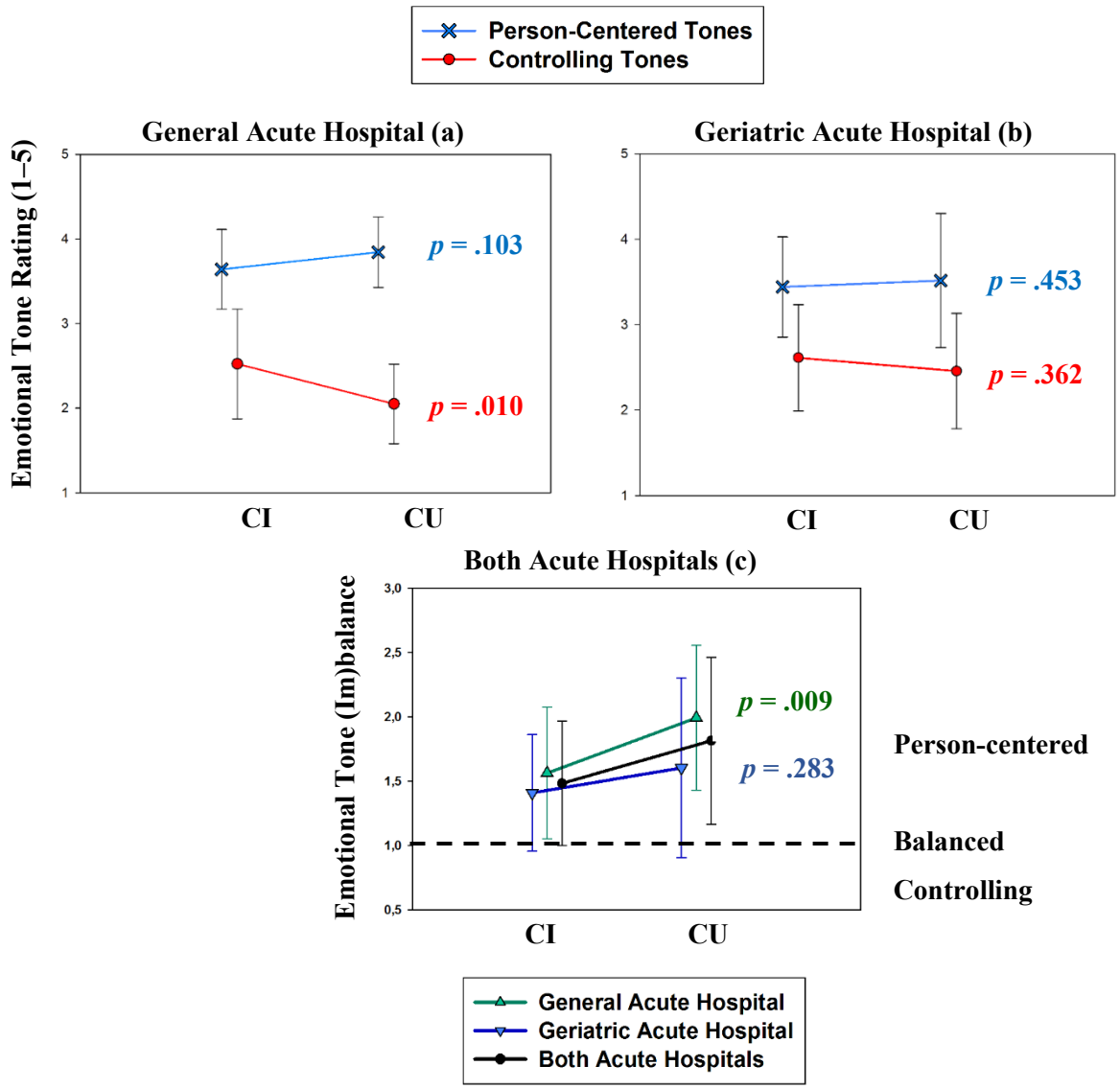
Table 4.2
Nurses' Characteristics of the General Versus the Geriatric Acute Hospital Setting

Variable	General acute hospital					Geriatric acute hospital					
	n	*M*	*SD*	%	Range	*n*	*M*	*SD*	%	Range	*p*
Age (years)	16	39.3	13.4	–	22–59	14	38.6	11.5	—	26–59	.883
Female/male	18	—	—	78/22	—	16	—	—	81/19	—	.803
German/non-German mother tongue	18	—	—	67/33	—	15	—	—	53/47	—	.435
Lower/intermediate/qualification for applied upper secondary studies/upper secondary school	17	—	—	0/47/29/24	—	15	—	—	7/40/20/33	—	.620
Registered nurse/geriatric-trained nurse	17	—	—	100/0	—	15	—	—	47/53	—	**.001**
Experience as a nurse (<5/5-10/11-15/>15 years)	17	—	—	24/23/0/53	—	15	—	—	27/40/7/26	—	.360
Experience in the current ward (years)	16	9.1	8.9	—	1–27	15	5.9	9.2	—	0–25	.334
Further education on dementia/geriatric care (no/yes)	15	—	—	67/33	—	12	—	—	33/67	—	.085
Self-rated psychogeriatric knowledge (1-5)[a]	17	3.4	0.8	—	2–5	15	4.1	0.8	—	3–5	.016
Participants' reactivity (1-5)[b]	17	1.8	0.6	—	1.0–2.8	16	1.7	0.7	—	1.0–3.3	.759

Note. The sample size varies due to refused interviews ($n = 2$) or omitted items. *p* values for interval-scaled variables from *t* tests and for dichotomous variables from χ^2-tests; *p* values were adjusted using the Bonferroni-Holm correction for multiple univariate comparisons; significant *p* values are in boldface.
[a]Self-rated psychogeriatric knowledge (Tropea et al., 2017); possible range: 1 (*very low*) to 5 (*very high*).
[b]Participants' reactivity was examined by use of a modified version of the iEAR evaluation questionnaire of Mehl and Carey (2014) consisting of six items rated on a 5-point Likert scale (1 = *not at all* and 5 = *a great deal*); higher mean values represent a higher tendency toward participants' reactivity.

Figure 4.1

Mean Differences in Emotional Tone Ratings



Note. Mean differences in emotional tone ratings between (a) the general and (b) the geriatric acute hospital setting. Mean emotional tone ratings for the person-centered (blue line/crosses) and the control-centered subscale (red line/circles) ranging from 1 (*not at all*) to 5 (*very*). (c) Mean emotional tone (im)balance (ratios) for the general (green line; triangle up) and the geriatric acute hospital (blue line; triangle down) as well as for both (black line, circles).

1 = *balance*, <1 = *tendency toward a controlling tone of voice*, >1 = *tendency toward a person-centered tone of voice*. Standard deviations are represented by error bars; *p* values for differences between severely cognitively impaired (CI) patients ($n = 46$) and cognitively unimpaired (CU) patients ($n = 46$).

The Role of Older Target Person's Characteristics and Perceiver's Self-system

Bivariate correlations on emotional tone (im)balance, older target person's characteristics, and perceiver's self-system are displayed in Table 4.3. Again, patients' functional status emerged as an important variable showing the highest correlation with the emotional tone ratio (r = .48). Hence, rather person-centered than controlling tones were used in patients with better functional status. Correlations for cognitive status and communication behavior showed moderate effect sizes. For nurses, we found a moderately high correlation between the evaluation of patients' cognitive status and the emotional tone ratio (r = −.38), but no significant association for the other variables.

As findings of the regression analysis show (see Table 4.4), cognitive group and setting explained a significant proportion of variance in emotional tone (im)balance (Adjusted R^2 = .12, p = .002). Functional status additionally significantly increased the amount of explained variance by 9%. As suggested by ANCOVA results, the factors cognitive group (β = −.07, p = .526) and setting (β = −.13, p = .231) lost significance with the consideration of functional status. Psychogeriatric knowledge accounted for a significant increase of 6% additional variance. Functional status emerged as a strong predictor of emotional tone (im)balance remaining significant after psychogeriatric knowledge was added in Model 3 (β = .36, p = .003). Altogether, the predictors accounted for 25% of the variance in emotional tone (im)balance, which can be considered a moderate effect (Ferguson, 2009).

Table 4.3
Bivariate Correlations Between Emotional Tone (Im)balance, Older Target Person's Characteristics, and Perceiver's Self-System

Variable	*M*	*SD*	1	2	3	4	5	6	7	8
1. Emotional tone ratio[a]	1.65	.59	—							
2. Patients' cognitive status[b]	10.75	8.44	–.29*	—						
3. Patients' functional status[c]	60.39	28.54	.48***	−.56***	—					
4. Patients' communication behavior[d]	3.93	1.21	.32**	−.82***	.64***	—				
5. Nurses' evaluation of cognitive status[e]	1.91	.94	−.38***	.64***	−.68***	−.65***	—			
6. Nurses' perceived stress[f]	2.28	2.65	−.20	.21	−.30**	−.28*	.20	—		
7. Nurses' psychogeriatric knowledge[g]	3.73	.89	.16	−.19	−.05	.04	−.03	−.12	—	
8. Nurses' chronological age	38.93	12.30	−.03	−.15	.11	.13	−.16	−.08	.19	—

Note. n varies between 81 and 92 due to missing data.
[a]A higher ratio indicates a stronger tendency toward a person-centered tone of voice.
[b]Lower error scores indicate a better cognitive performance.
[c-d]Higher values indicate a better functional status as well as a higher extent of communication behavior.
[e]Nurses' evaluation of patients' cognitive status; possible range: 1 (*no cognitive impairment*) to 4 (*severe cognitive impairment*).
[f]Nurses' perceived stress level during the care interaction; possible range: 0 (*not at all*) to 10 (*extremely*).
[g]Self-rated psychogeriatric knowledge; possible range: 1 (*very low*) to 5 (*very high*).
* p <.05. ** p < .01. *** p < .001.

Table 4.4
Predicting Emotional Tone (Im)balance: Findings of the Hierarchical Regression Analysis

Block	Predictor	Emotional tone (im)balance		
		Model 1	Model 2	Model 3
		β	β	β
1	Cognitive group[a]	–.24*	–.07	–.03
	Acute hospital setting[b]	–.26*	–.13	–.25*
2	Older target person's characteristics: Functional status[c]		.38**	.36**
3	Perceiver's self-system: Psychogeriatric knowledge[d]			.28*
ΔR^2		.14**	.09**	.06*
Adjusted R^2		.12	.20	.25
F		6.63**	8.10***	8.23***

Note. $n = 86$; Method = Enter.
[a]The assignment to the cognitive group was based on the 10/11 cutoff of the 6-Item Cognitive Impairment Test (Hessler et al., 2017).
[b]Acute hospital setting: General acute hospital versus geriatric acute hospital.
[c]A higher sum score of the Barthel index indicates a better functional performance (Mahoney & Barthel, 1965).
[d]Self-rated psychogeriatric knowledge (Tropea et al., 2017); possible range: 1 (*very low*) to 5 (*very high*).
*$p < .05$. **$p < .01$. ***$p < .001$.

Discussion

To the best of our knowledge, this is the first study investigating differences in emotional tone in the complex acute hospital setting under relatively controlled conditions. Our results partly supported Hypothesis 1 in showing more controlling tones of nurses' voice in CI compared to CU patients across both settings, but comparable levels of person-centered tones. According to the model of Hummert (1994b), the increased use of controlling tones in CI patients underpins the fact that negative age stereotyping is more likely in older individuals who trigger cues of functional and mental impairment. Earlier research also revealed a higher use of elderspeak in severely impaired and despondent older adults compared to so-called *golden agers*, who represent more positive age stereotypes (Hummert et al., 1998). However, our data generally revealed a higher amount of person-centered compared to controlling tones. Although similar findings have been reported in previous research (Williams et al., 2012), results have been differently interpreted as demonstrating an overuse of controlling tones. Nevertheless, substantial positive correlations with challenging behavior at the cross-sectional level suggest that even low levels of controlling tones could have negative effects on older adults (Williams & Herman, 2011).

Surprisingly, a comparison between hospital settings revealed more controlling tones in the geriatric compared to the general hospital, which might be explained by patients' overall low functional status. Thus, it can be assumed that general functional impairment overwhelms the impact of other factors. Indeed, effects for cognitive group and setting did not remain significant when controlling for functional status. In other words, functional impairment seems to be a stronger determinant of controlling tones when compared to cognitive impairment or setting. This finding might be explained by two primary reasons.

The first explanation refers to an increased salience of functional cues. As functional impairment frequently occurs in vulnerable older adults (Fried et al., 2004; Pedone et al., 2005), it may become a salient feature of geriatric patients. Furthermore, functional status represents a key component of geriatric assessments (Fried et al., 2004), which may have raised nurses' awareness of respective impairments. The dominating role of functional impairment is also supported by the dependency–support script showing a linkage between dependent behaviors of older adults and caregivers' supportive behavior (Baltes & Wahl, 1992).

Second, controlling tones may provide information on nurses' transient emotions and mental efforts (Frank et al., 2015). To be more precise, controlling tones might reflect a means

to cope with task-oriented demands (Hummert & Ryan, 1996), which are higher in functionally impaired patients.

In line with our second Hypothesis, overall poor functional status was associated with comparable levels of person-centered and controlling tones for both CU and CI patients in the geriatric, but not in the general hospital. This finding again underpins that functional impairment deserves particular attention in terms of negative stereotype activation.

It is important to note that self-rated psychogeriatric knowledge significantly increased the amount of variance in emotional tone (im)balance over and above functional status. This underpins the importance of psychogeriatric education to overcome negative attitudes toward functionally impaired patients. In fact, previous research has shown consistent associations between nurses' knowledge related to aging and positive attitudes toward older adults (Liu et al., 2013).

Implications

A central finding of this study was that controlling tone was higher toward vulnerable older patients with a lower functional status. Future research should explore critical thresholds of controlling tone and their impact on the mental health of older adults. We also advocate for using new emerging approaches such as comprehensive path models allowing for sophisticated statistical modeling of the whole communication process and its contributing factors (Bänziger et al., 2015). Such models may also help to disentangle the differential role of antecedents of controlling tone.

This study also comes with important practical and organizational implications. Considering the probably positively selected wards in the current study, it can be assumed that controlling tone toward older patients is a frequent occurrence in acute hospitals. Reducing controlling tone through education and training might not only have positive impact on older patients (Williams, 2006); it also may have beneficial effects for nurses by reducing challenging behavior, which is considered one of the most distressing events in acute hospitals (Hessler et al., 2018). First interventional studies indicate that it might be possible to reduce controlling tones of nursing home staff for a short time (Williams et al., 2003; Williams, 2006). Future studies should extend these findings by considering potential barriers and facilitators of implementation in the acute hospital setting (Tropea et al., 2017). A key practical component may be the exposure of hospital staff to their own audio-recordings. This may help to become more conscious of the negative effects of controlling tones, which are likely to be produced at an implicit level (Frank et al., 2015).

The theoretical part should inform about the role of age stereotypes, barriers of communication, characteristics of elderspeak as well as more efficient communication strategies including person-centered approaches.

Limitations

Some limitations have to be mentioned that might affect the interpretation of our results. First, nurses' awareness of being audio-recorded might have influenced their natural behavior. However, interview data referring to this issue pointed to minor effects of participants' reactivity.

Second, repeated measurements of some nurses might have caused dependencies in the data. Because such a design is typical for this research area (Williams et al., 2012) and there was a large heterogeneity of patients and care situations, we regarded the 92 care interactions as sufficient and largely independent from each other.

Third, the sample of raters was small and probably positively selected. However, although raters in previous studies (Williams, 2006; Williams et al., 2012) were clearly younger compared to our sample, findings were highly comparable.

Finally, the analysis of nurses' emotional tone was not based on objectively measured acoustic features such as exaggerated intonation and high pitch, which have been identified as nonverbal correlates of highly controlling communication (Hummert & Ryan, 1996). Although ratings of voice qualities may reflect subjective impressions from naïve listeners, the high inter-rater reliability demonstrated that distinct qualities of emotional tone can be similarly decoded from the voice.

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Compliance with Ethical Guidelines

Conflict of Interest

The authors declare that they have no conflict of interest.

Ethical Approval

All procedures performed in the study were in accordance with the ethical standards of the ethical board of the Faculty of Behavioral and Cultural Studies at Heidelberg University and with the 1964 Helsinki declaration and its later amendments or comparable ethical standards.

Informed Consent

Informed consent was obtained from all individual participants included in the study.

Chapter 5

3rd Publication

Elderspeak in Acute Hospitals?
The Role of Context, Cognitive, and Functional Impairment

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[9] Only formal changes have been made to adapt the accepted manuscript to the latest APA Style of the Publication Manual of the American Psychological Association (2020).

Abstract

Older adults are often exposed to elderspeak, a specialized speech register linked with negative outcomes. However, previous research has mainly been conducted in nursing homes without considering multiple contextual conditions. Based on a novel contextually-driven framework, we examined elderspeak in an acute general versus geriatric German hospital setting. Individual-level information such as cognitive impairment (CI) and audio-recorded data from care interactions between 105 older patients (M = 83.2 years; 49% with severe CI) and 34 registered nurses (M = 38.9 years) were assessed. Psycholinguistic analyses were based on manual coding (κ = .85–.97) and computer-assisted procedures. First, diminutives (61%), collective pronouns (70%), and tag questions (97%) were detected. Second, patients' functional impairment emerged as an important factor for elderspeak. Our study suggests that functional impairment may be a more salient trigger of stereotype activation than CI and that elderspeak deserves more attention in acute hospital settings.

Keywords: elderspeak, contextual framework, age stereotypes, functional status, cognitive impairment, acute hospital

Introduction

Acutely ill older patients represent a substantial and steadily increasing subgroup of the hospital population in many countries (Mukadam & Sampson, 2011). In Germany, around 45% of inpatients were estimated to be aged 65 years or older of whom 40% had comorbid cognitive impairment (CI; Bickel et al., 2018). Systematic reviews have shown that CI significantly increases the length of hospital stay in older inpatients and the risk of adverse outcomes such as functional decline (Möllers, Stocker, et al., 2019; Mukadam & Sampson, 2011).

In this context, elderspeak has been considered as a crucial factor contributing to neuropsychiatric symptoms (NPS) such as aggression (Herman & Williams, 2009) and finally to poorer treatment outcomes in older inpatients with CI (George et al., 2013). Elderspeak describes a specialized speech register that occurs in intergenerational interactions. Typical markers are the inappropriate use of diminutives, collective pronouns, and tag questions as well as exaggerated prosody, reduced fluency, lower grammatical complexity, and simplified vocabulary (Kemper, 1994; Samuelsson et al., 2013; Schroyen et al., 2018). Despite its potential relevance in the acute hospital setting, the bulk of previous research on elderspeak has been conducted in nursing home settings (Kemper, 1994; Williams, 2006; Williams et al., 2009). In general, only a few studies have dealt with this issue in German populations (Sachweh, 1998).

The current study addresses these gaps by examining elderspeak in two German acute hospital settings. We also strive to add more complexity to previous elderspeak literature by considering different types of elderspeak outcomes and their contextual embeddedness.

Previous Research on Elderspeak

Elderspeak can be seen as a substantial part of views on aging (VoA) research including work on age stereotypes (Kornadt & Rothermund, 2011) as well as ageism research (Chang et al., 2020; Gendron et al., 2016; Schroyen et al., 2018; Voss, Bodner, et al., 2018). A robust finding is that more negative VoA are significantly linked with undesired developmental outcomes such as impaired functional health, lower well-being, and higher mortality (Westerhof et al., 2014). Elderspeak research adds an important facet to VoA work because it concentrates on naturally occurring behavior and offers a high degree of ecological validity (Chang et al., 2020; Samuelsson et al., 2013).

Research from a variety of settings has demonstrated that older adults are often recipients of elderspeak (Kemper, 1994; Kemper, Finter-Urczyk, et al., 1998; Sachweh, 1998; Samuelsson et al., 2013; Williams et al., 2009). Although elderspeak is mostly seen as a negative speech register, ambiguous findings exist on the consequences of some components

of elderspeak (Kemper & Harden, 1999; Lowery, 2013; Schroyen et al., 2018). Importantly, elderspeak should not be confused with the concept of comfort talk, which includes techniques of rapid rapport, patient-centered communication styles, and hypnotic language to reduce patients' stress, anxiety, and pain (Lang, 2012). Whereas there is robust evidence on the effectiveness of comfort talk (Lang, 2012), results on the effects of elderspeak are more mixed. Therefore, we differentiate between (a) likely harmful and (b) hybrid features of elderspeak incorporating beneficial *and* harmful aspects depending on contextual characteristics.

In terms of *likely harmful features* of elderspeak, tag questions, diminutives, and collective pronoun substitution deserve particular attention. First, tag questions such as "right?" (German example: "gell?") have been described as rhetorical questions to politely push older adults' answers and behaviors in a desired direction (Herman & Williams, 2009; Kemper, 1994; Williams, Shaw, et al., 2017). Hence, tag questions undermine meaningful conversations and self-determined behaviors of older adults. Second, diminutives refer to the use of intimate forms of address such as first names, nicknames, and terms of endearment as well as oversimplified words and exaggerated praise (Sachweh, 1998; Williams, Shaw, et al., 2017). Diminutives were judged as inappropriate because they suggest an intimate relationship such as between children and parents (Edwards & Noller, 1993; Williams, 2006). Furthermore, diminutives may reinforce power differentials between patients and healthcare professionals inherent in institutional settings (Ryan et al., 2008; Williams, Shaw, et al., 2017). Third, collective pronoun substitutions (CPS) characterize nurses' use of plural ("we"/"our") instead of singular pronouns ("you"/your") during care activities, which are either performed by the patient or the nurse alone, but not together (Sachweh, 1998; Williams, Shaw, et al., 2017). In line with research on overprotective behaviors toward older adults (Baltes & Wahl, 1992; Ryan et al., 2006) and work on elderspeak (Williams, 2006; Williams, Shaw, et al., 2017), CPS can be considered as patronizing because the autonomy of an older person is ignored.

With respect to *hybrid features* of elderspeak, simple vocabulary as well as a reduced fluency in terms of a slower speech rate, a reduced sentence length, and more sentence fragments were observed in interactions with older adults when compared to younger adults (Kemper, 1994; Kemper & Harden, 1999; Kemper et al., 1996). Some studies found improvements in sentence comprehension and better recall of medical instructions (Kemper, Vandeputte, et al., 1995; McGuire et al., 2000), but it was nevertheless judged as patronizing by older adults (Gould et al., 2002). Other work even reported an increase in communication problems (Kemper, 1994; Kemper et al., 1996). Finally, reduced grammatical complexity can

be seen as a likely beneficial feature of elderspeak that improved older adults' communication performance (Kemper & Harden, 1999; Kemper et al., 1996).

A Contextual Approach to Elderspeak

Elderspeak has mostly been embedded into the communication predicament of aging model (CPA; Ryan et al., 1995). The CPA model assumes an adverse feedback loop based on negative age stereotypes. It puts strong emphasis on disability-related cues of elderspeak receivers at the proximal level such as cognitive and functional deficits. The age stereotypes in interactions model (ASI; Hummert, 1994b) extended the CPA model by addressing contextual characteristics at the distal level, for example, non-institutional versus institutional environments as well as perceiver's characteristics such as VoA. Nevertheless, the integrative consideration of multiple contextual conditions at the proximal and distal level has remained limited in previous conceptualizations of elderspeak.

To address this gap, we refer to the conceptual framework for context dynamics in aging (CODA; Wahl & Gerstorf, 2018) that is strongly driven by the seminal work of Bronfenbrenner (1999). As an overarching model, CODA differentiates between proximal and distal contexts of five life domains (socio-economic, social, physical, care/service, and technology). The present paper addresses the social and care/service dimensions by integrating them into established models of elderspeak (see Figure 5.1).

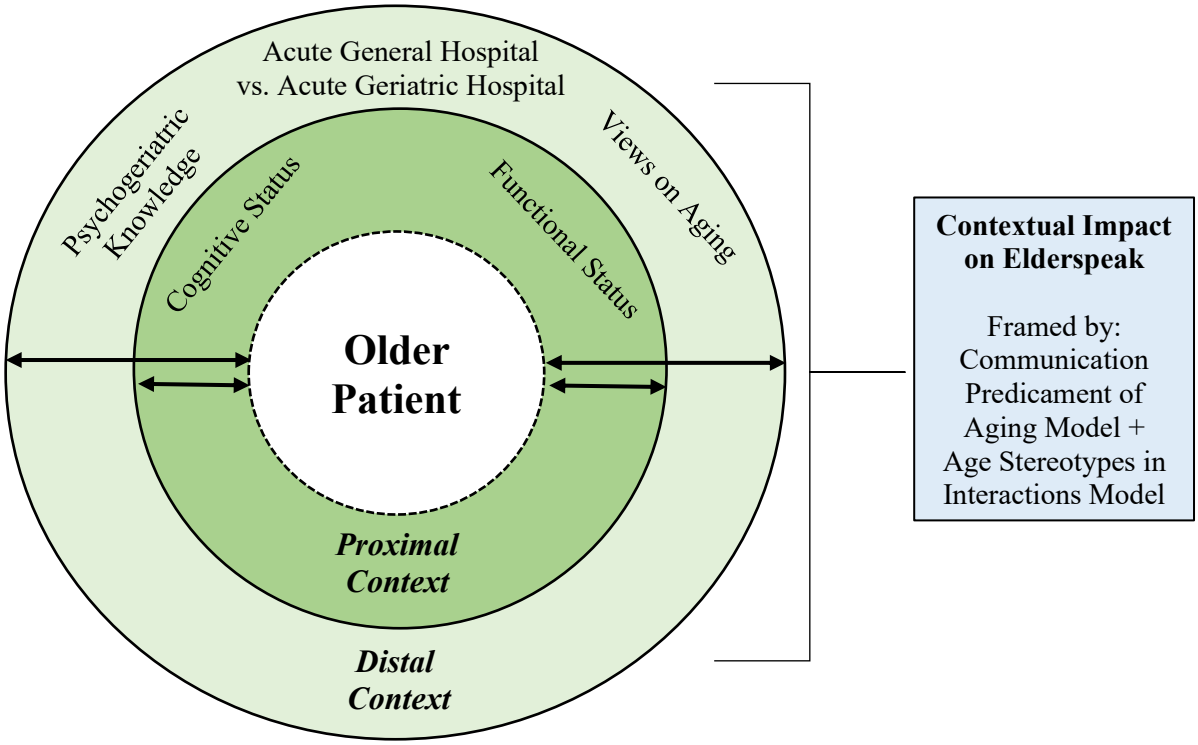
At the proximal contextual level, we concentrate on everyday care interactions between older patients and nurses in acute hospitals (see Figure 5.1, inner circle). We consider patients' cognitive and functional status as two central individual-level variables by which immediate care conditions may be shaped. First, studies indicated that cognitively impaired older adults are more exposed to likely harmful features of elderspeak when compared to cognitively unimpaired older adults (Kemper, 1994; Williams, 2006; Williams et al., 2009). However, inconsistent findings have been reported for most of the hybrid features of elderspeak (Kemper, 1994; Kemper, Finter-Urczyk, et al., 1998; Williams, 2006). Second, the role of functional impairment as a risk factor of elderspeak has only been considered by a few studies (Caporael & Culbertson, 1986; Lombardi et al., 2014; Sachweh, 1998), although nursing home residents typically require help in basic activities of daily living (ADLs). In our previous study, functional impairment turned out as even more important for explaining likely harmful controlling tones of nurses' voice toward older patients in the acute hospital setting when compared to CI (Schnabel, Wahl, Schönstein, et al., 2020).

Given previous research on the role of care settings (Baltes & Wahl, 1992), it can be expected that distal contextual factors such as different acute hospital environments, nurses'

psychogeriatric knowledge (Schnabel, Wahl, Schönstein, et al., 2020), and VoA (Schroyen et al., 2018) are also important predictors of elderspeak but produce lower effect sizes when compared to proximal contextual factors. We are to the best of our knowledge the first differentiating between an acute general versus acute geriatric hospital environment (see Figure 5.1, outer circle).

Figure 5.1

Extended Conceptual Framework of Elderspeak Communication Integrating Parts of the Context Dynamics in Aging Model (CODA; Wahl & Gerstorf, 2018) into the Age Stereotypes in Interactions Model (ASI; Hummert, 1994b), a Modified Version of the Communication Predicament of Aging Model (CPA; Ryan et al., 1995)



Note. Proximal contextual factors directly shaping the patient-nurse interaction are illustrated in the inner circle (dark green color). Distal contextual factors in terms of different acute hospital settings and individual-level variables of nurses are displayed in the outer circle (light green color).

Acute general hospital settings in Germany provide standard care for younger and older patients. Typically, length of stay is limited to a few days (Schnabel, Wahl, Schönstein, et al., 2020). In contrast, *acute geriatric hospital settings* employ hospital staff who received psychogeriatric training and provide specialized treatment for vulnerable older patients with CI and NPS (Schnabel, Wahl, Schönstein, et al., 2020; Zieschang et al., 2010). Patients of acute geriatric hospital settings usually have a longer length of stay compared to patients of acute general hospital settings due to severe cognitive and functional impairments and the need for early complex geriatric rehabilitation therapy (Kolb et al., 2014; Zieschang et al., 2010).

Objectives and Hypotheses

Our study aimed to examine to what extent nurses use likely harmful as well as hybrid features of elderspeak in the acute hospital setting. At the proximal level of contextual embeddedness of elderspeak, we consider the role of older patients' cognitive and functional status. We expect lower levels of cognitive and functional status to be significantly associated with a higher use of likely harmful as well as hybrid features of elderspeak (Hypothesis 1).

At the distal level of contextual embeddedness of elderspeak, we predict that acute hospital setting, nurses' psychogeriatric knowledge and age stereotypes account for significant amounts of explained variance in likely harmful as well as hybrid elderspeak features over and above proximal contextual variables (Hypothesis 2).

In accordance with the CODA model, we expect stronger effect sizes for proximal than distal contextual variables when predicting likely harmful as well as hybrid features of elderspeak (Hypothesis 3).

At the exploratory level, we also examine whether social-contextual features such as time of the day (morning vs. evening care) and interaction type (dyadic vs. triadic) play a role.

Research Design

Recruitment and Sample

Data collection took place in two academic acute hospitals (n = 114 and 105 beds, respectively) located in a medium-sized southwestern city in Germany. From September 2017 to March 2018, data were gathered within an acute general, internal medicine ward specialized in cardiology, angiology, and pulmonology (n = 36 beds; mean length of stay = 4.9 days) and an acute geriatric ward (n = 35 beds; mean length of stay = 16.5 days). The first author spent 2 months as an intern in both hospitals to analyze the daily routines and to reduce participant reactivity (Herman & Williams, 2009). For detailed information on the study design and recruitment, please see Schnabel, Wahl, Schönstein, et al. (2020).

All patients who were younger than 65 years, terminally ill, isolated, not sufficiently proficient in the German language, or planned for discharge were excluded from the study. According to our research design, patients with severe CI were planned to account for around 50% of the patient sample in both hospital settings. Patients were allocated to the CI group based on the 10/11 cutoff of the 6-Item Cognitive Impairment Test (6CIT; Hessler et al., 2017) showing the best sensitivity-specificity ratio (88% and 95%, respectively). Lower error scores indicate a better cognitive status (possible range: 0–28). A German validation study pointed to its higher sensitivity in the acute hospital setting when compared to medical records (Hessler et al., 2017). Medical records were only used in 10% of cases in which screenings were entirely not feasible due to CI (4/11 with diagnosed dementia).

Patients' functional impairment was rated by nurses using the Barthel Index (Mahoney & Barthel, 1965). Lower sum scores represent a higher degree of dependency in ADLs (possible range: 0–100). Patients' perceptions of age discrimination related to the care interaction as well as the hospital stay as a whole were examined by use of a dichotomous (yes/no) single item (modified from Hudelson et al., 2010).

All registered nurses were eligible for inclusion. Written informed consent was obtained from all participants or the legal representatives of CI patients as well as from all individuals in the audio-recorded rooms. Approximately 27% of the screened patients finally participated in the study leading to the precalculated sample size of 106 patients (49% with CI; for more details, see Schnabel, Wahl, Schönstein, et al., 2020). 34 registered nurses took part in the study.

Following the rule of Williams (2006), one patient was excluded because the interaction was shorter than 1 min. Sample characteristics are displayed in Supplementary Tables A1 and A2 in the Appendix. As can be seen in Supplementary Table A1, CI patients were characterized by stronger cognitive, functional, and communication impairments. Besides, patients of the acute geriatric hospital showed a significantly lower functional status, a slower speech rate as well as a longer hospital stay (see Supplementary Table A1). In general, our interview data pointed to low percentages of patients having experienced age discrimination during the care interaction (4%) or the hospital stay (2%). At the social-contextual level, interactions in the geriatric hospital more commonly took place in the bathroom. Furthermore, the number of other patients in the room was higher in the geriatric hospital, whereas the number of nursing aides was higher in the general hospital. As can be seen in Supplementary Table A2, nurses in the geriatric hospital reported better psychogeriatric knowledge of whom 50% were geriatric-trained nurses. The study was approved by the ethics commission of the Faculty of Behavioral

and Cultural Studies at Heidelberg University in July 2017 as well as by hospital staff leadership and staff councils.

General Procedure

Our approach was based on three data sources: (a) audio-recordings during the morning or evening care, (b) standardized interviews with the patients and nurses after the observed care interaction, and (c) patient data from the medical information system.

Audio-Recordings

The first author took the role of a non-participant observer to gain full control over the audio recording process. PCM digital audio recorders (48 kHz, 16 bits) placed in the patient rooms were immediately activated before the nurse entered the room and stopped as soon as the care was finished in the room. Mostly, there was one morning round in the geriatric hospital, whereas care in the general hospital was divided into two morning rounds. The first round (7.00–8.00 am) served to manage the most essential care tasks such as monitoring vital signs. The second round (9.00–11.00 am) comprised the assistance in ADLs. When possible, both morning rounds were recorded to increase the comparability between both hospital settings. There was only one assessment day for each patient being observed during a maximum of two care encounters (i.e., morning rounds). The majority of nurses were measured on more than 1 day during multiple care encounters (24% once, 47% 2–4 times, 29% 5–6 times).

Standardized Interviews

Patients were interviewed by trained students to examine sociodemographic, health- and hospital-related variables (see Supplementary Table A1). Interviewers underwent a communication training conveying evidence-based strategies for interactions with CI patients (Harwood et al., 2012). Further, they were instructed to code doubtful answers as missing. Standardized interviews with nurses were conducted by the first author and focused on nurses' sociodemographic and professional background, the number of previous care interactions with the patient, and nurses' perceptions of changes in their own behavior because of being observed (see Supplementary Tables A1 and A2). Nurses' evaluative age stereotypes in the life domains friends, leisure, lifestyle, and health were operationalized by 8-point bipolar items ranging from a negative to a positive pole (Kornadt & Rothermund, 2011). Values ≤ 4 indicate a tendency toward negative age stereotypes. The internal consistency of subscales was acceptable to good (Cronbach's α = .76–.83) in our study. However, the item "physical appearance" had to be removed from its subscale to increase internal consistency (Cronbach's α > .60). The assessment of nurses' psychogeriatric knowledge was based on a self-rated single item ranging from 1 (*very low*) to 5 (*very high*; Tropea et al., 2016).

Data Preparation

Using the software Audacity (Version 2.1.3; https://www.audacityteam.org/), target speakers were identified by the first author. For example, audio-recorded utterances of other patients and nursing aides were qualified as "non-relevant." Speech pauses longer than 1 min as well as time slots where the nurse left the room or interacted with non-relevant individuals were subtracted from interaction times. Following these rules, we roughly divided care interactions (n = 105) into three categories: (a) 0–10 min (56%), (b) 11–20 min (28%), and (c) >20 min (16%). In the case of longer interaction times, the first 5 min (category b) or first 10 min (category c) were considered as habituation phases with a higher risk of participant reactivity (Williams, 2006; Williams et al., 2009) and excluded from further analyses. This procedure also allowed us to test for potential effects of participant reactivity by examining differences in the occurrence of elderspeak between category a (56%) and categories b/c (44%). Due to a higher number of utterances for categories b/c, relative frequencies were computed. The occurrence of elderspeak features did not significantly differ between categories (all Bonferroni-Holm corrected p values > .05).

In a second step, minimal transcripts were created by four trained students and the first author following the cGAT conventions (Schmidt et al., 2015, November). Using the FOLK EditoR (FOLKER; Schmidt, 2012), words were transcribed in modified orthography providing full information on typical features of spoken language. Conformance with the cGAT conventions was automatically checked by FOLKER. Additionally, the content of all transcripts was rechecked by the first author.

In a third step, transcripts were segmented into utterances, that is, maximal syntactic units based on recommendations suggested by Westpfahl et al. (2019, April). Four types of segments were annotated: (a) simple sentential units, (b) complex sentential units with dependent structures, (c) non-sentential units without a finite verb, and (d) abandoned units with a syntactically and/or pragmatically incomplete structure. We made two minor adjustments to align the German guideline with the English guideline used in previous studies (Kemper et al., 1989). Segmentation was performed by the first author and a linguistic expert. Interrater reliability was determined by the Eudico Linguistic ANotator tool (ELAN; www.lat-mpi.eu/tools/elan) based on 10% of the data that were independently processed. Segmentation agreement based on the chance-corrected Staccato algorithm (Lücking et al., 2012) was high with an average degree of organization of 87%. Cohen's κ ranged between κ = .77 and κ = .98 indicating a moderate to substantial annotator agreement (Shrout, 1998). Final inconsistencies were rechecked by the linguistic expert for all transcripts.

In a fourth step, nurses' utterances were manually coded for likely harmful features of elderspeak using the Extensible Markup Language for Discourse Annotation system (EXMARaLDA; Schmidt, 2012) and well-established operational definitions (Kemper, 1994; Sachweh, 1998; Williams, 2006; Williams, Shaw, et al., 2017). Coding was performed by two trained students who were blinded to the patients' cognitive group and the acute hospital setting. The first 10% of the material was independently coded resulting in a substantial agreement for all measures (Cohen's κ = .85–.97; Shrout, 1998).

Measures

Likely Harmful Features of Elderspeak

First, tag questions were coded, which typically occur in the right outer field of an imperative or declarative utterance characterized by a rising intonation (Kemper, 1994; Kemper, Vandeputte, et al., 1995; Westpfahl et al., 2019, April). With respect to diminutives, intimate forms of address (first names, nicknames, and terms of endearment) and baby-talk like terms (oversimplified terms, exaggerated praise, and diminutive suffixes) were differentiated. Finally, nurses' use of CPS was coded as inappropriate for activities, which were independently performed by the patient or the nurse. To avoid ambiguity in the case of plural pronouns referring to several involved nurses, only dyadic care interactions were analyzed (n = 76).

Hybrid Features of Elderspeak

Two general measures of fluency were extracted via FOLKER: (a) mean length of utterance in words per utterance and (b) speech rate in words per minute. As a more specific measure of fluency, sentence fragments were derived from non-sentential and abandoned units. As a semantic indicator of lexical diversity, type-token ratios (TTR), that is, the number of different word forms related to the total number of words were calculated using FOLKER. Grammatical complexity was operationalized by complex sentential units.

Data Analyses

Data analyses were performed using IBM SPSS version 25 (Armonk, NY, USA). Due to varying length of interactions (Kemper, 1994; Williams et al., 2009), relative frequencies were computed for descriptive and correlational analyses by dividing the absolute number of annotated features by the total number of nurses' utterances (M = 129.54, SD = 66.21, range = 25–346). The different types of diminutives were analyzed together given the low mean percentages of intimate forms of address (≤ 1%). For examining cross-domain associations between the psycholinguistic variables, Spearman's correlations were computed due to positively skewed distributions and outliers. Two extreme outliers (> 3 *SDs* above the mean) were excluded from further analyses because they may have biased test results (Osborne &

Overbay, 2004). A series of blockwise hierarchical regression analyses were conducted to predict elderspeak outcomes by groups of proximal and distal contextual variables. To reduce the number of variables, mean ratings of evaluative age stereotypes across different life domains were calculated. Squared semipartial correlations (sr^2) will be reported to indicate the unique contribution of a single predictor variable.

Results

Descriptive Findings

Descriptive information as well as bivariate correlations between the psycholinguistic variables are displayed in Supplementary Table A3. Overall, the mean relative frequencies of likely harmful elderspeak features were between 2% and 8%. We also analyzed the occurrence of at least one example within the whole care interaction. In the majority of interactions (97%), at least one tag question was used. CPS occurred at least once in 70% of the interactions. Baby-talk like terms were found in 57% and intimate forms of address in 16% of interactions.

Likely harmful features were not linked to each other (see Supplementary Table A3). Hybrid measures of fluency and syntax showed low to moderate correlations. Mean length of utterance was strongly associated with most of the other hybrid features and thus not considered as a dependent variable for further analyses. An increasing number of nurses' tokens was associated with a decreasing lexical diversity, which is known as a general phenomenon of TTR (Richards, 1987).

As expected, patients' cognitive and functional status were both significantly related to elderspeak features (see the upper half of Supplementary Table A4). A lower functional status was linked with a higher use of diminutives, a slower speech rate, a reduced grammatical complexity, and a lower lexical diversity, whereas a lower cognitive status was only associated with a reduced grammatical complexity and a lower lexical diversity. Patients' sociodemographic variables were unrelated to most of the elderspeak features.

Nurses' variables revealed limited associations with elderspeak features (see the lower half of Supplementary Table A4). CPS increased with the negativity of age stereotype ratings. Nurses' gender was associated with speech rate, sentence fragments, and complex units, whereas age did not matter at all. Nurses' mother tongue was highly correlated with their speech rate. The number of previous care interactions with the patient was only linked with sentence fragments.

Examining the Role of Proximal Context for Elderspeak

In order to sequentially examine the role of proximal contextual predictors at the multivariate level, seven hierarchical regression analyses were conducted for the three likely harmful and four hybrid elderspeak outcomes. The sample size varied in these analyses between n = 71 (CPS), n = 98 (diminutives, tag questions) and n = 99 (sentence fragments, complex units, TTR, speech rate) due to refused interviews of nurses (n = 2) or omitted items. Because sample sizes were relatively small, only theoretically meaningful predictor variables and significantly correlated control variables were included (see Supplementary Table A4). There was no indication of multicollinearity problems (all variance inflation factors < 2, $r \leq .50$).

In the first step, we considered gender as well as nurses' number of utterances as control variables because all regression analyses were consistently performed with the absolute numbers of elderspeak outcomes depending on the length of interactions. Due to substantial correlations between nurses' mother tongue and speech rate, we also controlled for this variable when predicting speech rate. In a second step, we entered patients' cognitive group and functional status as proximal contextual predictors of elderspeak.

As can be seen in Table 5.1, control variables already explained a considerable amount of variance in likely harmful features of elderspeak ranging between 17% and 50% of explained variance (Adjusted R^2). However, only nurses' number of utterances significantly contributed to the prediction of likely harmful features of elderspeak, whereas gender of patients and nurses did not. Proximal contextual factors significantly increased the amount of explained variance in only one of the three likely harmful features of elderspeak, that is, in diminutives (ΔR^2 = 11%). In particular, functional status played an important role for diminutives (p = .001, sr^2 = .10), whereas cognitive group did not (p = .615, sr^2 = .00).

With respect to hybrid features of elderspeak (see Tables 5.2 and 5.3), control variables accounted for high amounts of variance ranging between 43% and 91% of explained variance (Adjusted R^2). Being a male nurse was associated with a lower number of sentence fragments, a higher number of complex units, and a faster speech rate. Speaking a non-German mother tongue was significantly associated with a slower speech rate. Patients' gender was not significantly related to any of the hybrid features. Adding proximal factors significantly increased the amounts of variance in two of the four hybrid features of elderspeak, namely in complex units by 7% and in speech rate by 5%. Again, the additional amounts of variance in complex units and speech rate were fully explained by functional status (p = .035 and p = .005, respectively), albeit its contribution was relatively low for both complex units (sr^2 = .02) and speech rate (sr^2 = .04).

Examining the Role of Distal Context for Elderspeak

For examining the additional role of distal contextual variables as predictors of elderspeak over and above control variables and proximal contextual variables, acute hospital setting, psychogeriatric knowledge, and evaluative age stereotypes were entered in the third step of hierarchical regression analyses. Distal contextual factors accounted for significant increments in variance in one of the three likely harmful features of elderspeak (see Table 5.1), namely in tag questions (ΔR^2 = .04). In particular, negative age stereotypes significantly contributed to a higher use of tag questions (p = .037), albeit the uniquely explained variance was relatively low (sr^2 = .02). Negative age stereotypes were also significantly related to a higher number of CPS (p = .029; sr^2 = .05).

With respect to the four hybrid outcomes of elderspeak, distal contextual factors accounted only for significant amounts of variance in sentence fragments (see Tables 5.2 and 5.3). As evident from Table 5.2, better psychogeriatric knowledge was significantly related to a lower use of sentence fragments (p = .021). However, the uniquely explained variance of psychogeriatric knowledge was relatively low (sr^2 = .01).

Comparing the Magnitude of Effect of Proximal Versus Distal Context

For testing the magnitude of effect of proximal versus distal context, we compared the increments in variance of the second (inclusion of proximal variables) versus the third step (inclusion of distal variables) after having controlled for covariates in the first step.

In three of the seven variables, increments in variance were higher for proximal contextual variables when compared to distal contextual variables. First, proximal variables contributed to significant increments in variance in diminutives (ΔR^2 = .11, p = .001), whereas distal factors did not (ΔR^2 = .03, p = .244). Second, additional amounts of variances in complex units were explained by proximal variables (ΔR^2 = .07, p = .003), but not by distal variables (ΔR^2 = .03, p = .165). Third, substantial increments of variance were observed for proximal variables (ΔR^2 = .05, p = .007) but not for distal variables (ΔR^2 = .01, p = .680) when predicting speech rate.

In only two of the seven variables, that is, tag questions and sentence fragments, distal contextual factors predicted a significantly higher amount of variance. However, the proportion of explained variance was relatively low (ΔR^2 = .04, p = .042 and ΔR^2 = .01, p = .048, respectively). With respect to CPS and TTR, neither proximal nor distal factors played a substantial role in prediction (see Tables 5.1 and 5.2).

Table 5.1
Hierarchical Regression Analysis Predicting Likely Harmful Features of Elderspeak.

Predictors	Likely harmful features of elderspeak											
	Tag Questions				Diminutives				Collective Pronouns			
	$\beta_{step\ 1}$	$\beta_{step\ 2}$	$\beta_{step\ 3}$	sr^2	$\beta_{step\ 1}$	$\beta_{step\ 2}$	$\beta_{step\ 3}$	sr^2	$\beta_{step\ 1}$	$\beta_{step\ 2}$	$\beta_{step\ 3}$	sr^2
Step 1: Control variables												
Patients' gender[a]	−.03	−.03	−.08	.01	−.05	−.07	−.10	.01	−.02	.01	.05	.00
Nurses' gender[a]	.09	.08	.11	.01	−.13	−.09	−.07	.00	−.04	−.04	.05	.00
Nurses' number of utterances	.71***	.74***	.71***	.43	.41***	.32***	.31**	.08	.48***	.38***	.37***	.11
Step 2: Proximal variables												
Cognitive group[b]		−.14	−.15	.02		−.05	−.02	.00		.09	.09	.01
Functional status[c]		−.05	−.14	.01		−.37***	−.35**	.07		−.23	−.17	.02
Step 3: Distal variables												
Acute hospital setting[d]			.17	.02			.02	.00			−.19	.02
Psychogeriatric knowledge[e]			.04	.00			.17	.02			−.10	.01
Evaluative age stereotypes[f]			−.15*	.02			−.12	.01			−.23*	.05
ΔR^2	.52***	.01	.04*		.19***	.11***	.03		.23***	.07	.08	
Adjusted R^2 (total model)	.50	.51	.54		.17	.26	.27		.20	.25	.30	
F	33.88***	21.04***	15.00***		7.37***	7.84***	5.49***		6.83***	5.57***	4.75***	

Note. The sample size for diminutives and tag questions is 98 due to missing data; the sample size for collective pronouns is lower (n = 71) because these features were only analyzed for dyadic care interactions. All regression analyses were performed with the absolute numbers of elderspeak outcomes. Method = Enter.
sr^2 = squared semipartial correlations are reported for the third step of hierarchical regression analyses.
[a]0 = female, 1 = male. [b]0 = cognitively unimpaired, 1 = severely cognitively impaired.
[c]a higher sum score represents a better functional status (possible range: 0–100). [d]0 = acute geriatric hospital, 1 = acute general hospital.
[e]higher values indicate a better self-rated psychogeriatric knowledge (possible range: 1–5).
[f]higher mean values across different domains of age stereotype ratings indicate a tendency toward more positive age stereotypes (possible range: 1–8).
* p < .05. ** p < .01. *** p ≤ .001.

Table 5.2
Hierarchical Regression Analysis Predicting Hybrid Elderspeak Features

Predictors	Hybrid features of elderspeak											
	Sentence fragments				Complex units				Type-token ratio			
	$\beta_{step\ 1}$	$\beta_{step\ 2}$	$\beta_{step\ 3}$	sr^2	$\beta_{step\ 1}$	$\beta_{step\ 2}$	$\beta_{step\ 3}$	sr^2	$\beta_{step\ 1}$	$\beta_{step\ 2}$	$\beta_{step\ 3}$	sr^2
Step 1: Control variables												
Patients' gender[a]	−.01	−.01	.00	.00	.09	.10	.04	.00	.09	.10	.08	.01
Nurses' gender[a]	−.10**	−.10**	−.09**	.01	.24**	.20**	.21**	.04	−.01	−.02	−.02	.00
Nurses' number of utterances	.95***	.94***	.93***	.73	.61***	.71***	.68***	.39	−.84***	−.82***	−.83***	.58
Step 2: Proximal variables												
Cognitive group[b]		.02	.00	.00		−.14	−.13	.01		.02	−.01	.00
Functional status[c]		−.03	−.05	.00		.18*	.13	.01		.08	.03	.00
Step 3: Distal variables												
Acute hospital setting[d]			−.00	.00			.16	.01			.09	.00
Psychogeriatric knowledge[e]			−.09*	.01			.15	.02			−.04	.00
Evaluative age stereotypes[f]			−.02	.00			−.09	.01			−.03	.00
ΔR^2	.91***	.00	.01*		.44***	.07**	.03		.72***	.01	.01	
Adjusted R^2 (total model)	.91	.91	.91		.43	.48	.50		.71	.71	.72	
F	331.79***	187.13***	124.56***		24.15***	19.35***	13.03***		82.74***	49.75***	31.73***	

Note. The sample size for all dependent measures is 99 due to missing data. All regression analyses were performed with the absolute numbers of elderspeak outcomes. Method = Enter.
sr^2 = squared semipartial correlations are reported for the third step of hierarchical regression analyses.
[a]0 = female, 1 = male. [b]0 = cognitively unimpaired, 1 = severely cognitively impaired. [c]a higher sum score represents a better functional status (possible range: 0–100). [d]0 = acute geriatric hospital, 1 = acute general hospital. [e]higher values indicate a better self-rated psychogeriatric knowledge (possible range: 1–5). [f]higher mean values across different domains of age stereotype ratings indicate a tendency toward more positive age stereotypes (possible range: 1–8).
* $p < .05$. ** $p < .01$. *** $p \leq .001$.

Table 5.3
Hierarchical Regression Analysis Predicting Speech Rate.

Predictors	Hybrid feature of elderspeak			
	Speech rate			
	$\beta_{step\ 1}$	$\beta_{step\ 2}$	$\beta_{step\ 3}$	sr^2
Step 1: Control variables				
Patients' gender[a]	.04	.05	.05	.00
Nurses' gender[a]	.41***	.38***	.37***	.11
Nurses' number of utterances	−.05	.03	.03	.00
Nurses' mother tongue[b]	−.41***	−.42***	−.48***	.13
Step 2: Proximal variables				
Cognitive group[c]		−.01	−.03	.00
Functional status[d]		.24**	.23*	.03
Step 3: Distal variables				
Acute hospital setting[e]			−.02	.00
Psychogeriatric knowledge[f]			−.11	.01
Evaluative age stereotypes[g]			−.01	.00
ΔR^2	.47***	.05**	.01	
Adjusted R^2 (total model)	.44	.49	.48	
F	20.39***	16.53***	11.01***	

Note. The sample size is 99 due to missing data. Method = Enter.
sr^2 = squared semipartial correlations are reported for the third step of hierarchical regression analysis.
[a]0 = female, 1 = male. [b]0 = German, 1 = non-German.
[c]0 = cognitively unimpaired, 1 = severely cognitively impaired.
[d]a higher sum score represents a better functional status (possible range: 0–100).
[e]0 = acute geriatric hospital, 1 = acute general hospital.
[f]higher values indicate a better self-rated psychogeriatric knowledge (possible range: 1–5).
[g]higher mean values across different domains of age stereotype ratings indicate a tendency toward more positive age stereotypes (possible range: 1–8).
* $p < .05$. ** $p < .01$. *** $p \leq .001$.

Additional Analyses

In order to examine the role of social-contextual distal features, we additionally entered time of the day (morning vs. evening care) and interaction type (dyadic vs. triadic care interactions), after having included the above-mentioned control variables and proximal variables as predictors of the first block. Adding social-contextual features did not contribute to significant increments in variance for likely harmful features of elderspeak (ΔR^2 = .01–.03; all *p*-values > .05). With respect to the four hybrid features of elderspeak, social-contextual variables increased the amounts of variance in complex units (ΔR^2 = .03, *p* = .038) and speech rate (ΔR^2 = .03, *p* = .042). Triadic care interactions were marginally associated with a higher number of complex units (β = .13, *p* = .062, sr^2 = .02) as well as with a significantly faster speech rate (β = .19, *p* = .013, sr^2 = .03).

Discussion

To the best of our knowledge, this is the first study that examined the occurrence of likely harmful and hybrid features of elderspeak in acute hospital environments. In order to contribute to a more differentiated understanding of elderspeak and its determinants, conceptually derived proximal and distal contextual predictors were simultaneously considered.

In the majority of care interactions, typical likely harmful features of elderspeak were identified (Sachweh, 1998; Williams, 2006; Williams, Shaw, et al., 2017). Hypothesis 1 assuming that both cognitive and functional impairment play a substantial role in the prediction of likely harmful as well as hybrid features of elderspeak was partly supported. As expected, functional impairment was significantly related to a higher use of diminutives, a reduced grammatical complexity, and a slower speech rate. Surprisingly, none of the elderspeak features was significantly predicted by cognitive status. An explanation for this finding may be that functional impairment is a more salient disability-related feature at the proximal level than CI, which has been shown to remain undetected by hospital staff in nearly 50% of cases (Hessler et al., 2017; Mukadam & Sampson, 2011). This finding is in line with our earlier analysis revealing that functional impairment more strongly contributed to controlling tones of nurses' voice than CI (Schnabel, Wahl, Schönstein, et al., 2020). Further evidence from research on dependency-supportive behaviors (Baltes & Wahl, 1992; Ryan et al., 2006) and baby talk in German nursing homes (Sachweh, 1998) exists showing that particularly functionally dependent older adults are receivers of patronizing talk.

Distal contextual features played a minor role in the prediction of elderspeak features. Although evaluative age stereotypes only contributed to a small amount of the explained

variance, it is interesting to note that this variable played a role in two of the three likely harmful features of elderspeak even after having controlled for several variables. Hence, more negative evaluative age stereotypes were significantly linked with a higher use of tag questions as well as a higher use of CPS. Psychogeriatric knowledge only played a role in sentence fragments. To conclude, support for Hypothesis 2 was given to some extent. The minor role of distal contextual variables strengthens our argument that functional impairment is a strong trigger of negative stereotype activation, which may counteract the positive effects of training programs.

Confirming Hypothesis 3, proximal context mostly emerged as more important for the prediction of elderspeak features showing larger effect sizes when compared to distal context. In particular, functional status contributed to the explanation of variance in both likely harmful as well as hybrid features of elderspeak. This underpins the importance of including different contextual levels. The current study also demonstrated that CODA can be a heuristically fruitful extension of the CPA and ASI model. Setting elderspeak into contextual spaces may help to better organize the existing research, which has dealt with a large number of dependent variables in a relatively unstructured manner (Kemper, Finter-Urczyk, et al., 1998).

In line with previous research (Lombardi et al., 2014), the current study demonstrated that dyadic nurse-patient care interactions were associated with simplifications in terms of a reduced speech rate and a lower grammatical complexity. In general, control variables explained large proportions of variance, in particular in hybrid features. Hence, gender and mother tongue became more important for hybrid compared to likely harmful features of elderspeak indicating that hybrid features are influenced by a myriad of factors.

Although our finding suggest that functional impairment is a more important trigger of harmful and hybrid elements of elderspeak than CI, the consequences of elderspeak may be particularly harmful for patients with CI. Research conducted in the acute hospital setting has demonstrated that NPS more frequently occur in patients with CI (76%) when compared to patients without CI (38%; Hessler et al., 2018). In particular, expansive symptoms such as nighttime disturbances (38%), aberrant motor behavior (28%), aggression (25%), and irritability (25%) were associated with major complications during care and caused the highest caregiver burden. Previous research has clearly shown that elderspeak can increase the likelihood of NPS in patients with CI (Herman & Williams, 2009; Williams et al., 2009).

However, some authors argue that specific simplifications might be beneficial for CI patients by lowering working memory demands (Samuelsson et al., 2013). Nevertheless, speaking too slowly and simply as with young children might rather tax working memory and can be perceived as patronizing (Harwood et al., 2012; Kemper & Harden, 1999). A comparison

of our data with German social interactions (Westpfahl & Gorisch, 2018) revealed typical syntactic features for spontaneously spoken German in everyday interactions that are dominated by sentence fragments and not so much by complex units. Furthermore, only a low amount of patients reported perceived age discrimination in our study.

To conclude, the appropriateness of elderspeak depends on several factors such as the level of familiarity, the degree of simplifications, and particular combinations of linguistic features (Kemper & Harden, 1999). For example, first name terms may even be interpreted as a form of person-centered communication if the patients wants to be addressed in that way or in the case of a close relationship with the healthcare professional (O'Connor & St. Pierre, 2004). More research is needed to disentangle beneficial versus harmful effects of elderspeak and to provide target-specific guidelines for older patients who represent a heterogeneous sample with different communication needs.

Limitations

One limitation of our study is that findings are based on relatively small and potentially positively biased subsamples requiring further replication in a broader variety of contexts such as rural hospitals.

Second, although particular emphasis was placed on the differentiation between harmful and hybrid features of elderspeak, the current findings do not allow us to draw conclusions on the positive versus negative valence of elderspeak. As the validity of self-reports is limited in CI patients, timed-event sequential studies focusing on behavioral reactions are needed (Herman & Williams, 2009; Williams et al., 2009).

Third, the present study only focused on three likely harmful features of elderspeak. Future studies should also consider prosodic features of elderspeak such as high pitch, which can also be seen as a likely harmful feature of elderspeak (Kemper & Harden, 1999; Kemper et al., 1996).

Finally, the acceptance of elderspeak likely depends on cultural norms (Voss, Kornadt, et al., 2018) limiting a direct comparison of our study with previous studies that were predominantly conducted in the USA (Lowery, 2013).

Implications

Our findings deserve particular attention with respect to daily interactions in the acute hospital context. Considering the evident discrepancy between lacking resources and the increased need for assistance in ADLs among vulnerable older inpatients (Voss, Bodner, et al., 2018), person-centered communication might be in danger. Importantly, negative age stereotypes are often activated via implicit mechanisms, which have been shown to be pervasive

and more negative than explicitly activated ones (Gendron et al., 2016). Some studies even indicated that nurses consciously used elderspeak to improve residents' well-being, their understanding, and cooperation during care interactions (Grimme et al., 2015). Thus, raising nurses' awareness of potentially harmful communication styles can be an important step to reduce unmet needs and NPS among older patients with CI (Williams, Perkhounkova, et al., 2017). The implementation of evidence-based communication strategies in nursing education and training programs is of high practical relevance.

Authors' Note

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According to the core values of transparency, openness, and reproducibility in science, parts of the research data underlying this study, that is, audio recordings, transcripts, annotations, and metadata will be archived for long-term use being available for research purposes under specific conditions by the trusted Archive for Spoken German (AGD) at the IDS (http://agd.ids-mannheim.de).

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Chapter 6

General Discussion

6.1 Summary and Integration of Findings

6.1.1 Discussion of Research Hypotheses

Paper 1 filled an important gap in previous research by supporting the applicability of the CODEM instrument for use in the acute hospital setting. To the best of my knowledge, this is the first study that also integrated linguistic features as well as social-contextual variables into the validation process.

In line with previous work (Kuemmel et al., 2014), the expected two-factor solution representing a verbal content and a nonverbal relationship aspect of communication was supported for acutely ill older patients with CI in acute hospitals (Hypothesis 1a). Consistent with Hypotheses 1b and 1c (see Table 1.3), the observed communication behavior significantly differed between CI and CU patients. First, CODEM mean ratings were generally higher for CU patients when compared to CI patients indicating a higher frequency of verbal and nonverbal communication behavior in CU patients with strong ceiling effects (Hypothesis 1b). Second, mean ratings for the nonverbal relationship aspect were higher than mean ratings for the verbal content aspect in CI but not in CU patients (Hypothesis 1c). These findings suggest that CODEM does not add further information for CU patients but may provide a more differentiated picture of the communication behavior of CI patients. The latter finding is in line with Watzlawick et al.'s first and second axiom (2011) who pointed to the "impossibility of not communicating" (p. 32) and the need to differentiate between different communication channels, that is, a content versus a relationship aspect of communication. This finding further corroborates previous empirical work in this field that has demonstrated severe communication deficits within the verbal content channel but remaining communication resources within the nonverbal relationship channel, even in advanced stages of CI (see again Section 1.2).

Conforming to Hypotheses 1d and 1e (see Table 1.3), the convergent and divergent indicators showed the expected correlation patterns with CODEM scores. The linguistic indicators were moderately to strongly associated with CODEM scores indicating that there is a substantial overlap with linguistic measures such as speech rate but also a conceptual distinctiveness of functional linguistic skills and communication behavior. This finding again underpins the complexity and multidimensionality when examining communication in PwD. It further supports the argument of Kuemmel et al. (2014) to go for a combined approach that considers both functional communication skills as well as naturally observed communication behavior in the context of well-being. As expected, the divergent indicators exhibited low correlations with CODEM scores indicating the conceptual distinctiveness of subjective

hearing capacity and verbal memory recall from communication behavior. Contrary to Hypothesis 1f, the assumption that nurses' emotional tone is more strongly associated with the nonverbal relationship aspect when compared to the verbal content aspect was not supported. The missing linkage may be explained by the time lag between events. Following the study design, patients' communication behavior was rated after the standardized interview situation that in turn took place after the audio-recording of care interactions. In line with the insights gained from Paper 2, a further explanation may be that other factors such as patients' functional impairment play a more important role for nurses' emotional tone than patients' cognitive and communication impairment.

To summarize, Paper 1 demonstrated that the CODEM instrument is a feasible, reliable, and valid tool to examine the communication behavior of acutely ill older patients in a differentiated manner. Contrasting the CI versus the CU group included in the sample of the present dissertation revealed typical differences in linguistic skills as well as communication behavior. Hence, Paper 1 elucidated the differential communication potentials and needs of CI versus CU patients in acute hospital settings. Whereas functional communication may work regardless of the communication channel in CU patients, communication with CI patients needs to be adapted to their specific communication resources and needs. The nonverbal relationship channel of communication deserves particular attention in a twofold manner. First, focusing on nonverbal reactions of CI patients may facilitate the recognition of their current affective states and potential unmet needs such as pain. The identification of the root cause, which is communicated through NPS, is also important enabling healthcare professionals to appropriately respond to this behavior. This may contribute to more successful interactions with CI patients coming along with empowerment and increased well-being for both CI patients and healthcare professionals (Savundranayagam et al., 2007). Second, assessment instruments focusing on communication of PwD as an outcome of psychosocial interventions should also examine patients' communication behavior, in particular the nonverbal relationship aspect of communication, which is closely linked with well-being in advanced stages of CI (Schall et al., 2015). Thus, CODEM may serve as a useful tool to describe the communication behavior of CI patients and to evaluate the effect of clinical trials as well as psychosocial interventions on the communication behavior of CI patients provided that it is administered by trained hospital staff.

Paper 2 and 3 simultaneously considered the role of proximal contextual variables (patients' cognitive and functional status) as well as distal contextual variables (acute hospital setting, nurses' psychogeriatric knowledge) on elderspeak at different communication levels. Paper 2 focused on differences in nurses' emotional tone of voice, whereas Paper 3 concentrated

on nurses' use of likely harmful versus hybrid features of elderspeak toward acutely ill older patients with and without CI. To the best of my knowledge, these studies are the first investigating the occurrence of elderspeak in the confounded acute hospital environment based on a relatively sound descriptive analysis of contextual conditions. These contributions did not only strive to replicate previous elderspeak findings in the unknown territory of acute hospital settings but also to extend previous research by considering the following aspects: (a) a comprehensive, contextually-driven conceptual framework, (b) the role of proximal and distal contextual predictors of elderspeak at the same time, and (c) likely harmful versus beneficial outcomes of elderspeak.

With respect to different cues of disability at the proximal level, both Paper 2 and 3 pointed out that cognitive impairment only played a minor role in predicting elderspeak features when compared to functional impairment. Hypothesis 2a assuming more controlling and less person-centered tones of nurses' voice toward CI patients when compared to CU patients was only partly supported. The findings of Paper 2 revealed more controlling tones toward CI as compared to CU patients but no group differences for person-centered tones of voice. However, this effect lost significance after having controlled for functional status. In line with Hypothesis 2b, the overall low functional status of both CU and CI patients in the acute geriatric hospital setting was also linked with a lower discrepancy in emotional tone patterns between cognitive groups when compared to the acute general hospital setting. Similar findings emerged from Paper 3. Hypothesis 3a predicting that lower levels of cognitive and functional status would be significantly associated with higher use of likely harmful and hybrid features of elderspeak found only partial support. Again, functional impairment was the key predictor variable that was associated with higher use of diminutives, a lower grammatical complexity, and a slower speech rate. However, cognitive status was not able to predict any of the elderspeak outcomes.

With respect to variables at the distal contextual level, both Paper 2 and 3 indicated that acute hospital setting, nurses' psychogeriatric knowledge, and evaluative age stereotypes only played a minor role in the prediction of elderspeak outcomes as compared to the effect of proximal context. Although functional status emerged as the most important variable in Paper 2, it deserves particular attention that acute hospital setting and self-rated psychogeriatric knowledge were significantly associated with nurses' emotional tone after having controlled for functional status. Psychogeriatric knowledge even accounted for additional amounts of variance in emotional tone over and above acute hospital setting, cognitive and functional status. However, psychogeriatric knowledge and acute hospital setting did only play a subordinate role in Paper 3. A better self-rated psychogeriatric knowledge was only linked with

a lower proportion of sentence fragments, whereas the acute hospital setting did not contribute to the prediction of any of the elderspeak features. Paper 3 also examined the role of evaluative age stereotypes. In fact, more negative evaluative age stereotypes were coupled with a higher use of likely harmful tag questions as well as a higher use of likely harmful CPS. Surprisingly, Paper 3 is among the first that empirically examined the association between age stereotypes and elderspeak by the use of a domain-specific VoA measure. Schroyen et al. (2018) also examined this linkage but did not find a significant association between VoA and elderspeak. They only detected a significant interaction effect. Hence, the group of healthcare professionals with more positive VoA used shorter utterances and a slower speech rate when explaining a medical treatment to a 70-year-old patient as compared to a 40-year-old patient, whereas healthcare professionals with more negative VoA showed overall reductions in sentence length and speech rate toward both patients. However, Schroyen et al. (2018) used other scales and did not include diminutives, CPS, and tag questions, which limits the comparability with the results of Paper 3. To conclude, support for Hypothesis 3b claiming that distal contextual factors would account for significant amounts of explained variance in likely harmful as well as hybrid elderspeak features over and above proximal variables was only given to some extent. This finding again underpins the argument that functional status plays the most dominant role for negative stereotype activation at the proximal contextual level, which may counteract the beneficial effect of specialized psychogeriatric training and more positive VoA at the distal contextual level. Consistent with Hypothesis 3c (see Table 1.3), the assumption of larger effect sizes for proximal compared to distal contextual variables was confirmed when predicting likely harmful as well as hybrid features of elderspeak. Besides control variables, differences in the use of elderspeak were predominantly explained by functional status in Paper 2 and 3.

To summarize the findings of Paper 2 and 3, the present dissertation suggests that overall functional impairment of older patients plays a central role in eliciting more controlling tones of voice (Paper 2) as well as a higher use of psycholinguistic features of elderspeak (Paper 3). The findings of Paper 2 and 3 also indicate that functional impairment is a stronger trigger of negative stereotype activation than CI at the proximal contextual level. Further, functional impairment unfolded a stronger effect on the use of elderspeak when compared to distal contextual factors. Paper 3 also demonstrated that the CODA model can be a heuristically fruitful extension of previous conceptualizations of elderspeak in terms of the CPA and ASI model by systematically capturing the contextual dynamics at the micro- and macro-level. This may help to organize the existing research on elderspeak, which revealed mixed results (see again Table 1.1) because a large number of variables were analyzed in a relatively unstructured

manner such as in the study of Kemper et al. (1998). For example, likely harmful versus hybrid features of elderspeak were mostly lumped together. Hence, Paper 3 provides empirical support for the need for a multidimensional and comprehensive approach that considers the complexity and contextual embeddedness of elderspeak at different levels. In the following section, possible explanations for the dominating role of functional impairment will be provided.

6.1.2 Explaining the Dominating Role of Functional Impairment

A first explanation for the central role of functional impairment could be the increased salience of negative age stereotypes such as illness and functional dependency among older patients in acute hospital settings (Hummert et al., 1998). Acutely ill older patients, particularly those with CI and in acute geriatric hospital wards, typically show functional impairment at admission or are at risk for experiencing functional loss during the hospital stay (Hartley et al., 2017; Heldmann et al., 2019; Pedone et al., 2005). Previous evidence suggests that disability-related cues, in particular dependency in ADLs, become more salient in acute hospital settings when compared to community-dwelling settings because institutional settings are characterized by hierarchical dependencies and power differentials between healthcare professionals and patients (Grainger, 2004; Ryan et al., 2008). In line with the theory of stereotype threat (Lamont et al., 2015), these contextual conditions can finally lead to fewer assertive and more passive responses of older adults (Hummert & Mazloff, 2001; Ryan et al., 2008) and increase their exposure to dependency-inducing talk (Grainger, 2004; Hummert et al., 1998). The finding that functional impairment emerged as a more salient cue of disability at the proximal contextual level when compared to CI is also in line with prior research revealing that CI often remains unrecognized by acute hospital staff in up to half of the patients (Hessler et al., 2017; Mukadam & Sampson, 2011). In contrast, functional impairment in terms of dependencies in ADLs such as washing and dressing becomes more obvious in everyday care interactions.

Second, this finding also fits well with the dependency-support script showing a high likelihood of dependence-supportive and overprotective behaviors toward older adults regardless of available resources (Baltes & Wahl, 1992; Ryan et al., 2006). A more recent study of Chasteen et al. (2020) comparing the experiences of young versus middle-aged versus older adults revealed that older adults were most commonly exposed to assumptions of social/physical disability (30%) followed by unwanted help in everyday life (23%). Assumptions of social/physical disability were also reported in younger age groups, whereas neither the young nor the middle-aged adults reported having experienced unwanted help (Chasteen et al., 2020). Interestingly, older adults experienced that both types of ageism most frequently occurred in interactions with service workers (39% and 36%, respectively). Previous

evidence suggests that healthcare professionals typically focus on the need for assistance in ADLs among older adults because they intend to help (Baltes & Wahl, 1992; Wahl, 1991). Both negative age stereotypes as well as the understanding of their helping role can be assumed to drive overprotective behaviors and overhelping communication toward older adults (Baltes & Wahl, 1992; Wahl, 1991). Previous research also suggests that caregivers expect that baby talk would be preferred by functionally impaired older adults and may increase the effectiveness of communication (Caporael et al., 1983).

Third, this finding is in accordance with the communication predicament of disability model (Ryan et al., 2005) and confirms prior research (Braithwaite & Thompson, 2000; Caporael & Culbertson, 1986; Ryan et al., 2006; Sachweh, 1998) showing that particularly individuals with disabilities such as those with functional impairment are receivers of patronizing and dependency-inducing talk. As already argued above, it can be assumed that cues of dependency become more salient in acute hospital settings than age cues. Contrasting different conceptualizations of elderspeak (i.e., CPA model, ASI model, communication predicament of disability model), the communication predicament of disability model seems most appropriate for explaining the occurrence of elderspeak in institutional and medical settings. Although previous research has mainly been conducted in nursing home settings including high proportions of functionally impaired patients (Grainger, 2004), the majority of studies referred to the CPA model (see Section 1.7). However, the additional consideration of functional impairment is important because acutely ill older patients may not only differ in age and CI but also in functional status. Although age is intertwined with functional impairment, it is necessary to distinguish between age cues versus disability cues at a theoretical level to contribute to a better understanding of the antecedents of elderspeak and to foster a more differentiated view on the heterogeneity of older adults (Ehni & Wahl, 2020; Lowsky et al., 2014). Hence, old age and institutional setting per se do not necessarily account for elderspeak. The findings of Paper 2 and 3 rather suggest that the use of elderspeak depends on older patients' functional status, which can be expected to be more strongly impaired in patients with CI and patients in geriatric hospital wards. These groups of acutely ill older patients may face an increased risk of elderspeak and deserve particular attention when it comes to interventions in healthcare settings.

Finally, more controlling tones of voice and more directive talk in terms of likely harmful features of elderspeak might also be interpreted as strategies to cope with task-oriented demands (Hummert & Ryan, 1996), which are higher in functionally impaired older patients. As introduced in Section 1.1, resources are relatively scarce in acute hospital settings. A recent

German study has identified dependency in ADLs as an independent patient-related risk factor for care challenges in acute hospital settings such as increasing the time for care, particularly in the case of CI patients (Hendlmeier et al., 2019). In line with the model of patronizing talk (Hummert & Ryan, 1996), it can be proposed that directive talk in terms of high levels of control and low levels of care serves to effectively perform the task, that is, to care for a high number of patients under time pressure.

6.1.3 Perceptions of Older Patients Related to Ageism and Age Discrimination Under a Cross-Cultural Perspective

Based on standardized interviews, the present dissertation also strived to examine the perceptions of acutely ill older patients related to ageism and age discrimination. Overall, interview data pointed to low percentages of older patients having experienced age discrimination during the care interaction (4%) or the hospital stay (2%). These frequencies are in line with data from a survey carried out at the Geneva University Hospitals in Switzerland showing that 3.1% of participants reported perceived age discrimination during the hospital stay (Hudelson et al., 2010).

However, more than one third of the older patients (36%) endorsed at least one type of ageist event during their hospital stay in the present interview data. The percentages of older patients having experienced ageism at least once ranged between 0% and 17% for the different types of ageism (see also Supplementary Table A5). In three quarters of cases, the reported types of ageist events occurred more than once. In line with the above-mentioned findings on the dominating role of disability-related cues in negative stereotype activation, the highest frequencies were reported for the disability-related items, that is, item 17: “Someone assumed I could not understand because of my age.” (17%) and item 16: “Someone assumed I could not hear well because of my age.” (15%). These types of ageism reflecting stereotypic beliefs on the hearing capacity and cognitive functioning of older adults were also identified as frequently occurring events in previous research applying the Ageism Survey in larger samples between 84 and 375 participants (McGuire et al., 2008; Palmore, 2001; Palmore, 2004). Around one third of participants reported having experienced these two types of ageist events at least once, with frequencies ranging between 26% and 33% in American samples (McGuire et al., 2008; Palmore, 2001; Palmore, 2004) and between 34% and 38% in a Canadian sample (Palmore, 2004). However, caution is advised when interpreting the interview data of the present study in the context of cross-nationally available findings. A direct comparison of the present results with previous ones is limited for three primary reasons.

First, robust evidence exists on cross-cultural differences in ageism and VoA (Bergman et al., 2013; Bodner, 2017; Chang et al., 2020; Levy & Langer, 1994; Palmore, 2004; Swift et al., 2019; Voss, Kornadt, et al., 2018; Westerhof et al., 2012; Wilińska et al., 2018). For example, previous research suggests that individualistic cultures such as Germany and the United States are characterized by overall more positive VoA when compared to collectivistic cultures such as China (Voss, Kornadt, et al., 2018).

Second, previous research has shown that ageism is not only shaped by cultural influences but also by the development level of a country (Chang et al., 2020; Marquet et al., 2016). A systematic review focusing on the global impact of ageism has found a higher proportion of significant associations between ageism and adverse health outcomes in less-developed countries such as Nepal (Chang et al., 2020), which can be attributed to a lack of socioeconomic resources in the healthcare system (Chang et al., 2020; Marquet et al., 2016).

Third, domain-specific approaches suggest that the occurrence of ageism largely varies across different domains of life such as health versus work (Chang et al., 2020; Chasteen et al., 2020; Kornadt & Rothermund, 2015; Voss, Kornadt, et al., 2018). However, context-specific instruments for measuring the occurrence of ageism in the healthcare system are lacking so far (São José et al., 2019). A major issue is that the existing scales of ageism such as the Ageism Survey (Palmore, 2001) and the European Social Survey (Ayalon, 2014) measure the occurrence of self-reported ageism in larger samples of older adults in general but not specifically among older patients in healthcare settings such as the acute hospital setting (São José et al., 2019). Available scales being part of the comparative European Social Survey or national longitudinal studies of aging (German Aging Survey, Health and Retirement Study, English Longitudinal Study of Ageing) examine the experience of ageist events over a longer time such as the past year (Bratt et al., 2018; Rippon et al., 2014; Rippon et al., 2015; Voss et al., 2017). However, these global scales fail to capture the momentary experience of age discrimination related to a specific situation such as naturally occurring care interactions or the experience of age discrimination within a specific context such as the acute hospital setting. Additionally, the existing studies in the acute hospital setting rather focused on healthcare professionals' attitudes toward older patients and not so much on older patients themselves (de São José, 2019). A recent review focusing on the psychometric properties of the available scales of ageism revealed that previous research primarily relied on scales that have not sufficiently been validated (Ayalon et al., 2019). To the best of my knowledge, there is only one study that specifically examined perceived age discrimination among older patients in the context of a hospital setting (Hudelson et al., 2010), albeit relying on a single-item measure. Due to the lack

of validated and context-specific measures for examining self-reported ageism and perceived age discrimination in the acute hospital setting in Germany, I decided to use the single-item measure of Hudelson et al. (2010) as well as Palmore's Ageism Survey (2001) in a forward-backward translated and modified version for the following reasons. First, the single-item measure specifically refers to perceived age discrimination in the hospital context. Furthermore, the item phrasing is similar to the one of the global single-item measure used in the German Aging Survey (Voss et al., 2017). Second, Palmore's Ageism Survey (2001) captures a broad range of negative types of ageism including ignoring and patronizing behavior, disability-related assumptions, as well as denied medical treatment. The development of the survey was based on the existing literature on ageism and represents previous conceptualizations of ageism in terms of benevolent forms of ageism such as patronizing behavior as well as hostile forms of ageism such as refusing medical treatment (see again Section 1.3).

Taken together, patients' self-reported data indicate overall low levels of perceived age discrimination but higher levels of ageism related to their hospital stay. In particular, disability-related assumptions of being treated as physically, functionally, and cognitively impaired were frequently endorsed by older patients. Hence, interview data provide further support for the widespread existence of stereotypic beliefs about age-related disability and functional decline corroborating the dominating role of functional impairment in negative stereotype activation.

6.2 Strengths and Weaknesses

Major strengths and weaknesses of each paper were already presented in the discussion part of Chapters 3-5. In the following, more general aspects will be discussed that characterize the conceptual framework as well as the sample and the research design of the present dissertation at large.

6.2.1 Strengths

To date, the acute hospital as a healthcare setting has largely been ignored in previous research on ageism and elderspeak. This might be explained by the variety of methodological challenges that complicate studies in this field such as increased ethical requirements, a myriad of confounding variables as well as measurement issues of time-intensive naturalistic observation studies (Buttigieg et al., 2018; Gordon & Arvey, 2004; Jansen et al., 2014; São José et al., 2019; Williams et al., 2018; Wrzus & Mehl, 2015). Hence, the present dissertation fills a major gap in the literature by examining ageism in naturally occurring interactions within the complex acute hospital ecology. It also provides a comprehensive methodological approach for

examining communication behavior in a naturalistic setting under relatively controlled conditions that might serve as a guideline for future studies in this field. Gaining new insights into the occurrence of ageism in acute hospitals has important clinical implications because particularly older adults in institutional settings are at high risk of being exposed to ageist behaviors, which can have long-term detrimental effects on their mental, functional, and physical health.

A major strength of the present dissertation is its interdisciplinary research approach. Importantly, the present dissertation connected previous linguistically driven research on elderspeak with two major contemporary perspectives of aging research: VoA and context dynamics in aging. As a consequence of such a sophisticated approach, the present work significantly contributed to a more differentiated understanding of the antecedents, manifestation, and consequences of elderspeak as well as its contextual embeddedness.

Another strength lies in the mixed methods design combining a qualitative with a quantitative approach. So far, mixed methods approaches are lacking in previous research on ageism in health and long-term care settings, which "is an unfortunate gap in existing research" (Buttigieg et al., 2018, p. 503). Hence, the present dissertation significantly adds to the previous literature on ageism in healthcare settings that has primarily focused on the explicit component of ageism relying on quantitative scales with questionable psychometric validity (Ayalon et al., 2019; de São José, 2019; São José et al., 2019). This research design also allowed for the assessment of different facets of ageism including not only the explicit but also the implicit component of ageism (Chang et al., 2020; de São José, 2019; São José et al., 2019). With respect to the explicit component of ageism, a context-specific single-item measure (Hudelson et al., 2010) and a modified version of the Ageism Survey (Palmore, 2001) were used to operationalize perceived age discrimination related to the specific care interaction as well as patients' perceptions related to different types of ageism during the hospital stay. Furthermore, nurses' VoA were examined in different domains of life based on a domain-specific approach. With respect to the implicit component of ageism, the present dissertation used audio-recorded clips of care interactions combined with a non-participant observation approach to capture unconsciously enacted ageism in naturally occurring intergenerational interactions of everyday life. As such, the present work substantially enriches the questionnaire-driven ageism and VoA literature because it offers a high degree of ecological validity and thus comes along with robust external validity (Diehl et al., 2017). In this context, it should also be emphasized that the present dissertation considers both the perspective of healthcare professionals and the perspective of older patients. The combination of different perspectives and multiple data

sources (self-reports, proxy-ratings, observational measures) allowed to gain a comprehensive picture of the experiences of older patients with CI, in which self-reported data should be interpreted with caution (de Vries, 2013; Goldberg & Harwood, 2013; Hubbard et al., 2003; Jansen et al., 2014). Both observational measures and self-reports can be seen as "meaning-making occasions" (Hubbard et al., 2003), which offer different approaches and insights into the situation of older patients with CI. Self-reports actively involve the patient but mainly refer to specific events in the past (subjective approach), whereas observational measures, that is, objective approaches capture the momentary behavior of CI patients during naturally occurring interactions (Hubbard et al., 2003; Wrzus & Mehl, 2015; Wrzus & Mehl, 2020). The advantage of a mixed methods approach is that it compensates for biases inherent in different sources of data collection (see also the next section on weaknesses).

To conclude, the present dissertation is based on a strong interdisciplinary research approach offering a mixed methods design, a broad range of measures derived from different data sources, and a nuanced contextually-driven framework of elderspeak that bridges the gap between ageism and major areas of aging research.

6.2.2 Weaknesses

Although the present work was able to translate elderspeak research into the complex acute hospital environment, some limitations should be mentioned that require further investigation in future studies. These limitations mainly refer to characteristics of the study sample as well as measurement issues of self-reported and observational data.

Study Sample

Similar to other naturalistic observation studies (Baltes & Wahl, 1992; Jansen et al., 2014; Williams, Shaw, et al., 2017; Wrzus & Mehl, 2015), the present work was based on relatively small sample sizes varying between the different data sources. The largest sample sizes were available for variables from the medical information system and observational data, whereas the sample was most strongly limited for self-reported data due to refused interviews, transfer to medical intervention, or verbal communication impairments. The missing values lie in the typical range of data from naturalistic studies including older adults with CI (Diegelmann et al., 2018; Jansen et al., 2014). In line with prior naturalistic observation studies on verbal care interactions (Baltes et al., 1987; Wahl, 1991; Williams et al., 2012), the present study was characterized by a disproportion in sample size between interacting groups including a larger number of patients than nurses. Hence, most of the nurses were repeatedly measured during care interactions with different patients, which might have caused dependencies in the data. Nevertheless, the number of care interactions included in the present analyses (Paper 1: $n = 93$;

Paper 2: $n = 92$; Paper 3: $n = 105$) can be regarded as sufficient and largely independent from each other because there was a large heterogeneity of patients and care situations. The care situations covered different times of the day (morning vs. evening care), interaction types (dyadic vs. triadic), ADLs (washing, dressing, transferring, using the toilet, monitoring vital signs), and environments (patient room vs. bathroom). Hence, it can be assumed that a high degree of data saturation was achieved (Faulkner & Trotter, 2017).

A major limitation is that the present study was carried out in only two German acute hospital wards limiting the generalizability of findings to other acute hospital settings. Considering that both acute hospitals were affiliated with the university located in a city with excellent living standards, the sample is likely positively biased. With respect to the sample of older patients, it might be the case that the study population had a better health status, a higher educational level, a more engaged lifestyle, and more positive VoA when compared to older patients from other regions. With respect to the sample of nurses, it can be assumed that participating nurses were characterized by a higher educational level and more positive VoA when compared to nurses of non-academic hospital settings. Further, the present work only focused on the specific subgroup of registered nurses. Some empirical evidence suggests that registered nurses might hold more positive attitudes toward older adults when compared to nursing students (McLafferty, 2005; Mellor et al., 2007; Söderhamn et al., 2001), which might be attributed to a better knowledge of aging (Liu et al., 2015; Mellor et al., 2007).

Hence, caution is needed when generalizing the findings from the present study to other populations and regions such as rural areas. For example, rural hospital environments might be particularly prone to ageism due to limited access to healthcare services and treatments as well as an increased lack of resources (Barth et al., 2018; Gunderson et al., 2005; Marquet et al., 2016; Voss, Bodner, et al., 2018). Considering that typical features of elderspeak even emerged in the present potentially positively biased sample, elderspeak deserves particular attention in other contexts such as non-academic and rural acute hospital settings. As already discussed above, findings cannot be generalized to other countries such as collectivistic cultures and less-developed countries that might be characterized by more negative VoA and an overall higher occurrence of ageism (Chang et al., 2020; Swift et al., 2019; Voss, Kornadt, et al., 2018). Finally, it should be kept in mind that the present dissertation contrasted only cognitively impaired older patients versus cognitively unimpaired older patients, whereas a younger control group was missing.

Measurement Issues of Self-Reported and Observational Data

The operationalization of constructs mainly relied on well-established and validated instruments. However, some measurement issues should be mentioned concerning the assessment of major study constructs, that is, CI, psychogeriatric knowledge as well as self-reported ageism and perceived age discrimination.

First, the operationalization of CI was based on the cutoff of a screening instrument, which has been validated for use in the acute hospital setting. However, a clinical diagnosis of dementia was given only for some of the patients. Hence, caution is advisable when generalizing the findings to PwD. As a bedside screening instrument, the 6CIT provides global information on patients' CI, which might not only be caused by dementia but also by delirium, depression, or dehydration (Tuijl et al., 2012). Thus, it helps to screen for suspicious patients but does not allow a clinical diagnosis of dementia or other secondary neurocognitive disorders. Contrasting the 6CIT with other dementia screening tools, one could also argue that the Mini-Mental State Examination (MMSE; Folstein et al., 1975) is still the most commonly used bedside screening tool for dementia in general practice and international research (Gale & Larner, 2017; Mitchell, 2017). For that reason, I examined the correlation between the 6CIT and the MMSE in an available subsample based on the medical records of the acute geriatric hospital setting ($n = 25$). Although the 6CIT is much shorter than the MMSE, there was a strong negative correlation between both screening tools ($r = -.87$). This finding is in line with previous studies (Brooke & Bullock, 1999; Tuijl et al., 2012). The short application time combined with a high validity is a clear strength in the acute hospital environment that is characterized by scarce resources (Tropea et al., 2017). Overall, the present work provides further support that the 6CIT is a more feasible screening tool in the acute hospital setting than the MMSE because it takes less time and does not include writing, drawing, or reading tasks that depend on language and communication skills as well as visuomotor abilities. Hence, the 6CIT offers tasks that are more feasible for acutely ill older patients such as those with visual impairment and stroke (O'Sullivan et al., 2016).

Second, the assessment of nurses' psychogeriatric knowledge was based on only a single-item measure asking nurses about their knowledge related to the care of PwD. This item was part of a larger survey, the Dementia Care Pathway focusing on barriers and facilitators to improve the quality of care for PwD in acute hospital settings (Tropea et al., 2017). Nevertheless, in line with the considerations of Tropea et al. (2017), I decided to use the single-item approach to keep standardized interviews with nurses as short as possible. The findings must be interpreted with caution because self-rated knowledge may not reflect the "true

knowledge" of nurses. Furthermore, the comparability of results with other studies is limited because only a few studies have examined dementia-related knowledge of acute hospital staff based on different operationalizations and measures (Schneider et al., 2020; Tropea et al., 2017). As already discussed above, context-specific validated measures are also lacking for the assessment of knowledge of acute hospital staff. In the survey of Tropea et al. (2017), the majority of acute hospital staff rated their psychogeriatric knowledge as moderate (53%) or high (32%), whereas 8% judged their psychogeriatric knowledge as low. Similar findings emerged from the present study, in which most of the nurses rated their psychogeriatric knowledge as moderate (47%) or high (28%), whereas 3% judged their psychogeriatric knowledge as low. However, the proportion of nurses endorsing a very high psychogeriatric knowledge was higher in the present study (22%) when compared to the percentage of acute hospital staff (7%) in the survey of Tropea et al. (2017), which might indicate the positive selection bias of the present sample. Although the present work was based on a single-item approach, it is interesting to note that self-rated psychogeriatric knowledge played a role in Paper 2.

Third, patients' perceptions related to ageism and age discrimination as well as some other variables were assessed by self-report measures. Although self-reports are important because they give the patient a voice, they are prone to different sources of biases (Schwarz, 2012). The responses of older patients might have been influenced by the interview situation (Schwarz, 2012; Voss, Bodner, et al., 2018). Data were gathered from face-to-face interviews, in which older patients were directly confronted with a series of likely threatening questions by younger interviewers. In total, patients were asked 12 times whether they had experienced any discrimination due to their age. The repetitive exposure to threatening aging- and health-related questions in itself might have increased feelings of stereotype threat and perceived age discrimination in older patients who are more susceptible to negative age stereotypes (Auman et al., 2005; O'Brien & Hummert, 2006). Furthermore, the effects of social desirability and self-presentation bias might have played a role, in particular in CU patients (Schwarz, 2012). Previous research has shown that social desirability was linked with positive forms of self-reported ageism (Cherry et al., 2015). Because patients were interviewed during their hospital stay, they likely answered in a socially appropriate manner because they were in a highly vulnerable and uncontrollable situation dependent on the help and benevolence of acute hospital staff. The increased awareness of such power differentials may have decreased selective assertiveness and authentic responses (Hummert & Mazloff, 2001). It may also be that older patients did not report ageist events because they felt ashamed and struggled to belong to a

socially disadvantaged group (McGuire et al., 2008). As a potential coping strategy, they may have disidentified from their stigmatized age group to reduce stereotype threat and to portray themselves in a positive light (Chasteen & Cary, 2015; Palmore, 2004; Soubelet & Salthouse, 2011; Weiss & Lang, 2012). To dissociate from the negative image of always complaining older adults (Hummert et al., 1994), patients might have avoided negative answers. Finally, patients' perceptions related to ageism and age discrimination were retrospectively assessed and are thus prone to recall bias (Schwarz, 2012; Wrzus & Mehl, 2015). Potentially, there were more ageist events, but the patient was not able to remember them correctly because they have already happened at admission or in the emergency department. Especially in CI patients, self-reports might come along with incorrect recall, response bias, and limited validity due to verbal communication impairment and memory deficits (de Vries, 2013; Goldberg & Harwood, 2013; Hubbard et al., 2003; Jansen et al., 2014). This is a major limitation because particularly CI patients might be affected by ageism (Evans, 2018). Hence, it may be the case that specifically those who were unable to answer the questions were strongly exposed to ageism.

Finally, several strategies were undertaken to reduce the effects of participant reactivity. Nevertheless, it cannot completely be ruled out that audio-recordings and my presence changed the natural behavior of nurses and patients (Wrzus & Mehl, 2015). Considering nurses' self-reports (see Supplementary Table A2) and the fact that elderspeak is often used as a strategy to improve communication, it can be assumed that audio-recorded speech patterns largely reflect authentic behavior.

6.3 Implications and Outlook

6.3.1 Implications for Future Research

The present dissertation has major implications for future research at the theoretical and empirical level. Drawing from the present findings, three lines of research should be pursued in more detail: (a) embedding research on ageism and elderspeak in a more comprehensive and contextually-driven framework, (b) capturing ageism and elderspeak by use of context-specific instruments and innovative measurement approaches of computational linguistics, and (c) developing theoretically informed intervention approaches to combat ageism.

Toward a More Comprehensive and Contextually-Driven Framework

With respect to the theoretical and conceptual level, more studies are needed that are driven by a comprehensive theoretical framework taking the multidimensional nature of ageism into account. Most of the previous studies on ageism in healthcare and long-term care settings

did not build on any theory or conceptual framework (Buttigieg et al., 2018; de São José, 2019; São José et al., 2019), which strongly limits the scientific quality of previous research on ageism (Pruchno et al., 2014). Future studies have to derive their research questions and hypotheses from theory and previous research findings to avoid "fishing expeditions" (Pruchno et al, 2013, p. 145) providing less robust findings. Furthermore, a consistent operational definition of ageism and a clear description of the explored dimensions and components may help to improve the comparability of findings between different studies and settings (Buttigieg et al., 2018). The present study demonstrated the utility of combining theoretical and conceptual considerations of ageism research (São José et al., 2019) with those of aging research (Wahl & Gerstorf, 2018), which lacked integration in the previous literature (Levy & Macdonald, 2016). Applying current multidimensional definitions of ageism (São José et al., 2019) and the CODA framework (Wahl & Gerstorf, 2018) allows us to systematically capture different facets of the complex phenomenon of ageism within a broad set of contexts, which finally contributes to a more holistic understanding of ageism. Such comprehensive taxonomies represent heuristically useful tools that enable researchers to better organize the existing and future research as well as to uncover less explored components of ageism and overlooked contexts (Wahl & Gerstorf, 2018).

With respect to different components of ageism, self-directed and implicit forms of ageism such as less healthcare-seeking behavior caused by negative VoA (Sarkisian et al., 2002) and naturally occurring ageist behavior deserve particular attention in future research (São José et al., 2019). In particular, such subtle manifestations of ageism can unfold harmful consequences for older adults because individuals are often not aware of their existence and their impact.

With respect to different contexts, more research focusing on elderspeak, self-reported ageism, and perceived age discrimination is needed in acute hospital settings. The present findings have to be replicated in a broader range of acute hospital settings including different types of acute hospital wards, rural areas, and non-academic acute hospital settings. Domain-specific approaches that have proven as fruitful in research on age stereotypes, age discrimination, and VoA are also required in this field (Kornadt & Rothermund, 2011, 2015; Kornadt et al., 2015; Voss, Bodner, et al., 2018; Voss, Kornadt, et al., 2018). For example, it would be interesting to contrast the occurrence of elderspeak between an acute care setting and a long-term care setting, which differ in a large number of contextual characteristics such as the offered healthcare services, professional expertise of healthcare professionals, and the length of stay (Buttigieg et al., 2018). Future studies should also go for combined approaches

simultaneously considering context dynamics in ageism at different levels (micro-level, meso-level, macro-level). Albeit a differentiation between such contextual levels has heuristic value for explaining the etiology of ageism, the three perspectives are closely intertwined with each other (Ayalon & Tesch-Römer, 2018c). The recently published systematic review of Chang et al. (2020) illustrated how the micro- and meso-level interact and shape the relationship between ageism and adverse health outcomes. The findings of this comprehensive analysis indicate that the reach and impact of ageism may have been underestimated in previous research.

In line with the seminal work of Kemper (1994) and contemporary work on ageism (Chasteen et al., 2020; de São José, 2019), future research should include different age groups for two reasons. First, to validate previously reported differences in speech patterns toward younger versus older adults in the population of acute hospital patients. Second, to shed some light on the occurrence of ageism toward young and middle-aged older adults, which have received less attention in previous research on ageism. However, younger adults can also be victims of ageism, albeit more frequently in other domains of life (Bratt et al., 2018; Chasteen et al., 2020). Future studies should also include other groups of nursing staff such as nursing students because they are responsible for a large proportion of direct care interactions such as washing (Williams, Perkhounkova, et al., 2017). With respect to different countries, future studies should have closer look at Germany that is characterized by a high amount of older adults on the one hand and a large social security system on the other hand (Voss, Kornadt, et al., 2018). These contextual conditions are of particular interest for studying context dynamics in aging because a higher proportion of older adults in the population may contribute to more negative VoA, whereas a more extensive healthcare system may be linked with more positive VoA and a lower occurrence of ageism (Voss, Kornadt, et al., 2018).

To summarize, future research should be carried out in larger and more representative samples to capture the occurrence of ageism across different target groups, settings, and countries by making use of suitable measures. The correct identification of high-risk groups and contextual conditions that increase the likelihood of ageism is a first important step to develop strategies for combating ageism in a systematic manner (Ayalon, 2020a).

Toward a Better Understanding of Beneficial Versus Harmful Effects of Elderspeak

Despite the long tradition of research on elderspeak, there is still ambiguity regarding the beneficial versus harmful nature of some components of elderspeak. Future studies should focus on the nonverbal reactions of CI patients by behavioral analysis of elderspeak (Williams et al., 2018) and timed-event sequential analyses such as in previous elderspeak studies in the nursing home setting (Williams et al., 2009; Williams & Herman, 2011). Using video

recordings combined with timed-event sequential analyses would allow us to analyze the temporal association between elderspeak or other ageist events and nonverbal reactions of CI patients in the acute hospital setting (Bakeman, 2015). In the light of the dominant role of functional status, it might also be interesting to explore the temporal linkage between dependent and independent behaviors of CI patients and the occurrence of dependency-inducing talk in the acute hospital setting (Baltes & Wahl, 1992). Disentangling beneficial versus harmful components of elderspeak is of high practical relevance because inconsistent recommendations are existing for improving the communication with PwD, which are rather based on anecdotal experiences than on the available empirical evidence (Savundranayagam & Orange, 2014). Two frequently recommended communication strategies in the literature are to speak slowly and to use short and simple sentences (de Vries, 2013; Jootun & McGhee, 2011; Small & Gutman, 2002; Small et al., 2003; Smith et al., 2011). However, both communication strategies emerged as ineffective in empirical research (see Table 1.2). Speaking more slowly did not improve sentence comprehension in individuals with AD. Rather, it was related to a higher number of communication breakdowns (see Table 1.2). Only reduced MCU (i.e., fewer clauses per utterance) was found to improve comprehension in individuals with AD, whereas reduced MLU (i.e., fewer words per utterances) did not (see Table 1.2). Hence, only the latter part of the recommendation to use short and *simple sentences* is supported by empirical evidence and should be explained in more detail to avoid ambiguity. A major problem is that such ineffective communication strategies are currently disseminated by nonprofit organizations like the Alzheimer's Association that has a wide reach in providing information for caregivers of PwD (Small & Gutman, 2002). It is of great concern that the ongoing initiative "Dementia Partner" of the German Alzheimer's Associations, which organizes a huge number of educational courses for different stakeholders of the society, conveys ineffective communication strategies such as speaking slowly and using short and simple sentences (Alzheimer's Association, 2020). So far, 62.781 individuals have been trained as dementia partners since its beginning in September 2016 (Alzheimer's Association, 2020; Federal Ministry for Family Affairs et al., 2018).

To conclude, there is an urgent need for empirically derived communication strategies such as those provided by Harwood et al. (2012). Furthermore, target-specific guidelines are required addressing the heterogeneous communication resources and needs of older adults in different life domains. To the best of my knowledge, the present work is the first that provides a systematic overview of the occurrence and consequences of elderspeak divided into a broad set of different target groups (see Tables 1.1 and 1.2). Future recommendations should be

formulated in a more cautious and differentiated manner considering different stages of AD (Savundranayagam & Orange, 2014).

Toward More Context-Specific Instruments and Innovative Measurement Approaches

With respect to the measurement level, more context-specific, multidimensional, and validated instruments are needed to systematically and reliably capture the occurrence of ageism in different domains of life (Ayalon et al., 2019; São José et al., 2019). Previous findings on the occurrence of ageism should be interpreted with caution because they were largely based on unidimensional, global measures that did not meet psychometric criteria (Ayalon et al., 2019). Future measurement tools should be able to capture multiple components of ageism within specific settings (e.g., acute hospitals) and target groups (e.g., older patients).

Three further aspects are important to note. First, larger survey questionnaires should be available in different languages allowing for cross-cultural comparisons of ageism (Wilińska et al., 2018). Second, it is time to overcome single-item approaches, which are frequently employed in social surveys but fail to capture the multidimensional nature of ageism (Ayalon, 2018). Combining cross-cultural approaches with domain-specific approaches may serve as an intriguing avenue to explain cross-cultural differences in ageism (Kornadt & Rothermund, 2015), as demonstrated by recent research focusing on cross-national differences in specific domains of VoA (Voss, Kornadt, et al., 2018). Future studies should also examine knowledge about aging and knowledge about dementia by using more comprehensive instruments that offer true-false items such as Palmore's Facts on Aging Quiz (Palmore, 1977) or the Knowledge in Dementia scale (Elvish et al., 2018). Developing context-specific and psychometrically valid instruments to examine the knowledge of acute hospital staff is of high relevance in the context of training programs because better knowledge of aging has been shown to be associated with more positive attitudes toward older adults (Liu et al., 2015; Mellor et al., 2007) and less ageist behaviors (Cherry et al., 2016). Third, future research should go for mixed methods studies allowing for both qualitative and quantitative data analyses. Mixed methods studies can push ageism research forward to a more comprehensive and integrative understanding of the multiplicity of ageism (Buttigieg et al., 2018).

Considering previous methods of communication analysis (see Section 1.6), future research on ageist language should be enriched by novel techniques of computational linguistics such as machine learning, sentiment analysis (Díaz et al., 2018; Ng et al., 2015; Oscar et al., 2017), and automated discourse analyses (Atay et al., 2015; Baker et al., 2015). For example, such techniques may offer new avenues for examining the occurrence of age stereotypes and ageist language in big data such as publicly available social media data (Díaz et al., 2018;

Jimenez-Sotomayor et al., 2020; Meisner, 2020; Oscar et al., 2017) as well as large corpora (Ng et al., 2015).

Toward Evidence-Based Intervention Approaches to Combat Ageism

Future studies should invest more effort in the development and implementation of multidimensional and theoretically informed intervention programs to tackle ageism. As a theoretical model to reduce ageism, the positive education about aging and contact experiences (PEACE) model (Levy, 2018) deserves particular attention. The PEACE model provides an integrative view on two key factors, which are assumed to counteract negative age stereotypes: (a) education about aging and (b) positive intergenerational experiences. The role of these individual-level characteristics in reducing negative stereotype activation has been supported by ample empirical evidence (see also Kotter-Grühn, 2015). Both factors are also considered as central perceiver's characteristics in the ASI model (see Section 1.7). The PEACE model postulates that promoting both a better knowledge about aging as well as positive contacts with older adults may be a promising avenue for reducing negative ageism by changing negative societal perceptions of older adults.

Future studies should simultaneously consider both factors and their combined potential for reducing negative VoA in society. Furthermore, future research needs to develop and evaluate theoretically informed intervention programs for tackling subtle forms of ageism such as self-directed ageism by changing negative self-perceptions of aging (Kotter-Grühn, 2015). As a first intervention program to counteract negative VoA, the Aging^{Plus} Program (Brothers & Diehl, 2017) provides encouraging results. Based on two well-established theoretical frameworks referring to the internalization of age stereotypes and components of health-promoting behavior, an 8-week multi-component motivational program was developed and evaluated. Findings provide initial support for the modifiability of VoA. Furthermore, less negative VoA and higher control beliefs were associated with an increase in physical activity behavior. These findings need to be replicated in other studies, which should also evaluate the stability of effects (Kotter-Grühn, 2015).

6.3.2 Implications for Practice and Policy

The present dissertation also comes with major implications for clinical practice, nursing education, and policy. Against the background of the current outbreak of ageism during the COVID-19 pandemic, the present dissertation dealt with an issue that is more important than ever before. Although intensive efforts have been undertaken to combat ageism in the last decades (Ayalon & Tesch-Römer, 2018b), the current COVID-19 pandemic finally illustrates that we are still at the beginning of this fight (Ayalon, 2020b; Ayalon, Chasteen, et al., 2020;

Cesari & Proietti, 2020; Reynolds, 2020; Spuling et al., 2020). The full range of ageism emerged during the COVID-19 pandemic comprising negative VoA in terms of overall age-related disability (Ehni & Wahl, 2020) and a widespread use of ageist language (Jimenez-Sotomayor et al., 2020; Meisner, 2020). Furthermore, intergenerational conflicts (Ayalon, Chasteen, et al., 2020; Meisner, 2020), denied access to services and treatment in the healthcare system (Cesari & Proietti, 2020), limited involvement in decision making (Ayalon, 2020b) as well as the digital and social exclusion of older adults (Brooke & Jackson, 2020; Seifert et al., 2020) became evident during the COVID-19 pandemic. Hence, the COVID-19 pandemic brings us back to the roots of ageism showing its complex, persistent, and pervasive nature in society.

Implications for Practice

The present work has several practical implications for improving everyday interactions between nurses and older patients in acute hospital settings. Identifying elderspeak is a first important step to combat at least one component of ageism. Considering the robust association between elderspeak and adverse outcomes such as NPS (Cunningham & Williams, 2007; Herman & Williams, 2009; Williams et al., 2009; Williams & Herman, 2011), the reduction of likely harmful features elderspeak in acute hospital settings is of high clinical relevance in a twofold manner.

First, overcoming elderspeak has beneficial effects for older adults. In line with the considerations of the communication enhancement model (1995), it can be assumed that increasing person-centered communication toward older adults improves their well-being as well as feelings of competence and self-esteem, which in turn fosters social engagement and an active role in medical decision making. Empowering older individuals to express their own needs and wishes represents a key component of a shared decision-making process that has been considered as the gold standard for maximizing the well-being of older adults in healthcare settings (Harwood et al., 2016; Ryan, Meredith, et al., 1995). Importantly, improving decision making by the use of person-centered communication may facilitate individually tailored decisions and better health outcomes (Harwood et al., 2016). Previous attempts to overcome elderspeak and to increase person-centered communication through the so-called Changing Talk program, a brief educational intervention of three 1-hr sessions to raise nursing home staffs' awareness of elderspeak, provide encouraging results (Bradford & End, 2010; Williams et al., 2003; Williams, 2006; Williams et al., 2016; Williams, Perkhounkova, et al., 2017; Williams et al., 2018). With respect to psychosocial outcomes, the Changing Talk intervention was able to enhance residents' communication satisfaction, well-being, and self-esteem through lowering the use of elderspeak (Bradford & End, 2010). With respect to behavioral outcomes,

initial evidence from a cluster randomized controlled trial exists that the Changing Talk intervention may also be a promising cost-effective and non-pharmacological approach for reducing NPS and the need for antipsychotic medications among older residents with dementia (Shaw et al., 2018; Williams, Ayyagari, et al., 2017; Williams, Perkhounkova, et al., 2017; Zhang et al., 2020).

Second, such communication interventions have important practical implications for different groups of healthcare professionals in acute hospital settings by offering a promising avenue to reduce NPS. Research has demonstrated that NPS frequently occur in acute hospital settings (Hessler et al., 2018). Strategies and interventions to manage NPS are of high clinical relevance because NPS are linked with a broad range of care challenges in everyday interactions such as sleeping disturbance, wandering behavior, and shouting requiring more time to complete the care or medical treatment than usual (Hendlmeier et al., 2019). A recent German study conducted in the acute hospital setting has demonstrated that at least one care challenge occurred in 88% of PwD and/or patients with delirium, which was linked with a higher amount of time in more than half (57%) of the patients (Hendlmeier et al., 2019). NPS represent a major issue in acute hospital settings because they place an additional burden on acute hospital staff (Tropea et al., 2017).

In the majority of cases, it can be assumed that elderspeak is unconsciously enacted without being aware of its harmful effects (Williams et al., 2004). However, in interactions with CI patients, it may also be the case that healthcare professionals consciously use elderspeak with the intention to improve communication and to complete care tasks (Grimme et al., 2015). In both cases, it is important to develop and test educational interventions such as the Changing Talk intervention for use in the acute hospital setting to raise the awareness of likely harmful features of elderspeak among acute hospital staff. To date, evidence on the effectiveness of educational interventions to reduce elderspeak is restricted to long-term care settings (Ayalon et al., 2016). In general, evidence-based dementia communication skills training approaches are lacking for healthcare professionals working in the acute hospital setting (Eggenberger et al., 2013; O'Brien et al., 2018). The implementation and evaluation of dementia-specific communication skills in acute hospital settings is highly important because previous research indicated limited knowledge about dementia and communication skills of acute hospital staff (George et al., 2013; O'Brien et al., 2018; Røsvik & Rokstad, 2020; Tropea et al., 2017). Finally, the enhancement of communication with PwD may empower acute hospital staff and increase their confidence in caring for PwD (Elvish et al., 2018; O'Brien et al., 2018; Ryan, Meredith, et al., 1995).

To summarize, evidence-based communication strategies should be part of multidimensional intervention approaches teaching acute hospital staff to better meet the needs of PwD in this setting (Elvish et al., 2018; George et al., 2013; Røsvik & Rokstad, 2020). Furthermore, evidence-based strategies to improve communication with older patients in general as well as with PwD should be integrated into the curricula of nurses and physicians because it may be difficult to change communication behavior, once it is consolidated (Alden & Toth-Cohen, 2015; McLaughlin, 2020; Williams et al., 2004). Finally, both training programs and educational modules should promote knowledge about aging and ageism to raise students' awareness of ageist behaviors (Alden & Toth-Cohen, 2015; Hines Duncliffe et al., 2018).

Implications for Policy

Although the manifestation of ageism and its detrimental effects for older adults are well known, it is still unclear how to combat ageism (Ayalon & Tesch-Römer, 2018b). One lesson from the COVID-19 pandemic is that gerontologists and ageism researcher have to invest in educational interventions to reframe stereotyped and homogeneous views on older adults among policy makers, experts, and society at large (Ayalon, 2020a; Ayalon, Chasteen, et al., 2020; Cesari & Proietti, 2020; Ehni & Wahl, 2020; Reynolds, 2020).

Toward a new Narrative on Aging in the Public Discourse. In particular, the widespread use of ageist language and negative portrayals of older adults in the public discourse and the mass media is problematic because they deeply shape societal perceptions of older adults (Diehl et al., 2020; Kotter-Grühn, 2015; Levy et al., 2013). Considering the current public debates on caregiving, for example, it is important to reframe the stereotyped picture of older adults as a burden of the healthcare system by pointing to their substantial contributory role as unpaid caregivers of family members or spouses (Diehl et al., 2020; Gonzales et al., 2015).

To change the narrative on aging, it is necessary to raise the awareness of policy makers, experts, and other stakeholders for the harmful and persistent consequences of ageist language and deficit-oriented images of aging when spreading information via influential sources (Ehni & Wahl, 2020). Policy makers need to be sensitized to the long-term negative impact of ageism on developmental outcomes (Chang et al., 2020) and the huge healthcare costs caused by ageism (Levy et al., 2020). Policy makers must be informed about the current gerontological knowledge to improve the quality of life for older adults (Ehni & Wahl, 2020). Importantly, employees in the public sector such as in government agencies and the press need to learn how to avoid ageist language (Reynolds, 2020). When communicating about aspects of aging or disability, guidelines for bias-free language such as those released by the American

Psychological Association (2020) are not only required for the scientific community but also for practitioners and policy makers. Such bias-free language guidelines should be publicly available and disseminated within different countries. Whereas government reports are usually characterized by gender-sensitive language, age-sensitive language has received limited attention when talking about older adults, as vividly demonstrated during the COVID-19 pandemic (Ayalon, Chasteen, et al., 2020; Ehni & Wahl, 2020; Kessler & Gellert, 2020, April 1; Meisner, 2020; Spuling et al., 2020; Tesch-Römer et al., 2020). This is a major issue because research in Europe demonstrated that perceived age discrimination more frequently occurs than gender and ethnic discrimination (Ayalon, 2014).

Toward Awareness-Raising Campaigns and Educational Interventions. Informed by the advice of gerontologists, government agencies should allocate more financial and organizational resources to long-term programs at the macro-level such as awareness-raising campaigns and educational interventions to change public thinking about aging (Reynolds, 2020). It is also important to involve older adults in the development of such programs and policy decisions by participatory approaches to promote their self-determination as well as to give older adults a voice for representing their own interests and needs (Kessler & Gellert, 2020, April 1). According to the PEACE model (Levy, 2018), future educational interventions should foster education about aging as well as positive intergenerational experiences and solidarity.

A promising awareness-raising campaign that should be disseminated worldwide is The Reframing Aging Initiative of the Gerontological Society of America (2020). The Reframing Aging Initiative builds on the "Gauging Aging" report that demonstrated the public's limited understanding of aging and ageism in the United States (Lindland et al., 2015). Drawing from these findings, the Reframing Aging Initiative was developed as a long-term awareness-raising campaign in the United States that strives to contribute to a more positive and differentiated view on aging and older adults in the general public. This initiative provides a broad repertoire of evidence-based material to reframe the language used in conversations with older adults and in the public discourse about older adults. The overarching aim of reframing the narrative on aging is to counteract ageism and to reduce negative implicit bias against older adults. Because the Reframing Aging Initiative was launched in 2014, the effectiveness of this program and its longitudinal impact on developmental outcomes remain unclear so far. However, a recent laboratory-based study provided first evidence for the effectiveness of a short-term reframing intervention in reducing implicit age bias (Busso et al., 2019). Two further promising educational initiatives provided by the Academy for Gerontology in Higher Education of the Gerontological Society of America are the Age-Friendly University movement and the Ageism

First Aid that are described elsewhere in more detail (Reynolds, 2020). The high prevalence of ageism around the world requires a global action plan to combat ageism, which is a very challenging task (Ayalon, 2020a; Burnes et al., 2019; Officer & de la Fuente-Núñez, 2018). Considering the global evidence on the adverse impact of ageism on health outcomes (Chang et al., 2020), policy makers and stakeholders have to put the "fight against ageism" on the top of the political healthcare agenda as a modifiable risk factor for poor health status (Burnes et al., 2019).

Toward Initiatives for Coping with the Psychosocial Consequences of the Pandemic. Initiatives at the local and national level are urgently needed to help older adults to recover from the outbreak of ageism during the COVID-19 pandemic and to strengthen their position and rights in society (Ayalon, 2020b; Ehni & Wahl, 2020; Kessler & Gellert, 2020, April 1; Morrow-Howell et al., 2020). In this context, the interdisciplinary perspective of gerontologists, psychologists, and linguists will be needed to mitigate the negative psychological consequences of the pandemic as well as to develop initiatives to reduce ageism and to increase participation of older adults across different domains of life (Diehl et al., 2020; Ehni & Wahl, 2020; Morrow-Howell et al., 2020; Reynolds, 2020). For example, empirically supported interventions are needed to reframe the homogeneous picture of older adults and the ageism messages delivered during the COVID-19 pandemic. To deal with this global public health issue, funding agencies should support multinational and interdisciplinary collaborations such as the COST Action IS1402 "Ageism: A Multinational, Interdisciplinary Perspective", which has proven as an intriguing avenue to provide a comprehensive perspective on contemporary issues in research on ageism and future directions (Ayalon & Tesch-Römer, 2018a). Future studies should evaluate the short- and long-term effects of the COVID-19 pandemic on psychological outcomes such as self-perceptions of aging, which are likely to have changed throughout the COVID-19 pandemic (Ehni & Wahl, 2020). First evidence exists that self-perceptions of aging play a crucial role in coping with the psychosocial consequences of the COVID-19 pandemic (Losada-Baltar et al., 2020). Hence, strategies are needed to improve self-perceptions of aging associated with higher use of coping strategies (Wurm et al., 2013). Furthermore, future studies should evaluate the appropriateness of preventive measures in different life domains such as the long-term care setting considering the balance between the risk of infection and the risk of social isolation and loneliness (Berg-Weger & Morley, 2020; Seifert et al., 2020). Considering the limited amount of staff, the increased organizational effort, and the emotional distress during the COVID-19 pandemic, it is likely that the lock-down increased the occurrence of elder abuse among long-term care residents who belong to a high-

risk group (Ayalon, Zisberg, et al., 2020; Yon et al., 2019). Learning from the failures during the COVID-19 pandemic is also important to prepare for future pandemics. For example, additional funding should be allocated to nursing homes to increase the digital participation of long-term care residents (Seifert et al., 2020). Although the outbreak of ageism during the COVID-19 pandemic was a bitter experience for ageism/aging researchers, it may have increased the awareness of this public health issue at multiple levels of our society, which may provide the needed power to push this research area forward. Even though changing the narrative on aging will take some time, I would like to conclude with the relatively optimistic view of Diehl et al. (2020):

"Of course, changing the current loss- and decline-oriented narrative on aging will not happen overnight. Cultural and social change takes time, as other sociocultural movements in the United States have shown. However, we are optimistic that initiatives like Reframing Aging will gain momentum and will facilitate the adoption of more positive views of aging. Well-trained psychologists, especially psychologists who are actively involved in aging research and interdisciplinary work, will be critically important for the success of establishing the new narrative on aging" (p. 586).

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List of Tables and Figures

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Appendix

Supplementary Table A1

Patients' Characteristics and Social-Contextual Variables at the Proximal and Distal Contextual Level

Variable	Acute general hospital				Acute geriatric hospital				Effect size[a]	
	CI		CU		CI		CU			
	M	*SD*	*M*	*SD*	*M*	*SD*	*M*	*SD*	Cognition	Setting
Age (years)	82.48	4.69	81.86	6.58	85.77	5.90	82.72	6.60	.02	.03
Cognitive status (6CIT; 0–28)[b]	17.33	4.58	4.11	3.39	20.60	5.77	3.50	2.78	**.77*****	.03
Functional status (BI; 0–100)[c]	53.20	27.23	85.52	17.95	38.46	23.70	61.60	22.39	**.28*****	**.16*****
Subjective health (1–5)[d]	2.68	0.89	2.78	0.89	2.89	1.08	3.21	0.72	.01	.03
Subjective hearing (1–5)[e]	2.67	0.80	2.78	0.85	3.13	1.26	2.67	1.17	.01	.01
Satisfaction with care (1–5)[f]	1.84	0.77	1.88	0.65	2.12	0.93	2.07	0.57	.00	.03
CODEM total score (0–5)[g]	3.05	0.98	4.85	0.19	3.30	1.18	4.69	0.23	**.54*****	.00
Speech rate (words per minute)	125.85	29.13	152.97	23.11	105.25	35.19	141.64	24.61	**.25*****	.08**
Frequency of complex units[h]	0.02	0.03	0.04	0.04	0.01	0.03	0.04	0.04	.11***	.01
Length of stay (days)	11.00	4.92	9.41	4.90	18.08	6.77	17.84	5.31	.01	**.34*****
Admission to examination (days)	5.56	3.82	5.07	3.66	9.54	7.66	8.60	5.85	.00	.11***
Total speech time (minutes)[i]	5.12	2.57	4.19	2.69	4.46	2.18	3.74	1.86	.03	.01
Total number of utterances[i]	241.44	107.85	195.48	109.84	215.85	107.65	170.60	84.02	.05*	.02
Total number of tokens[i]	768.68	407.04	673.86	434.08	624.38	328.13	558.88	281.36	.01	.03
Previous care interactions[j]	1.25	1.19	2.76	2.80	2.81	3.81	3.36	2.61	.03	.04

(Continued)

Supplementary Table A1

Patients' Characteristics and Social-Contextual Variables at the Proximal and Distal Contextual Level (Continued)

Variable	Acute general hospital		Acute geriatric hospital		Effect size[a]	
	CI	CU	CI	CU	Cognition	Setting
	%	%	%	%		
Gender (female/male)	40/60	45/55	73/27	68/32	.01	.28**
Perceived age discrimination (yes/no)[k]						
during care interaction	6/94	0/100	6/94	4/96	.10	.07
during the whole hospital stay	0/100	0/100	6/94	4/96	.03	.16
Shift (morning/evening)	56/44	35/65	54/46	48/52	.14	.07
Environment (patient room/bathroom)	92/8	90/10	62/38	72/28	.06	.30**
Number of patients in room (1/2/3)	12/88/0	24/76/0	19/23/58	16/52/32	.18	**.56****
Number of involved nurses (1/2)	60/40	52/48	69/31	80/20	.00	.20*

Note. The total sample size varies between 84 and 105 with the smallest numbers for self-reported data due to refusal, transfers, or severe cognitive impairment.

CI = severely cognitively impaired patients, CU = cognitively unimpaired patients.

[a]Partial eta squared (η_p^2) is reported as effect size for continuous data indicating small (.01), medium (.06), or large (.14) effects (Cohen, 1988). Cramer's *V* is used for categorical data indicating small (.10), medium (.30), or large (.50) effects (Cohen, 1988). Large effects are in boldface.

[b]6CIT = 6-Item Cognitive Impairment Test (Hessler et al., 2017); lower error scores indicate a better cognitive status.

[c]BI = Barthel Index (Mahoney & Barthel, 1965); higher sum scores indicate a better functional status.

[d-f]Subjective health, hearing capacity, and satisfaction with hospital care (Keller et al., 2014) were operationalized by single items ranging from 1 (*very good*) to 5 (*very poor*).

[g]CODEM = Observational tool to assess the frequency of communication behavior in dementia (Kuemmel et al., 2014; Schnabel et al., 2019) ranging from 0 (*never*) to 5 (*always*); higher scores represent a higher frequency of communication behavior.

[h]The relative frequency represents the number of tagged complex sentential units divided by the total number of utterances.

[i]Total numbers refer to the speech time, utterances, and tokens of both nurses and patients.

[j]Number of previous care interactions with the patient.

[k]Perceived age discrimination was assessed by use of a dichotomous single item (modified from Hudelson et al., 2010).

* $p < .05$. ** $p < .01$. *** $p \leq .001$.

Supplementary Table A2

Nurses' Characteristics at the Distal Contextual Level

Variable	Acute general hospital					Acute geriatric hospital					
	n	*M*	*SD*	%	Range	*n*	*M*	*SD*	%	Range	Effect size[a]
Age (years)	16	39.3	13.4	—	22–59	14	38.6	11.5	—	26–59	−.05
Experience in the current ward (years)	16	9.1	8.9	—	1–27	15	5.9	9.2	—	0–25	−.35
Self-rated psychogeriatric knowledge (1–5)[b]	17	3.4	0.8	—	2–5	15	4.1	0.8	—	3–5	**.90***
Participants' reactivity (1–5)[c]	17	1.8	0.6	—	1.0–2.8	16	1.7	0.7	—	1.0–3.3	−.11
Domain-specific age stereotypes (1–8)[d]				—					—		
Friends and acquaintances	17	3.5	1.0	—	1.7–5.0	15	4.4	2.0	—	1.7–8.0	.54
Leisure activities and social/civic commitment	17	4.0	1.3	—	1.8–6.3	15	4.0	1.6	—	1.0–7.3	.01
Personality and way of living	17	4.5	1.2	—	2.3–7.3	15	4.0	1.8	—	1.7–7.0	−.32
Physical/mental fitness and health	17	3.7	1.7	—	1.0–8.0	15	3.5	1.9	—	1.5–7.0	−.10
Gender (female/male)	18	—	—	78/22	—	16	—	—	81/19	—	.04
Mother tongue (German/non-German)	18	—	—	67/33	—	15	—	—	53/47	—	.14
Lower/intermediate/qualification for applied upper secondary studies/upper secondary school	17	—	—	0/47/29/24	—	15	—	—	7/40/20/33	—	.24
Registered nurse/geriatric-trained nurse	17	—	—	100/0	—	15	—	—	47/53	—	**.62****
Experience as a nurse (<5/5–10/11–15/>15 years)	17	—	—	24/23/0/53	—	15	—	—	27/40/7/26	—	.32

Note. The sample size varies due to refused interviews ($n = 2$) or omitted items.

[a]Cohen's *d* is reported as effect size for continuous data indicating small (0.20), medium (0.50), or large (0.80) effects (Cohen, 1992). Cramer's *V* is used for categorical data indicating small (.10), medium (.30), or large (.50) effects (Cohen, 1988). Large effects are in boldface.

[b]Single item (Tropea et al., 2017) ranging from 1 (*very low*) to 5 (*very high*).

[c]Modified questionnaire of Mehl and Carey (2014) ranging from 1 (*not at* all) to 5 (*a great deal*); higher mean values represent a stronger tendency toward participants' reactivity.

[d]Domain-specific questionnaire (Kornadt & Rothermund, 2011) with 8-point bipolar items; values ≤ 4 indicate a tendency toward negative views on aging.

* $p < .05$. ** $p < .01$. *** $p \leq .001$.

Supplementary Table A3

Descriptive Data and Bivariate Correlations Between the Dependent Psycholinguistic Variables

Variable	*n*	*M*	*SD*	1	2	3	4	5	6	7	8	9
1. Tag questions[a]	105	0.08	0.04	—								
2. Diminutives[b]	105	0.02	0.05	.10	—							
3. Collective pronouns[c]	76	0.02	0.02	.08	.17	—						
4. Sentence fragments[d]	105	0.59	0.08	.03	.02	−.10	—					
5. Complex units[e]	105	0.04	0.03	.22*	−.12	.12	−.44***	—				
6. Mean length of utterances (in words)[f]	105	3.38	0.60	.19	−.11	−.03	**−.61*** **	**.71*** **	—			
7. Speech rate (words per minute)	105	158.60	22.77	.18	−.23*	.10	−.40***	.44***	**.65*** **	—		
8. Type-token ratio[g]	105	0.46	0.10	.02	−.13	−.15	.16	−.10	−.12	−.01	—	
9. Total number of nurses' tokens	105	442.07	252.70	.08	.09	−.21	−.29**	.36***	.37***	.20*	**−.85*** **	—

Note. The sample size for collective pronouns is lower because these features were only analyzed for dyadic care interactions ($n = 76$).

[a-e]Mean values represent relative frequencies with respect to the total number of nurses' utterances.

[f]Segmentation into utterances (maximal syntactic units) was based on German guidelines for spoken language interactions.

[g]Type-token ratio refers to the number of different word types divided by the total number of word tokens; higher values indicate a higher lexical diversity.

Spearman correlations; according to widely established rules of thumb (Cohen, 1992), the effect sizes of correlation coefficients can roughly be interpreted as small (.10), medium (.30), and large (.50). Large effects are in boldface.

*$p < .05$. **$p < .01$. ***$p < .001$.

Supplementary Table A4
Bivariate Correlations Between Person Characteristics and Elderspeak Features

Variable	Tag Questions	Diminutives	Collective pronouns	Speech rate	Fragments	Complex units	Type-token ratio
Patients' characteristics							
Age	−.06	−.05	.03	−.10	.04	−.15	.00
Gender[a]	−.04	−.05	−.11	.30**	−.05	.13	.06
Cognitive group[b]	−.13	.15	.17	−.11	.10	−.29**	−.33***
Functional status[c]	.06	−.37***	−.14	.28**	−.13	.33***	.31***
Nurses' characteristics							
Age	−.10	.01	.16	−.15	−.00	.17	−.15
Gender[a]	.16	−.17	.01	**.54*** **	−.25*	.22*	−.06
Mother tongue[d]	−.15	.03	.01	**− .58*** **	.02	−.17	−.09
Age stereotypes (mean)[e]	−.18	−.08	−.28*	.19	−.07	−.16	−.06
Psychogeriatric knowledge[f]	−.06	.20*	−.07	.12	−.11	.12	−.04
Previous care interactions[g]	−.01	.05	.05	−.11	.27**	−.12	.12

Note. The sample size varies between 92 and 105 due to missing data; the sample size for collective pronouns is lower because these features were only analyzed for dyadic care interactions (n = 76). With respect to tag questions, diminutives, collective pronouns, sentence fragments, complex units, relative frequencies were computed by dividing the absolute numbers of annotated features by the total number of nurses' utterances.
[a]0 = female, 1 = male. [b]0 = cognitively unimpaired, 1 = severely cognitively impaired. [c]higher values represent a better functional status.
[d]0 = German, 1 = non-German.
[e]Higher mean values across different domains of age stereotype ratings indicate a tendency toward more positive views on aging.
[f]Higher values indicate a better self-rated psychogeriatric knowledge.
[g]Number of previous care interactions with the patient.
Spearman correlations; according to widely established rules of thumb (Cohen, 1992), the effect sizes of correlation coefficients can roughly be interpreted as small (.10), medium (.30), and large (.50). Large effects are in boldface.
* $p < .05$. ** $p < .01$. *** $p \leq .001$.

Supplementary Table A5

*Percentages of Patients Reporting Perceived Ageism During Their Hospital Stay (*N = *106)*

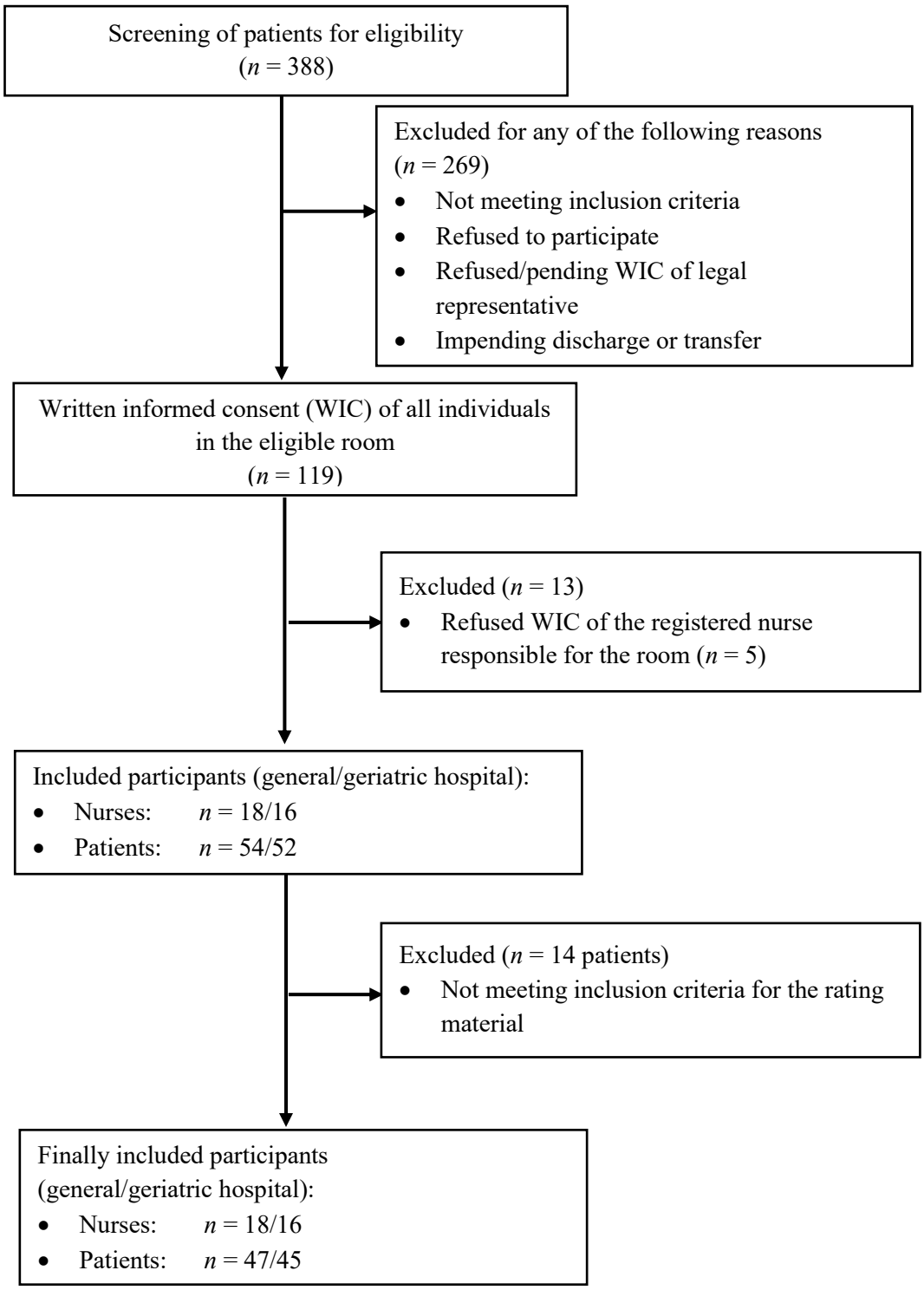
Item	Types of ageist events	Acute general hospital				Acute geriatric hospital					
		n	0x	1x	2x	*n*	0x	1x	2x	*p*	Rank[a]
1	I was told a joke that pokes fun at old people.	47	100	0	0	42	95	0	5	.130	7
3	I was ignored or not taken seriously because of my age.	46	89	7	4	42	93	2	5	.647	3
4	I was called an insulting name related to my age.	47	100	0	0	42	100	0	0	—	9
5	I was patronized or "talked down to" because of my age.	47	98	2	0	39	92	0	8	.105	6
10	I was treated with less dignity and respect because of my age.	47	94	4	2	42	95	2	2	.885	5
12	A doctor or nurse assumed my ailments were caused by my age.	46	94	2	4	34	94	6	0	.334	4
13	I was denied medical treatment because of my age.	47	100	0	0	42	95	0	5	.130	7
16	Someone assumed I could not hear well because of my age.	44	89	2	9	39	82	0	18	.330	2
17	Someone assumed I could not understand because of my age.	47	83	9	9	37	84	3	14	.436	1
18	Someone told me, "You're too old for that."	47	98	2	0	41	100	0	0	.348	8

Note. Item 2, 6, 7, 8, 9, 11, 14, 15, 19, 20 of Palmore's Ageism Survey (2001) were excluded in the present study because they were not considered as relevant for the acute hospital setting. The numbers represent how often patients have experienced the different types of ageism (0x = *never*, 1x = *once*, 2x = *more than once*). Percentages may not add up to 100% due to rounding. *p* values are based on χ^2-tests.

[a]The frequencies of the different types of ageist events were ranked from 1–9, with 1 indicating the highest frequency of having experienced the ageist event at least once and 9 indicating the lowest frequency.

Supplementary Figure A1

Flow Chart of the Recruitment Procedure Lasting From September 2017 to March 2018



Note. Screening of patients' eligibility was based on current patient lists and the medical records. Exclusion criteria were terminal illness, isolation, insufficient knowledge of the German language, and impending discharge or transfers. Reasons for refusal were fatigue, skepticism against audio-recordings, and anticipated negative consequences for further treatments. *n* (general acute hospital setting) / *n* (geriatric acute hospital setting). WIC = written informed consent.

Personal Contribution to the Publications of This Cumulative Dissertation

1st Publication

Schnabel, E.-L., Wahl, H.-W., Penger, S., & Haberstroh, J. (2019). Communication behavior of cognitively impaired older inpatients: A new setting for validating the CODEM instrument. *Zeitschrift für Gerontologie und Geriatrie, 52*(Suppl 4), S264-S272. https://doi.org/10.1007/s00391-019-01623-2

H.-W. Wahl and I developed the study concept and design. I trained three psychology students and one sociology student who supported me in conducting interviews and processing the data. I conducted the statistical and linguistic analyses, interpreted the data, and wrote the draft. H.-W. Wahl, S. Penger, and J. Haberstroh contributed to the statistical analyses and interpretation of data, and commented on the manuscript. H.-W. Wahl supervised the study and the manuscript preparation.

2nd Publication

Schnabel, E.-L., Wahl, H.-W., Schönstein, A., Frey, L., & Draeger, L. (2020). Nurses' emotional tone toward older inpatients: Do cognitive impairment and acute hospital setting matter? *European Journal of Ageing, 17*(3), 371-381. https://doi.org/10.1007/s10433-019-00531-z

H.-W. Wahl and I developed the theoretical framework, the study design, the research questions, and wrote the draft. I trained L. Frey and L. Dreager who supported me in conducting interviews and processing large amounts of the qualitative data. I supervised L. Frey in conducting the emotional tone rating study and the psychometric analysis. A. Schönstein provided support in carrying out the statistical analyses and interpreting the data, and commented on the manuscript. H.-W. Wahl supervised the study and the manuscript preparation.

3rd Publication

Schnabel, E.-L., Wahl, H.-W., Streib, C., & Schmidt, T. (2020). Elderspeak in acute hospitals? The role of context, cognitive and functional impairment. *Research on Aging.* Advance online publication. https://doi.org/10.1177/0164027520949090

H.-W. Wahl and I developed the theoretical framework, the study design, and the research questions. I supervised C. Streib in conducting interviews, processing the quantitative and qualitative data, and coding the data for likely harmful features of elderspeak. I conducted the statistical and linguistic analyses, interpreted the data, and wrote the draft. T. Schmidt provided recommendations in collecting, transcribing, analyzing, and interpreting the linguistic data, and commented on the manuscript. H.-W. Wahl supervised the study and the manuscript preparation.

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