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Depressive or just in a Bad Mood? Laypersons' Assumptions about their Knowledge of Medical Vocabulary[1]

Health counselling requires physicians to choose the correct words and communicate health information in a way that it is intelligible to patients. Typically, physicians and patients differ with regard to their conceptual understanding of medical vocabulary. While physicians may be aware of the difficulty and complexity of medical terms in general, patients may base their evaluations of current understanding on specific characteristics of the terms.

In a 2x3 Design, this article examines word origin and word frequency of specialist vocabulary related to depressive disorders as indicators of the difficulty of a term's meaning and laypersons' perceived comprehension of central technical concepts. As expected, there was an influence of both word features: Terms of German origin were perceived to be less difficult and better comprehended than terms of Greek/Latin origin. Moreover, frequently occurring terms were rated to be less difficult and better comprehended than terms of lower frequency. Furthermore, analysis of comprehension ratings showed that within the group of terms with low frequency indices, only terms of German origin were rated to be well comprehended. For highly frequent terms, this difference did not occur. Theoretical and practical implications for adequate word use in health communication and counselling settings are discussed.

Keywords: health communication, technical concepts, laypersons, comprehension.

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1. Introduction

According to the World Health Organisation (WHO), with about 121 million affected worldwide, depression is one of the most common psychical diseases. Due to this fact, depressive disorders have become a topic of high interest in healthcare and broader society. New media (Goldberg, Russell & Cook 2003; MacArthur 2006) has given laypersons almost unrestricted access to health information about depression that influences their understanding of the domain. Hence, health communication has become increasingly interactive, with patients actively integrating their own knowledge into the process of counselling and decision-making. Such patient-centred communication requires a high degree of information exchanged between patient and physician (Roter & Hall 1992) in order to construct sufficient health literacy. Thus, it is important to bear in mind which aspects of a disease are most fundamental to the comprehension of laypersons (Diviani & Schulz 2010). However, this situation also holds potential risks. The greater availability of medical information to laypersons does not automatically lead to better understanding of a disease. In contrast, research findings point out that laypersons often have misconceptions about common illnesses. For example, Gittelman, Mahabee-Gittens & Gonzalez-del-Rey (2004) administered a survey to 122 caregivers asking them to define typical child illnesses like fever or diarrhoea. They found that most of the participants were not able to give full definitions of a certain disease and were thus not aware of the corresponding complexity. In line with these findings, Becker, Bromme & Jucks (2008) pointed out several widespread false beliefs of laypersons related to central concepts of the metabolic syndrome. Such erroneous conceptions might not necessarily be noticed. Research findings show that laypersons in the medical domain often refer to specialist terms even though they have not understood the underlying concepts properly (Bromme, Jucks & Runde 2005; Jucks & Bromme 2007). Especially when using technical terms on the threshold to everyday language, laypersons fail to recognize that these terms have different meanings in the specific field than they do in general (Schorling & Saunders 2000). This might encourage problematic consequences in health communication or counselling when patients

or affiliated individuals must make health related decisions. Research has already provided remarkable evidence, that conversations between patients and health care providers have a profound effect on clinical outcomes (Roter 2000; Roter & Hall 1992). Imagine a patient suffering from a major depression and deliberating an appropriate therapy with his or her therapist. If his conceptual understanding of "being depressive" does not include any physical explanations he might have problems understanding the need for medical treatment. Health communication requires physicians to understand patients' underlying assumptions and beliefs about diseases in order to communicate health information in a way that facilitates the integration of new information with patients' already existing mental models. To make medical information accessible to laypersons, physicians face two challenges: They must gauge participants' levels of understanding and they have to adapt their language to this level. Unfortunately, research findings show that clinical staff often overestimates patients' knowledge of medical terminology (Schillinger et al. 2004). But how do they develop a concise model about the patient's perspective in order to choose moderate vocabulary? Following Clark & Murphy (1982), word usage provides relevant cues as to the partners' perspective. According to the linguistic copresence heuristic (Clark 1992), speakers make the tacit assumption that addressees know the meaning of a word introduced into a conversation unless they signal otherwise. Speakers continue to use that expression, taking their addressee's knowledge of its conceptual meaning for granted (audience design). Communication partners coordinate their word use, building conceptual pacts (Brennan & Clark 1996). In health communication, physicians have to use words that are intelligible to patients. Here, sufficient communication is a matter of adequate word use. To decide which words to use in health counselling, physicians have to understand how words affect laypersons' assumptions about depressive disorders. Hence, it must be clarified how laypersons perceive medical terms and whether there are systematic differences in perceptions due to particular features of these terms. To tackle this question, this article focuses on word origin and word frequency of specialist vocabulary related to depressions as indicators of the difficulty of a term's meaning and laypersons' perceived comprehension of central technical concepts.

2. Word Origin and Word Frequency

In general, beyond its function as carrier of a semantic meaning, a word can serve as a hint towards the speaker's or writer's attitudes or properties (Hogenraad & Garagozov 2010; Jensen 2008). Words can also serve as indicators of conceptual richness of the underlying meaning (Paus & Jucks, submitted).

The existence of at least two different lexical encodings for many specialist concepts is not exclusive to German, but does have a special tradition in that language. In German, many words of Latin or Greek origin – particularly those introduced into German over the last 400 years – have synonyms of German origin. In his categorization of German technical terms, Bromme (1996) differentiates between everyday language terms in specific technical usage and loan words borrowed from classical languages. It is therefore possible to differentiate between more "technical" medical terms originating from Greek and Latin (classical language terms) and more "common" medical terms (German language terms). The classical language terms are listed in the German dictionary of foreign terms, the *Fremdwörterduden* (Wermke et al. 2001), the German language terms are not. However, both encode medical concepts: Laypersons in particular recognize the need for a deep and thorough understanding of technical terms with a Latin or Greek origin (Paus & Jucks, submitted).

Moreover, many terms of specialist vocabulary relating to depressive disorders are commonly used in a nontechnical context like in the media or everyday communication ("Someone is depressive"; "He needs psychotherapy"). Besides term origin, the frequency of occurrence of specialist vocabulary therefore should also influence laypersons' assumptions about technical terms. Word frequency can be measured either by objective word frequency counts (e.g., the British National Corpus, BNC) or by native speaker judgments. Although older studies indicate high agreement between human judgments and word frequency counts (see Tryk 1968: 74–78, and Backman 1976: 91–94), whether subjective judgments can be a reliable substitute for corpus data remains a matter of some debate. Alderson (2007) investigated different methods of assessing word frequency judgments and found only moderate correlations across the different measures – indicating that objective and subjective frequency

measures cannot be equated. In this study, we therefore use an objective measure of word frequency.

In the present study, we examined laypersons' assumptions about technical vocabulary related to depressions. In detail, we predicted that more "common" technical terms – as represented by word origin and word frequency indices – are perceived to be less difficult and rated to be better comprehended than more "technical" technical terms.

3. Method

3.1. Participants

The participants in this study were 96 sixth formers (18 % male) from different high schools in Muenster. Mean age of participants was M = 18.09 (SD = 3.11) years. Of the 96 participants, 89 were German native speakers, one had spoken German as a second native language since childhood, and 6 had spoken German for more than 15 years. At the beginning of the study, prior knowledge as well as scientific understanding of participants was controlled.

3.2. Material

Individual variables. To assess how participants subjectively evaluated their overall conceptual understanding before completing the main questionnaire, they were asked to rate their knowledge of depression on a 5-point scale ranging from good (5) to bad (1) both before and after the online discussion. Further, we expect laypersons' assumptions about a medical term's difficulty to be influenced by individual differences in their personal theories about the structure of knowledge and process of knowing typically referred to as epistemological beliefs (Hofer & Pintrich 1997, 2002). We thus included measures of epistemological beliefs in our study as a control variable. We chose two inventories to measure: (a) Domain-specific and (b) Domain-related epistemological beliefs. (a) The CAEB (Connotative Aspects of Epistemological Beliefs; Stahl & Bromme 2007) addresses associative and evaluative knowledge judgments. Participants rate their personal epistemological beliefs using pairs

of contrasting adjectives on a 7-point semantic differential. Only 17 of the original 24 items were used in this study, because these items could be clearly assigned to two underlying factors, texture and variability of knowledge. An exemplary pair of adjectives to measure texture is "superficial" and "deep." We selected "depression" as the domain addressed by the CAEB items. We chose this rather narrow subdomain because it seems reasonable to look for differences in epistemological beliefs only in the participants' discourse topic. (b) The DEBQ (Discipline-focused Epistemological Beliefs; Hofer & Pintrich 2002; translated into German by Richter 2004) consists of 18 items representing four subscales: source, certainty, simplicity, and justification of knowledge. Participants must rate how much they agree with each item on a 5-point scale ranging from totally agree (1) to not agree at all (5). For example, to measure simplicity of knowledge, participants are asked to rate the following item: "If you are ever going to be able to understand something, it will make sense to you the first time you hear it." In this study, all items referred to the domain of "depression."

Questionnaires. We drew up the list of concepts to be manipulated that were highly relevant in the context of depressive disorders (see Table 1 for an overview of all terms). Some of the concepts initially were encoded with either German or with a Greek or Latin term. We looked for synonyms in encyclopedias and in the glossaries of textbooks covering the topic. Each term was matched with an appropriate synonym for the present context. All lexical encodings for specialist concepts were checked in encyclopedias (Häcker & Stapf 2009; Pschyrembel 2007; Wittchen & Hoyer 2006).

Two versions of the questionnaire were constructed, which each containing only one encoding of each of the 19 concepts. In version A, the order of words (10 classical language terms and 9 German language terms) was randomized. In version B, the respective synonyms were presented in the same sequence resulting in the presentation of 10 German language terms and 9 classical language terms. Each term was embedded in a short sentence originating from original texts to prevent misinterpretations of meaning for ambiguous words (e.g., terms which can be used in different fields with a different meaning).

3.3. Dependent Measures

Two measures were administered to assess how the communality of medical terms – as indicated by word origin and word frequency – impacted how they are mentally represented.

Perceived difficulty. Three items represented perceived difficulty; one to measure technicality ("The word XY is a technical term") and two to measure complexity, whereby complexity was specified into a comprehension part ("This term needs to be explained to be understood") and an explanation part ("The word has to be understood to be explained").

Perceived comprehension. This variable was assessed in terms of participants' subjective evaluations of their understanding of a term ("I understand the meaning of XY""). Both, perceived difficulty and comprehension of terms, was assessed by participant ratings on a 5-point scale (agree strongly – disagree strongly) for each term.

Design and Procedure. This study was a 2x3 within-subject design with the independent variables "word origin" and "word frequency." Word origin was conceptualized as "German origin" versus "classical origin."

To determine word frequency of the manipulated terms the University of Leipzig's word frequency database (http://wortschatz.uni-leipzig.de) was used. The database reports frequency in terms of frequency classes. A class describes the relative frequency of a word in relation to the most frequently used word in German ("der" – "the"). Specifically, if a word is allocated to frequency class N, then "der" occurs approximately 2N times more frequently than that word (see Appendix A for details of word frequencies). Frequency classes have proved to be a stable and reliable indicator of word frequency (Alderson 2007). Word frequency classes of the 38 specialist terms (19 in each encoding) used in this study varied from 10 to 21 (with 10 being an indicator of high frequency and 21 being an indicator of low frequency). We then subsumed these 11 classes to three categories indicating low, medium and high word frequency (low frequency = 18, 19, 20, 21; medium frequency = 14, 15, 16, 17; and high frequency = 10, 11, 12, 13). It was assured, that there was a difference between these categories, $F(2, 36) = 145.37$, $p < .001$, $\eta_p^2 = .89$. Post-hoc comparison confirmed that the high frequency category was indeed higher

than the medium frequency category, $t(25) = -8.14$, $p < .001$, $d = 3.60$, and the medium frequency category was higher than the low frequency category, $t(21) = -8.25$, $p < .001$, $d = 1.25$. In sum, six subgroups of terms exist as shown in Table 1.

Overall, it took around 30 minutes to participate in the experiment. Data was collected in a lecture room at the University of Muenster. Version A of the questionnaire was randomly distributed to 47 participants; version B to 49 participants. The participants completed the question-

Table 1: List of the 19 Manipulated Technical Terms related to Depressive Disorders assigned to subgroups of Term Origin and Word Frequency

Word Frequency	Term Origin	
	Greek/Latin	German
Low	– Psychoanalyse (psycho analysis) – Transmitter (transmitter) – Interpersonell (interpersonal) – Somatisch (somatic) – Insomnie (insomnia)	– Antriebsschwäche (lack of drive) – Schlafstörung (sleep disorder) – Tiefenpsychologisch (depth psychological) – Stimmungsaufheller (mood enhancer) – Zwischenmenschlich (between people)
Medium	– Suizid (suicide) – Behavioral (behavioral) – Symptom (symptom) – Antidepressiva (antidepressants) – Placebo (placebo) – Stimulanzien (stimulants) – Lethargie (lethargy)	– Nervenarzt (mental* health doctor) – Aufputschmittel (pep pills) – Arzneimittel (drugs) – Botenstoff (messenger) – Andauernd (long-lasting)
High	– Medikamente (medicine) – Chronisch (chronic) – Konfrontation (confrontation) – Psychiater (psychiatrist) – Therapie (therapy) – Diagnose (diagnosis) – Trauma (trauma)	– Feststellung (finding) – Selbstmord (self-inflicted death) – Auseinandersetzung (face-off) – Verhaltens- (action-related) – Anzeichen (sign) – Behandlung (treatment) – Schock (shock) – Körperlich (physical)

* Some of the English translations still include words with a Greek or Latin origin.

naires without any time constraints. Finally, the following demographic data was obtained: Age, gender, main courses at school, and whether German was the native language. The experiment was part of an open house information day of the university for high school students and thus was not rewarded.

4. Results

Unless otherwise indicated, analyses were performed using SPSS, and the underlying statistical assumptions of the methods applied were met.

At the beginning of the experiment, participants' self-rated previous knowledge about depressive disorders was comparable in both conditions. $F(1, 93) = 0.80$, *ns*. Furthermore, participants did not differ with regard to their epistemological beliefs measured on two inventories, the CAEB (Bromme and Stahl 2007), $F(2, 89) = 0.12$, *ns*, and the DEBQ (Hofer and Pintrich 1997; 2002), $F(4, 89) = 1.03$, *ns*. The descriptive statistics are presented in Appendix B.

We performed a subject and an item analysis for both dependent variables, namely perceived difficulty and perceived comprehension, to be able to generalize on each level. In a subject analysis data points are computed by collapsing over subjects, whereas in an item analysis data points are computed by collapsing over items (see Raaijmakers, Schrijnemakters & Gremmen 1999: 418). Typically, both F values were then included to compute F' (or *minF'*) as test statistic to prove for significance (for details see Clark 1973). We decided for this procedure, because in our design items are nested under the treatment variables and we therefore cannot use other strategies (like matching materials or using counterbalanced lists) to assure generalization on the term level (see Raaijmakers et al. 1999; Raaijmakers 2003).

4.1. Perceived Difficulty

Our first hypothesis was that the difficulty participants associate with a term depends on its origin and its frequency of occurrence. Multivariate analysis with the two independent variables as within-subject factors on the three dependent measures of perceived difficulty revealed a large

main effect of word origin, $F_1(3, 91) = 249.49$, $p < .001$, $\eta_p^2 = .89$; $F_2(3, 31) = 49.17$, $p < .001$, $\eta_p^2 = .83$; $minF'(1, 53) = 41.10$, $p < .001$. Therefore, technical terms with a German encoding were perceived to be less difficult than terms with a Latin or Greek origin (see Appendix C for descriptive statistics of all dependent variables). Furthermore, there was a large main effect of word frequency, $F_1(6, 88) = 33.56$, $p < .001$, $\eta_p^2 = .70$; $F_2(6, 64) = 4.46$, $p < .001$, $\eta_p^2 = .30$; $minF'(2, 48) = 3.94$, $p < .05$. Post-hoc comparison showed that terms with a high frequency index were perceived to be less difficult than terms with a low frequency index, $t(93) = -12.72$, $p < .001$, $d = 2.82$; $t(24) = -2.47$, $p = 0.02$, $d = 0.91$, $minF'(2, 34) = 4.19$, $p > .05$. No further differences exist. Moreover, there was no interaction effect between the two independent variables, $F_1(6, 88) = 3.86$, $p = .002$, $\eta_p^2 = .21$; $F_2(6, 64) = 0.54$, $p > .05$; $minF'(5, 49) = 0.47$, $p > .05$.

4.2. Perceived Comprehension

Given that word origin and word frequency had an effect on the perceived difficulty of technical terms related to depressive disorders, we then tested how these factors influence laypersons' comprehension judgements. We assumed that terms that were perceived to be more difficult were also rated as being comprehended less well.

Again, univariate analysis revealed a principle effect of word origin, $F_1(1, 93) = 178.29$, $p < .001$, $\eta_p^2 = .66$; $F_2(1, 37) = 19.61$, $p < .001$, $\eta_p^2 = .37$; $minF'(1, 47) = 17.67$, $p < .001$. In line with our assumptions, technical terms with a German encoding were rated to be better comprehended than terms with a Latin or Greek origin. There was a secondary main effect of word frequency for comprehension ratings, $F_1(2, 92) = 101.45$, $p < .001$, $\eta_p^2 = .69$; $F_2(2, 36) = 13.07$, $p < .001$, $\eta_p^2 = .44$; $minF'(2, 48) = 11.59$, $p < .001$. Post-hoc comparison showed, that participants rated terms with a high frequency index to be better understood than terms with a low frequency index, $t(93) = 14.32$, $p < .001$, $d = 2.17$; $t(11) = 3.11$, $p < .001$, $d = 1.38$, $minF'(2, 31) = 3.34$, $p < .05$. The interaction of the two within subject factors was also significant, $F_1(2, 92) = 46.32$, $p < .001$, $\eta_p^2 = .50$; $F_2(2, 36) = 4.72$, $p = .02$, $\eta_p^2 = .22$; $minF'(5, 46) = 4.28$, $p < .001$ (see Figure 1). Here, there was no difference between comprehension ratings of German and Latin/Greek originating terms for high frequent terms,

$t(95) = 3.87$, $p < .001$, $d = 2.15$; $t(13) = 2.63$, $p = 0.03$, $d = 0.29$, $minF'(5, 26) = 1.56$, $p > .05$, and medium frequent terms, $t(94) = 9.61$, $p < .001$, $d = 2.13$; $t(10) = 1.62$, $p > 0.05$, $d = 1.69$, $minF'(5, 14) = 1.39$, $p > .05$; whereas a difference was shown for low frequent terms, $t(93) = 10.86$, $p < .001$, $d = 2.77$; $t(6) = 4.42$, $p = .01$, $d = 3.19$, $minF'(5, 12) = 3.14$, $p < .05$.

An illustration of concise difficulty and comprehension ratings for each of the manipulated technical terms is given in Figures 2 and 3. As an exemplifying indicator of perceived difficulty, the concise ratings of complexity are shown in Figure 1. The distribution of technical terms clearly represents the two main effects: "treatment" as a highly frequent term with a German origin has a low complexity rating, whereas "somatic" as a less frequent term with a Latin/Greek origin is rated to be very complex.

Furthermore, in Figure 2 the interaction of word frequency and word origin on comprehension ratings becomes visible. For terms with higher

Figure 1: Interaction Effect of Word Frequency and Word Origin on Perceived Comprehension

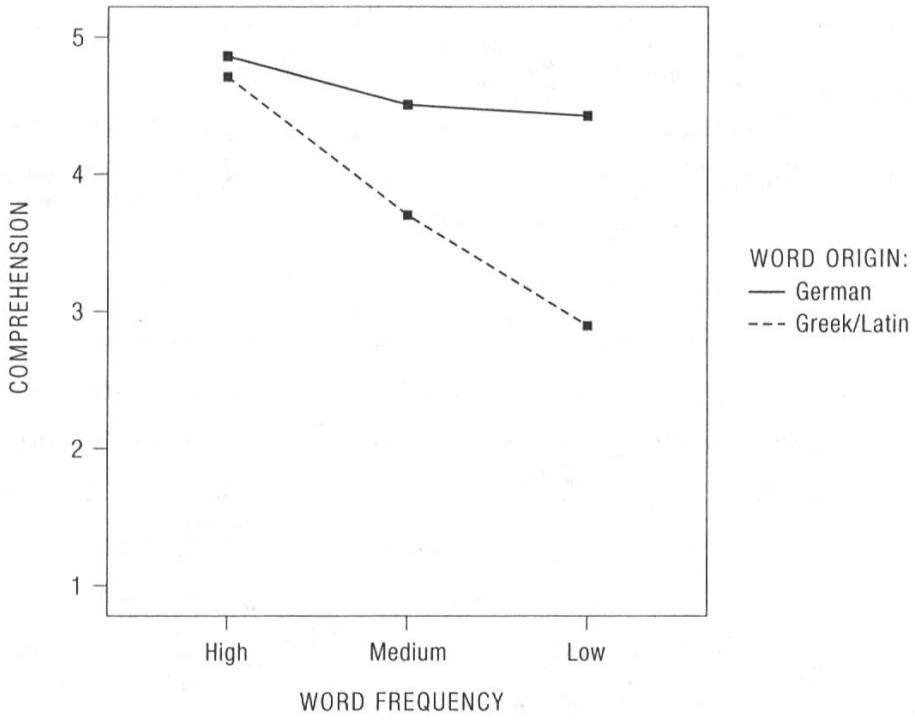


Figure 2: Perceived Complexity for all Manipulated Terms (exemplary terms are labelled)

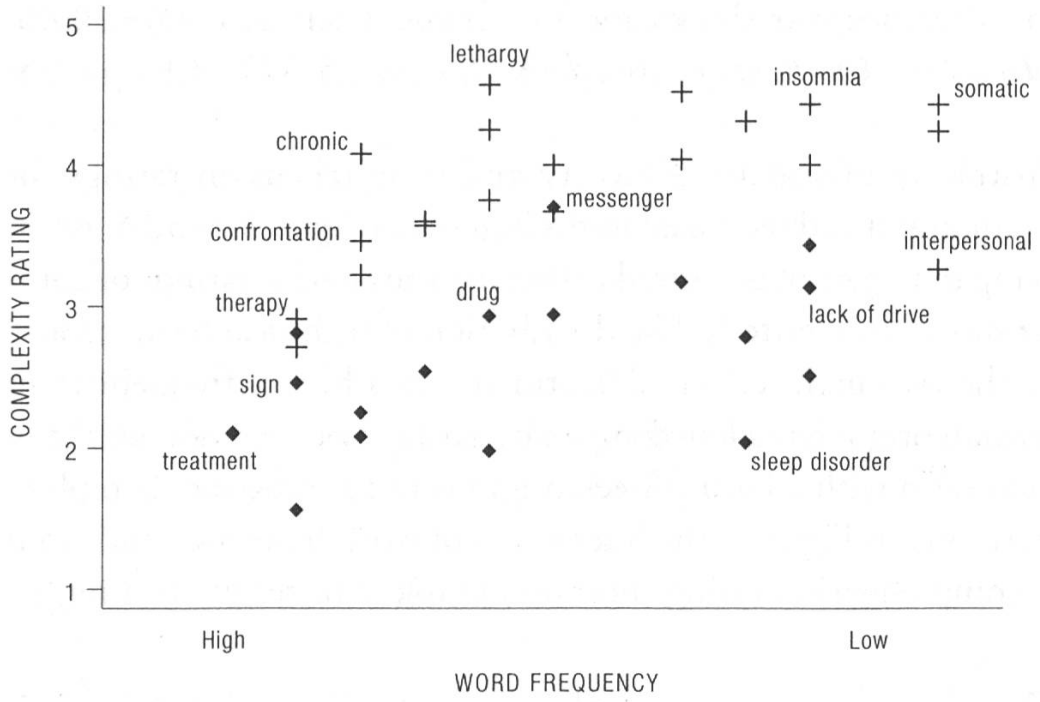
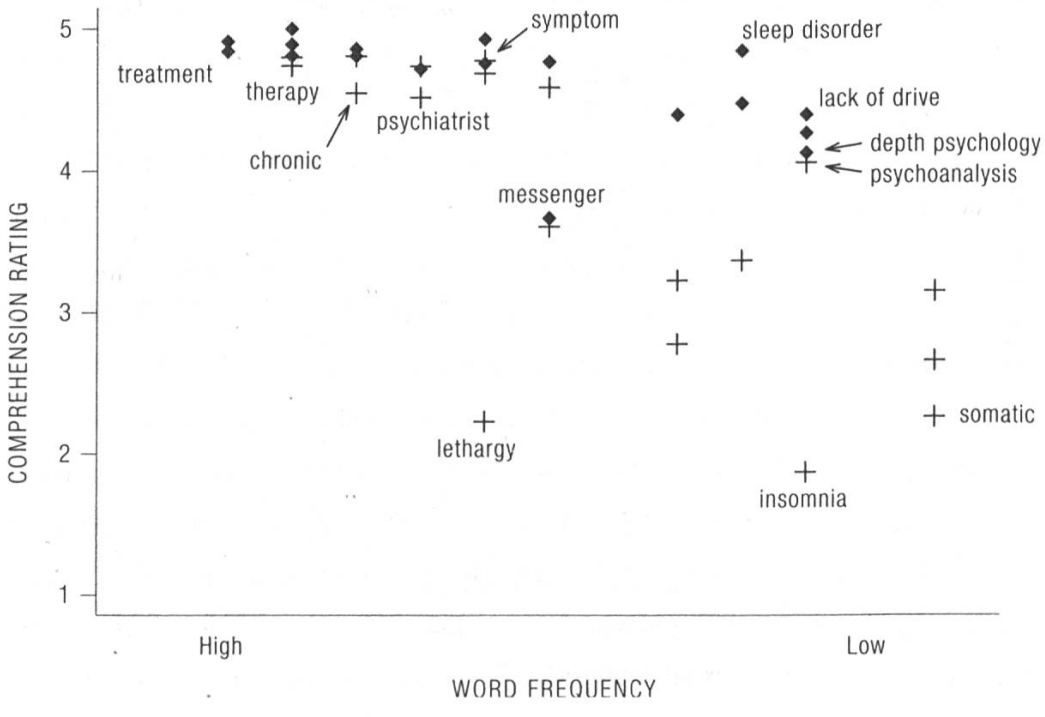


Figure 3: Perceived Comprehension for all Manipulated Terms (exemplary terms are labelled)



frequency scores, word origin does not influence comprehension ratings ("therapy" vs. "treatment"). In contrast, for terms with lower frequency scores, word origin determines comprehension ratings ("sleep disorder" und "insomnia"). However, there are some terms that do not fit the regular pattern: First, there are synonym pairs ("depth psychology" vs. "psychoanalysis") with the same low frequency scores that have the same comprehension ratings – despite having a different term origin. Additionally, there are terms with the same origin and the same frequency score that differ strongly with regard to comprehension ratings (see for example "symptom" and "lethargy" or "psychoanalysis" and "insomnia").

5. Discussion

The findings of this study confirmed the influence of specific word features on laypersons' subjective evaluations of difficulty and comprehension for specialist vocabulary related to depressive disorders. The surface features of a technical term, e.g., in this case its colloquialism, impacts how it is mentally represented throughout laypersons. Thereby, colloquialism seems to be represented by word origin and word frequency. However, these two factors influence difficulty and comprehension ratings in a different way. Perceived difficulty shows a linear pattern with less frequent Greek/Latin words being rated as the most complex and highly frequent German words as the less complex ones. In contrast, patterns of comprehension ratings are not that clearly separated. Highly frequent words are generally rated to be well comprehended irrespectively of their origin. For less frequent words, however, term origin strongly impacts whether a word is rated to be understood or not. These findings provide the first insight into recommendations for an adequate term use in health communication. In counselling situations, physicians strive to formulate medical advice such that patients or affiliated people are able to understand the main content. For physicians – or experts in general – it is difficult to evaluate how well laypersons are able to understand medical terms. Experts organize the concepts in their field differently than laypersons and they often have problems in conveying their knowledge without abstraction (Hinds, Patterson & Pfeffer 2001). On first sight, it seems to be obvious to provide information as easy and accessible as possible to

be understandable for laypersons. The findings of the current study thus imply to preferably use technical terms that are frequently used in non-technical contexts and have a German origin.

However, such a recommendation would hold potential risks: Using "simple" words might conceal the real complexity of the domain and hinder deeper processing of the underlying medical concepts. Research could already show that adaptation between communication partners on the lexical level, i.e., lexical entrainment (Garrod & Anderson 1987) or lexical alignment (Pickering & Garrod 2004) occurs also in expert – lay-person communication in the medical domain (Bromme, Jucks & Wagner 2005). In other words, a technical term that is introduced by either the patient or the physician is usually used further on without any further elaboration on its conceptual meaning (Jucks, Becker & Bromme 2008). This could easily lead to patients' assumptions about their actual knowledge being inaccurate. For instance, Paus & Jucks (submitted) compared laypersons' comprehension ratings about technical terms with their actual knowledge about the terms. They found that laypersons tend to overestimate their knowledge about technical terms in general. Given these findings, using technical terms that do not reflect the difficulty of the domain could foster an insufficient understanding of depressive disorders within patients, because a profound understanding of a knowledge domain can only be achieved by acquiring its central concepts and principles (e.g., Anderson & Lebiere 1998; Van Lehn 1996).

6. Limitations and Further Research

The setting addressed in this study – health communication – is of high interest in present times. However, the present study was conducted with a sample of high school students. Although this sample certainly represents laypersons, future research should clarify whether our findings can be transferred to a sample of real patients or affiliated people. These people are usually already informed about the disease they are suffering from and can thus be better defined as novices. Thus, it remains an open question, how much people's involvement in the topic of interest contributes to the development of more precise medical conceptions. In the same vein, further research could investigate the influence of indi-

vidual differences. For instance, people who have a strong tendency to get involved in cognitive activities (e.g., Need for Cognition, Cacioppo et al. 1996) might be more willing to search further and elaborate on medical concepts. Moreover, the findings of this study primarily give us insight into people's assumptions about their knowledge. To identify whether these subjective evaluations are correct or not has to be clarified in further research by comparing subjective and objective measures of comprehension. This could help developing interventions fostering the disclosure of erroneous conceptions in real medical counselling. Furthermore, it has to be mentioned that our findings solely concern the domain of depression. Technical terms related to this field are commonly used in everyday life. Assumptions about technical terms of other domains that are perceived to be more "technical" might possibly be triggered differently.

Finally, to appropriately understand medical information (e.g., to understand the concepts underlying the technical terms), laypersons have to reflect on the accuracy of perceived comprehension of specialist vocabulary. On a more practical level, further research should thus investigate methods that can help people in developing a more complete and precise understanding of technical concepts. In written communication – as it is typically the case in health forums – metacognitive prompting introduced by supporting software (see Jucks, Schulte-Löbbert & Bromme 2007) may be a fruitful means of improving the accuracy of mental representations about medical concepts. Beyond this, in face-to-face health communication, experts in health communication using specialist vocabulary related to depression should bear in mind that their patients do not necessarily understand the complex meaning underlying the terms. Rather than aligning their language use directly to specialist vocabulary introduced by patients, they should encourage them to explicitly reflect on those terms and their understanding of them. This is likely to be especially important for specialist terms at the threshold to everyday language, the underlying complexity of which is often not recognized by patients or affiliated people.

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Appendix A: Word Frequencies for all Terms Investigated

Word Frequency Class N*			
German Language Terms		Classical Language Terms	
Tiefenpsychologisch	19	Psychoanalytisch	19
Arzneimittel	14	Medikamente	11
Selbstmord	11	Suizid	14
Botenstoff	15	Transmitter	18
Andauernd	14	Chronisch	12
Auseinandersetzung	10	Konfrontation	12
Verhaltens-	13	Behavioral	17
Nervenarzt	17	Psychiater	13
Anzeichen	11	Symptom	14
Stimmungsaufheller	18	Antidepressiva	15

(continued)

Zwischenmenschlich	19	Interpersonell	21
Behandlung	10	Therapie	11
Feststellung	12	Diagnose	12
Scheinheilmittel	–	Placebo	15
Aufputschmittel	15	Stimulanzien	17
Schock	11	Trauma	13
Antriebslosigkeit	19	Lethargie	14
Körperlich	12	Somatisch	21
Schlafstörung	18	Insomnia	19
Nachlassen	13	Remission	21

Appendix B: Descriptives of Controlled Individual Variables for the Two Groups (questionnaire A and questionnaire B)

Variable	Questionnaire A M (SD)	Questionnaire B M (SD)	*F*	*p*
Preknowledge				
Self-rating	2.85 (0.87)	3.00 (0.79)	0.80	.37
Epistemological beliefs				
CAEB – Texture	4.03 (0.76)	4.10 (1.01)	0.13	.72
CAEB – Variability	4.62 (0.76)	4.61 (0.70)	0.07	.80
DEBQ – Source	3.02 (0.53)	2.89 (0.68)	1.13	.29
DEBQ – Justification	3.53 (0.60)	4.02 (1.74)	1.38	.21
DEBQ – Simplicity	3.02 (0.69)	2.86 (0.94)	0.93	.34
DEBQ – Certainty	2.13 (0.39)	2.14 (0.47)	0.01	.91

Appendix C: Mean and Standard Deviations of all Dependent Variables for Subject and Item Analyses

Subject Analysis:

	Word Origin					
	Classical Origin			German Origin		
	Word Frequency					
	Low	Medium	High	Low	Medium	High
Categorization as technical term	4.67 (0.22)	4.62 (0.11)	4.08 (0.39)	2.89 (0.72)	2.72 (0.82)	2.08 (0.40)
Complexity (comprehension)	4.11 (0.45)	3.83 (0.47)	3.39 (0.29)	2.78 (0.54)	2.94 (0.62)	2.24 (0.35)
Complexity (explanation)	4.19 (0.31)	3.83 (0.47)	3.39 (0.29)	3.06 (0.59)	3.03 (0.62)	2.49 (0.37)
Comprehension	2.89 (0.79)	3.70 (1.01)	4.71 (0.12)	4.43 (0.27)	4.51 (0.50)	4.86 (0.08)

Item Analysis:

	Word Origin					
	Classical Origin			German Origin		
	Word Frequency					
	Low	Medium	High	Low	Medium	High
Categorization as technical term	4.66 (0.51)	4.61 (0.56)	4.07 (0.80)	2.93 (0.97)	2.69 (1.00)	2.81 (0.84)
Complexity (comprehension)	4.10 (0.68)	4.12 (1.06)	3.72 (0.76)	2.81 (0.90)	2.93 (1.01)	2.24 (0.84)
Complexity (explanation)	4.21 (0.64)	3.85 (0.80)	3.39 (0.85)	3.10 (0.96)	3.13 (0.99)	2.51 (0.96)
Comprehension	3.07 (1.10)	3.62 (1.11)	4.71 (0.48)	4.40 (0.70)	4.61 (0.55)	4.85 (0.29)

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