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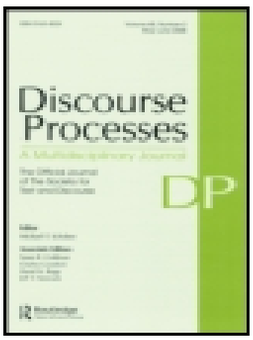

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On Differences Between Spoken and Written Language*

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Considering various naturally occurring speaking and writing situations, Chafe (1982) suggested two dimensions along which spoken and written productions in English differ: involvement against detachment, and fragmentation against integration. In order to control for the influence of variables that covary with the spoken/written distinction (e.g., topic, planning, formality, audience), an experiment was conducted where modality (speaking/writing) and topic were manipulated, holding the other relevant factors constant. Three of the scales (with the exception of "detachment") showed excellent discrimination between the two modalities even in these strictly matched speaking and writing situations. The psychometric qualities of the scales are, however, rather problematic in that they lack internal consistency.

Early linguistic and developmental research in spoken and written language identified a variety of syntactic, lexical, and morphological differences between the two modalities (e.g., Drieman, 1962; Harrell, 1957; Vygotsky, 1934/1962). The increasing emphasis in modern linguistic theory on semantics and pragmatics has in recent years elicited various approaches to a functional account of the differences between spoken and written language with considerations of contextual factors such as situation, purpose, and so forth (Chafe, 1979; Keenan & Bennett, 1977; Kroll, 1977; Ochs, 1979; Olson, 1980; Pellegrino & Scopesi, 1978; Rubin, 1980; Tannen, 1982).

A recurring theme in this area, which is either the explicit target of study or is included as a control consideration, is the problem of disentangling the numerous factors that codetermine differences between spoken and written language. The most important of these dimensions that covary with modality (speaking/writing) are the amount of planning, the conventionally expected level of formality in the situation, the nature and size of the audience, and the subject matter.

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Typical spoken discourse tends to be unplanned, informal, and directed to a limited number of listeners who are generally known to and interacting with the speaker, often providing immediate (verbal and/or nonverbal) feedback. Written texts, on the other hand, tend to be well-planned. Writers can polish their productions to meet communicative, esthetic and formal standards. The potential readers are generally not present during the time the text is being composed, and may not even be known to the writer. As a consequence of the social situation and function, speaking is more likely to be about personal experiences while writing typically conveys more general descriptive and explanatory information.

Thus, speakers and listeners in a typical conversational situation tend to be more involved in their communication than writers and readers. According to Chafe (1979), this involvement is evidenced (in English) in, for instance, speakers' self-references and references to their mental processes, use of direct quotes and historical present, use of colloquial expressions, monitoring devices (to control the information flow), evidentials (comments on the source and validity of the information), vagueness, and hedges. All these features (which will be discussed in more detail later) are more frequent in typical spoken than in typical written language. It is, however, questionable to what extent these differences are a function of modality itself and not of other factors that naturally covary with modality. The frequencies of self-references, references to the communicator's mental processes, direct quotes, and historical present are obviously related to the subject matter. Colloquial expressions occur more often in informal situations. The use of monitoring (e.g., "you know", "I mean") and evidentials (e.g., "I think", "I guess") depends on the relationship between communicator and recipient. Vagueness and hedges are more frequent in unplanned than in planned language. Thus, as defined by these features, involvement is a multifaceted and heterogeneous concept.

Written language, in addition to the less frequent use of involvement features, conveys the communicator's detachment through structures like passives, past perfect, indirect quotes, and literary expressions (Chafe, 1979). Again, concommittant factors influence these spoken/written differences. Literary expressions and possibly also passives may reflect conventions of form determined by the situational context, and the use of past perfect and indirect quotes varies with the subject matter.

Thus, while involvement and detachment intuitively are the opposite ends of one dimension, they reflect a variety of cognitive factors, determined by the communicator's perceptions of the situation and his/her attitude toward the message and the recipient(s).

Other differences between spoken and written language are more closely related to the processing characteristics of the two modalities. The attentional and working memory demands imposed on speaker and hearer by the speech situation, as well as competition for the floor in conversation, favor a fragmented, not very integrated style. In writing, the production process allows for

much more deliberation, and readers can proceed at their own pace and even retrieve previous information from earlier parts of the text. This results in frequent occurrence of integrative language devices like subordination, complement clauses, nominalizations, and attributive adjectives (Chafe, 1979, 1982).

Differences in integratedness within as well as between modalities are a function of the amount of planning. Ochs (1979) distinguishes between referential and nonreferential functions of language and suggests (p. 95) that "if one or the other of these functions places heavy demands on the communicator, . . relatively unplanned discourse will be produced." Unplanned discourse is characterized by increased reliance on "morphosyntactic and discursive skills acquired in the first 3–4 years of life" (p. 53). Ochs substantiates this claim with many examples and relevant findings from developmental psycholinguistics.

Chafe (1979, 1982) organizes a large variety of features of English, including some of Ochs' (1979) features of planned/unplanned language, in a fragmentation and an integration scale (which will be described below in the section "Coding").

Chafe is currently expanding the list of features that contribute to his involvement, detachment, fragmentation, and integration scales and investigating their validity as indicators of spokenness and writtenness as well as the dimensional organization of the feature space. For this study, he and Jane Danielewicz collected four kinds of language samples from faculty and graduate students: dinner table conversations, lectures, personal letters, and academic papers (cf. Chafe, 1982).

The choice of these discourse situations allows the separation of the "spoken/written" factor from the "formal/informal" dimension. This dimension (informal conversations and letters vs. formal lectures and papers) coincides with differences in the amount of planning and in audience characteristics. The within-modality variation may thus be seen as probing the extremes of spokenness and writtenness in speaking and writing. The two levels of this factor might, however, not be strictly comparable between the speaking and the writing situations. The high situational demands in the conversations may be expected to produce a less planned language style than the letter writing (cf. Ochs, 1979). In the high formality condition (lectures and papers), a similar problem arises. The conventions of linguistic form in academic papers may be quite different from those in the lecture situation. Good lectures often mimic unplannedness (cf. Tannen, 1982), using deliberately planned involvement and fragmentation features. These difficulties in independently varying the formality of the situation, the amount of planning, and the communicator–audience relationship, introduce some ambiguity to the theoretical interpretation of any interactions of these factors with the spoken/written factor, thus defeating the major purpose of a multivariate design.

In the present study, plannedness, formality, and audience were held constant across conditions. In rather unplanned informal speaking and writing situations,

a variation in subject matter (orthogonal to the modality factor "spoken/written") was introduced to answer two major questions:

1. Are there differences in the degree of involvement/detachment and fragmentation/integration of spoken and written language if the speaking and writing situations are very similar with respect to conventions of form, subject matter, amount of planning, and communicator/recipient relationship?
2. Do the scale values and/or the modality effects depend on the subject matter of the communication?

METHOD

Procedure

Four topics were used in this experiment, two personal stories and two explanation topics. In the personal story genre, the topics were (a) "Something that happened to you last year," and (b) "Something that happened to you recently." The explanation topics were (a) "The American School System," and (b) "The Berkeley Co-op System."

The oral presentations were tape-recorded in the phonology laboratory of the University of California, Berkeley.[1] Subject and experimenter were seated in a comfortably furnished, sound-proof room, half-facing each other, with a microphone near the subject's chin transmitting to a tape-recorder outside. The experimenter gave only nonverbal (i.e., gaze, mimic, posture, etc.) back-channel responses to avoid the essentially uncontrollable influence of verbal reactions on the subject's lexical and syntactic choices. Initial announcement of the topic and the subject's presentation were separated by an overtly timed five-minute practice talk on a different topic and some small talk (total time: approximately 10 min). The subject was asked to tell the story or to give the explanation as if in a casual conversation.

The writing task was a two-page essay in the form of a letter to the experimenter. The instructions emphasized ". . . just write it down as it comes to mind. . . Please do not polish your product. Do not copy your manuscript."

Thus the spoken and written productions were both rather unplanned, at least in the sense of being not rehearsed or edited. Both were directed to the same person, and the instructions were designed to induce a very informal setting.

The large variation among individuals in language use calls for a repeated measures design. Since writing about a topic would certainly have strong effects

[1]I am indebted to Mariscela Amador for introducing me to the phonology laboratory and for volunteering her expert technical assistance with the recordings.

on the language used in a subsequent oral presentation of the same topic, all subjects completed the oral tasks first. The effect of the oral presentation on the form of the written texts was minimized by a considerable delay between the two parts of the experiment and controlled by using new as well as repeated topics in the writing task. The procedure was as follows:

In the oral task, each subject told a story and gave an explanation, with a delay of 4–17 days (median: 7 days) between the two sessions. The sequence of the two genres was counterbalanced between subjects. Three weeks after the first recording the subject was informed that there was a second part to the experiment, involving a writing task. Again, a story and an explanation were elicited. For one of the genres (story/explanation), the subject was given the same topic as in the oral presentation; for the other, she wrote about the alternate topic of that genre.[2] The delay between spoken and written productions of the same topic ranged from 20–65 days (median: 37.5 days).

Thus, the design consisted of the two experimental factors "modality" and "genre" (repeated factors), and three grouping factors for control purposes: "sequence of genres in spoken productions," "sequence of genres in written productions," and "old/new written topic."

Subjects

Eight female undergraduates (various majors, not psychology or linguistics) from a room-and-board house of the Berkeley University Students Cooperative Association served as subjects. Sampling was restricted to women because studies of sex differences in spoken language (reviewed by Haas, 1979) suggest the possibility of interactions of gender with topic and/or modality. All subjects were superficially acquainted with the experimenter, which enhanced the informality of the situations. One subject felt she could not afford the additional time for the written part of the experiment and had to be replaced.

Data Preparation

The tape-recorded oral presentations were transcribed by the experimenter with attention to pauses, hesitations, respiratory events, and intonation contours, roughly along the lines of Chafe's (1980) conventions. The 16 oral presentations were 3 min to 11 min 15 s long (total 104.5 min) with a minimum of 570 and a maximum of 1,933 words (total number of words spoken: 19,450). The 16 written texts were between 166 and 545 words in length (total: 6,011 words).

[2]The "same" condition was introduced not only to investigate the effect of a prior oral presentation on the written texts, but also to allow (in a future analysis) direct assessment of encoding differences between spoken and written presentations of the same contents.

TABLE 1
Features Defining the Involvement, Detachment, Fragmentation, and Integration Scales (with Examples from this Study)

	INVOLVEMENT
Self-references	*I, me, my, . . .* (unless monitoring or evidential)
Communicator's mental processes	*I wish, I felt, I realized, . . .* (except when used in monitoring or evidentials)
Direct quotes	*So he said, "Okay!", . . .*
Historical present	*Then I get this notice from the police . . .* (excluding descriptions of states which may continue to be true in the present)
Colloquial expressions	*stuff, I figured, a very fun situation, . . .*
Emphasis	*just, really, so* (unless used in a comparison), . . .
Monitoring	*you know; I mean; Oh no. I take that back; . . .* (devices to control the information flow)
Evidentials	*I think, I suppose, I'm not really sure, . . .* (indicating source and/or validity of information)
Vagueness	*and so on, things like that, etc., . . .*
Hedges	*sort of, roughly, basically, in a way, . . .*
	DETACHMENT
Passive	*is reflected in, must be paid, . . .*
Past perfect	*I had bought it, . . .*
Indirect quotes	*and said he'd take me home, . . .*
Literary expressions	*utterly, to excel, ambience, the utmost of, is conducive to, met with success, . . .*
	FRAGMENTATION
Independent clauses	(simple one-verb clauses without coordinating or subordinating conjunctions, e.g., *"I was still moving in. I had a lot of expenses. I couldn't write checks."*)
"and"-clauses	*and that was fun, . . .*
"but"-clauses	*but it worked out well, . . .*
Coordinated clauses	(other than "*and . . .*" or "*but . . .*")
	INTEGRATION
Attributive adjectives	*late, tiny, controversial, emotional, . . .* (excluding participles and quantifications)
Present participles	*amazing things, I remember thinking . . . , . . .* (excluding nominalizations)
Past participles	*was exhausted, no money involved, used moped, . . .* (excluding nominalizations)
Nominalizations	*exposure to* (instead of "*we were exposed to*"), *smoking areas, . . .*
Series of verbs	*We all, after experiencing some novelty, long for and return to our usual patterns; . . .*
Series of adjectives	*it seems very spacious and very quiet; . . .*
Series of nouns	*The cooking, maintenance, cleaning, and gardening is done by students; . . .*
Complement clauses	*I noticed that . . . ; it was important for me to . . . ;* ("*I want to . . .*" and similar constructions are only included if the complement is stressed)

Coding

Involvement, detachment, fragmentation and integration scores for each text were determined by coding[3] and counting the major features from Chafe's current definition of the scales (Table 1).

Several potentially interesting features were omitted here from the integration scale. For instance, Kroll's (1977) findings of modality differences in subordination and coordination suggest that subordinating constructions are more frequent in written than in spoken language. For many formally subordinated clauses, however, the functional status in the discourse is questionable, and the notions "complex sentence," "compound sentence," and so forth invoke the highly controversial "sentence" concept. The omission of Chafe's feature "topic sentence" has similar reasons. "Genitive subjects" and "genitive objects" (Chafe, 1982) accompanying nominalizations are features of well-planned formal written language and occurred only five and two times, respectively, in all of the present data. They were thus not included in the analysis.

RESULTS AND DISCUSSION

The frequency indices (number of occurrences per 1,000 words) of the defining features and the resulting scale values for involvement, detachment, fragmentation, and integration are given in Table 2.[4] The individual features show considerable variation in frequency and, therefore, in relative contribution to the overall scale value. The modality and genre differences are not always in the expected direction. For the more reliable overall scale values (sums of feature indices), however, the result is very clear: Spoken texts are more involved and more fragmented than written texts, which are more detached and more integrated. Stories show more involvement and fragmentation and less detachment and integration than explanations. The only exception to this pattern is the surprisingly high detachment value for the spoken stories.

Control Factors

For each of the four scales (involvement, detachment, fragmentation, and integration) analyses of variance were conducted to determine the effects of the control factors "sequence of genres" in the spoken and in the written productions and "old/new" in the written texts. None of the scales showed a significant effect of the sequencing factors ($F(1,4) = 3.98$, $p > .10$, for the effect of the

[3]The coding was supervised by Wallace Chafe, who decided any unclear cases (without information about the source—spoken or written—of the feature in question).

[4]For the indices in Table 2, the frequencies were added across subjects before being relativized to the total number of words. In the significance tests to be reported below, the indices were computed separately for each of the 32 texts, yielding only slightly different overall values (less than 6% deviation).

TABLE 2
Frequency Indices (Number of Occurrences per 1000 Words) for the Involvement, Detachment, Fragmentation, and Integration Scales and for Their Component Features

	Spoken		Written	
	Story	Explan.	Story	Explan.
INVOLVEMENT (total)	142.6	68.8	99.4	45.4
Self references	72.3	24.2	69.3	25.2
Communicator's mental processes	8.9	2.8	9.8	2.7
Direct quotes	3.0	.3	1.3	.7
Historical present	1.2	.0	.3	.0
Colloquial expressions	12.5	6.2	4.9	2.0
Emphasis	15.2	5.4	4.6	2.0
Monitoring	12.8	7.7	2.6	.7
Evidentials	7.1	12.2	2.0	6.5
Vagueness	3.9	2.9	1.0	2.4
Hedges	5.7	7.1	3.6	3.1
DETACHMENT (total)	7.9	5.2	8.5	16.6
Passive	3.4	4.5	3.6	15.3
Past perfect	2.0	.3	3.3	.7
Indirect quotes	1.5	.1	.3	.3
Literary expressions	1.0	.3	1.3	.3
FRAGMENTATION (total)	81.7	63.4	39.7	35.0
Independent clauses	13.8	12.2	21.2	23.1
"and"-clauses	39.4	26.8	9.1	4.4
"but"-clauses	7.0	7.2	3.9	3.4
Other coordinated clauses	21.5	17.2	5.5	4.1
INTEGRATION (total	44.3	63.6	93.5	105.9
Attributive adjectives	13.3	23.7	29.9	38.1
Present participle	6.9	7.1	14.0	6.8
Past participle	3.5	5.5	5.9	8.2
Nominalizations	3.2	5.3	7.8	9.9
Appositives	.5	1.5	3.3	4.4
Series of nouns	3.3	7.0	9.8	14.0
Series of adjectives	1.9	3.7	2.0	4.4
Series of verbs	5.2	2.9	9.1	9.2
Complement clauses	6.5	6.9	11.7	10.9

sequence of genres on the involvement score in the written texts; all other F-values are < 1). For involvement and fragmentation the scores of the "new" written texts were on the average somewhat higher than those of the "old" (repeated) topics, but not significantly so ($F(1,4) = 1.91, p > .10$ and $F(1,4) = 3.91, p > .10$). In detachment and integration, the "old" and "new" topics showed no systematic differences (all F's < 1). Since none of the control factors had any significant effects, they were not included in the further analyses.

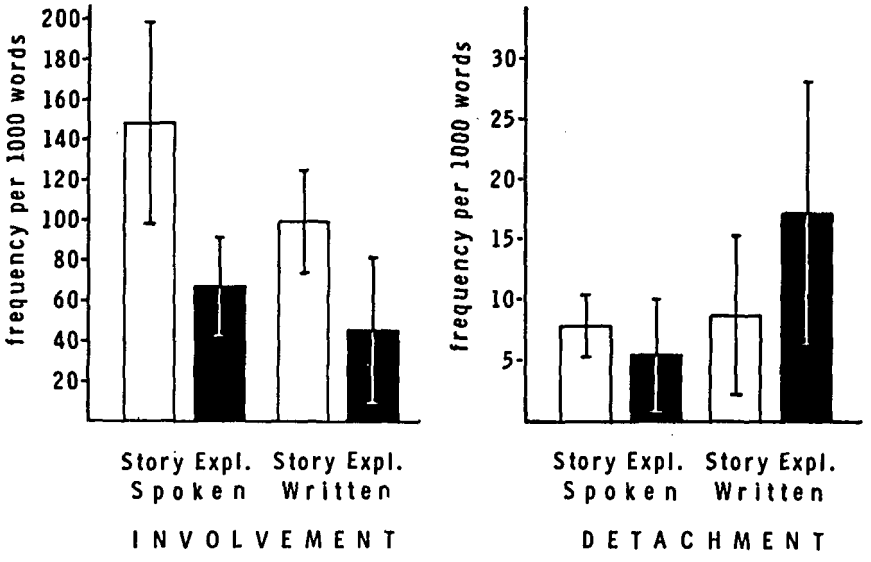

FIG. 1. Average involvement and detachment scores (bars indicate +/− 1 standard deviation)

Modality and Genre

Analyses of variance were conducted with the repeated factors of modality (spoken/written) and genre (story/explanation) and the four scales as dependent variables. For the involvement scale, both the modality effect and the difference between genres were significant ($F(1,7) = 13.82$, $p < .01$; $F(1,7) = 39.08$, $p < .001$). The spoken texts showed more involvement than the written texts and stories scored higher than explanations (see Figure 1). There as no interaction ($F(1,7) = 2.2$, $p > .10$). In detachment, none of the effects reached the significance level of .01, which was chosen to keep the overall experimentwise alpha below 10% (modality: $F(1,7) = 6.74$, $p > .01$; genre: $F(1,7) = 5.52$, $p > .05$; modality × genre: $F(1,7) = 10.75$, $p > .01$). The differences were essentially in the expected direction, however. The high score for the written explanations (see Figure 1) was due to an extremely high frequency score of the feature "passive" in this condition (cf. Table 2). Since the detachment scale contains only four, rather infrequent features, the frequency scores are based on a low total number of occurrences, which makes this scale somewhat unreliable. Longer texts or a larger number of subjects, providing a more powerful significance test, would be needed to reveal these effects.

The fragmentation and integration scales both showed large modality effects in the expected direction (see Figure 2; fragmentation: $F(1,7) = 88.05$, $p < .001$; integration: $F(1,7) = 61.63$, $p < .001$). The spoken texts were more fragmented and less integrated than the written texts. For fragmentation the

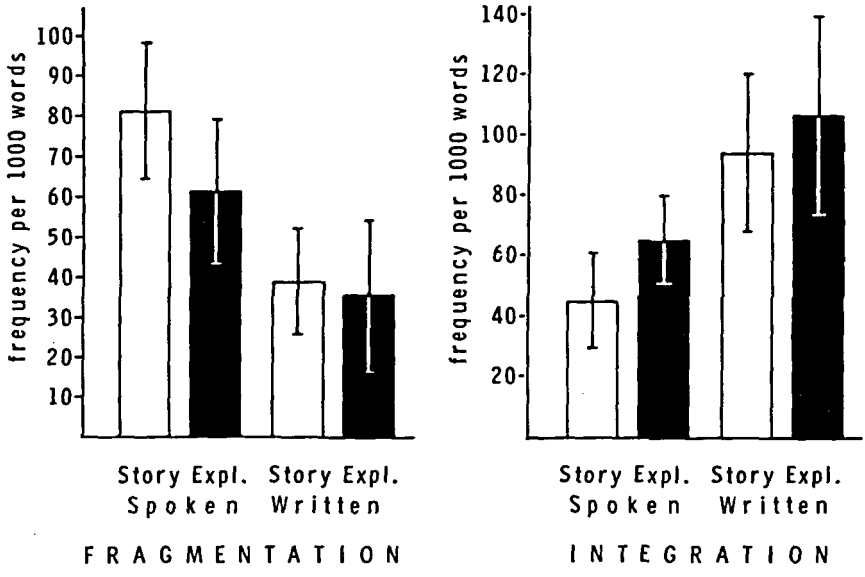

FIG. 2. Average fragmentation and integration scores (bars indicate +/− 1 standard deviation)

difference between the genres was also significant ($F(1,7) = 21.93$, $p < .01$). The fact that the stories are not significantly less integrated than the explanations ($F(1,7) = 5.36$, $p > .05$), may be due to the subjects' having told these stories before, while the explanations were newly composed in the experimental situation. Chafe (personal communication, January 1981) has found that the level of integration shows a dramatic increase from the first to subsequent tellings of a story. This explanation is supported by the observation that the average difference between "repeated" and "new" written texts was 1.7 for the stories, indicating essentially no effect of the oral production, while it was 13.05 for the explanations.

Psychometric Considerations

The most problematic aspect of the scales in their current definition (sums of feature counts taken relative to text length) is the direct dependence of the weight of a feature in the scale on its overall frequency. While more frequent features are more reliably measured and thus should receive somewhat higher weights, the ultimate criterion for the weight of a feature should be its theoretical importance. The inappropriateness of the simple addition is most evident in the involvement scale, which is dominated by the extremely frequent feature "self-references," leaving the infrequent features "vagueness," "direct quotes," and "historical present" with very little influence (Table 2).

As pointed out in the introduction, the unidimensionality of the scales seems

questionable. This point is substantiated by a rather diffuse pattern of Spearman correlations between the features; there are no clear intrascale clusters. The occurrence of very low and even negative feature/scale correlations (Spearman correlations between the feature score and the scale value as determined by its remaining features) indicates a lack of internal consistency.

At least under the current scaling procedure, the relation between the scales is also problematic. While integration and fragmentation correlate −.89, and may thus be considered the opposite poles of essentially the same dimension, involvement and detachment do not show the expected negative correlation ($r = -.05$). This may in part be due to the lack of reliability in the detachment scale, but should be kept in mind in considering the possible components within the involvement and detachment scales.

CONCLUSIONS

This study has shown that Chafe's (1982) spokenness/writtenness features are powerful indicators of differences between spoken and written language, even when the speaking and the writing situations are very similar. In naturally occurring situations, a variety of factors covary with the modality of the discourse and tend to enhance the spokenness/writtenness contrast.

The integration and fragmentation scales each discriminated very well between the spoken and written discourse produced in this study and the data supported their conceptualization as the opposite ends of a single dimension. While the involvement scale also showed good discrimination between spoken and written productions, the detachment scale is apparently rather unreliable and/or too heterogeneous.

The finding of such striking differences between spoken and written language has implications for psycholinguistic and memory research. Studies in comprehension of and memory for linguistic material (connected discourse or isolated sentences) often use written responses. The possible effects of this choice on the quality of the elicited language are generally not considered. Investigations of differences between listening and reading comprehension should include systematic variations of the spokenness/writtenness of the material. Hildyard and Olson (1978), for instance, compare comprehension of oral and written discourse using the same stimulus material in both modalities. Their finding that oral presentation did not yield higher memory performance on pragmatic inferences than written presentation may have been due to the fact that their material did not have typical characteristics of spoken language.

Taking the differences between spoken and written language into account is especially important when linguistic stimulus material is generated by the experimenter, for instance, in speech processing research (e.g., Blank, 1980; Marslen-Wilson & Tyler, 1980). Here subjects are often presented orally with highly integrated material, the contents of which are of no communicative interest to

either the speaker (experimenter) or the hearer. In one such study (Blank, 1980),[5] the scale values (frequency scores determined as described above) characterize the language as neither involved (score: 3.3 occurrences per 1000 words), nor particularly detached (3.3). The fragmentation is less than in any of my texts (23.1), while the integration score is extremely high (132.0). The language used in Blank's study is presumably typical of this area of research. Thus, it seems important for the conclusions drawn from such studies to investigate the generalizability of the results to the processing of more typical spoken language.

The further investigation of the spokenness/writtenness scales should take three directions:

1. Other kinds of topics and genres should be used and the factors that were held constant in the present study should be varied (amount of planning, formality/informality of the situation, nature and size of the audience). With respect to the communicator's audience design, it would be interesting to vary the degree of assumed shared knowledge and the addressee's feedback.[6]
2. At the psychometric level, the empirical construct validation should include approximation of dimensional decomposition models to determine the structure of the feature space and optimal weights for the features.
3. The psychological validity of the scales should be assessed. Having different subjects rate the spokenness/writtenness and how involved, detached, integrated and fragmented the spoken and written productions appear, may also shed some light on the dimensions and components of perceived spokenness and writtenness.

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[5]Blank's (1980) study is used for this illustration because she provides a list of the sentences used in her experiment.

[6]The possibility that assumptions and/or feedback about shared knowledge might be important here was suggested by an anonymous reviewer.

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