The Gender-Linked Language Effect in Primary and Secondary Students' Impromptu Essays[1]

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Impromptu essays were written by 96 primary- and secondary-school students (48 males and 48 females) from three grades: fourth, eighth, and twelfth. In Analysis 1, printed transcripts of the essays were coded for 19 language features by trained observers. Discriminant analyses showed language differences between the male and the female writers at all three grade levels, differences that permitted 84 to 87% accuracy of gender prediction. In Analysis 2, the same transcripts were rated on three attributional dimensions by untrained university students and older individuals. Differences were found for all three grades: fourth-grade females were rated higher on Socio-Intellectual Status and Aesthetic Quality, but corresponding males were rated higher on Dynamism; eighth- and twelfth-grade males were rated higher on Dynamism. In Analysis 3, multiple regression analyses demonstrated a predictive link between objective language use and subjective attributional ratings. The findings are generally consistent with sex role stereotypes and fully support the existence of the Gender-Linked Language Effect in the writing of fourth graders.

Scholars disagree whether sex role stereotypes reflect actual differences in the communication behavior of men and women or whether such differences are merely unsupported, folk linguistic notions (Bradley, 1981). For instance, Berryman-Fink and Wilcox (1983, p. 663) argue that "very few actual differences in the speech of males and females are empirically documented." Smith (1979, p. 134) claims that there are "enough data to conclude that our precon-

ceptions about men's and women's speech are significantly at odds with male-female differences." Brouwer et al. (1979, p. 33) agree that studies striving to establish gender differences in communication are "on the wrong track."

However, a growing number of researchers are presenting evidence that men's and women's communication behavior differs and that those differences are consistent with sex role stereotypes. Giles and his associates (Giles et al., 1979, 1987) emphasize that communication style helps establish the identity of group members (for example, males, the elderly, the working class) by distinguishing them from non-group members. Thus, members of a social group may use communication behavior that perpetuates group distinctiveness. Goffman (1967) sees verbal and nonverbal messages as aspects of group structure that are used, among other things, to establish and express roles of dominance and submission. Trudgill (1972) similarly interprets gender-distinctive language choice as a product of social roles. Henley (1977) concurs that behavior reflects social roles through the mechanism of self-fulfilling prophecy and that women are reinforced for communicating in a manner denoting powerlessness.

Research spanning the last 30 years demonstrates that people hold clear-cut stereotypical notions about men and women. Just as men are viewed as more confident, dominant, and persistent, women are perceived as more affectionate, submissive, and sympathetic (Ashmore & Tumia, 1980; Del Boca & Ashmore, 1980; Williams & Bennett, 1975). Recently Deaux and Lewis (1984) demonstrated a more complex conceptualization of stereotypes that adds the components of role behaviors, occupations, and physical appearances to that of gender-related traits. In addition to general stereotypical notions, people also possess stereotypes regarding men's and women's communication behavior (Kemper, 1984; Kramer, 1977).

In terms of *actual* communication behavior, a number of studies have shown differences in men's and women's use of nonverbal variables that appear to be consistent with sex role stereotypes. For example, women tend to smile more (Frances, 1979; LaFrance, 1981) and to gaze more at their conversational partners (Argyle & Cook, 1976; Lamb, 1981; Mulac et al., 1987). Men tend to speak in longer utterances (Frances, 1979; Mulac, 1989) and to interrupt their partners more often (Frances, 1979; West & Zimmerman, 1983; Zimmerman & West, 1975; but see Dindia, 1987, for conflicting results).

Research on actual language use in various speech contexts has also demonstrated gender-linked differences that appear to be consistent with stereotypes. For instance, female speakers are more likely to refer to emotions (Gleser et al., 1959; Mulac et al., 1986; Staley, 1982), to use intensive adverbs (Crosby & Nyquist, 1977; McMillan et al., 1977; Mulac & Lundell, 1986; Mulac et al., 1986), to begin sentences with adverbs or adverbial phrases (Mulac et al., 1986, 1988), and to use longer mean length sentences (Mulac

& Lundell, 1986; Mulac et al., 1986; Poole, 1979). On the other hand, male speakers are more likely to refer to quantity or place (Gleser et al., 1959; Mulac & Lundell, 1986; Sause, 1976; Wood, 1966), to use judgmental phrases (Mulac et al., 1986; Sause, 1976), and to make grammatical errors (Mulac et al., 1986). Research on gender-distinguishing language use in written contexts has been less common (Kramarae et al., 1983) and has found fewer distinguishing variables.

Our study examines not only possible male/female language differences in writing, but also the effect of these differences on impressions formed by untrained readers. Although the latter provides an important rationale for the study of male/female language differences, it has received relatively little attention by researchers. It is important to determine whether male and female communicators are perceived differently, in part because of differences in their language use.

Much of the research that investigates observer ratings of gender-based language differences has employed fabricated stimulus materials thought to be indicative of male/female language differences. Not surprisingly, "male" language (usually presented in the absence of female language features) has led communicators to be rated as more instrumental and more commanding, whereas "female" language has led them to be seen as more socially positive and more accommodating (Berryman, 1980; Newcombe & Arnkoff, 1979; Rasmussen & Moely, 1986). When Bradley (1981) trained male and female confederates to use, or to not use, two qualifying (that is, feminine) language devices when they presented dissenting positions in small groups, she found that only the women were denigrated for such use. However, other researchers (Berryman-Fink & Wilcox, 1983; O'Barr, 1982; Wiley & Eskilson, 1985) have found that the use of powerless or feminine language leads to similar, usually negative, effects when used by either male or female communicators. Although these studies are valuable in that they have established the effects of sex-stereotypical language, they have not dealt with the attributional consequences of actual male/female language differences.

One exception to the use of constructed language samples is the research program of Mulac and his associates, who have investigated the effect of actual male and female language use in speech, referring to the pattern of results as the Gender-Linked Language Effect. These studies of the attributional consequences of gender-distinguishing language use have employed language samples elicited from 12 to 96 speakers in a variety of communication contexts. The samples were printed in transcript form, without gender identification, and were judged by untrained raters using the Speech Dialect Attitudinal Scale (Mulac, 1975, 1976), a multidimensional semantic differential. The findings are that female speakers are generally rated higher on subjective characteristics subsumed under the rubrics of Socio-Intellectual Status

and Aesthetic Quality, whereas males are rated higher on characteristics subsumed under Dynamism. This pattern of effects has been remarkably stable across the speech contexts in which it has been tested: (a) photograph-description monologues in the presence of a researcher (Mulac & Lundell, 1980; Mulac & Rudd, 1977), (b) public speeches (Mulac & Lundell, 1982), and (c) same-sex dyadic interactions (Mulac et al., 1988). In addition, these effects have been linked empirically to specific language features, measured by trained coders, that differentiate between male and female speech (Mulac & Lundell, 1986; Mulac et al., 1986).

This series of studies has controlled for possible sex role stereotype effects in the ratings by determining that similar respondents were unable to identify the sex of the speakers. However, in another study Mulac et al. (1985b) directly compared the effects of male/female language differences and sex role stereotypes on judgments of speakers. Using elicited descriptions of two landscape photographs, they demonstrated that language and stereotype effects can operate separately, even though the patterns of the two effects are virtually identical.[3] Thus, an observer makes similar judgments about men and women, based on the speaker's language behavior or on the observer's own sex role stereotypical notions. In addition, the findings showed that these attributions can be brought about separately, added together to increase male/female differences, or subtracted from each other to cancel out such differences. Most of the Gender-Linked Language Effect studies have been conducted with the sex of the communicator unlabeled (and with the subjects unable to guess communicator sex) to ensure that the judgments were based upon men's and women's linguistic choices alone. We followed this paradigm in the present study.

The purpose of this study was to determine whether male and female primary- and secondary-school students use language differently in impromptu essays and whether observers' judgments of the writers, based on these essays, differ. In addition, we wanted to test the predictive connection between gender-linked language differences and observers' attributional judgments of the writers. Finally, we intended to compare any differences in language use, and any differences in the effects of language use, to sex role

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[3]In that study, untrained raters responded to speech transcripts presented in four language/ gender-attribution conditions: (a) Gender-Linked Language Effect only (no designation of speaker gender and respondents unable to identify gender), (b) language effect plus sex role stereotype effect (speaker gender correctly identified on 100% of the transcripts, e.g., "a woman"), (c) sex role stereotype effect only (speaker gender correctly identified on 50% of the transcripts, so that gender-linked language was controlled), and (d) language effect versus sex role stereotype (speaker gender correctly identified on 0% of the transcripts, so that the language effect was pitted against the stereotype effect).

stereotypes. In this way we could assess the explanatory power of the Gender and Communication Cycle, shown in Fig. 1. This model proposes that there exist male/female communication differences, that these differences lead to differential judgments about communicators, and that the judgments are consistent with sex role stereotypes. It also suggests that sex role stereotypes are consistent with, and may contribute to the perpetuation of, male/female communication differences.

The portion of the model that provides the focus for this study deals with the Gender-Linked Language Effect. Given the consistent and robust nature of the effect in previous research that examined spoken language, it is natural to ask if it will also be found for written language. The possibility that gender differences may shift from spoken to written contexts is suggested by the results of several studies (Haslett, 1983; Price & Graves, 1980). In addition, the research of the linguists Chafe (1982) and Tannen (1982) indicates that there are striking differences between the spoken and written channels of communication. We therefore examined the writing behavior of fourth-, eighth-, and twelfth-grade students to determine the presence or absence of gender-linked distinctions and the stability of such findings across age levels.

It is clear that by the age of 2.5 years children demonstrate some knowledge of sex role stereotypes and that by fourth grade stereotypes are well established (Cummings & Taebel, 1980; Drabman et al., 1981; Gettys & Cann, 1981; Parish & Bryant, 1978; Tryon, 1980). We therefore reasoned that any relationships between stereotypes and language behavior could reasonably be assessed as early as fourth grade.

In contrast to the approach taken in the majority of previous research, our study investigated whether male and female writers actually use combi-
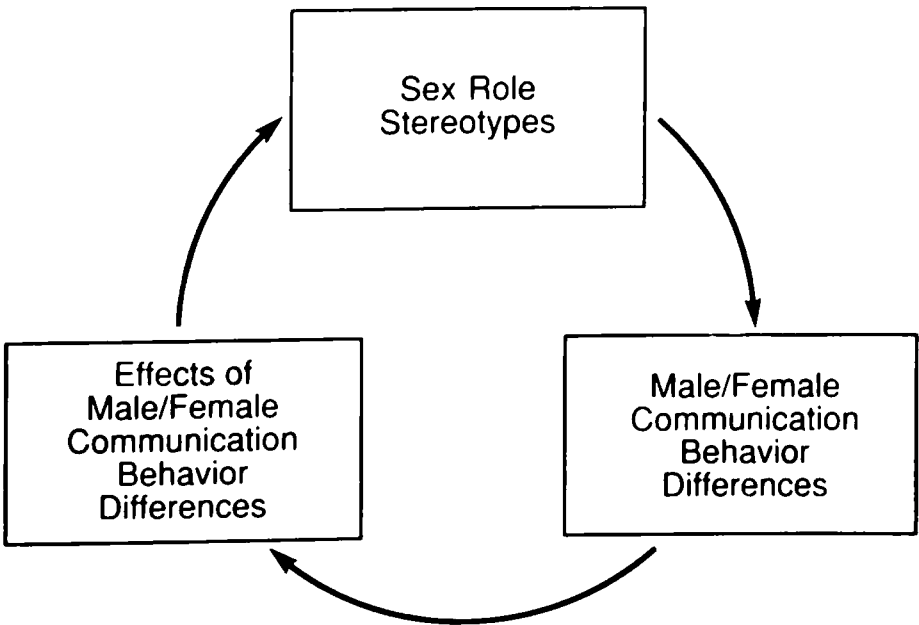

Fig. 1. The Gender and Communication Cycle.

nations of language features differently and whether their writing leads them to be rated differently by untrained observers. We posed the following hypotheses.

Hypothesis 1: Combinations of language variables coded by trained observers can differentiate between male and female writers of impromptu essays in fourth, eighth, and twelfth grades.

Hypothesis 2: Subjective attributional judgments by untrained observers can differentiate between male and female writers of impromptu essays in fourth, eighth, and twelfth grades in ways that are consistent with the Gender-Linked Language Effect: females receiving higher ratings on Socio-Intellectual Status and Aesthetic Quality and males receiving higher ratings on Dynamism.

If male/female differences were to be found both for objective language features and for subjective attributional judgments, then a third hypothesis could be tested:

Hypothesis 3: Male/female differences in the use of language features can predict differences in observers' subjective attributional judgments of the writers.

In addition, an overarching concern was to determine whether any differences found in male/female language use at any grade level, as well as any differences in the effects of those language differences, were consistent with sex role stereotypical judgments found in earlier studies. Therefore, we posed the following research question.

Question: To what extent are objective language differences and subjective attributional judgments consistent with sex role stereotypes?

METHOD

Writing Samples

The writers were students enrolled in the predominantly white, upper middle-class, Santa Barbara (California) County public school system and were drawn from three grade levels: (a) fourth grade (9–10 years of age), (b) eighth grade (13–14 years), and (c) twelfth grade (17–18 years). In selecting these grades, we followed the rationale of Hunt's (1965) classic study of grammatical and linguistic structures in writing: (a) many students are not ready to write essays until the fourth grade, (b) most have stabilized their writing style by the twelfth grade, and (c) the eighth grade is a useful halfway checkpoint to view the developmental process. In the normal classroom setting, the teacher gave the students 50 min to write an impromptu essay on the following topic: "Is it important to tell the truth? Can it ever be bet-

ter to lie?" The students were encouraged to use examples drawn from their own experience.

Several essays were eliminated for the following reasons: (a) the writer failed to follow instructions, (b) the sample was too brief (primarily a problem with fourth graders), (c) the handwriting was illegible, or (d) the content of the essay revealed the sex of the writer (thus permitting stereotypical judgments). From the remaining samples, 32 essays (16 male and 16 female) were randomly selected for each of the three grade levels, giving a total of 96 for analysis. To control for length, each sample started at the beginning of the essay and continued to the first paragraph break after 80 words. The samples were typed, one to a page, in order to eliminate the effect of handwriting, but with the writers' original spelling, punctuation, and grammar preserved. Analyses of the males' and females' transcript lengths for each grade level failed to uncover any differences [all t's (30) < 0.50, p's > .60, two-tailed]. The mean transcript length, in words, for the three grades was as follows: (a) fourth, 101.8; (b) eighth, 139.5; and (c) twelfth, 145.8.

Essay transcipts were randomly assigned numbers (for example, "Person 19") within each grade, but no gender or age identification was given. Within each grade, the 32 writing samples were randomly subdivided, for purposes of rating, into four groups of eight writers (four male and four female). Transcript booklets representing each grade were formed by individually randomizing photocopies of these subgroups.

Writing Maturity Auxiliary Analysis

Because Analysis 1 would involve the objective coding of language features by trained observers (features that might be affected by the levels of writing development), it was important to assess the writing competence displayed in the essays. It is commonly believed that for younger age groups girls are superior to boys in writing development, although support for this view has come primarily from standardized performance tests of language ability administered to large groups, where the magnitude of difference has been small (Hogrebe et al., 1985). Several studies that have summarized research on linguistic development (Klann-Delius, 1981; Macaulay, 1978) have failed to find any consistent gender differences. However, one large-scale study of fourth, eighth, and eleventh graders did find evidence that females outperformed males on overall writing skills (National Assessment of Educational Progress, 1980). Because of the possibility of female superiority, we conducted two auxiliary analyses to assess writing maturity of our students: (a) T-unit analysis and (b) holistic assessment.

Mean length T-units are widely accepted as a measure of syntactic maturity (Hunt, 1965, 1970; Loban, 1976). This variable, defined as the average length in words of "each independent clause with its modifiers" (Loban, 1976, p. 9), was computed for each writer, based on the coding of all 96 transcripts by five trained observers. The intraclass reliability estimate for the data (Winer, 1971, pp. 283-289) showed high agreement among the judges (.97).

A two-way analysis of variance (2 writer sexes × 3 grade levels) of the mean length T-units failed to uncover any differences between the males and the females at any grade level. Neither the main effect for sex [$F(1,90)$ = 0.17, p > .50] nor the sex-by-grade interaction [$F(2,90)$ = 1.38, p > .20] approached statistical significance. However, a main effect was found for grade level [$F(2,90)$ = 8.64, p < .001], followed by Duncan comparisons, indicating that fourth graders used shorter T-units (M = 7.81) than either eighth graders (M = 9.32) or twelfth graders (M = 9.43). These results are consistent with the findings of Hunt for fourth, eighth, and twelfth graders (1965).[4]

The second measures were in the form of holistic assessments of writing maturity, acknowledged as valid measures of overall writing quality (Breeland & Gaynor, 1979; Myers, 1980). These were rendered for all 32 essays from each of the three grade levels (presented without sex identification) by three panels (each comprised of four experienced primary or secondary teachers of language arts). The teachers ranged from 29 to 55 years of age and represented 2 to 33 years of teaching experience, with a median experience of 15 years. The scores were given on a 1- to 6- point scale, following usual procedures for holistic assessment of writing quality (White, 1985). The intraclass reliability (Winer, 1971, pp. 283-289) of these scores was high for all three groups of raters, ranging from .88 to .95, with a median reliability of .93.

A two-way analysis of variance (2 writer sexes × 3 grade levels) of the holistic scores failed to show any effects approaching statistical significance [all F's (1,90 or 2,90) < 1.5; all p's > .20]. This analysis demonstrated that the male and female writers at each grade level received similar overall quality ratings. No comparative assessment was possible between the grade levels because each grade was evaluated separately, with the raters using the entire 6-point scale to indicate the variance of quality within that grade level.

The two auxiliary analyses failed to find any differences between the male and female writers. This meant that any differences in language use that might be found in Analysis 1 for any grade level would not reasonably be attributable to the literacy development of male, compared to female, writers.

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[4]Elley et al. (1976) also found no improvement in the writing performance or language competence of high school-age students over a 3-year period.

Sex-Recognition Auxiliary Analysis

Because Analysis 2 would involve the use of attributional judgments by untrained raters, judgments that might be affected by sex role stereotypes (Mulac et al., 1985b), it was important to determine whether respondents would be able to guess accurately the sex of the writers. This possibility was tested by having a separate group of observers read the 12 subsets of writing samples, each containing four males and four females from one grade, and guess the sex of each writer on a forced-choice coding form. Respondents were 73 volunteers (27 males and 46 females) drawn from an advanced communication course at the University of California, Santa Barbara.

Chi-square analyses indicated that the readers could not guess the sex of writers from the three grades with anything better than chance accuracy: (a) fourth graders $-\chi^2(1, N = 25) = 1.43, p > .20$; (b) eighth graders $-\chi^2 (1, N = 22) = 0.82, p > .30$; and (c) twelfth graders $-\chi^2 (1, N = 26) = 0.91, p > .30$. This meant that any differences found in the analysis of attributional ratings by untrained observers in Analysis 2 would be the result of language differences of the writers, and not of the sex role stereotypical notions held by the raters.

ANALYSIS 1: OBJECTIVE LANGUAGE FEATURES

The purpose of the first analysis was to determine, for each grade level, whether objectively coded language features of the essays would permit accurate determination of writer gender, as predicted by the first hypothesis.

Language Features

We selected 19 language variables for analysis, 18 of which had previously been shown empirically to differentiate between males' and females' communication.[5] These variables are listed in Table I, along with examples drawn from the essays, citations of the studies in which they have been found to differ for males and females, the gender more likely to use each, and the age groups and communication contexts for which the differences have been found. In addition, 11 of the variables had been shown to influence judgments in ways consistent with the Gender-Linked Language Effect (Mulac et al., 1985a, 1986; Mulac & Lundell, 1986); for example, use of the female

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[5]*Contractions* were chosen for analysis, even though no earlier study had found the variable to differ for males and females, because its presence in written essays seemed potentially indicative of the direct, "less proper," language use stereotypically assumed of males (Kramer, 1977).

Table I. Descriptions, Examples,[a] and Citations[b] for 19 Language Variables Coded as Potential Predictors of Writer Gender and SDAS Ratings

I. Sentences

A.   *Mean Length Sentence:* The number of words divided by the number of sentences (defined as sequences of words beginning with a capital letter and ending with a period). Hunt, 1965, F + (primary and secondary students: written essays); Mulac et al., 1986, F + (university students: public speeches); Mulac and Lundell, 1986, F + (children and adults: oral descriptions of photographs); Poole, 1979, F + (teenagers: interviews).

B.   *Rhetorical Questions* ("What else could I say?"): A question for which no response is apparently expected. Mulac et al., 1986, F + (university students: public speeches).

II. Clauses and Phrases

A.   *Sentence Initial Adverbials* ("During a person's high school year...." "Really, the only way...."): Answers the question How? When? or Where? regarding the main clause. Mulac et al., 1986, F + (university students: public speeches); Mulac et al., 1988, F + (university students: dyadic interactions).

B.   *Relative Clauses* ("... which was meant for your little sister...."): A clause that serves to specify or qualify the words that convey primary meaning. Beck, 1978, M + (university students: oral descriptions of TAT cards); Hunt, 1965, F + (primary and secondary students: written essays); Poole, 1979, F + (teenagers: interviews).

C.   *Oppositions* ("It seems like it's a good idea, but it isn't."): Retracting a statement and posing one that has an opposite meaning. Mulac and Lundell, 1986, F + (children and adults: oral descriptions of photographs); Mulac et al., 1986, F + (university students: public speeches).

D.   *Judgmental Phrases* ("It is important...." "This idea is Puritanical."): Indicating personal evaluations rather than merely description. Mulac et al., 1986, F + (university students: public speeches); Sause, 1976, M + (kindergarten children; interviews).

III. Verb Phrases

A.   *Action Verbs* ("yelled," "threw"): Verb forms indicating movement or action. Gleser et al., 1959, M + (adults: oral descriptions of events); Mulac et al., 1986, F + (university students: public speeches).

B.   *Uncertainty Verbs* ("It seems wrong," "You might get in trouble...."): Verb phrases indicating apparent lack of certainty or assuredness. Hartman, 1976, F + (elderly individuals: interviews); Poole, 1979, F + (teenagers: interviews).

C.   *Progressive Verbs* ("telling," "getting blamed"): Verbs presented in the "-ing" form. Mulac et al., 1986, M + (university students: public speeches).

IV. Modifiers

A.   *Hedges/Softeners* ("In general it is best...." "This is probably because...."): Modifiers that indicate lack of confidence in, or diminished assuredness of, the statement. Crosby and Nyquist, 1977, F + (adults: dyadic interactions).

B.   *Intensive Adverbs* ("really," "very," "so"): Crosby and Nyquist, 1977, F + (adults: dyadic interactions); Lapadat and Seesahai, 1978, F + (university students: group discussion); McMillan et al., 1977, F + (university students: group discussions); Mulac and Lundell, 1986, F + (children and adults: oral descriptions of photographs); Mulac et al., 1986, F + (university students: public speeches); Mulac et al., 1988, F + (university students: dyadic interactions).

Table I. Continued

C. *Justifiers* ("It's also not good to lie because you could get caught."): A reason is given for a previous assertion. Mulac and Lundell, 1986, M+ (children and adults: oral descriptions of photographs); Mulac et al., 1988, F+ (university students: dyadic interactions).

V. Conjunctions

A. *Coordinating Conjunctions* ("and," "or," "but"): A word that connects other words, phrases, and clauses that are grammatically similar. Hunt, 1965, M+ (primary and secondary students: written essays).

B. *Subordinating Conjunctions* ("so that," "although," "unless"): Words that join grammatically unlike elements. Hunt, 1965, F+ (primary and secondary students: written essays).

VI. References

A. *References to Emotion* ("scared," "embarrassed," "sad"): Any mention of an emotion or feeling. Gleser et al., 1959, F+ (adults: oral descriptions of events); Mulac et al., 1986, F+ (university students: public speeches); Staley, 1982, F+ (primary and secondary students: oral descriptions of pictures).

B. *References to Quantity or Place* ("ten dollars and fifty cents," "fire department"): References to an amount or a geographical location. Gleser et al., 1959, M+ (adults: oral descriptions of events), Mulac and Lundell, 1986, M+ (children and adults: oral descriptions of photographs); Sause, 1976, M+ (kindergarten children: interviews); Warshay, 1972, M+ (university students: event description essays); Wood, 1966, M+ (adults: oral descriptions of pictures).

VII. Miscellaneous

A. *Grammatical Errors* ("Me and my sister were going," "I thinked," "It ain't important."): Any syntactic form that is not generally agreed to be standard English. Mulac et al., 1986, M+ (university students: public speeches); Price and Graves, 1980, M+ (university students: writing samples).

B. *Fillers* ("Well...." "like if you were drinking"): Words used other than for their semantic meaning. Hirschman, 1973, F+ (university students: dyadic interactions); Mulac and Lundell, 1986, M+ (children and adults: oral descriptions of photographs); Mulac et al., 1986, F+ (university students: public speeches).

C. *Contractions*[c] ("didn't," "shouldn't," "she'll"): The condensing of two words into one, with an apostrophe added to signal the omitted letters.

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[a]All examples were drawn from the essay transcripts that were analyzed.

[b]Citations indicate empirical studies in which the variable was found to differ for male and female communicators. Gender distinctions, in terms of whether the variable was more indicative of male or female communicators, are M+ = male and F+ = female. (Note, however, that the linguistic categories were not in all cases precisely equivalent across studies.) Communicators' age groups and the communication contexts in which gender differences were found are indicated in parentheses.

[c]This variable had not previously been found to distinguish gender.

speech indicators, references to emotion and intensifiers, have been found to be predictive of higher Socio-Intellectual Status and Aesthetic Quality ratings. However, only five of these language features had been shown to dis-

tinguish between male and female writing. Given the differences between the spoken and the written channels (Chafe, 1982; Tannen, 1982), we had no assurance that any of the remaining 13 language features would show differences for male and female writers.

Language Feature Coding

The language features were coded by six advanced Speech and Hearing Sciences majors (two variables per week) after training with similar transcripts by the principal investigator. Each observer independently coded the 19 variables for all 96 writing samples.

Reliability of Language Variables

Intraclass reliability estimates (Winer, 1971, pp. 283–289) showed a generally high degree of agreement among the coders. These coefficients ranged from .79 to .99, with a median reliability of .90.

Transformation

The linguistic data for each variable were aggregated across the six coders for each writer, divided by the total number of words for that writer, and multiplied by 100. The result indicated the number of times each writer used a given feature (for example, action verbs, hedges/softeners, or justifiers) per 100 words. These proportional data were subjected to arcsin transformation before analysis because of the inherent relationship between means and variances encountered when using proportions (Winer, 1971, pp. 399–400).

Discriminant Analysis Results

The first hypothesis, regarding possible differentiation of male and female writers on the basis of objectively coded language features, was assessed by means of three stepwise discriminant analyses. This multivariate procedure has the advantage over univariate analyses because it identifies weighted combinations of language features that distinguish group membership, a process that more closely approximates the way in which people hear or read messages (Mulac & Lundell, 1986; Mulac et al., 1986). For each analysis of a given grade level, the 19 language features served as predictor variables, and the gender of the 32 writers served as the criterion, or predicted, variable.

Table II. Summary of Stepwise Discriminant Analysis[a] of Language Features Predicting Writer Gender for Fourth Graders

Step	Variable	Gender predicted[b]	Canonical coefficient[c]	F-to-remove	Wilks' lambda
1	Action verbs	Male	1.55	6.48	.82
2	Rhetorical questions	Male	2.39	4.66	.71
3	Hedges/softeners	Female	− 14.24	4.50	.61
4	Mean length sentence	Male	.14	3.16	.58
5	Relative clauses	Female	− 12.36	2.83	.54
6	Contradictions	Male	5.42	3.71	.51
7	Judgmental phrases	Male	5.31	1.64	.50
8	References to emotion	Female	− 4.81	1.59	.48
9	Fillers	Female	− 3.39	1.05	.46
10	Sentence initial adverbials	Female	− 4.33	1.07	.45

[a]Wilks' lambda = .45, $F(10, 21)$ = 3.46, $p < .01$, R^2 = .55. Reclassification accuracy = 87% (male = 93%, female = 81%).
[b]Relatively frequent use of the variable led to this prediction for interactant gender.
[c]Coefficients are not standardized. The designation of male indicators with positive coefficients, and female with negative, is arbitrary.

Results for the fourth graders indicated that a subset of 10 language variables provided substantial differentiation between male and female writers [Wilks' lambda = .45, $F(10,21)$ = 3.46, $p < .01$, R^2 = .55]. Based on the weighted combination of these 10 variables (see Table II), 87% of the writers could be accurately reclassified in terms of gender (males = 93%, females = 81%). Five of the language features entering the equation were more predictive of male writers. That is, those fourth graders making greater-than-average use of these five features tended to be male: action verbs, rhetorical questions, contradictions, judgmental phrases, and longer mean length sentences.[6] Five variables were more indicative of female writers: hedges/softeners, relative clauses, references to emotion, fillers, and sentence initial adverbials.[7]

Discriminant analysis of the eighth graders' language features also showed a significant difference between the male and the female writers [Wilks' lambda = .44, $F(9,22)$ = 3.13, $p < .025$, R^2 = .56] (Table III). The

[6]*Mean length sentence* was analyzed because in earlier studies, it had been found that female communicators tended to use longer sentences than males, possibly indicating a greater degree of elaboration. However, here it seemed more indicative of run-on sentences, that is, T-units strung together with coordinating conjunctions ("...and ..."). The fact that fourth-grade males and females failed to differ on mean length T-units supports this supposition.
[7]*Sentence initial adverbials,* like many other language features, occur in a number of different versions and potentially have a variety of possible effects on readers' judgments. However, our combining these adverbials was consistent with the majority of earlier studies on male/female language differences (Kramarae et al., 1983) and therefore permitted a comparison with those findings.

Table III. Summary of Stepwise Discriminant Analysis[a] of Language Features Predicting Writer Gender for Eighth Graders

Step	Variable	Gender predicted[b]	Canonical coefficient[c]	F-to-remove	Wilks' lambda
1	Quantity/place references	Male	7.45	3.62	.89
2	Justifiers	Male	8.05	3.10	.81
3	Action verbs	Female	− 10.06	3.04	.73
4	References to emotion	Female	− 14.25	2.31	.67
5	Rhetorical questions	Female	− 2.35	3.82	.58
6	Judgmental phrases	Male	7.49	1.86	.54
7	Progressive verbs	Female	− 4.12	1.52	.51
8	Subordinating conjunctions	Female	− 5.69	1.83	.47
9	Contractions	Female	− 3.71	1.74	.44

[a]Wilks' lambda = .44, $F(9,22) = 3.13$, $p < .025$, $R^2 = .56$. Reclassification accuracy = 84% (male = 87%, female = 81%).
[b]Relatively frequent use of the variable led to this prediction for interactant gender.
[c]Coefficients are not standardized.

accuracy of gender reclassification based on the cluster of nine variables was 84% (males = 87%, females = 81%). The three features indicative of male writers were references to quantity or place, justifiers, and judgmental phrases. The six variables predictive of female writers were action verbs, references to emotion, rhetorical quesitons, progressive verbs, subordinating conjunctions, and contractions.

Finally, the analysis of the twelfth graders' data similarly indicated gender differences in language use [Wilks' lambda = .53, $F(9,22) = 3.73$, $p < .01$, $R^2 = .47$]. The gender reclassification based on the six-variable cluster of language features (see Table IV) showed an overall accuracy of 84% (males = 81%, females = 87%). Of the six variables entering the equa-

Table IV. Summary of Stepwise Discriminant Analysis[a] of Language Features Predicting Writer Gender for Twelfth Graders

Step	Variable	Gender predicted[b]	Canonical coefficient[c]	F-to-remove	Wilks' lambda
1	Uncertainty verbs	Male	11.82	3.79	.89
2	Progressive verbs	Female	− 3.01	4.23	.77
3	Subordinating conjuctions	Male	14.35	3.74	.68
4	Judgmental phrases	Male	10.61	2.75	.62
5	Sentence initial adverbials	Male	11.21	2.28	.57
6	Fillers	Female	− 7.00	2.03	.53

[a]Wilks' lambda = .53, $F(6, 25)$, $p < .01$, $R^2 = .47$. Reclassification accuracy = 84% (male = 81%, female = 87%).
[b]Relatively frequent use of the variable led to this prediction for interactant gender.
[c]Coefficients are not standardized.

tion, four were more predictive of males: uncertainty verbs, subordinating conjunctions, judgmental phrases, and sentence initial adverbials. The two features more indicative of female writers were progressive verbs and fillers.

ANALYSIS 2: SUBJECTIVE ATTRIBUTIONAL RATINGS

The purpose of the second analysis was to determine, for each grade level, whether subjectively rated attributional judgments of the transcripts differed for male and female writers in ways consistent with the Gender-Linked Language Effect, as predicted by the second hypothesis.

Rating Instrument

We used the Speech Dialect Attitudinal Scale (SDAS) (Mulac, 1975, 1976), a 12-item semantic differential, to measure observers' attributional judgments of the writers. This instrument had been used in earlier studies that had found the Gender-Linked Language Effect for speakers. Factor analyses in these studies had consistently yielded clusters of characteristics supporting three independent dimensions, which Mulac (1975) has labeled Socio-Intellectual Status, Aesthetic Quality, and Dynamism. These factors are consistent with Zahn and Hopper's (1984) empirically derived dimensions: Socio-Intellectual Status, Attractiveness, and Dynamism. The distinction between the SDAS Socio-Intellectual Status and Aesthetic Quality is a specific version of the general distinction between "status-stressing" and "solidarity-stressing" judgmental dimensions that has emerged consistently in research on the evaluation of communicator style of language (Bradac & Mulac, 1984; Ryan, 1979). The distinction between Aesthetic Quality and Dynamism is pervasive in the literature on gender stereotyping (Ashmore & Tumia, 1980; Best et al., 1980; Williams & Bennett, 1975).

Raters

The transcript raters were volunteers drawn from two age groups: (a) university students and (b) older, adult-education students. The 139 university students (48 males and 91 females) were enrolled in an introductory communication course at the University of California, Santa Barbara. They represented a wide variety of majors and ranged from 17 to 27 years of age, with a median age of 19. The 63 adult education students (31 males and 32 females) were enrolled in a variety of courses in the Metropolitan Adult Education Program, San Jose, California, and ranged from 20 to 55 years of age, with a median age of 32.

Procedure

The raters received training in the use of SDAS, including the instruction to rate each writer "as a person." Each observer then received a booklet containing an eight-transcript subset (four male and four female) from one of the three grade levels.

Factor Analysis of Attributional Judgments

Factor analysis of the SDAS ratings, using common-factor and Varimax procedures, yielded the previously found three-factor structure: Socio-Intellectual Status (high social status/low social status, white collar/blue collar, literate/illiterate, and rich/poor), Aesthetic Quality (pleasant/unpleasant, beautiful/ugly, sweet/sour, and nice/awful), and Dynamism (strong/weak, active/passive, loud/soft, and aggressive/unaggressive). These dimensions accounted for 68% of the item variance, with primary loadings ranging from .61 to .86 and a median loading of .69.

Reliability of Attributional Judgments

Based on the results of the factor analysis, attributional scores for each writer were computed for the three SDAS dimensions. Intraclass reliability estimates (Winer, 1971, pp. 283-289) showed that both groups of observers demonstrated a relatively high degree of agreement in their ratings: (a) university students' coefficients ranged from .80 to .98, with a median of .96, and (b) older, adult-education students' coefficients were from .77 to .94, with .90 the median reliability.

Multivariate Analysis of Variance Results

Observers' ratings of male and female writers were analyzed by means of a four-way multivariate analysis of variance (2 writer sexes × 3 writer groups × 2 rater sexes × 2 rater groups). The results showed a substantial multivariate main effect for writer sex [Hotelling-Lawley trace = 0.0509, $F(3, 378) = 6.41, p < .001$]. Less interesting in terms of the purpose of this study, a main effect for writer group was also indicated [Hotelling-Lawley trace = 0.0534, $F(6, 754) = 3.35, p < .01$]. On the other hand, rater sex and rater group failed to show any significant main effects. More importantly, no interactions were found for any combination of the four independent variables. Therefore, univariate comparisons were conducted to determine the dimensional makeup of the multivariate main effects for writer sex and writer group.

Univariate Comparison Results

Because the Gender-Linked Language Effect provides specific directional predictions regarding the attributional judgments of male and female writers, directional planned comparisons (Hays, 1973, pp. 584-588) were used to assess the effects of writer sex. Male and female means and standard deviations for the three SDAS dimensions are given in Table V; the pattern of these judgments is shown in Fig. 2.

For the fourth graders, writer sex differences were found that supported the Gender-Linked Language Effect on all three dimensions. The Socio-Intellectual Status ratings favored female writers [$t(200) = 2.16, p < .025$, one-tailed]. Females were also rated higher on Aesthetic Quality [$t(200) = 2.58, p < .01$, one-tailed]. On the other hand, the Dynamism ratings favored male writers [$t(200) = 2.93, p < .01$, one-tailed]. In contrast, attributional judgments of male and female eighth-grade writers differed on the Dynamism dimension only. For this grade, males were again rated higher than females [$t(200) = 2.12, p < .01$, one-tailed]. Socio-Intellectual Status and Aesthetic Quality ratings did not approach statistical significance (both t's < 1.0, p's $> .50$). Similarly, twelfth-grade male and female writers were perceived as differing on Dynamism only, with males again rated higher [$t(200) = 2.77, p < .01$, one-tailed]. As with the eighth graders, males' and females' scores on Socio-Intellectual Status and Aesthetic Quality were essentially similar (both t's < 1.0, p's $> .50$).

Although they were not directly relevant to the purpose of this study, writer group differences were analyzed within the factorial model (using F

Table V. Means and Standard Deviations for SDAS[a] Attributional Judgment Effects for Writer Gender

SDAS Dimension[b]	Mean			Standard Deviation		
	Soc-Int	Aesth	Dyn	Soc-Int	Aesth	Dyn
Fourth graders						
Male	15.56*	17.56*	16.71**	3.18	2.80	2.27
Female	16.48*	18.69*	15.65**	2.40	2.33	1.96
Eighth graders						
Male	16.72	18.15	16.92*	2.92	3.10	2.51
Female	16.60	18.01	16.05*	2.82	2.78	2.28
Twelfth graders						
Male	17.61	18.30	17.04**	2.25	2.43	2.20
Females	17.87	18.11	15.96**	2.90	2.97	2.10

[a]Possible scores for SDAS (Speech Dialect Attitudinal Scale) dimensions range from a low of 4 to a high of 28, with a midpoint of 16.
[b]SDAS dimensions: Soc-Int, Socio-Intellectual Status; Aesth, Aesthetic Quality; Dyn, Dynamism.
*Significant male/female differences, $p < .05$.
**Significant male/female differences, $p < .01$.

ratios and Duncan post hoc comparisons), and a difference was uncovered for one dimension: twelfth graders were rated higher on Socio-Intellectual Status ($M = 17.74$) than eighth graders ($M = 16.66$), who in turn were perceived as being higher than fourth graders ($M = 15.97$) [$F(2, 380) = 13.74$, $p < .01$]. Comparisons among the grades in terms of Aesthetic Quality and Dynamism failed to uncover any differences [all F's$(2, 380) < 1.00$, p's $> .50$].

ANALYSIS 3: PREDICTIVE LINK BETWEEN OBJECTIVE LANGUAGE FEATURES AND SUBJECTIVE ATTRIBUTIONAL RATINGS

The third analysis tested the extent to which the objective language features that were found to differentiate between male and female writers could also predict gender-linked effects on the subjective attributional measures, as predicted by the third hypothesis. We conducted a series of stepwise multiple regression analyses, using as predictor variables the language features that in Analysis 1 distinguished gender at a particular grade level (for example, action verbs and references to emotion) and as criterion variables the attributional judgments that in Analysis 2 distinguished gender at that grade (for example, Aesthetic Quality). As with the discriminant analysis employed in Analysis 1, the advantage of multiple regression analysis is that it locates
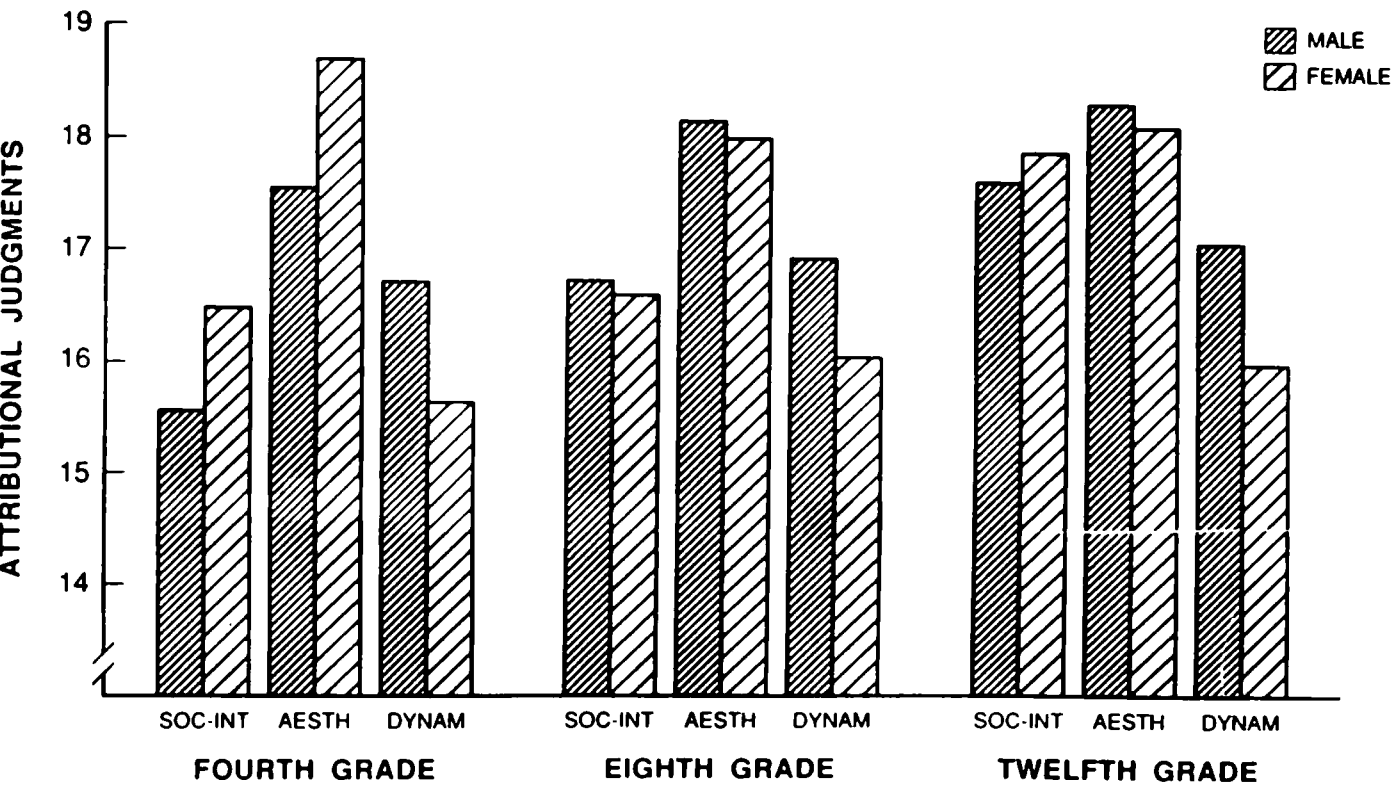

Fig. 2. Mean SDAS dimension scores for fourth-, eighth-, and twelfth-grade writers.

and assigns weights to the language features whose combination most effectively predicts the attributional judgments of interest. Any predictive linkages found would be valuable in helping to identify some of the language variables implicated in the Gender-Linked Language Effect.

Multiple Regression Analysis Results

For the fourth graders, 9 of the 10 language features that had combined to distinguish gender (see Table II) were shown to predict ratings on the three atrributional dimensions for which gender-linked effects had been found (see Table V). As Table VI shows, for Socio-Intellectual Status, two of the male indicators (action verbs and rhetorical questions) were predictive of lower ratings, whereas one female indicator (sentence initial adverbials) was predictive of higher ratings [$(F(3, 28) = 4.75, p < .01, R^2 = .34]$. For all three of these language variables, the direction of prediction (positive or negative) was consistent with the Gender-Linked Language Effect.

Judgments of fourth graders' Aesthetic Quality were negatively affected by two of the male discriminators (rhetorical questions and action verbs) and positively influenced by three female predictors (references to emotion, sentence initial adverbials, and relative clauses) [$F(4, 24) = 3.04, p < .05, R^2 = .47$]. Although the effects of these five language features were consistent with the Gender-Linked Language Effect, two others were not: (a) the positive effect of the male-indicative longer *mean length sentence* and (b) the negative effect of the female-predictive higher use of *fillers*.

Finally, a portion of fourth graders' Dynamism ratings was explainable on the basis of three linguistic variables [$F(3, 28) = 4.38, p < .025, R^2 = .32$]. The effects of all three of these language features entering the regression equation were consistent with the Gender-Linked Language Effect. That is, the male indicator *contractions* had a positive impact on Dynamism ratings, whereas the female predictors *hedges/softeners* and *references to emotion* had a negative one.

For the eighth-grade transcripts, the only attributional effect that distinguished gender was Dynamism, and we therefore conducted a stepwise multiple regression analysis predicting that variable. Results indicated that a weighted combination of four of the nine gender-distinguishing language features had predictive utility in terms of Dynamism ratings [$F(4, 27) = 3.50, p < .025, R^2 = .37$; see Table VII]. Three of the variables operated in a manner consistent with the Gender-Linked Language Effect: the three female indicators (action verbs, subordinating conjunctions, and references to emotion) all tended to diminish Dynamism ratings. However, one male indicator (justifiers) also had a negative influence on this attributional dimension.

Table VI. Summary of Stepwise Multiple Regression Analysis Predicting Gender Differences in Attributional Judgments[a] of Fourth Graders on the Basis of Their Gender-Linked Language Differences[b]

MRA step	Language variable	Standard regression coefficient	Cumulative R^2[c]	F-to-remove	Gender predicted by DA[d]	Consistent with GLLE?[e]
		Socio-Intellectual Status*				
1	Action verbs	-.42	.14	7.51	Male	Yes
2	Sentence initial adverbials	.33	.27	4.40	Female	Yes
3	Rhetorical questions	-.26	.34	2.81	Male	Yes
		Aesthetic Quality**				
1	References to emotion	.33	.16	4.26	Female	Yes
2	Rhetorical questions	-.34	.25	4.43	Male	Yes
3	Action verbs	-.41	.33	6.76	Male	Yes
4	Mean length sentence	.23	.38	1.49	Male	No
5	Fillers	-.21	.42	1.80	Female	No
6	Sentence initial adverbials	.23	.44	1.64	Female	Yes
7	Relative clauses	.20	.47	1.12	Female	Yes
		Dynamism***				
1	Hedges/softeners	-.40	.21	6.01	Female	Yes
2	References to emotion	-.27	.27	2.12	Female	Yes
3	Contractions	.24	.32	2.84	Male	Yes

[a]SDAS judgments by untrained transcipt readers.
[b]Objective language features that distinguished gender for fourth graders.
[c]Cumulative coefficients of multiple determination (R^2).
[d]Gender predicted by the discriminant analysis for fourth graders.
[e]Answers the question: Was the attributional effect of the language feature consistent with the Gender-Linked Language Effect? (That is, for example, did a female-indicating language feature predict higher Socio-Intellectual Status ratings?)
*$F_{(3,28)} = 4.75$, $p < .01$.
**$F_{(7,24)} = 3.04$, $p < .05$.
***$F_{(3,28)} = 4.38$, $p < .025$.

Table VII. Summary of Stepwise Multiple Regression Analysis Predicting Gender Differences in Attributional Judgments[a] of Eighth Graders on the Basis of Their Gender-Linked Language Differences[b]

MRA step	Language variable	Standard regression coefficient	Cumulative R^2[c]	F-to-remove	Gender predicted by DA[d]	Consistent with GLLE?[e]
		Dynamism*				
1	Justifiers	−.25	.15	5.22	Male	No
2	Action verbs	−.38	.25	2.09	Female	Yes
3	Subordinating conjunct.	−.31	.30	2.92	Female	Yes
4	References to emotion	−.22	.37	1.52	Female	Yes

[a]SDASSDAS judgments by untrained transcript readers.
[b]Objective language features that distinguished gender for eighth graders.
[c]Cumulative coefficients of multiple determination (R^2).
[d]Gender predicted by the discriminant analysis for eighth graders.
[e]Answers the question: Was the attributional effect of the language feature consistent with the Gender-Linked Language Effect? (That is, for example, did a male-indicating language feature predict higher Dynamism ratings?)
*$F(4,27) = 3.50$, $p < .025$.

We ran a similar analysis for the twelfth-grade transcripts, using the single attributional variable that distinguished gender, Dynamism. Results failed to indicate any combination of variables that met the criteria for inclusion in the regression function (F-to-enter = 1.0, tolerance = .01). Thus for twelfth graders the language features that differentiated between male and female writers did not predict the judgments of Dynamism.

DISCUSSION

In Analysis 1, we sought to determine whether weighted combinations of objectively coded language features could differentiate between male and female writers' impromptu essays, as predicted by Hypothesis 1. Results of the discriminant analyses supported the first research hypothesis for all three grade levels. The accuracy of gender reclassification made possible on the basis of the discriminating clusters of variables was 87% for the fourth graders, 84% for the eighth, and 84% for the twelfth. This indicates that substantial between-gender differences were found in the language use of primary and secondary students.

These results demonstrate that by the time boys and girls are in the fourth grade, they exhibit differences in their written language. The discriminant analysis of fourth graders' essays correctly identified the gender of 87% of the students on the basis of 10 language features. The linguistic features whose greater use distinguished the writing of boys suggest a relatively active (action verbs — "yelling") and judgmental (judgmental phrases — "It's good") stance. The boys were also more likely to use rhetorical questions ("What else could I say?"). In addition, they wrote more informally (contractions — "can't") and used more run-on sentences (longer mean length sentences — "...and then...."). On the other hand, fourth-grade girls were more likely to use nonassertive devices: hedges/softeners — "sort of"; and fillers — "like" [which O'Barr (1982) argues function as hedges]. Their style was generally more elaborated, making greater use of relative clauses ("which was meant for your little sister") and sentence initial adverbials ("Actually, a person should"). Finally, they showed a greater interest in affective states (references to emotion — "sad") than did their male counterparts.

At the eighth- and twelfth-grade levels, clusters of language features were again able to differentiate between male and female writers. However, the list of variables that distinguished gender at these grade levels was not the same as for the fourth-grade writers, and several variables that were predictive of males in the fourth grade were in later grades found indicative of females (for example, rhetorical questions and contractions).

In spite of this occasional crossover of gender-indicating variables, the analyses showed that four language features were consistently indicative of either male or female writers across age groups. Judgmental phrases ("It is important") were found to be indicative of males for all three grade levels. In addition, three variables were predictive of female writers for at least two grades: references to emotion ("she'd be hurt"), fillers ("Well...."), and progressive verbs ("giving"). Furthermore, the findings for these four language features were consistent with those of earlier research for various speech contexts. However, none of them had been found in previous studies to distinguish gender in written communication.

It is important to note that, although gender-linked differences were found, the results support the notion of substantial overlap of language use by male and female communicators (Mulac et al., 1986). That is, the language used by primary and secondary students in impromptu essays does not exhibit consistent, clear-cut distinctions. Instead, their style, like the style of male and female communicators in the speech contexts of previous studies (Mulac & Lundell, 1986; Mulac et al., 1986, 1988), exhibits a substantial degree of cross-gender syntactic/semantic overlap. Therefore, even though judgmental phrases were more common in the writing of males, females also made use of this language feature. Additionally, although references to emotion and progressive verbs were more indicative of females' writing, males also used these features. This overlap of linguistic domains appears to be substantial. The fact that university students could not accurately guess the sex of the writers at any grade level supports this notion of substantial overlap. Further evidence can be seen in the finding that the discriminating clusters of language features were unable to distinguish gender for 13 to 16% of the writers, depending on grade level. This also suggests that some of the writers were not using language in ways consistent with the majority of their group.

The finding that the language features that distinguished gender at one age did not consistently do so at another suggests that the overlap of language use fluctuates with age ("fluctuating overlap") (Mulac et al., 1986). Further evidence of the fluctuating overlap may be seen in the fact that several language features that have previously been found to predict gender in oral communication contexts did not do so here. For example, references to quantity or place have often been found to a greater extent in male speech, but here they failed to enter the discriminant function for any of the grades. The usual female indicator, oppositions, similarly failed to provide any gender-predictive capability.

However, in spite of substantial overlap in language use, the discriminant analyses demonstrated that objective language differences were in fact exhibited at all three grade levels. This finding answers earlier challenges

of scholars (Berryman-Fink & Wilcox, 1983; Smith, 1979) who argued that male/female language differences have not been established through the empirical analysis of communication behavior. The potential importance of the objective language differences found in Analysis 1 was demonstrated in the second analysis using observer judgments of the writers.

In Analysis 2 we explored the possibility that subjective attributional ratings by untrained observers differ for male and female writers in ways consistent with the Gender-Linked Language Effect. This analysis dealt with the social impact of language behavior differences. Results of the multivariate analyses of variance supported Hypothesis 2 in whole or in part, depending on the grade level. Ratings of the fourth-grade writers were consistent with the effect for all three dimensions. On the basis of their essays, fourth-grade girls were generally perceived as being higher in social status and literacy (Socio-Intellectual Status), as well as nicer and sweeter (Aesthetic Quality). In contrast, fourth-grade boys were generally seen as stronger and more aggressive (Dynamism). These findings are completely consistent with the patterns of judgments from earlier studies of male and female speakers giving public speeches or describing photographs.

Results for the eighth and twelfth graders supported the effect on the Dynamism dimension only, with males rated higher. Thus, by the eighth grade the male writers wrote in such a way as to be perceived as similar to female writers with respect to both Socio-Intellectual Status and Aesthetic Quality.

One question that emerges from these findings is why the Gender-Linked Language Effect was shown in its complete, three-dimensional form in the essays of fourth graders, but was demonstrated in terms of Dynamism only in those of eighth and twelfth graders. One possible explanation is that the writing style of fourth graders may be qualitatively different from that of the other two grade levels. Fourth graders generally write in a spontaneous, conversational style, whereas eighth and twelfth graders use a more formal, written style. If fewer male/female differences are exhibited in writing than in speaking (as might be expected because schools tend to focus more on writing than on speaking standards), then the fourth graders' use of a more spoken style in their writing would lead to greater differences at that level.

A second possible explanation for the grade level distinction is a developmental one. Some might argue that the boys' writing skills have caught up with their female classmates' skills by the eighth grade,[8] thereby minimizing the differences that led to fourth-grade males' lower ratings on Socio-

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[8]Although one study indicated that female students demonstrated superiority over males in language arts until the seventh grade (Yarborough & Johnson, 1980), another (Hogrebe et al., 1985) found that reading achievement scores (vocabulary plus reading comprehension) of ninth-grade males and females showed no difference.

Intellectual Status and Aesthetic Quality. However, this argument does not appear to explain the results for our writers because the two independent auxiliary analyses of semantic maturity (mean length T-units and holistic assessment scores) failed to show gender differences at any grade level.

An additional question was raised by our findings: Why do the males' Dynamism ratings remain consistently higher than the females' at the eighth- and twelfth-grade levels? Research by Giles and his associates (Giles et al., 1979, 1987) indicates that the identity of group members is in part established and maintained through their communication style. It seems reasonable to speculate that the need of males to appear strong and aggressive or, taken to the stereotypical extreme, to appear macho continues throughout the secondary school years. We should note that in early research on the SDAS measurement instrument (Mulac, 1975), only Socio-Intellectual Status and Aesthetic Quality were shown to have any evaluative meaning to raters, in that ratings on a good/bad scale were positively correlated with both of those dimensions. However, no such relationship existed between the good/bad scale and the Dynamism dimension. Hence there would be no evaluative rationale for female eighth and twelfth graders to do anything to increase their Dynamism ratings. In fact, any such move on their part would be contrary to sex role stereotypical expectations (Best et al., 1980; Williams & Bennett, 1975). On the other hand, for males the counter-stereotypical improvement in their Aesthetic Quality attributions is apparently more than offset by their desire to improve on a dimension that carries a good/bad connotation. A similar rationale may also apply to their improvement in Socio-Intellectual Status, although the stereotypical expectations for that dimension are not clearly established (Mulac et al., 1985b).

In spite of the similarity between the effects of language differences and of stereotypes, it is important to realize that the language effects were demonstrated using transcripts for which the raters were unable to determine the gender of the writers. This lack of gender identifiability is important because it precludes the possibility that the observers reacted to sex role stereotypes of the writers rather than to their language use.

Given the clear distinctions between judgments of male and female writers at all three grade levels, it is noteworthy that we found no differences between male and female raters' judgments, or for that matter between university students' and older raters' judgments. This similarity of observer reactions to language samples is consistent with the findings of earlier studies.

In Analysis 3 we investigated the predictive link between the language features found in the first analysis that differentiated between male and female writing and the attributional ratings found in the second analysis that separated male from female writing. Results of the multiple regression analyses supported this link, proposed by Hypothesis 3, for fourth and eighth, but not twelfth, graders.

For fourth graders all three attributional dimensions that distinguished between male and female essays were predicted on the basis of three to seven language features that had discriminated between male and female language use. In nearly all cases the language variables entered the regression equation in ways consistent with the Gender-Linked Language Effect. For example, the male indicators *action verbs* and *rhetorical questions* were indicative of lower ratings on Socio-Intellectual Status and Aesthetic Quality, two dimensions on which the males received lower scores. Similarly, the female variable *references to emotion* was predictive of higher Aesthetic Quality, but lower Dynamism ratings — again, predictions that were supportive of the Gender-Linked Language Effect.

For eighth graders, four language variables predicted Dynamism, the dimension that favored males. Three of the four features did so in ways consistent with the Gender-Linked Language Effect. For example, the female indicators *references to emotion* and *subordinating conjunctions* predicted lower Dynamism ratings. However for twelfth-grade writers, no prediction of Dynamism, the dimension that favored males, was possible on the basis of the six language features that discriminated gender. Therefore the multiple regression analyses suggest that the language feature and attributional rating data sets are directly linked for fourth-and eighth-grade, but not necessarily for twelfth-grade, essays.

The issue raised by the research question was whether gender-linked language differences and the effects of those differences are similar to prevailing stereotypes. Although the research design did not permit direct analysis of this question, the patterns of results for the first two research hypotheses appear to be substantially consistent with sex role stereotypes. In terms of language differences demonstrated by 9 to 10 year olds, males generally exhibited a somewhat stereotypical orientation characterized by action, rhetoric, personal judgments, and informality. In general, the fourth-grade females also seemed to write in ways consistent with stereotypes, suggesting an orientation that was generally more qualified and elaborated than that of the males. In addition, they were more likely to express a concern for other people's emotional state. By eighth grade, however, this stereotypical language use was less apparent.

The subjective attributional judgments of the writers, made by untrained raters, also appear to be consistent with sex role stereotypes. Male writers from all three grades were generally perceived as higher in Dynamism, that is, stronger, more active, more aggressive, and louder. These language-based attributions are virtually identical to the stereotypes of men as stronger and more active (Best et al., 1980), aggressive (Williams & Bennett, 1975), and loud (Broverman et al., 1972). Also, fourth-grade females were rated higher

on Aesthetic Quality—that is, more beautiful, nicer, more pleasant, and sweeter. These too are consistent with stereotypical notions that females are better-looking (Ashmore & Tumia, 1980), more tactful (Broverman et al., 1972), and more sensitive (Williams & Bennett, 1975). The relationship between Socio-Intellectual Status and sex role stereotypes is, however, less clear. The fourth-grade females were rated higher in this attribute—that is, higher in social status, richer, more white-collar, and more literate. Because these items focus to an extent on propriety and literacy, areas in which female communicators are stereotypically thought to have an advantage [for example, polite speech and good grammar (Kramer, 1977, p. 157)], even these ratings of language appear somewhat consistent with stereotypes.

The patterns of results of the first two analyses, the predictive linking of those two patterns in the third analysis, and the similarity of those results to the pattern of sex role stereotypes provide partial support for the Gender and Communication Cycle proposed earlier. That is, the male and female writers of all three grade levels displayed differences in language behavior. In addition, the attributional consequences of their language behavior were different for male and female writers at all three grade levels, although the distinctions were greatest for the fourth graders. Moreover, the results of the multiple regression analyses demonstrated a predictive link between gender-linked language differences and the Gender-Linked Language Effect for fourth- and eighth-grade writers.

However, no direct relationships between these two communication elements and sex role stereotypes were tested, positive as those relationships appear to be. Because the attributional consequences of gender-linked language differences appear so similar to those of prevailing sex role stereotypes, it is possible that such consequences help perpetuate stereotypes. Additionally, because the objectively coded language differences between the male and the female writers seem generally consistent with sex role stereotypes, it is also possible that those stereotypes could play some part, indirect though it might be, in students' acquisition of gender-consistent language behavior by the time they reach the fourth grade. Although these relationships must be tested in future research, the present results are at least consistent with the possibility of their existence.

In summary, we have found evidence of differences in the language behavior exhibited in the writing of male and female primary- and secondary-school students—differences that affect the judgments of observers. These language differences and their attributional consequences, in the form of the Gender-Linked Language Effect, can be seen as being fully developed by the time students are 9 to 10 years of age. The similarity of this effect with sex role stereotypes suggests the possibility that such language-based judg-

ments help reinforce the stereotypes, which might in turn indirectly influence language use. The cyclical nature of these apparent relationships is difficult to dismiss.

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