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## ABSTRACT

Drawing upon the processing, distancing, and affective streams of writing research, a study examined the relationships among key variables in the writing of sixth through twelfth grade students: grade level, writing ability, knowledge of appropriate and inappropriate writing behaviors, and writing apprehension. Subjects, 496 students from an urban school district, completed an instrument designed to measure knowledge of appropriate writing behaviors and a writing apprehension test. Additional data were gathered from teacher ratings of student writing ability. Results indicated that students rated lowest in writing ability were less able to identify written descriptions of appropriate and inappropriate writing behavior than were high ability students. In addition, writing ability was related to emotional apprehension about the act of writing, with low ability students showing greater apprehension than high ability students. Multiple regression analysis revealed that student knowledge of appropriate and inappropriate writing behavior was a significant predictor of writing ability. (A copy of the instrument to measure student knowledge of appropriate writing behavior is appended.) (FL)

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Relationships Among Writing Ability, Grade.  
Level, Writing Apprehension and  
Knowledge of Composing as a Process  
in Secondary School Students

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## Abstract

An empirical study of 496 urban secondary school students was performed to determine relationships among several important variables related to writing. Students rated lowest in writing ability were less able to identify written descriptions of appropriate and inappropriate writing behavior than high ability students. Further, writing ability was related to emotional apprehension about the act of writing: low ability students showed greater apprehension than high ability students. As revealed by multiple regression analysis, student knowledge of appropriate and inappropriate writing behavior were both significant predictors of writing ability.

In a discussion of modern approaches to research and instruction in writing, Myers (1983) identified processing, distancing, and modeling as three approaches that have emerged in the last two decades. All of these might be considered alternatives to (or perhaps supplements to) traditional views of writing. In traditional approaches, major emphasis is placed on the product of writing. Thus, the student writer is directed to learn the rules to produce a written work that is free of mechanical and grammatical errors and that follows the canons of "good writing." While no one would dispute that the ultimate goal of writing instruction is the creation of well written products, there is considerable debate on how best to achieve this objective. The alternative approaches identified by Myers arose for a variety of practical and theoretical reasons. Not the least of these reasons was dissatisfaction with a strictly teach-the-rules-of-writing instructional strategy.

Processing approaches to writing focus on the cognitive aspects of composing. Theoretical constructs and metaphors from cognitive psychology are extensively used. For example, research has been done on conceptual maps within the mind of the writer (relationships among ideas and topics) and how graphic display of such maps can be used to teach writing (Buckley and Boyle, 1983). Analyzing the processes of writing has also led to an interest in the steps of the composing process. Emig (1971) and Graves (1975) developed the groundwork in this area by performing observational studies of students actually engaged in writing. In more recent work, Flower and Hayes (1978) have identified stages in the writing process, for example: making plans, executing the plans, and revising products produced in accordance with the plans. These stages were named based on empirical research on writers doing composing. Indeed, a characteristic

of processing approaches is a firm commitment to studying writing as it actually occurs (Humes, 1983). A major finding of research is that composing processes of good and poor writers differ, and these differences have implications for writing instruction.

Viewing writing in terms of process highlights the psychological world of the individual writer. But writing always occurs for a reason, and the contextual aspects of writing have also received attention. In what Myers (1983) calls distancing approaches to writing, concepts from sociolinguistics play an important role. Thus, special emphasis is placed on the relation between the writer and the subject and the writer and the audience. Odell, Cooper and Courts (1978) have argued that discourse theories of linguistics may provide a fruitful source of research hypotheses about writing. Of course, such theories also have importance for the writing teacher.

Processing approaches to writing emphasize the cognitive or problem-solving dimensions of writing. Distancing approaches to writing emphasize the social and contextual nature of written communication. Researchers have also been concerned with affect related to writing. Research on the affective aspects of various school subjects has a long history and has been a continuing interest of investigators. For example, Steinkamp and Maehr (1983) identified 66 studies dealing with the relatively narrow topic of sex differences in attitude, ability and achievement measures of science subjects. In the area of writing, Daly and Miller (1975) developed an instrument to measure writing apprehension (roughly speaking, anxiety about the act of writing). The instrument was developed and validated with college age students. It has been used as part of the evaluation of college composition classes (Witte & Faigley, 1983).

The present study drew upon the processing, distancing, and affective streams of writing research. The authors used secondary school students and sought to examine relationships among several key variables: school grade of student, writing ability of student, student knowledge of appropriate and inappropriate writing behaviors, and student apprehension about writing. An instrument was developed to measure student knowledge of appropriate and inappropriate writing behaviors. Many of the items from the instrument reflected research from processing theory (e.g., items tapping student knowledge of effective steps to be followed in composing). Other items were inspired by discourse theories (e.g., items pertaining to a writer's cognizance of audience). Representing the affective stream of research, the Daly-Miller Writing Apprehension instrument was administered.

The study was descriptive-correlational in nature. Obtaining answers to several interrelated questions guided the data analysis:

1. Could students reliably identify written descriptions of appropriate and inappropriate writing behavior?
2. Could the Daly-Miller Writing Apprehension instrument be feasibly used with secondary school students? The instrument was developed and refined on a sample of college students. Would secondary students be able to respond to the instrument?
3. What effect does grade level have on student knowledge of appropriate and inappropriate writing behavior and student writing apprehension?
4. What effect does writing ability level of the student have on knowledge of appropriate and inappropriate writing behavior and student writing apprehension?
5. What interrelationships exist among knowledge of appropriate and inappropriate writing behavior, grade level, writing apprehension, grade level, and writing ability? Can writing ability be predicted from the other variables? If writing apprehension is used as a criterion variable, will the remaining variables predict student scores on this affective dimension?

## Method

### Subjects and Procedure

Subjects were secondary school students from an urban public school district; usable data were obtained from 496 students in grades 6 through 12. Measurement of variables occurred in Spring 1982 as part of a research study on the writing behavior of secondary school students.

Most variables were based on information obtained from students. The regularly assigned writing teacher administered a multi-part questionnaire to students, using class time for this purpose. Student responses to items within sections of the questionnaire were used as the basis for several variables of the study. In addition to student-generated data, teachers provided information on the grade level of the class (6 through 12). Teachers also rated the writing level of a given classroom and the writing ability of each student within the class.

### Variables

The first of the student generated variables was termed Writing Apprehension (APP). This was measured by a 26 item 5 step Likert scale instrument developed by Daly and Miller (1975). The instrument uses a series of statements to tap a person's positive or negative affect related to the act of writing. Among items in the instrument to which respondents indicated agreement or disagreement were: "I'm nervous about writing" and "Handing in a composition makes me feel good." The composite score on the instrument, after reverse weighting of some items, yielded a number indicating apprehension toward writing, with a low total score



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(lowest possible = 26) indicating low apprehension and high total score  
(highest possible = 130) indicating high apprehension.

Two student-generated variables were obtained from a Knowledge of Composing as a Process Questionnaire (KCPQ). The latter instrument required Yes or No responses to 43 items related to a hypothetical situation described in the KCPQ instructions. Below are some pertinent sentences from KCPQ instructions that describe the situation:

Suppose that there were a national contest for which students were invited to write papers on a certain subject. The subject and length of the papers would be announced, but students would be free to choose their form (essay, letter, story, etc.). Students would have three weeks to prepare their papers, and the papers would be judged on the quality of the writing itself as well as on the ideas.

The statements below describe some things students might do in getting their entries ready for such a contest. We want you to tell us what you think you would do if you were to write a paper for the contest. For each statement, circle only one answer--either Yes or No.

The 43 items of the KCPQ were divided into a set of 21 items designed to measure Appropriate Writing Behavior (AWB) and a set of 22 items designed to measure Inappropriate Writing Behavior (IWB). An AWB item was "Before writing, I would jot down some notes about what I wanted to say in the paper"; an IWB item was "Before writing, I would re-write the instructions in my own words." Items from the AWB and IWB scales were mixed so that not more than four items from either scale occurred consecutively in the KCPQ. (See Appendix A for a copy of the instrument.) The 43 items were selected in consultation with a panel of six judges: three college composition specialists and three secondary language arts teachers. The AWB and IWB variable scores were formed by summing over the items for each scale. Thus, scores on AWB could range from 21 to 42, and scores on IWB could range from 22 to 44. The AWB items were designed



to measure student knowledge of activities which facilitate the successful completion of a piece of writing. The IWB items were designed to measure student knowledge of activities which tend to delay or obstruct the successful completion of a piece of writing.

The variable Writing Ability (WA) was derived from teacher ratings. Each teacher rated each class of students on level of writing ability (1 = low, 2 = medium, 3 = high). Also, each student within each class received a rating (again, 1 = low, 2 = medium, 3 = high). The WA variable was based on the two teacher ratings. For example, a low rated student in a low rated class was given a WA score of 1; a high rated student in a high rated class was given a WA score of 9. Scores between 1 and 9 reflected intermediate levels of writing ability. Exact designations of the WA variable were as follows:

- 9 = high ability student in high ability class
- 8 = medium ability student in high ability class
- 7 = low ability student in high ability class
- 6 = high ability student in medium ability class
- 5 = medium ability student in medium ability class
- 4 = low ability student in medium ability class
- 3 = high ability student in low ability class
- 2 = medium ability student in low ability class
- 1 = low ability student in low ability class

## Results and Discussion

A variety of descriptive and inferential statistics were calculated for this study. In addition to univariate statistical procedures, multiple regression analysis was employed in an effort to obtain information on the degree of predictability of a given variable from a set of other variables. The nature of the latter analyses was predictive in the sense Pedhazur (1982) uses the term. That is, no attempt was made to develop an explanatory (i.e., causal) model of variables in the study.

A grade level analysis was performed to examine possible influences of grade (a proxy measure of age of subjects) on several dependent variables. Table 1 shows mean scores by grade for the APP, AWB, IWB scales and the writing ability measure (WA).

Although significant differences existed among means on the APP scale ( $F = 3.09$ ,  $p < .005$ ), no linear trend was apparent in mean scores. Thus, a hypothesis of no linear relationship between grade and writing apprehension was supported ( $r = .06$ ,  $p > .05$ ). On the AWB scale, mean differences were not significant ( $F = 1.85$ ,  $p > .05$ ), and no significant linear trend could be inferred between grade and AWB ( $r = .02$ ,  $p > .05$ ). When mean scores on IWB were compared across grades, statistical significance was obtained ( $F = 8.43$ ,  $p < .00005$ ). The mean of grade 6 students stood out as being markedly higher than the rest. The correlation of grade and IWB was a significant  $r$  of  $-.18$  ( $p < .05$ ). Finally, the mean writing ability scores, WA, were found to be different by grade ( $F = 7.16$ ,  $p < .00005$ ). The correlation between grade and WA was statistically significant ( $r = .19$ ,  $p < .05$ ).

In summary, analysis of the data did not support the hypotheses that as students get older they get less apprehensive about writing or more capable of recognizing appropriate writing behavior. Slight support was found that younger secondary students are less capable than older students of recognizing inappropriate writing behavior.

It should be noted that, given the scoring system used for the AWB scale, a low score on AWB mean relatively low ability to recognize appropriate writing behavior and a high score meant relatively high ability (in other words, for AWB, "the higher the better"). However, for the IWB scale, a low total score meant relatively high ability to recognize inappropriate behavior, and a high score meant low ability (in other words, for IWB, "the lower the better"). Examination of Table 1 reveals that, averaged across grades, the mean for AWB ( $\bar{X} = 36.73$ ) did exceed that for IWB ( $\bar{X} = 30.33$ ) which fits with the conceptualization of the two constructs.

A final comment should be made on the data of Table 1. Analysis showed a positive relationship between WA scores and grade: older students received somewhat higher WA scores than younger students. Averaging across grades, the mean on WA of 5.52 was slightly higher than the mean of 5.00 which would have occurred had scores been symmetrically distributed. Using Fisher's g statistics to calculate skewness (Hull & Nie, 1981, p. 312), WA scores had a skewness index of -.284.

Table 1  
Mean Scores by Grade for Writing Apprehension (APP),  
Appropriate Writing Behavior (AWB), Inappropriate  
Writing Behavior (IWB) and Writing Ability (WA)

<u>Grade</u>	<u>N</u>	<u>APP</u>	<u>AWB</u>	<u>IWB</u>	<u>WA</u>
12	74	75.14	36.64	29.58	6.95
11	59	73.15	36.76	29.64	4.85
10	56	69.07	37.93	29.54	5.88
9	85	78.15	36.20	30.85	5.55
8	85	68.80	36.48	29.55	5.48
7	66	72.39	37.11	29.76	4.67
6	<u>71</u>	<u>71.76</u>	<u>36.46</u>	<u>33.13</u>	<u>5.08</u>
Overall	496	72.79	36.73	30.33	5.52

Note. The APP scale was a 26 item Likert scale instrument with low scores indicating low writing apprehension (lowest possible score = 26) and high scores high apprehension (highest possible score = 130). The AWB scale consisted of 21 dichotomously scaled items (1 = No, 2 = Yes). A low score indicated the student could not successfully identify behaviors associated with appropriate composition practices (lowest possible score = 21) and a high score indicated the student could identify such practices (highest possible score = 42). The IWB scale consisted of 22 dichotomously scaled items (1 = No, 2 = Yes). A low score indicated the student could successfully identify inappropriate composition practices (lowest possible score = 22) and a high score indicated the student could not identify such practices (highest possible score = 44). The variable WA was a composite measure of writing ability based on teacher ratings of the writing level of the class (1 to 3) and the writing ability of the student within the class (1 to 3). The WA score of each student ranged between 1 (low ability) to 9 (high ability).

To further explicate relationships among variables, WA was used as an independent variable with nine levels. Table 2 shows mean scores by levels of WA for the APP, AWB and the IWB scales.

Significant differences on mean APP scores were found across levels of WA ( $F = 4.47$ ,  $p < .00005$ ). The highest mean APP score was for the lowest WA group and the lowest APP score was for the highest WA group, but means did not show a strong inverse linear pattern. The correlation between individual WA and APP scores did result in a significant inverse relationship ( $r = -.13$ ,  $p < .01$ ). Analysis of means on the AWB scale showed significant differences ( $F = 2.16$ ,  $p < .03$ ) with higher mean scores associated with higher levels of WA ( $r = .15$ ,  $p < .01$ ). When IWB mean scores were examined, significant differences were found ( $F = 12.50$ ,  $p < .00005$ ) with higher means associated with lower levels of WA. This inverse relationship was also revealed in the  $r$  of  $-.38$  between WA and IWB scores ( $p < .01$ ).

In summary, some evidence was found to support the hypothesis that apprehension about writing was inversely related to writing ability (i.e., high apprehensive subjects were relatively low in ability and low apprehensive subjects relatively high in ability). Further, significant relationships were apparent between writing ability and knowledge of appropriate and inappropriate writing practices. The latter relationships were consistent with several hypotheses. For example, low ability students were more likely than high ability students to incorrectly identify inappropriate behavior as appropriate.

Table 2  
Mean Scores by Writing Ability (WA) for Writing  
Apprehension (APP), Appropriate Writing Behavior  
(AWB) and Inappropriate Writing Behavior (IWB)

<u>WA</u>	<u>N</u>	<u>APP</u>	<u>AWB</u>	<u>IWB</u>
9	62	64.33	37.60	28.53
8	78	75.59	37.09	28.69
7	60	73.35	37.32	29.92
6	51	66.16	36.55	28.49
5	81	75.59	36.25	30.63
4	48	76.17	36.73	31.83
3	35	74.11	36.31	31.26
2	40	72.00	36.88	33.03
1	<u>40</u>	<u>78.13</u>	<u>35.25</u>	<u>33.28</u>
Overall	495	72.83	36.73	30.32

**Note.** The APP scale was a 26 item Likert scale instrument with low scores indicating low writing apprehension (lowest possible score = 26) and high scores high apprehension (highest possible score = 130). The AWB scale consisted of 21 dichotomously scaled items (1 = No, 2 = Yes). A low score indicated the student could not successfully identify behaviors associated with appropriate composition practices (lowest possible score = 21) and a high score indicated the student could identify such practices (highest possible score = 42). The IWB scale consisted of 22 dichotomously scaled items (1 = No, 2 = Yes). A low score indicated the student could successfully identify inappropriate composition practices (lowest possible score = 22) and a high score indicated the student could not identify such practices (highest possible score = 44). The variable WA was a composite measure of writing ability based on teacher ratings of the writing level of the class (1 to 3) and the writing ability of the student within the class (1 to 3). The WA score of each student ranged between 1 (low ability) to 9 (high ability).

Table 3  
Intercorrelations, Means, Standard Deviations and  
Alpha Coefficients for APP, AWB, IWB, GRD, and WA

	<u>APP</u>	<u>AWB</u>	<u>IWB</u>	<u>GRD</u>	<u>WA</u>
APP	1.000				
AWB	-.310	1.000			
IWB	.004	.200	1.000		
GRD	.058	.024	-.188	1.000	
WA	-.131	.147	-.384	.192	1.000
Mean	72.83	36.73	30.32	8.93	5.52
SD	16.76	3.37	4.04	1.98	2.48
Alpha	.91	.68	.73		

**Note.** APP = Writing Apprehension Scale  
 AWB = Appropriate Writing Behavior Scale  
 IWB = Inappropriate Writing Behavior Scale  
 GRD = Secondary School grade  
 WA = Writing Ability Score  
 Alpha coefficient (Cronbach's alpha) is a measure of internal consistency reliability.



Table 4  
Summary of Stepwise Multiple Regression Analyses  
Using Variables APP, AWB, IWB, GRD and WA

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<u>Dependent Variable</u>	<u>Independent Variables Entered</u>			
WA	<u>Step</u>	<u>Variable</u>	<u>R</u>	<u>R<sup>2</sup></u>
	1	IWB	.384	.148
	2	AWB	.447	.200
	3	GRD	.460	.211

$$\text{Predicted WA} = 5.77 + (-.251) \text{ IWB} + (.167) \text{ AWB} + (.137) \text{ GRD}$$

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<u>Dependent Variable</u>	<u>Independent Variable Entered</u>			
APP	<u>Step</u>	<u>Variable</u>	<u>R</u>	<u>R<sup>2</sup></u>
	1	AWB	.310	.096
	2	WA	.321	.103

$$\text{Predicted APP} = 130.32 + (-1.477) \text{ AWB} + (-.588) \text{ WA}$$

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Note. APP = Writing Apprehension Scale  
 AWB = Appropriate Writing Behavior Scale  
 IWB = Inappropriate Writing Behavior Scale  
 GRD = Secondary School Grade  
 WA = Writing Ability Score  
 Regression equations displayed show B coefficients in parentheses.

Table 5  
Summary of Stepwise Multiple Regression Analysis  
and Stepwise Multiple Discriminant Analysis  
using APP, AWB, IWB and GRD as Predicting  
Simple Three Category Measure of Student  
Writing Ability

<u>Multiple Regression Analysis</u>				
<u>Dependent Variable</u>	<u>Independent Variables Entered</u>			
Writing Ability of Student (1=low, 2=medium, 3=high)	<u>Step</u>	<u>Variable</u>	<u>R</u>	<u>R<sup>2</sup></u>
	1	IWB	.219	.048
	2	APP	.289	.083
Predicted Score = 3.90 + (-.042) IWB + (-.009) APP				
<u>Multiple Discriminant Analysis</u>				
<u>Dependent Variable</u>	<u>Independent Variables Entered</u>			
Writing Ability of Student (1=low, 2=medium, 3=high)	<u>Step</u>	<u>Variable</u>		
	1	IWB		
	2	APP		
	3	GRD		
<u>For First Discriminant Function</u>				
<u>Canonical Correlation</u>		<u>Canonical Correlation Squared</u>		
.302		.091		

Note. APP = Writing Apprehension Scale  
 AWB = Appropriate Writing Behavior Scale  
 IWB = Inappropriate Writing Behavior Scale  
 GRD = Secondary School Grade  
 Regression equation displayed shows B coefficients in parentheses.

### Multiple Regression Analyses

In order to explore predictive relationships among variables, multiple regression analysis was employed. Table 3 shows data produced in conjunction with two regression analyses. Shown are intercorrelations, means, standard deviations, and alpha coefficients for APP, AWB, IWB, Grade and WA. Of the composite measures (variables formed by summing over a set of items), APP had the highest internal consistency reliability, .91, while coefficients for AWB and IWB were lower, both in the neighborhood of .70. Many intercorrelations in the table were previously discussed: those between Grade and the remaining variables and those between WA and the remaining variables. One interesting result not previously mentioned was the inverse correlation of  $-.31$  between APP and AWB. This meant that subjects relatively low in writing apprehension were relatively high in knowledge of appropriate writing behavior and those high in apprehension were low in knowledge. The strength of the inverse relationship was greater than that between APP and WA ( $r = -.131$ ).

Table 4 shows results of two regression analyses, first with WA as the criterion, then APP as the criterion. In both cases, stepwise analysis was used, a procedure in which variables are successively added to a prediction equation, starting with the variable most related to the criterion. At each step, the next most predictive variable is entered and any previously entered variables that lose predictive power as a result of the entry of new variables are deleted from the equation. Probability criteria for adding variables to the equation were .05 and for deleting variables from the equation were .10. When WA was used as the criterion, IWB, AWB and GRD were successively entered, resulting in an equation with a multiple correlation coefficient of  $R = .460$ . The

coefficient squared, expressed as a percentage, was  $R^2 = 21\%$ , thus 21% of the variability in WA was accounted for by the combination of IWB, AWB and GRD. The variable APP was not entered into the equation, since it accounted for no significant variance beyond the other three predictors. When APP was used as the criterion variable, two predictors entered an equation, AWB and WA. Collectively, these accounted for about 10% of variability in the APP criterion.

When examining data from the first analysis, with WA as the criterion, it was found that residuals showed positive auto-correlation (Durbin-Watson statistic  $d = .52$ ,  $p < .01$ ). The lack of independence among residuals occurred because of criterion WA was based on both the writing ability level of the individual student and the ability level of the class containing the student. Any student in a high rated class had a good chance of obtaining a higher than average WA score (a similar phenomenon occurred in low rated classes, with those students often obtaining lower than average WA scores). It was decided to perform follow-up analyses to investigate predictive relationships using a simplified measure of writing ability. Rather than using the nine step WA score as a criterion, the simple three step (1 = low, 2 = medium, 3 = high) writing level of the individual student was used.

Table 5 shows results of two analyses: a multiple regression analysis and a multiple discriminant analysis. The stepwise regression analysis, using the same predictors and statistical criteria as the analysis reported in Table 4, resulted in two variables being entered into the equation, IWB and APP, which accounted for about 8% of variance in the new, simplified criterion. While auto-correlation was no longer a problem (Durbin-Watson statistic  $d = 1.84$ ), the information loss was

substantial by doing this rather conservative analysis, since 21% of variance was accounted for when the nine step WA criterion was used.

The lower half of Table 5 shows a further analysis of data on the three step writing ability criterion. This time multiple discriminant analysis was used--a procedure somewhat similar to regression analysis, but not requiring an assumption of an intervally scaled criterion variable. Using the method of Wilks (minimizing the lambda statistic) three variables were selected for entry, in the order IWB, APP, and GRD. The first discriminant function derived had a canonical correlation of .302. Squaring this resulted in .091, which is interpretable as the proportion of variance in the criterion variable accounted for by the discriminant function based on the predictors.

Both the regression analyses summarized in Table 4 and more conservative analyses reported in Table 5 provided at least some support for the predictive usefulness of the APP, AWB and IWB variables. Such covariation is a necessary prerequisite to any attempts to use the variables in a causal or explanatory model. Building such a model was not an objective of the present study.

#### Data Analysis Summary

Some comments are needed regarding the results of the study and how they bear on the interrelated questions raised in the introduction of this paper.

There was some evidence that students could reliably identify appropriate and inappropriate writing behaviors. However, internal consistency coefficients for the AWB and IWB scales were not particularly high. More work is necessary to refine the scales to reduce error variability and thus enhance their usefulness as measures of constructs

and possible predictors. Validity studies should also be performed. Is there a relationship between student responses on the AWB and IWB scales and what the students actually do when they compose? Such construct validity data is presently lacking.

Use of the Daly-Miller Writing Apprehension Instrument with this secondary school sample seemed to be entirely successful. Internal consistency ( $\alpha = .91$ ) was high. Daly and Miller (1975) reported a corrected split-half coefficient of .94 for a sample of 464 college students. Furthermore, factor analysis of secondary student responses resulted in factor loadings similar to those reported by Daly and Miller. One interesting finding worthy of future exploration was that secondary students measured in the present study had a lower mean writing apprehension score than the college students measured by Daly and Miller (72.79 vs. 79.28). Whether this discrepancy reflects a true difference based on age or reflects some other (unmeasured) factor is not known.

Levels of writing ability were more related to differences in AWB, IWB and APP than were levels of secondary school grade. When comparing AWB and IWB, the latter was more useful than the former. For example, IWB was the first variable entered into any regression analysis which had a writing ability criterion. Further research might be done to correlate IWB with a measure of general academic aptitude. Does the ability to recognize inappropriate writing behavior simply reflect overall intelligence of the student?

While the analyses reported in this paper treated AWB and IWB as each unitary constructs, they can be further broken down in terms of stages of the writing process (e.g., AWB-pre-writing phase of composing, AWB-actual writing phase of composing, AWB-post-writing phase of

composing). Kaiser and Dietrich (1983) have reported on relationships between these subscale scores and many of the other variables in the present study (e.g., Grade, APP).

If the goal of meaningful prediction of writing ability is to be achieved, many potential predictor variables need to be considered. In the present study, the maximum percentage of variability accounted for in writing ability was 21%. While this is not trivial, much remains unexplained. Work is also needed on the criterion variable in such studies. Reliable measures of students' actual writing competence (e.g., ratings of writing samples by trained raters) would be preferred to global measures of writing ability.



## References

- Buckley, M. H. & Boyle, O. (1983). Mapping and composing. In M. Myers & J. Gray (Eds.), Theory and practice in the teaching of composition: Processing, distancing, and modeling (pp. 59-66). Urbana, IL: National Council of Teachers of English.
- Daly, J. A., & Miller, M. D. (1975). The empirical development of an instrument to measure writing apprehension. Research in the Teaching of English, 9, 242-249.
- Emig, J. (1971). The composing process of twelfth graders. Urbana, IL: National Council of Teachers of English.
- Flower, L. & Hayes, J. (1978). The dynamics of composing: Making plans and juggling constraints. In L. W. Gregg & E. R. Steinberg (Eds.), Cognitive process in writing. Hillsdale, NJ: Lawrence Erlbaum Associates.
- Graves, D. (1975). An examination of the writing processes of seven year old children. Research in the Teaching of English, 9, 227-241.
- Hull, C. H. & Nie, N. H. (Eds.). (1982). SPSS update 7-9: New procedures and facilities for releases 7-9. New York: McGraw-Hill.
- Humes, A. (1983). Research on the composing process. Review of Educational Research, 53, 201-216.
- Kaiser, M. M. & Dietrich, J. C. (1983, October). 496 students tell us what they think about composition. Presentation at the Southeast Regional Conference of the National Council of Teachers of English, Charleston, SC.
- Myers, M. (1983). Approaches to the teaching of composition. In M. Myers & J. Gray (Eds.), Theory and practice in the teaching of composition: Processing, distancing and modeling (pp. 3-43). Urbana, IL: National Council of Teachers of English.
- Odell, L., Cooper, C. R. & Courts, C. Discourse theory: Implications for research in composing. In C. R. Cooper & L. Odell (Eds.), Research on composing: Points of departure (pp. 1-12). Urbana, IL: National Council of Teachers of English.
- Pedhazur, E. J. (1982). Multiple regression in behavioral research (2nd ed.). New York: Holt, Rinehart and Winston.
- Steinkamp, M. W. & Maehr, M. L. Affect, ability and science achievement: A quantitative synthesis of correlational research. Review of Educational Research, 53, 369-396.
- Witte, S. P. & Faigley, L. (1983). Evaluating college writing programs. Carbondale and Edwardsville, IL: Southern Illinois University Press.

## Appendix A

The Knowledge of Composing as a Process (KCPQ) instrument is reproduced on the following four pages. The items occur in the same order as seen by students. Not shown under each item are the response options: 1. no, 2. yes. Preceding each item number is the code A, indicating the item was part of the Appropriate Writing Behavior (AWB) scale, or the code I, indicating the item was part of the Inappropriate Writing Behavior (IWB) scale. These letter codes did not appear on the instrument that was completed by the students.

PART II

Suppose that there were a national contest for which students were invited to write papers on a certain subject. Students would receive printed instructions giving the date the papers were due and the address to which they should send their entries. The subject and length of the papers would be announced, but students would be free to choose their form (essay, letter, story, etc.). The writing would not be done in class. Students would have three (3) weeks to prepare their papers, and the papers would be judged on the quality of the writing itself as well as on the ideas. The writers of the winning papers would receive cash prizes.

The statements below describe some things students might do in getting their entries ready for such a contest. We want you to tell us what you think you would do if you were to write a paper for the contest. For each statement, circle only one answer -- either yes or no. There are no right or wrong answers. We want to know what you honestly think you would do if you were entering the contest. Some statements may seem repetitious, but try to answer each one as honestly as you can.

Example:

1. I would type the final copy of my entry or ask someone to type it for me.

1. no

2. yes

(If you think that you would type the paper or ask someone to type it for you, circle yes. If you think that you would not, circle no.)

- I 1. Before writing, I would copy the contest instructions on my paper.
- A 2. Before writing, I would jot down some notes about what I wanted to say in my paper.
- A 3. I would pause to think about what I was writing as I wrote.
- I 4. After I had finished writing and before I mailed in my paper, I would memorize it.
- A 5. I would go back and change some vocabulary words in my paper after I had written it.
- I 6. I would write down the best sentences I could as they came to me and then submit my paper.
- A 7. Before writing, I would decide to make my entry a story or a letter or an essay or some other form depending on which I thought was best to get my ideas across to my reader.
- I 8. After I had finished writing. I would go back through my paper to make sure that each paragraph was no more than six or seven lines long.
- A 9. Before writing, I would try to think about how the people who would read my paper already feel about the subject.
- I 10. I would stop after I had written part of my paper and copy neatly.
- A 11. While I was writing, I would stop sometimes to re-read what I had written.
- A 12. Before writing, I would look at some other pieces of writing that might be like what I would try to write.
- I 13. Whenever I couldn't think of what to write next, I would think about how I would spend the prize money.
- A 14. While I was writing, I would re-read the contest instructions whenever I had trouble deciding whether to include an idea.
- I 15. Before writing, I would re-write the instructions in my own words.
- I 16. After I had finished writing my paper, if I thought it was hard to follow, I would add a final paragraph that repeated my main ideas.
- A 17. Before writing, I would decide what I would want the readers of my writing to do or think or feel.
- I 18. I would read the first part of the contest instructions and then begin writing.

- A 19. I would re-read the contest instructions before I submitted my paper.
- I 20. Before writing, I would make a detailed outline of my paper.
- A 21. I would cross out some things as I wrote.
- I 22. While I was writing, I would check my paper for neatness.
- A 23. Before writing my conclusion, I would read over everything I had written.
- I 24. I would write my paper neatly with the correct margins the first time so I wouldn't have to copy it over.
- I 25. Whenever I couldn't think of what to write next, I would try to use ideas from a different subject that interested me.
- A 26. Before writing, I would explore the subject.
- I 27. After I had finished writing my paper if I thought it was not detailed enough, I would add a final paragraph of details.
- I 28. Before writing, I would study a list of commonly misspelled words.
- A 29. Before writing, I would think about the kind of person I would want my readers to think I am.
- I 30. I would stop after I had written a while and review the rules for commas.
- A 31. After I had finished writing, I would ask a friend to read my paper and say what he or she thought of it.
- A 32. I would check my paper for spelling, capital letters, and punctuation when I had finished writing.
- A 33. Before writing, I would talk with some friends about my ideas.
- A 34. While writing, I would move some sentences around in my paper.
- I 35. After I had finished writing, if I thought my paper were too short, I would lengthen it by repeating some ideas.
- I 36. I would review grammar rules before I began to write.
- A 37. After I had finished writing, I would re-write some sentences.
- I 38. After I had finished writing, if I thought my paper were too short, I would lengthen it by adding ideas from another subject that interested me.
- I 39. After I had finished writing, I would take out the last paragraph if I thought my paper were too long.

- I 40. Before writing, I would decide to make my entry a story or a letter or an essay or some other form depending on which I liked best.
- A 41. After I had finished writing, I would check to make sure that my paper was written in complete sentences.
- I 42. Before writing, I would try to find out how much the contest judges would be paid for judging the entries.
- A 43. After I had finished writing, I would look for some unimportant things to take out if I thought my paper were too long.