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BOLDFACED TERMS AND THEIR EFFECTS ON STUDENT LEARNING

by

Michael J. Drysdale

A thesis submitted in partial fulfillment
of the requirements for the degree

of

MASTER OF SCIENCE

in

Psychology

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2009

ABSTRACT

Boldfaced Terms and Their Effects on Student Learning

by

Michael J. Drysdale, Master of Science

Utah State University, 2009

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Department: Psychology

Every published introductory psychology textbook includes boldfaced terms throughout the chapters. These boldfaced terms are theoretically included to help students learn the material. Are they really beneficial for student learning? An experimental/control group designed study was conducted to answer this question. Volunteers were provided with a chapter excerpt. The experimental group received the excerpt with no boldfaced terms included (the bold type had been removed), whereas the control group received the excerpt as it normally appeared in the textbook, boldfaced terms included. Both groups were quizzed using a 10-item multiple-choice quiz. Statistical analyses showed that those who studied the excerpt with boldfaced terms included scored significantly higher, $F(1, 180) = 5.68$; $p = .02$; partial $\eta^2 = .03$, with an effect size of .32. This study and the resulting conclusions provide support for the inclusion of boldfaced terms in textbooks to aid student study and learning.

(67 pages)

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Michael J. Drysdale

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CHAPTER I

INTRODUCTION

In 2006 there were 39 introductory psychology textbooks available for use in college classrooms. Each of these contains a varying number of text-based learning aids that are included for the purpose of assisting the reader in learning the material presented. These include chapter outlines, chapter learning objectives, chapter summaries, section summaries, boldfaced terms, running glossaries, chapter glossaries, glossaries with pronunciation, italics for emphasis, chapter review exercises, learning checks, demonstrations, discussion questions, questions as organization devices, and self-tests (Marek, Griggs, & Christopher, 1999). Out of the total 39 textbooks available in 2006, Koenig (2006) found that boldfaced terms were present in all 39 introductory psychology textbooks, while a few other text-based learning aids appeared in only four or five textbooks.

A number of studies have been conducted to assess student perceptions of these different learning aids found in introductory psychology textbooks (Marek et al., 1999; Weiten, Deguara, Rehmke, & Sewell, 1999; Weiten, Guadagno, & Beck, 1996). Remarkably consistent observations were reported across studies. Researchers found that boldfaced terms were rated number 1 in familiarity, likelihood of use, and value and benefit for learning among first-year college freshmen (Marek et al.), more advanced university students (Weiten et al., 1996), and community college and high school students (Weiten et al., 1999). In other words, students consider boldfaced terms to be the most valuable text-based learning aid for facilitating learning.

Research has been conducted looking at the effects of boldfaced terms as a learning aid. The conclusions from this research have contradicted the belief of students that boldfaced terms are beneficial for their learning (Gurung, 2003, 2004; Moravcsik & Healy, 1998). For instance, Gurung concluded that student-reported use of boldfaced terms was not related to student exam scores. Furthermore, Moravcsik and Healy, after conducting two experiments, stated that the use of boldfaced terms led to a lower number of correct responses on a multiple-choice quiz than when boldfaced terms were not included. Unfortunately, as will be shown in the literature review, these conclusions have been reached relying on a few limited experimental and correlational designs that have serious weaknesses.

Thus, given that students consistently say that boldfaced terms are important and beneficial and that boldfaced terms are so frequently included in introductory psychology textbooks, a well-designed experimental study is needed to help us determine whether students learn better when key terms and phrases are presented in boldface than when they are not.

CHAPTER II

LITERATURE REVIEW

In 2006 Koenig conducted an extensive review of the learning aids included in all published introductory psychology textbooks. She found that each textbook contained a varying number of text-based learning aids. Out of the total 39 textbooks, only one contained a chapter glossary and just three included review exercises. Contrast this with boldfaced terms that were present in all 39 introductory psychology textbooks. Appendix A contains a table that includes a list of all the textbooks reviewed by Koenig, along with the learning aids included in each book.

Student Perceptions About the Value of Boldfaced Terms

Not only do all introductory psychology textbooks include boldfaced terms, students also consider them to be the most beneficial learning aid. Three studies, using very similar methods, have been conducted to assess student perceptions of the different learning aids (Marek et al., 1999; Weiten et al., 1996, 1999). Weiten and colleagues (1996) developed an original list of 13 learning aids that were found in introductory psychology textbooks. These included chapter outlines, chapter learning objectives, chapter summaries, section summaries, boldfaced terms, running glossaries, chapter glossaries, glossaries with pronunciation, italics for emphasis, chapter review exercises, learning checks, demonstrations, and discussion questions. They then surveyed students from a university research methods class ($n = 134$) regarding their perceptions of those learning aids. Student participants were asked to rate (on a scale of 1 to 7; 1 being *low*

and 7 being *high*) each text-based learning aid on their familiarity with the aid, its value in facilitating learning, and the likelihood that they would use it when studying. The researchers found that boldfaced terms rated highest on all three questions asked of students.

In follow-up studies, Marek and colleagues (1999) and Weiten and colleagues (1999) replicated the Weiten and colleagues' (1996) study with other student populations. These follow-up studies included two additional learning aids, questions as organization devices and self-tests, that were missing from the original list employed by Weiten and colleagues (1996).

Marek and colleagues (1999) surveyed 409 students from on-campus psychology courses. Two hundred fifty-six were first semester freshmen students (labeled "first-semester" by the researchers), while the other 153 had completed at least one semester of college courses (labeled "advanced" by the researchers). Using the same 1-to-7 scale (Weiten et al., 1996), students were asked to rate each text-based learning aid on familiarity, probability of use, and value. Boldfaced terms rated highest among both groups of students on familiarity and probability of use. Furthermore, boldfaced terms rated number one on value among "advanced" students and rated a close second (6.18 mean rating as compared to 6.20 mean rating for *chapter glossaries*) among "first-semester" students.

Finally, Weiten and colleagues (1999) extended the population of students further by surveying 200 students from a university, 189 from a community college, and 130 from a high school. Again, the students were asked to rate the text-based learning aids on

 a scale of 1 to 7. Boldfaced terms were rated number one by all three groups of students on familiarity, probability of use, and value.

The major question of the current research is: Are boldfaced terms beneficial for student learning? Therefore, these studies have been reviewed to discover student perspectives on the value of boldfaced terms for their learning. Table 1 summarizes student mean ratings (on the 1-to-7 scale), by sample, of the value of each learning aid from all three studies. Also, a weighted average calculated by multiplying the mean rating and number of students from each group, summing those products and dividing by the total number of groups, across all studies has been added in the extreme right column. Remarkably consistent observations were reported across studies: boldfaced terms were rated number one in familiarity, likelihood of use, and value and benefit for learning in all but one of the samples studied. The only exception to this finding was among undergraduate students in the first semester of their studies (Marek et al., 1999), and then boldfaced terms were ranked a very close second.

Empirical Research About the Effects of Boldfaced Terms

Given how positive students are about the benefits of boldfaced terms, it is interesting that the few empirical studies that have been done suggest that boldfaced terms do not provide a benefit. Unfortunately, only two experimental studies (Moravcsik & Healy, 1998) and two correlational studies (Gurung, 2003, 2004) have been conducted; these will be reviewed next.

Table 1

Student Mean Ratings of the Value of Learning Aids in Facilitating Learning

	Weiten et al. (1996)	Marek et al. (1999)		Weiten et al. (1999)			
	University students (*n* = 134)	University first semester students (*n* = 256)	University "more advanced" students (*n* = 153)	University students (*n* = 200)	Community college students (*n* = 189)	High school students (*n* = 130)	Weighted averages
Boldfaced terms	6.09	6.18	6.16	6.14	6.55	6.28	6.24
Running glossaries	5.87	6.13	6.06	5.97	6.20	6.09	6.06
Chapter glossaries	5.55	6.20	5.76	5.59	6.05	5.77	5.86
Self-tests	Not included	6.04	5.67	5.57	5.99	5.33	5.77
Chapter summaries	5.96	5.82	5.76	5.95	5.75	4.93	5.73
Section summaries	5.19	5.55	5.35	5.40	5.25	4.70	5.29
Italics for emphasis	4.70	5.23	4.86	5.20	5.32	5.10	5.10
Learning checks	4.81	5.38	5.08	4.81	5.42	4.75	5.09
Chapter review exercises	4.82	5.40	5.19	4.66	5.26	4.91	5.07
Questions as organizational devices	Not included	5.22	4.89	5.09	5.10	4.83	5.06
Glossaries with pronunciation	4.06	5.12	4.53	4.45	5.16	5.09	4.78
Demonstrations	4.41	4.62	4.90	4.72	4.94	4.91	4.75
Chapter learning objectives	4.33	4.75	4.06	4.37	4.61	3.82	4.39
Discussion questions	4.41	4.58	4.27	4.00	4.36	4.58	4.37
Chapter outlines	4.14	4.23	3.99	3.94	4.26	3.98	4.10

Experimental Designs

In 1998, Moravcsik and Healy conducted two experiments to evaluate whether boldfacing important words affects learning. In their first experiment Moravcsik and Healy (1998) recruited 60 undergraduate students from an introductory psychology course. Each participant read six different passages taken from "a standardized reading test" (p. 260) with an average length of 129 words. These passages were presented in the same order to each participant. The manipulation came when the researchers split the six passages into pairs (i.e., pair 1 was composed of passages 1 and 2), to create three different types (two passages of each type) of passages: no boldface included, boldfaced important words included, and all words boldfaced. The order in which the type of passage was presented was counterbalanced across participants. After reading all six passages, the participants answered six multiple-choice questions about each of the six passages.

The second experiment was a replication of the first with one exception: they informed participants that important words appeared in boldfaced type, whereas in the first experiment they told participants that some words in the passage were boldfaced, but not that those boldfaced words were important. Once again 60 undergraduates from an introductory psychology course were recruited to participate. The same materials were used.

Upon completion of their first experiment, Moravcsik and Healy (1998) concluded that "[boldfacing] important words led to significantly lower accuracy than did either [boldfacing] all words or [boldfacing] no words" (p. 263). Furthermore, following their second experiment they stated that "[boldfacing] the important words led to only a

bit lower accuracy" (p. 265). In this second experiment there were no statistically significant differences. Reported results from both experiments are presented in Table 2.

The overall conclusion they drew from experiment 1 was that students score lower when only important words are boldfaced, as opposed to no words boldfaced or all words boldfaced. For that reason, they hypothesized that "perhaps the disadvantage for the important words condition can be attributed to the fact that the participants were not aware that the words highlighted in that condition were the important ones" (p. 264). Therefore, they explicitly told participants in experiment 2 that the important words were boldfaced.

No standard deviations were reported by Moravcsik and Healy (1998); therefore no effect size statistics can be calculated. They did, however, include a total of 60 participants in each study, using a repeated measures design, thereby giving them reasonably high statistical power.

Table 2

Proportion of Correct Responses by Passage Type in Moravcsik and Healy (1998)[a]

		Proportion of correct responses			
	# of participants	No boldfacing	Important words boldfaced	All boldfacing	
Experiment 1	60	.819	.758	.801	$F(2, 118) = 3.64$, $p = .028$
Experiment 2	60	.780	.778	.787	$F(2, 118) < 1.00$
Means		.800	.768		

[a]Information compiled from Moravcsik and Healy (1998).

One drawback to their design is that they used passages of an average of only 129 words in length. Students in college courses are typically quizzed over an entire chapter of information. In addition, Moravcsik and Healy (1998) did not explain whether or not the multiple choice questions were designed to measure specifically the material that was boldfaced in the passages. They simply state that "there were six 4-alternative multiple choice questions per set" (p. 261). Following is an example of a multiple choice item used in their study:

Mary Brown was:

    (a) brave

    (b) kind

    (c) honest

    (d) pretty

This item does not fit the common mold of quiz item that students in college courses today will experience. It asks them to remember the state of mind of Mary from a narrative story. Most often students are confronted with expository text and quiz items that ask about specific bits of information.

Furthermore, the passages used contained an average of 24.5 words that were boldfaced (almost 20% of the words in the passage). Participants were quizzed using only six multiple-choice questions. With only six questions, but an average of 24.5 boldfaced

terms, Moravcsik and Healy (1998) were unable to measure participant learning for all the boldfaced material.

Correlational Design

Gurung (2003, 2004) sought to understand the relationship between student use of text-based learning aids and exam performance. To investigate this relationship he conducted two studies using students from his introductory psychology classes. In both studies students completed a survey regarding their use of the various aids found in the class textbook. To do this, Gurung added the survey to the end of the last of four exams and asked students to volunteer to fill it out. In both studies all of his students completed the survey.

Gurung found that students reported using boldfaced terms more than the other five text-based learning aids (outlines, chapter summaries, italic terms, key terms, and practice test questions) present in their textbook. After averaging all four exam scores, he conducted correlational analyses and found that "the reported use…of the different pedagogical aids were not significantly associated with exam scores" (Gurung, 2003, p. 94). He stated in his second study that results from correlational analyses were consistent with his first study, but correlation coefficients for these relationships were not reported.

Based on the limited research that has been conducted, and the weaknesses associated with that research, no clear conclusion regarding the effect of boldfaced terms on student learning can be reached. Some of the problems present in previous research include: use of very short passages for participants to study, reliance on correlational methods to draw conclusions about the effectiveness of boldfaced terms, and lack of use

of excerpts from published textbooks. Furthermore, no study has asked participants to rate the value of boldfaced terms while at the same time manipulating the boldfaced terms in the passages studied. Some students may consider boldfaced terms to be important and the boldfaced terms end up being beneficial for them, or they may end up not being beneficial for them. Others may not consider them to be important and the boldfaced terms may or may not end up being beneficial for them.

Conclusion

Students consider boldfaced terms to be beneficial for their learning even though the limited research directly examining the effect of boldfaced terms has not demonstrated a positive effect on student learning. Therefore, an experimental/control group study which avoids the weaknesses of past research, by including a passage from a published introductory psychology textbook, manipulates the boldfaced type in the passage, and surveys participants about the value of boldfaced terms, was conducted to answer the following two research questions:

1. Do boldfaced terms increase student learning of the material in an Introductory psychology textbook?

2. Are boldfaced terms more beneficial for those who consider them to be beneficial for their learning?

CHAPTER III

METHOD

Design

To evaluate whether or not boldfaced terms are a benefit for student learning, a two- group (control and experimental) design was employed. The independent variable was whether or not key concepts in the material were boldfaced, and the dependent variable was student learning as measured by a 10-item multiple choice quiz.

Pilot Study

Firstly, a pilot study was conducted to test the materials: the length of the excerpt, time it took participants to complete the study, and the effectiveness of the items that made up the quiz.

Participants

Eighty-nine students were recruited from on-campus introductory psychology courses at Utah State University (labeled as PSY 1010 in the catalog) during the Fall semester of 2008. The instructor for each course was contacted via email and asked if their students could volunteer to be in the study. Their classes were visited and the study was presented to them following the script included in Appendix B. All instructors agreed to give their students course credit for participation.

Materials

Two versions of a packet were prepared. The first version (version A) included the following: a letter of information (see Appendix C), a prequiz designed to measure participant knowledge of the concepts presented in the textbook excerpt, a white envelope (labeled 1), containing a Chapter 15 excerpt from the Myers (2007) text, and a second white envelope (labeled 2), containing a postquiz composed of 10 multiple-choice questions (taken from the publisher-provided test bank for the material contained in the excerpt from Chapter 15) designed to assess participant learning of the material cued by boldfaced type. The second version (version B) of the packet was the same as version A with only one change: the Chapter 15 excerpt did not include boldfaced terms.

Prequiz. This quiz (see Appendix D) contained the same items as the postquiz, but the order in which the questions were presented, and the order in which the answer options were presented, was changed. The final question, which asked the student to rate whether boldfaced terms were beneficial, was not included. Participants were given 10 minutes to complete this quiz.

Textbook excerpt. The excerpt (see Appendices F and G) was taken from Chapter 15 (*Personality*) of the Myers (2007) *Psychology* textbook. It was an exact copy of the textbook and included approximately 1,300 words. Two versions of the excerpt were used: one with the boldfaced terms that appeared in the original textbook, and the other with no boldfaced type (removed by the publisher). Participants were given 30 minutes to complete the reading.

Postquiz. The postquiz was designed to assess participant learning of the material that was cued by the boldfaced terms in the chapter excerpt. The quiz included 10 multiple-choice questions selected from the publisher-provided test bank. These questions were selected specifically to measure student learning for the material cued by the boldfaced terms. Also included, at the end of the quiz, was the following question regarding the participant's perception of boldfaced terms:

Yes	No	Do you consider the inclusion of boldfaced terms beneficial to your learning?

Participants were given 10 minutes to complete the postquiz.

Procedure

The participants were scheduled so as to allow for groups of up to 25 students at a time to meet in the planned places and times. Both versions of the packet were randomly distributed to the participants using the method described next. All copies of the packets were shuffled together into one pile. Then the researcher reviewed the information contained in the informed consent document, making sure that participants understood their rights, what would happen to them during the study, and that they agreed to participate. The researcher then informed participants that they had 10 minutes to take the prequiz.

Once the first 10 minutes had elapsed, the researcher collected the prequizzes and told participants that they could open the white envelope labeled 1 and that they had 30 minutes to read/study the excerpt that was contained therein. After the 30 minutes had passed the researcher collected the excerpts and informed participants that they could

open the white envelope labeled 2 and that they had 10 more minutes to complete the postquiz. Once the participants had finished, the researcher collected the postquizzes, thanked them for their participation, and informed them that the findings from the study would be available next semester in the office of the psychology department.

After completing the pilot study, an item difficulty analysis was conducted following procedures suggested by Hopkins, Stanley, and Hopkins (1990). To calculate item difficulty indices the number of participants who give the correct response is divided by the total number of participants. The higher the number of correct responses the closer to 1 will be the difficulty index; the closer to 1 the easier the item. Furthermore, an item discrimination analysis was run to evaluate the effectiveness of the items to discriminate between those who have learned the material and those who have not learned the material. The item discrimination indices were calculated by first splitting the sample into the participants who scored in the top 25% and those who scored in the bottom 25% on the quiz. Then for each individual item the percent of those who selected the correct response, in the bottom 25%, was subtracted from the percent of those who selected the correct response in the top 25%. For example, on item number 1, 100% of the top 25% got the item correct, whereas only 48% of the bottom 25% got it correct (1.00 - .48 = .52). Table 3 presents the results from these analyses.

Many items on the postquiz were answered correctly by most participants (indicated by an item difficulty index close to 1). For example, items 2, 3, 7, and 8 had item difficulty indices equal to or higher than .92. Most items fell into the acceptable range of discriminating between those students who have and have not learned the

Table 3

Pilot Study Postquiz Item Difficulty and Discrimination Indices

	Postquiz items						
	n = 89	Difficulty	Discrimination		n = 89	Difficulty	Discrimination
1	a: 6	.82		6	a: 9	.82	.43
	b▲: 73		.52		b▲: 74		
	c: 6				c: 1		
	d: 4				d: 5		
2	a▲: 87	.98		7	a: 1	.96	.14
	b: 1		.09		b: 3		
	c: 1				c: 0		
	d: 0				d▲: 85		
3	a: 2	.92		8	a: 1	.93	.19
	b: 3		.14		b: 1		
	c▲: 82				c: 3		
	d: 2				d▲: 84		
4	a▲: 70	.79		9	a: 8	.59	.67
	b: 12		.67		b▲: 53		
	c: 7				c: 9		
	d: 0				d: 19		
5	a▲: 60	.67	.81	10	a: 7	.68	.67
	b: 12				b: 15		
	c: 12				c▲: 51		
	d: 5				d: 6		

▲ = correct answer

material: items 1, 4, 5, 6, 9, and 10. Usually, a discrimination index of .25 or higher is considered acceptable (Hopkins et al., 1990).

The items were reviewed using the information in Table 3 as a guide. Because items 2, 3, 7, and 8 were very simple and did a very poor job of discrimination, they were revised for the study. After looking over the distracters that were included in these four items it was determined that they would be rewritten, not in an attempt to trick the participants into selecting them, but to provide possible plausible answers to the items

that would be more likely to be selected by someone who had not really learned the material.

Using the responses on the postquiz, a Cronbach's alpha was calculated. This statistic provides information about the internal consistency of the overall quiz. The resulting coefficient was .59. In addition, a Spearman-Brown split-half reliability (prophecy formula) was calculated (odds and evens from the quiz). The resulting coefficient was .50. These coefficients are low, providing further support for the need of revising items from the quiz.

Even though it was clear that the quiz needed to be revised, an analysis of covariance (ANCOVA) was conducted on the data using prequiz scores as the covariate. This analysis (descriptive statistics shown in Table 4; one participant was excluded from this analysis due to a response that did not fit) revealed no statistically significant differences (main effects or interaction) for group (bold vs. no bold) or student perspective of boldfaced terms (important vs. not important). This finding agrees with past research.

In response to the question, *do you consider the inclusion of boldfaced terms beneficial to your learning?*, only 4 students reported that boldfaced terms were not beneficial for their learning. Based on these results it was decided to change the item for the study from dichotomous to the following 2-part scale item:

Using the following scale please indicate how valuable you consider boldfaced terms to be for:						
	Not valuable					*Valuable*
a) your learning	*1*	*2*	*3*	*4*	*5*	*6*
b) performing well on exams	*1*	*2*	*3*	*4*	*5*	*6*

Table 4

Pilot Study Descriptive Statistics

		Mean	Adjusted mean	Standard deviation	*n*
Postquiz					
Bold		8.22		1.75	46
	Important	8.20	8.16	1.79	44
	Not important	8.50	8.64	.71	2
No bold		8.18		1.69	42
	Important	8.15	8.19	1.70	40
	Not important	8.00	7.90	1.71	2
Total		8.18		1.69	88
	Important	8.18	8.17	1.70	84
	Not important	8.25	8.27	1.71	4

Study

After conducting the pilot study and making the necessary changes the study was conducted.

Participants

A total of 187 students from on-campus introductory psychology courses at Utah State University (labeled as Psy 1010 in the catalog) during the Spring 2009 semester volunteered to participate in the study.

Materials and Procedure

The same materials and procedure were used for the study as were used in the pilot study with the only exception being that the four revised items on the pre- and postquizzes were included as described above (see Appendix E). After collecting the data for the study, item difficulty and discrimination analyses were run again. The results are

presented in Table 5. A total of five participants (two from the boldfaced terms group and three from the no boldfaced terms group) left one or more answers blank on the quizzes and were therefore removed from this analysis.

A comparison of Table 5 and Table 3 was done to discover how, if at all, the quiz was improved from pilot study to actual study. Item difficulty indices did not change much. Items 1, 8, and 10 were easier, with slight increases (an increase of .03 being the largest of the three). In addition, all four of the items that were revised, items 2, 3, 7, and 8, showed an increase in their item discrimination indices.

Further, an analysis of internal reliability (Cronbach's alpha) was run on the responses to the items from the postquiz. The resulting alpha coefficient was .55. The analysis was run a second time after removing items 7 and 8; the alpha coefficient did not change. This alpha level is a slight decrease from the Cronbach's alpha from the pilot study (.59). Lastly, it can be seen that in the actual study, only items 7 and 8 would be labeled as needing to be revised or possibly be thrown out. More analyses like this would be beneficial for test bank construction.

Table 5

Actual Study Post-Quiz Item Difficulty and Discrimination Indices

	Postquiz items							
	n = 182		Difficulty	Discrimination		*n* = 182	Difficulty	Discrimination
1	a:	17	.85	.38	6	a: 11	.75	.49
	b▲:	155				b▲: 137		
	c:	7				c: 7		
	d:	3				d: 27		
2	a▲:	158	.87	.38	7	a: 4	.91	.16
	b:	3				b: 13		
	c:	17				c: 0		
	d:	4				d▲: 165		
3	a:	33	.74	.31	8	a: 1	.96	.13
	b:	7				b: 4		
	c▲:	134				c: 2		
	d:	8				d▲: 175		
4	a▲:	137	.75	.45	9	a: 15	.71	.72
	b:	27				b▲: 130		
	c:	17				c: 14		
	d:	1				d: 23		
5	a▲:	122	.67	.71	10	a: 21	.69	.71
	b:	26				b: 22		
	c:	25				c▲: 126		
	d:	9				d: 13		

▲ = correct answer

CHAPTER IV

RESULTS

Once the data had been collected, descriptive statistics were calculated. These included sample size, means, effect sizes, and standard deviations (see Table 6).

Next, a *t* test was run to test for differences between the groups on the prequiz. The result was not statistically significant at the .05 level, $t(180) = -.876$, $p = .382$, thus adding support for the assumption of group equivalence at the beginning of the study.

Then, correlational analyses were run, on a number of variables, to discover if there were any relationships among the variables and the postquiz. This assisted in determining which variables to use as covariates in the later analyses. Table 7 includes the results of those correlational analyses. The correlation between prequiz score and postquiz score was the only statistically significant relationship, $r(180) = .45$, $p = .000$. Therefore, to help answer the first research question: Do boldfaced terms increase student learning of the boldfaced material, prequiz score was included as a covariate in an analysis of covariance (ANCOVA); postquiz was the dependent variable, and group was the independent variable: $F(1, 180) = 5.68$; $p = .02$; partial $\eta^2 = .03$. The effect sizes for the differences between the groups (see Table 6) were -.13 on the prequiz and .25 on the postquiz. The adjusted means: boldfaced terms = 8.19 and no boldfaced terms = 7.63, based on the ANCOVA, change the effect size from .25 to .32, showing that the inclusion of boldfaced terms benefitted participants on the postquiz by nearly a third of a standard deviation. These results add further support for the benefit of boldfaced terms for student learning.

Table 6

Descriptive Statistics for Study

	Unadjusted mean	Standard deviation	Effect sizes	Adjusted mean	Effect size	*n*
Prequiz						
Bold	4.41	2.08				90
No bold	4.68	2.13	-.13			92
Total	4.55	2.11				182
Postquiz						
Bold	8.13	1.64		8.19		90
No bold	7.68	1.86	.25	7.63	.32	92
Total	7.91	1.77		7.91		182

Table 7

Correlations

	Prequiz	Postquiz	BoldLearning	BoldExam
Prequiz	1	.45	.10	.04
Postquiz		1	.25 (.23[▲])	.13 (.13[▲])
BoldLearning			1	.58
BoldExam				1

[▲]Partialed on Prequiz.

The second research question was: are boldfaced terms more beneficial for those who consider them to be beneficial for their learning. To answer this question, it was first important to determine the responses, by group, to the two questions regarding the value of boldfaced terms for learning (BoldLearning) and for taking exams (BoldExam). Table 8 presents this data.

The majority of responses (329 out of 364 or 90.3%) were a 4 or higher on both BoldLearning and BoldExam. These responses have been graphically presented in Figure 1 to show the relationship, by participant of a response on BoldLearning and a

Table 8

Frequency of Responses to the Value of Boldfaced Terms by Group

		Response			
		Not valuable	‹————›		Valuable
Variable	Group	2/3[a]	4	5	6
BoldLearning					
How valuable are boldfaced terms for your learning:	Boldfaced terms	5	20	34	31
	No boldfaced terms	9	29	32	22
BoldExam					
How valuable are boldfaced terms	Boldfaced terms	9	20	29	32
for performing well on exams:	No boldfaced terms	12	19	36	25

[a] No participants selected 1, therefore that response has been left out of the table. Further, due to very low selection of 2 and 3, they have been combined and are represented in the table by number 2/3.

		BoldLearning					
		1	2	3	4	5	6
BoldExam	1	0	0	0	0	0	0
	2	0	1	1	2	0	0
	3	0	0	4	10	1	2
	4	0	1	2	20	14	2
	5	0	0	4	13	37	11
	6	0	1	0	4	14	38

Figure 1. Responses on BoldLearning and BoldExam by participant.

response on BoldExam. Along the top of the figure is displayed the BoldLearning

variable with the scale with the six responses that were available to participants. On the

left is the same for the BoldExam variable.

Figure 1 also shows that most participants (91%) rated the value of boldfaced

terms for learning and for performing on exams as the same. For example, 38 responded

with a 6 on both BoldLearning and BoldExam. One exception was a participant who

rated BoldLearning as 2 and BoldExam as 6. This could be interpreted as meaning that

that particular participant thought that boldfaced terms were important for performing

well on exams but that overall they were not very valuable for learning the material. Further interpretation could be that this participant does not view exams as good measures of learning.

To further help answer the second research question two charts were constructed to display the relationship between group, responses on BoldLearning and BoldExam, and postquiz scores (see Figures 2 and 3). Figure 2 presents, by group, responses on BoldLearning and their corresponding postquiz mean. Figure 3 does the same with BoldExam.

Lastly, two 2-way ANOVA analyses were run. These analyses help determine if any interaction effects (group by responses) are present in the data. If interaction effects are present, then the effect of group on the postquiz scores would depend on the participant's perspective of the value of boldfaced terms. The first analysis included group and BoldLearning as the independent variables. The second analysis was the same but included BoldExam instead of BoldLearning. Both included postquiz score as the dependent variable.

The interaction was not statistically significant for either analysis; first analysis, $F(3, 182) = .15$, $p = .93$; second analysis: $F(3, 182) = .65$, $p = .58$. Based on these findings it can be concluded that the effect of group membership on postquiz score does not depend on the participant's perspective on boldfaced terms: if they consider boldfaced terms to be important they will not necessarily score better on quizzes that are designed to measure their learning for the material that is boldfaced.
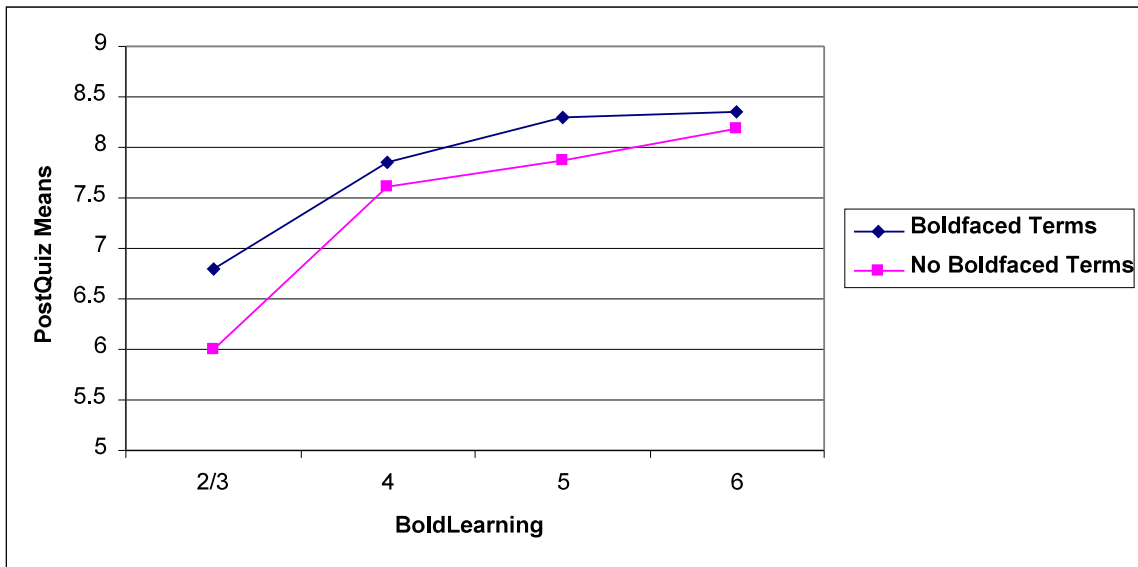
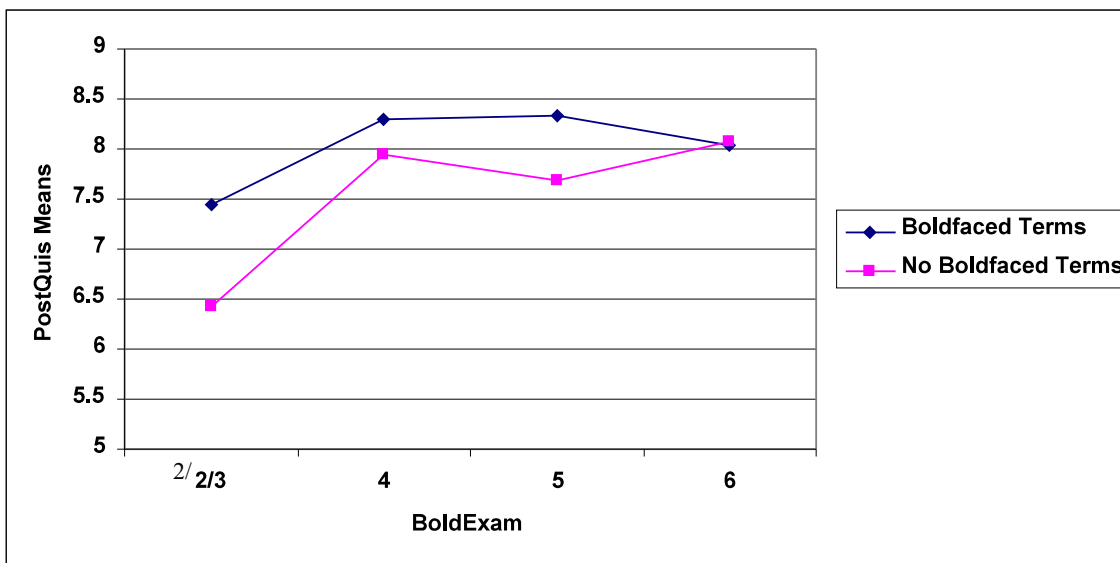*Figure 2*. BoldLearning, by group, effect on postquiz scores.

Figure 3. BoldExam by group, effect on postquiz scores.

CHAPTER V

DISCUSSION AND CONCLUSIONS

The results from this study provide support for the notion that boldfaced terms are beneficial for students as they study and prepare to take quizzes, $F(1, 180) = 5.68$; $p = .02$. The effect size for this data (based on adjusted means) was found to be .32.

Previous research in this area had not been done particularly well. This present study sought to improve the methods and, therefore, the trust in the results. This was done by randomly assigning participants to the two groups (boldfaced terms or no boldfaced terms), using a prequiz to help even more in the establishment of equivalence between the groups, using an excerpt from an already published introductory psychology textbook, and using quiz items that were similar to what students can expect to encounter in their college careers.

Threats to the internal validity of research designs can present alternative explanations to the results and conclusions drawn from a study. It is therefore expedient that researchers seek to minimize these threats as much as possible. Because of the way in which this research was designed no likely threats to internal validity bear on the conclusions drawn. For example, the threat of selection is not an issue, as participants were randomly assigned to groups and the prequiz scores were found to not be statistically significantly different between the two groups. None of the seven classic threats to internal validity, experimental mortality, instrumentation, maturation, selection, history, testing, and regression, are likely alternative explanations for the observed

results. For that reason, it can be concluded that boldfaced terms do have a positive impact on student learning.

The next question would be, does the magnitude of that positive impact warrant including them in textbooks? The overall effect size was .32. This means that participants' scores were raised almost a third of a standard deviation when boldfaced terms were included in the text. The standard deviation on the postquiz was 1.76, therefore the inclusion of boldfaced terms benefitted participants by more than a half of a point on a 10-question quiz. When taken in the current context, the inclusion of boldfaced terms benefitted students by increasing their grade by the equivalent of a sign change: going from an A- (90%) to an A (95%). Given that the cost of including boldfaced terms in textbooks is so low it would be beneficial for publishers to continue including them.

In answering the second research question: are boldfaced terms more beneficial for those who consider them to be beneficial for their learning, results showed that boldfaced terms were not more beneficial for those who considered them to be beneficial for their learning or for taking exams.

Limitations

The current study was limited in that participants were taking a quiz immediately after having read through the material. In "real life" students are able to study whenever they want and therefore may do so a day or even a week before being quizzed or tested over the material. Furthermore, students normally are quizzed or tested over more than just three pages of material from a chapter. Quizzes are usually designed to assess student learning for at least an entire chapter's worth of content. In addition, all questions on the

quizzes in this study were specifically designed to measure learning for the boldfaced terms. Whether or not the other material (i.e., not cued by the boldfaced terms) in the chapter is learned as well is unknown. Even with these limitations the results from the present study provide strong support for the use of boldfaced terms in textbooks.

Future Research

To address these issues, it could be proposed that further research is needed that is more ecologically valid. For instance, studies could be conducted that provide students in the same class with different versions of the same textbook, some with boldfaced terms and others without. The quizzes given could be designed to measure both the material that is cued by the boldfaced terms and the material that is not cued. Then student scores could be compared. This would provide evidence that is based more on the normal experience of college students and not come from a more contrived "laboratory" setting. Given the clearly demonstrated benefits associated with boldfaced terms in this study, and the relatively low cost of including boldfaced terms in textbooks, it is probably not worth the time and effort to do such a time-consuming and expensive study. Furthermore, the results and conclusions drawn from the present study provide ample evidence, making a further, more involved design like the one discussed unnecessary.

Another trend in colleges and universities today is to use online textbooks. This may also affect student perspectives on boldfaced terms. Online text displayed on a computer monitor almost always contains boldfaced and underlined text, which are recognized as important because that text provides links to other sites and materials that relate to the current page or content. As computers are almost a ubiquitous resource today

on college campuses, the reading that students do on computers is bound to have an impact on their reading from their textbooks. As this trend toward online and computerized textbooks increases, it would be useful for research to follow that trend and begin looking at similar issues as they relate to reading and learning on computers.

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APPENDICES

Appendix A:

Textbook Table

Table A1

Text-based Learning Aids Included in Various Introductory Psychology Texts

Textbooks	Boldface terms	Italic terms	Chapter outline	Chapter summary	Running glossary	Discussion question	Learning check	Section summary	Demon-stration	Questions as organizer	Self-test	Learning objective	Glossaries w/ pronunciation	Review exercise	Chapter glossary	Totals
Baron & Kalsher, 2005	x	x	x	x	x	x										6
Baucum & Smith, 2004	x	x	x	x	x		x		x		x			x		9
Bernstein, Penner, Clarke-Stewart, & Roy, 2006	x	x	x	x	x			x	x							7
Ciccarelli & Meyer, 2006	x	x	x	x	x	x	x			x	x	x				10
Coon, 2004	x	x	x	x	x	x	x				x		x			9
Davis & Palladino, 2004	x	x	x		x		x	x	x	x						8
Ettinger, 2005	x	x		x	x											4
Feldman, 2005	x	x	x	x	x	x	x		x							8
Franzoi, 2002	x	x	x		x	x	x				x					7
Gazzaniga & Heatherton, 2006	x	x	x	x	x	x	x			x						8
Gerow & Bordens, 2003	x	x		x	x		x									5
Gerrig & Zimbardo, 2005	x	x	x	x												4
Gleitman, Fridlund, & Reisberg, 2004	x	x	x	x												4
Gray, 2002	x	x	x					x			x					5
Griggs,	x	x	x		x		x	x			x					7
Hinrichs,	x	x	x			x					x			x		7
Hockenbury & Hockenbury, 2006	x	x	x	x	x		x						x			7
Huffman, 2004	x	x	x	x	x	x	x	x	x	x						10
Kalat, 2005	x	x	x			x	x	x	x						x	8
Kassin, 2004	x	x	x	x	x	x	x									7
Kosslyn Rosenberg, 2004	x	x	x	x	x	x		x	x		x					9
Kowalski & Westen, 2005	x	x	x	x		x		x								6
Lahey, 2004	x	x	x	x	x	x	x	x					x			9
Lefton & Brannon, 2006	x	x	x	x	x	x			x	x						8
Morris & Maisto, 2005	x	x	x	x	x	x	x			x						8
Myers, 2004	x	x	x	x	x	x	x	x								8
Nairne, 2006	x	x	x	x	x	x	x	x					x	x		10
Nevid, 2003	x	x	x	x	x	x	x		x							8
Passer & Smith, 2004	x	x	x			x		x				x				6
Pastorino & Doyle-Portillo, 2006	x	x	x	x	x	x	x		x			x	x			10
Plotnik, 2005	x	x	x			x	x	x		x	x		x			8
Rathus, 2005	x	x	x	x	x	x	x									7
Sanrtrock, 2003	x	x	x	x	x	x	x	x		x		x				10
Sdorow & Rickabaugh, 2006	x	x	x	x	x	x	x				x					8
Smith, Nolen-Hoeksema, Fredrickson, & Loftus, 2003	x	x	x	x		x		x								6
Sternberg, 2004	x	x	x	x		x	x				x					7
Wade & Tavris, 2006	x	x	x		x	x	x		x							8
Weiten, 2004	x	x	x	x			x	x			x					7
Wood, Wood, & Boyd, 2005	x	x	x	x	x		x		x	x			x			9
Total	39	39	37	30	28	27	25	18	12	11	11	5	5	3	1	

Appendix B:

Script

My name is Mike and I am conducting a study regarding student learning. We will be asking participants to read a brief passage and then answer some questions about what you've read. The entire study will require about 45 minutes of your time and is very much appreciated. My contact information, if you have questions, as well as the places and times scheduled for participation, will be available on your class Blackboard® page under the title of Student Learning.

Appendix C:

Letter of Information

Title: How Students Learn Using Textbooks

Introduction/ Purpose: Dr. Karl White in the department of Psychology at Utah State University (USU) and Michael Drysdale are conducting a research study to find out more about student learning from textbooks. There will be approximately 300 participants in this research.

Procedures: If you agree to be in this research study you will be given a pretest that will take about 10 minutes to complete. Then you will be asked to read a study passage, an excerpt from Myers (2007), that will take 25 minutes, followed by a 10 minute posttest.

Risks: There are minimal risks involved in the study.

Benefits: There are unlikely to be any direct benefits to you from these procedures. The investigator, however, may learn more about how students learn from textbooks.

Explanation & offer to answer questions: Mike Drysdale has explained this research study to you and answered your questions. If you have other questions or research-related problems, you may reach him at (435) 797-3402.

Compensation: Some of your professors have decided that participating in this experiment is worth 1 lab credit. Therefore, some of you will receive 1 lab credit for your Introductory psychology course for participating in this experiment.

Voluntary nature of participation and right to withdraw without consequence: Participation in research is entirely voluntary. You may refuse to participate or withdraw at any time without consequence or loss of benefits. Your decision not to participate will not affect your class standing.

Confidentiality: Research records will be kept confidential, consistent with federal and state regulations. Only the investigator and assistants will have access to the data which will be kept in a locked file cabinet in a locked room. Information will be kept for 3 years, at which point it will be destroyed. No personal identifiable information will be asked of you; please do not put your name on any of the pre/post tests.

IRB Approval Statement The Institutional Review Board for the protection of human participants at USU has approved this research study. If you have any questions or concerns about your rights, you may contact the IRB at (435) 797-1821.

Investigator Statement "I certify that the research study has been explained to the individual, by me, and that the individual understands the nature and purpose, the

possible risks and benefits associated with taking part in this research study. Any questions that have been raised have been answered."

_____   _____
Karl R. White   Michael Drysdale
Principal Investigator   Co-Principal Investigator
(435) 797-3013   (435) 797-3402

Appendix D:

Original Pilot Study Quizzes

Prequiz

Please choose the most correct answer for each question.

1. Freud emphasized that unresolved childhood conflicts often lead to:
   A) reciprocal determinism.
   B) the self-reference phenomenon.
   C) an external locus of control.
   D) fixation.

2. According to Freud, the unconscious is:
   A) the part of personality that cannot process information.
   B) The thoughts, wishes, feelings, and memories, of which we are largely unaware.
   C) a set of universal concepts acquired by all humans from our common past.
   D) a reservoir of deeply repressed memories that does not affect behavior.

3. According to Freud, the part of personality that represents our sense of right and wrong and our ideal standards is the:
   A) collective unconscious.
   B) ego.
   C) id.
   D) superego.

4. Which of the following techniques did Freud use to discover the latent content of his patients' dreams?
   A) fixation
   B) factor analysis
   C) projective testing
   D) free association

5. When 2-year-old Matthew was told he would get no dessert until he finished the food on his plate, he threw his plate on the floor in a temper tantrum. Freud would have suggested that Matthew was unable to resist the demands of his:
   A) superego.
   B) ego.
   C) id.
   D) Oedipus complex.

6. Freud suggested that the superego develops through the process of:
   A) fixation.
   B) free association.
   C) reciprocal determinism.
   D) identification.

7. According to Freud's theory, the ego:
   A) is the executive part of personality.
   B) operates on the pleasure principle.
   C) is the major source of guilt feelings.
   D) operates only on a conscious level.

8. Freud suggested that pleasure-seeking energies focus on distinct erogenous zones as we progress through various:
   A) defense mechanisms.
   B) psychosexual states.
   C) free associations.
   D) identifications.

9. A boy's sexual desires for his mother and feelings of hostility toward his father constitute what Freud called:
   A) reaction formation.
   B) the Oedipus complex.
   C) reciprocal determinism.
   D) an oral fixation.

10. Freud called his theory of personality and the associated treatment techniques:
    A) a humanistic perspective.
    B) terror-management theory.
    C) a biophysical approach.
    D) psychoanalysis.

Post-Quiz

Please choose the most correct answer for each question.

1. Which of the following techniques did Freud use to discover the latent content of his patients' dreams?
   A) fixation
   B) factor analysis
   C) projective testing
   D) free association

2. Freud called his theory of personality and the associated treatment techniques:
   A) a humanistic perspective.
   B) terror-management theory.
   C) a biophysical approach.
   D) psychoanalysis.

3. According to Freud, the unconscious is:
   A) the part of personality that cannot process information.
   B) The thoughts, wishes, feelings, and memories, of which we are largely unaware.
   C) a set of universal concepts acquired by all humans from our common past.
   D) a reservoir of deeply repressed memories that does not affect behavior.

4. When 2-year-old Matthew was told he would get no dessert until he finished the food on his plate, he threw his plate on the floor in a temper tantrum. Freud would have suggested that Matthew was unable to resist the demands of his:
   A) superego.
   B) ego.
   C) id.
   D) Oedipus complex.

5. According to Freud's theory, the ego:
   A) is the executive part of personality.
   B) operates on the pleasure principle.
   C) is the major source of guilt feelings.
   D) operates only on a conscious level.

6. According to Freud, the part of personality that represents our sense of right and wrong and our ideal standards is the:
   A) collective unconscious.
   B) ego.
   C) id.
   D) superego.

7. Freud suggested that pleasure-seeking energies focus on distinct erogenous zones as we progress through various:
   A) defense mechanisms.
   B) psychosexual states.
   C) free associations.
   D) identifications.

8. A boy's sexual desires for his mother and feelings of hostility toward his father constitute what Freud called:
   A) reaction formation.
   B) the Oedipus complex.
   C) reciprocal determinism.
   D) an oral fixation.

9. Freud suggested that the superego develops through the process of:
   A) fixation.
   B) free association.
   C) reciprocal determinism.
   D) identification.

10. Freud emphasized that unresolved childhood conflicts often lead to:
   A) reciprocal determinism.
   B) the self-reference phenomenon.
   C) an external locus of control.
   D) fixation.

Yes   No   Do you consider the inclusion of boldfaced terms beneficial to your learning?

Appendix E:

Revised Quizzes

Prequiz

1. Freud emphasized that unresolved childhood conflicts often lead to:
   A) reciprocal determinism.
   B) the self-reference phenomenon.
   C) an external locus of control.
   D) fixation.

2. According to Freud, the unconscious is:
   A) the part of personality that cannot process information.
   B) The thoughts, wishes, feelings, and memories, of which we are largely unaware.
   C) a set of universal concepts acquired by all humans from our common past.
   D) a reservoir of deeply repressed memories that does not affect behavior.

3. According to Freud, the part of personality that represents our sense of right and wrong and our ideal standards is the:
   A) collective unconscious.
   B) ego.
   C) id.
   D) superego.

4. Which of the following techniques did Freud use to discover the latent content of his patients' dreams?
   A) fixation
   B) factor analysis
   C) projective testing
   D) free association

5. When 2-year-old Matthew was told he would get no dessert until he finished the food on his plate, he threw his plate on the floor in a temper tantrum. Freud would have suggested that Matthew was unable to resist the demands of his:
   A) superego.
   B) ego.
   C) id.
   D) Oedipus complex.

6. Freud suggested that the superego develops through the process of:
   A) fixation.
   B) free association.
   C) reciprocal determinism.
   D) identification.

7. According to Freud's theory, the ego:
   A) is the executive part of personality.
   B) operates on the pleasure principle.
   C) is the major source of guilt feelings.
   D) operates only on a conscious level.

8. Freud suggested that pleasure-seeking energies focus on distinct erogenous zones as we progress through various:
   A) defense mechanisms.
   B) psychosexual states.
   C) free associations.
   D) identifications.

9. A boy's sexual desires for his mother and feelings of hostility toward his father constitute what Freud called:
   A) reaction formation.
   B) the Oedipus complex.
   C) reciprocal determinism.
   D) an oral fixation.

10. Freud called his theory of personality and the associated treatment techniques:
    A) a humanistic perspective.
    B) terror-management theory.
    C) a biophysical approach.
    D) psychoanalysis.

Post-Quiz

Please choose the most correct answer for each question.

1. Which of the following techniques did Freud use to discover the latent content of his patients' dreams?
   A) fixation
   B) factor analysis
   C) projective testing
   D) free association

2. Freud called his theory of personality and the associated treatment techniques:
   A) a humanistic perspective.
   B) terror-management theory.
   C) a biophysical approach.
   D) psychoanalysis.

3. According to Freud, the unconscious is:
   A) the part of personality that cannot process information.
   B) The thoughts, wishes, feelings, and memories, of which we are largely unaware.
   C) a set of universal concepts acquired by all humans from our common past.
   D) a reservoir of deeply repressed memories that does not affect behavior.

4. When 2-year-old Matthew was told he would get no dessert until he finished the food on his plate, he threw his plate on the floor in a temper tantrum. Freud would have suggested that Matthew was unable to resist the demands of his:
   A) superego.
   B) ego.
   C) id.
   D) Oedipus complex.

5. According to Freud's theory, the ego:
   A) is the executive part of personality.
   B) operates on the pleasure principle.
   C) is the major source of guilt feelings.
   D) operates only on a conscious level.

6. According to Freud, the part of personality that represents our sense of right and wrong and our ideal standards is the:
   A) collective unconscious.
   B) ego.
   C) id.
   D) superego.

7. Freud suggested that pleasure-seeking energies focus on distinct erogenous zones as we progress through various:
   A) defense mechanisms.
   B) psychosexual states.
   C) free associations.
   D) identifications.

8. A boy's sexual desires for his mother and feelings of hostility toward his father constitute what Freud called:
   A) reaction formation.
   B) the Oedipus complex.
   C) reciprocal determinism.
   D) an oral fixation.

9. Freud suggested that the superego develops through the process of:
   A) fixation.
   B) free association.
   C) reciprocal determinism.
   D) identification.

10. Freud emphasized that unresolved childhood conflicts often lead to:
    A) reciprocal determinism.
    B) the self-reference phenomenon.
    C) an external locus of control.
    D) fixation.

Using the following scale please indicate how valuable you consider boldfaced terms to be for:

		Not valuable					Valuable
c)	your learning	1	2	3	4	5	6
d)	performing well on exams	1	2	3	4	5	6

Appendix F:

Chapter Excerpts (Boldfaced Terms Included)

Exploring the Unconscious

Objective 3 | Discuss Freud's view of the mind as an iceberg, and explain how he used this image to represent conscious and unconscious regions of the mind.

Might some neurological disorders have psychological rather than physiological causes? Observing patients led Freud to his "discovery" of the unconscious. He decided that the peculiar loss of feeling in one's hand might be caused by a fear of touching one's genitals; that unexplained blindness or deafness might be caused by not wanting to see or hear something that aroused intense anxiety. Initially, Freud thought hypnosis might unlock the door to the unconscious, but patients displayed an uneven capacity for hypnosis. He then turned to **free association**—in which he merely told the patient to relax and say whatever came to mind, no matter how embarrassing or trivial. Freud assumed that a line of mental dominoes had fallen from his patients' distant past to their troubled present. Free association, he believed, allowed him to retrace that line, following a chain of thought leading into the patient's unconscious, where painful unconscious memories, often from childhood, could be retrieved and released. Freud called his theory of personality and the associated treatment techniques **psychoanalysis.**

Basic to Freud's theory was his belief that the mind is like an iceberg—mostly hidden (**FIGURE 15.1**). Our conscious awareness is the part of the iceberg that floats above the surface. Below the surface is the much larger, **unconscious** region containing thoughts, wishes, feelings, and memories, of which we are unaware. Some of these thoughts we store temporarily in a *preconscious* area, from which we can retrieve them into conscious awareness. Of greater interest to Freud was the mass of unacceptable passions and thoughts that he believed we *repress,* or forcibly block from our consciousness because they would be too unsettling to acknowledge. Freud believed that, although we are not consciously aware of them, these troublesome feelings and ideas powerfully influence us, sometimes gaining expression in disguised forms—the work we choose, the beliefs we hold, our daily habits, our troubling symptoms.

For Freud the determinist, nothing was ever accidental. He believed he could glimpse the unconscious seeping not only into people's free associations, beliefs, habits, and symptoms but also into slips of the tongue and pen. He illustrated with a financially stressed patient who, not wanting any large pills, said, "Please do not give

■ **free association** in psychoanalysis, a method of exploring the unconscious in which the person relaxes and says whatever comes to mind, no matter how trivial or embarrassing.

■ **psychoanalysis** Freud's theory of personality that attributes thoughts and actions to unconscious motives and conflicts; the techniques used in treating psychological disorders by seeking to expose and interpret unconscious tensions.

■ **unconscious** according to Freud, a reservoir of mostly unacceptable thoughts, wishes, feelings, and memories. According to contemporary psychologists, information processing of which we are unaware.

"Good morning, beheaded—uh, I mean beloved."

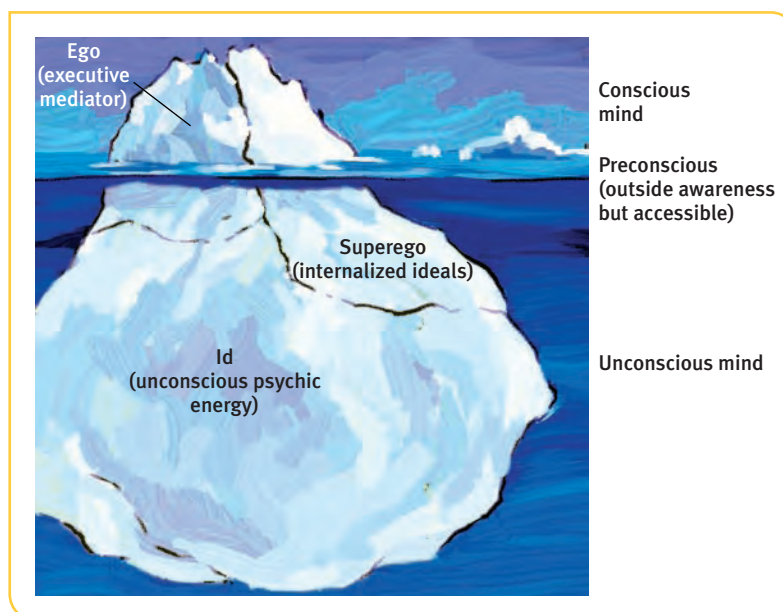"I know how hard it is for you to put food on your family."

George W. Bush, 2000

Ego
(executive mediator)

Conscious mind

Preconscious
(outside awareness but accessible)

Superego
(internalized ideals)

Id
(unconscious psychic energy)

Unconscious mind

FIGURE 15.1
Freud's idea of the mind's structure
Consciousness is like an iceberg's visible tip. Note that the id is totally unconscious, but ego and superego operate both consciously and unconsciously. (Adapted from Freud, 1933, p. 111.)

■ **id** contains a reservoir of unconscious psychic energy that, according to Freud, strives to satisfy basic sexual and aggressive drives. The id operates on the pleasure principle, demanding immediate gratification.

■ **ego** the largely conscious, "executive" part of personality that, according to Freud, mediates among the demands of the id, superego, and reality. The ego operates on the *reality principle*, satisfying the id's desires in ways that will realistically bring pleasure rather than pain.

■ **superego** the part of personality that, according to Freud, represents internalized ideals and provides standards for judgment (the conscience) and for future aspirations.

■ **psychosexual stages** the childhood stages of development (oral, anal, phallic, latency, genital) during which, according to Freud, the id's pleasure-seeking energies focus on distinct erogenous zones.

■ **Oedipus** [ED-uh-puss] **complex** according to Freud, a boy's sexual desires toward his mother and feelings of jealousy and hatred for the rival father.

■ **identification** the process by which, according to Freud, children incorporate their parents' values into their developing superegos.

■ **fixation** according to Freud, a lingering focus of pleasure-seeking energies at an earlier psychosexual stage, in which conflicts were unresolved.

"Fifty is plenty."   "Hundred and fifty."

The ego struggles to reconcile the demands of superego and id, said Freud.

me any bills, because I cannot swallow them." Similarly, Freud viewed jokes as expressions of repressed sexual and aggressive tendencies, and dreams as the "royal road to the unconscious." The remembered content of dreams (their *manifest content*) he believed to be a censored expression of the dreamer's unconscious wishes (the dream's *latent content*). In his analysis of dreams, Freud searched for the nature of patients' inner conflicts and their release from inner tensions.

Personality Structure

OBJECTIVE 4 | Describe Freud's view of personality structure, and discuss the interactions of the id, ego, and superego.

In Freud's view, human personality—including its emotions and strivings—arises from a conflict between our aggressive, pleasure-seeking biological impulses and the internalized social restraints against them. Freud believed personality is the result of our efforts to resolve this basic conflict—to express these impulses in ways that bring satisfaction without also bringing guilt or punishment. To understand the mind's dynamics during this conflict, Freud proposed three interacting systems: the *id, ego,* and *superego* (see Figure 15.1 on page 597.)

The **id** has a reservoir of unconscious psychic energy constantly striving to satisfy basic drives to survive, reproduce, and aggress. The id operates on the *pleasure principle:* If not constrained by reality, it seeks immediate gratification. To envision an id-dominated person, think of newborn infants, crying out for satisfaction the moment they feel a need, caring nothing for the outside world's conditions and demands. Or think of people with a present rather than future time perspective—those who often use tobacco, alcohol, and other drugs, and would sooner party now than sacrifice today's pleasure for future success and happiness (Keough & others, 1999).

As the **ego** develops, the young child learns to cope with the real world. The ego, operating on the *reality principle,* seeks to gratify the id's impulses in realistic ways that will bring long-term pleasure rather than pain or destruction. (Imagine what would happen if, lacking an ego, we expressed our unrestrained sexual or aggressive impulses whenever we felt them.) The ego contains our partly conscious perceptions, thoughts, judgments, and memories.

Beginning around age 4 or 5, Freud theorized, a child's ego recognizes the demands of the newly emerging **superego,** the voice of conscience that forces the ego to consider not only the real but the ideal, and that focuses solely on how one *ought* to behave. The superego strives for perfection, judging actions and producing positive feelings of pride or negative feelings of guilt. Someone with an exceptionally strong superego may be virtuous yet, ironically, guilt-ridden; another with a weak superego may be wantonly self-indulgent and remorseless.

Because the superego's demands often oppose the id's, the ego struggles to reconcile the two. It is the personality "executive," mediating the impulsive demands of the id, the restraining demands of the superego, and the real-life demands of the external world. If chaste Jane feels sexually attracted to John she may satisfy both id and superego by joining a volunteer organization to which John belongs.

Personality Development

OBJECTIVE 5 | Identify Freud's psychosexual stages of development, and describe the effects of fixation on behavior.

Analysis of his patients' histories convinced Freud that personality forms during life's first few years. Again and again his patients' symptoms seemed rooted in unresolved conflicts from early childhood. He concluded that children pass through a series of **psychosexual stages,** during which the id's pleasure-seeking energies focus on distinct pleasure-sensitive areas of the body called *erogenous zones* (**TABLE 15.1**).

TABLE 15.1

FREUD'S PSYCHOSEXUAL STAGES

Stage	Focus
Oral (0–18 months)	Pleasure centers on the mouth—sucking, biting, chewing
Anal (18–36 months)	Pleasure focuses on bowel and bladder elimination; coping with demands for control
Phallic (3–6 years)	Pleasure zone is the genitals; coping with incestuous sexual feelings
Latency (6 to puberty)	Dormant sexual feelings
Genital (puberty on)	Maturation of sexual interests

Freud believed that during the *phallic stage* boys seek genital stimulation, and they develop both unconscious sexual desires for their mother and jealousy and hatred for their father, whom they consider a rival. Given these feelings, boys supposedly also feel guilt and a lurking fear of punishment, perhaps by castration, from their father. Freud called this collection of feelings the **Oedipus complex** after the Greek legend of Oedipus, who unknowingly killed his father and married his mother. Some psychoanalysts in Freud's era believed that girls experienced a parallel *Electra complex*. Freud's own thinking seemed to vary on this issue.

Children eventually cope with threatening feelings, said Freud, by repressing them and by identifying with (trying to become like) the rival parent. It's as though something inside the child decides, "If you can't beat 'em [the parent of the same sex], join 'em." Through this **identification** process, children's super-egos gain strength as they incorporate many of their parents' values. Freud believed that identification with the same-sex parent provides what psychologists now call our *gender identity*—our sense of being male or female. This illustrates what both Freud and today's *object relations theorists* have presumed: that our early childhood relations with parents, caregivers, and everything else influences our developing identity, personality, and frailties.

In Freud's view, conflicts unresolved during earlier psychosexual stages could surface as maladaptive behavior in the adult years. At any point in the oral, anal, or phallic stages, strong conflict could lock, or **fixate,** the person's pleasure-seeking energies in that stage. A person who had been either orally overindulged or deprived (perhaps by abrupt, early weaning) might fixate at the oral stage, for example. This orally fixated adult could exhibit either passive dependence (like that of a nursing infant) or an exaggerated denial of this dependence—perhaps by acting tough and uttering biting sarcasm. Or the person might continue to seek oral gratification by smoking and eating excessively. In such ways, Freud suggested, the twig of personality is bent at an early age.

Identification
Freud believed that children cope with threatening feelings of competition with their same-sex parent by identifying with that parent.

From the K. Vandervelde private collection

Appendix G:

Chapter Excerpts (No Boldfaced Terms Included)

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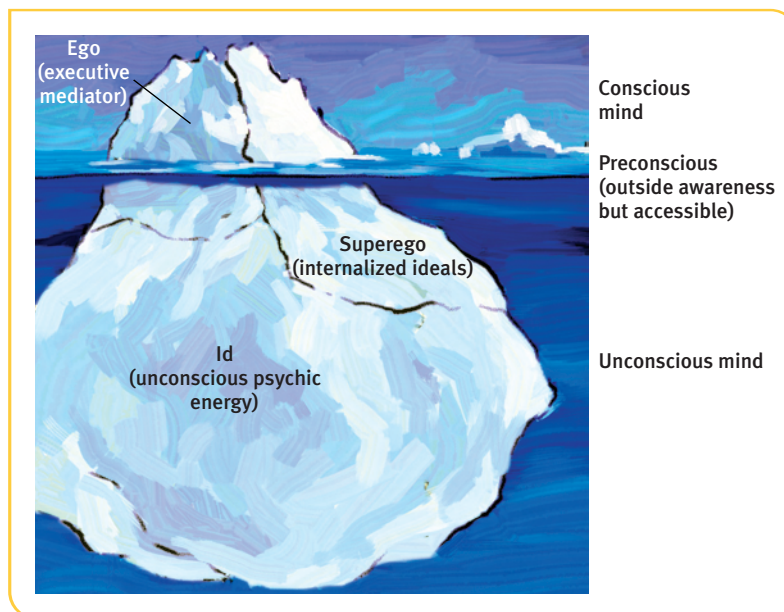
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