

CHAPTER 4

RESULTS

Participant characteristics are described first by demographic patterns, then analyzed by age and religious background, but primarily by sex. Significant findings are reported in the text, followed by comprehensive tabular results. I then report the organization and initial attitude survey findings, including a discussion of regression toward the mean in scores from Time 1 to Time 3. Third, I report the text analysis for moral development, cognitive effort, and commitment variables. These are analyzed by demographic characteristics and for their influence on attitudes at Time 1 and Time 3, and on attitude difference scores from Time 1 to Time 3. Finally, I report each hypothesis analysis and the degree to which each is accepted or rejected.

Characteristics of Study Participants

The sample consisted of members of a college class in human sexuality, 91% of whom were white. Students ranged in age from 17 (n=1) to 27 (n=1) years. The class population consisted of 141 women and 62 men and sample participants were 91 women (65%) and 42 men (68%). Class rolls reflected a broad range of majors and class levels. The only criterion that significantly affected participation in the study was that of grade (A/F or pass/fail) status. Only 1 out of 23 pass/fail-status students enrolled in the study.

Out of the 289 A-F status students, 5 opted to perform an alternative extra credit option, 96 did not opt for any extra credit task, 64 opted to participate in the attitude survey and not in the comment text analysis, and 144 opted to participate fully in the study. Final grades ranged from A to F; none of the Pass/Fail status students failed. Study participation was related to class performance, as shown in Table 17. Only 1 of the 23 Pass/Fail status students enrolled in the study. Comparison of grades earned by A-F grade status students shows D and F students not participating in the study at any level, a larger than expected proportion of C students not participating, and 1/3 the expected proportion of A students not participating. In addition, a significantly higher proportion of A students participated in the entire study than in the attitude survey only.

None of the study participation categories were significantly different by sex, but participation by major was significantly different. More Family and Child Development majors participated in the full study than would be expected for their overall proportion of the class composition. Fewer College of Arts and Sciences majors participated than would be expected. More Psychology and University Studies majors participated in the attitude survey only and not in the full study, than expected.

Table 17
Final Course Grades by Study Participation Status

Participation Status	Final Grade						Total
	A	B	C	D	F	P	
Declined	9	41	19	3	4	20	96
Survey only	37	24	3	0	0	2	66
Dropped from study	2	2	4	0	0	0	8
Full participation	71	60	4	0	0	1	136
Totals	119	127	30	3	4	23	306

Note. Goodman & Kruskal Tau values, with Participation Status dependent=.17 and with Final Grade dependent=.095; were both significant at $p < .000$.

Demographic participant information was analyzed by sex and age. A significant sex difference in majors occurred ($p = .0002$). Most of the women in the class were Family and Child Development majors or enrolled in other helping profession curricula. Men tended to be from the physical sciences, business, and engineering curricula. The religious background of the group was interesting in that no respondent selected fundamentalist, despite the southern location of the university. No significant difference in religious perspective by sex occurred. A trend toward a significant difference in age occurred ($p = .06$), particularly in the youngest group at 18 years with only 2 men and 21 women. The final grade and ethnicity ranges indicated no significant trend by sex. Family structure during adolescence was significant by sex in that a higher proportion of women had their mother in the home than men did. Participation in pregnancy, which included the pregnancies of friends and relatives, was significantly different by sex in that men were proportionately less likely to report participation. See Table 18 for frequencies of demographic characteristics by sex.

Family demographics reflected a generally comfortable middle-class background, in that 87% of the fathers and 58% of the mothers worked full-time. During adolescence, 77% of the fathers were present in the respondent's home and 96% of the mothers were present. Eleven percent of the respondents were financially independent and 71% worked during the summer only. More younger siblings were reported than older siblings: 38% had younger sisters and 34% younger brothers, 28% reported older sisters and 22% older brothers. These characteristics did not differ by sex or by age.

Information about human sexuality was derived primarily from personal experience, followed closely by friends and peers, textbooks, and sex education classes. The film source was significant for sex differences in that more men than women cited this source. The personal experience source showed a trend toward significance, with more men than women citing this source. See Table 19 for details on sources of information about human sexuality. Only college courses were significant as an influence on values about human sexuality with more women citing the source. See Table 20 for details on reports of influence on values related to human sexuality.

Differences by age were significant for currently married, having a stepmother present in the home during adolescence, being financially independent and working full-time or only in the summer, experience with pregnancy as a partner, and having friends influence values in regard to sexuality. Major and relative level of partner's sexual experience vary significantly by age. Many of these are statistically significant but due to low numbers, not very useful. The demographic categories statistically significant by age are reported in detail in Table 21.

Table 18
Participant Demographic Characteristics by Sex

Demographic Characteristics	Male	Female	F
Major			29.81**
Family and Child Development	1	26	
Other College of Human Resources and Education	0	7	
Arts and Sciences	19	42	
Engineering	9	6	
Agriculture	2	2	
Architecture	1	2	
Business	10	6	
Self-described Religious Background		4.13	
Fundamentalist	0	0	
Conservative	17	50	
Liberal	19	25	
None	6	16	
Age			10.60
18	2	21	
19	13	31	
20	12	24	
21	8	7	
22	5	6	
23+	2	2	
Final Grade			1.76
A	24	46	
B	16	42	
C	2	2	
D	0	0	
Fail	0	0	
Pass	0	1	
Ethnicity			7.47
American Indian	1	0	
Asian or Pacific	1	2	
Black	2	0	
Hispanic	1	1	
White	36	85	
Multiracial	0	1	
Prefer not to categorize	1	2	
Family Structure During Adolescence			
Mother in Home	38	90	5.64*
Father in Home	31	71	0.29
Experience with Pregnancy			
Some participation	13	44	3.55
No participation	31	50	4.30*

* $p < .05$.

** $p < .01$.

Table 19
Sources of Information About Human Sexuality

Source of Information	%	n		Pearson's Chi Square
		Male	Female	
Personal experience	90	39	81	0.48 ⁺
Friends and peers	88	38	79	0.36
Textbooks	87	38	78	0.58
Sex education classes	86	38	77	0.84
Films	72	37	59	7.74**
Magazines	70	33	50	2.18
Parents	56	22	52	0.26
Media A/V	55	23	50	0.00

⁺p < .10. *p < .05. **p < .01.

Table 20
Influences on Values Related to Human Sexuality

Influences on Values	%	n		Pearson's Chi Square
		Male	Female	
Family	77	30	73	1.27
Friends	74	34	65	1.37
Media	42	22	34	2.66
School	42	21	33	2.25
Religion	33	14	30	0.00
College courses	31	8	33	3.99*
Other	23	10	20	0.06

*p < .05.

Table 21
Participant Demographic Characteristics by Age

Demographic Characteristics	Age						Pearson's Chi Square
	18	19	20	21	22	23+	
Currently Married	0	0	0	0	2	2	76.9***
Lived with Stepmother During Adolescence	2	1	0	0	0	0	22.8***
Financially Independent	4	4	1	0	3	2	26.5**
Employment Status							
Full-time Work	0	4	2	1	3	2	27.7***
Summer Work Only	16	30	32	11	5	1	17.6*
Experience with Pregnancy							
As Partner	0	1	3	0	0	1	30.0***
Influence in Sexual Values							
Friends	13	37	30	11	4	4	21.0*
Major Partner's Sexual Experience Relative to One's Own							157.77*** 436.1*

* $p < .05$.

** $p < .01$.

*** $p < .001$.

Attitude Survey

Attitude scores were calculated for each of the four topics of interest at Time 1 and Time 3: gender, sexual orientation, sex education, and sexual coercion (see Table 22). The number of cases depended on the participants' presence at the corresponding class presentation and on the participants' responding with a substantive answer to all the scale items. The number of cases ranged from 94 for sex education at Time 3 to 124 for sexual orientation at Time 3. The means ranged from 51 out of 100 for sexual orientation at Time 1 to 76 out of 100 for sex education at Time 3, with higher scores indicating more sensitivity to diversity.

Table 22
Attitude Scores by Topic and Time of Measurement

Topic	Time 1			Time 3		
	Mean	SD	n	Mean	SD	n
Gender	58.37	16.80	100	58.23	15.67	101
Orientation	50.67	23.57	123	58.13	24.14	124
Education	74.47	17.83	97	76.06	19.15	94
Coercion	62.38	15.44	106	66.33	15.24	107

Attitude scale scores were expected to change in a positive direction from Time 1 to Time 3. Table 23 displays the difference score descriptions. Correlations and t-tests of Time 1 to Time 3 were performed for each topic (see Table 24). All four topic analyses showed high correlations between the beginning and the end of the semester. Sexual orientation showed the highest correlation and the highest difference with a seven and one-half point increase from the beginning to the end of the semester. Sexual coercion also showed a significant difference with a three and one-half point increase from the beginning to the end of the semester. Gender and sex education differences from Time 1 to Time 3 were nonsignificant.

Table 23
Characteristics of Time 1 to Time 3 Attitude Difference Scores by Topic

Topic	Mean	SD	Median	Min	Max	Skew
Gender	-.46	13.7	-1.75	-41.8	35.0	0.007
Orientation	7.3	14.3	6.6	-33.6	45.2	-.213
Education	2.0	14.5	1.25	-48	64.5	0.294
Coercion	3.5	13.9	5.4	-31.0	45.0	0.070

Table 24
Correlations and T-tests of Attitude Scores Time 1 to Time 3 by Topic

Topic	Time 1 to Time 3			
	Correlation	df	t-value	t-value-trimmed
Gender	.647**	98	-.33	-.88
Orientation	.821**	121	5.62***	4.97***
Education	.689**	100	1.40	.66
Coercion	.617**	107	2.62*	2.82**

Note. A trimmed sample (10% each of high and low scorers in Time 1 removed) was tested for effect of extreme scores.

* $p < .05$. ** $p < .01$. *** $p < .001$.

Table 25
Correlations Among Attitude Scores of Time 1 and Time 3 to Difference From Time 1 to Time 3

	n	Difference T1-T3	
		Time 1	Time 3
Gender	99	-.47**	.37**
Orientation	122	-.24*	.36**
Education	101	-.37**	.42**
Coercion	108	-.47**	.40**

* $p < .01$. ** $p < .001$.

Change from Time 1 to Time 3 initially was assumed to be influenced primarily by the semester-long course, however, the difference scores obtained by subtracting the Time 1 from the Time 3 scores were influenced by both a ceiling effect and by regression toward the mean from Time 1 to Time 3. Some students scored high at Time 1 and their scores remained high at Time 3. Their difference score is, therefore, much smaller, perhaps even a negative value, because they started at the ceiling of the pre-test range.

Other students may have started with a low attitude score at Time 1 and their subsequent scores at Time 3 are markedly higher because they started at the floor and had nowhere to go but up. As shown in Table 23, as additional consideration is the effect of outliers in the raw difference scores and the potential for these to skew the results.

Characteristics of Time 1 to Time 3 attitude difference scores revealed a strong ceiling effect. The measures at Time 1 and Time 3 were negatively skewed distributions with only sexual orientation at Time 1 positively skewed. Trimmed samples were not improved in skew and some samples became even more skewed (Howell, 1992).

It was expected that the gain from Time 1 to Time 3 would be positive (see Hypothesis 2). Correlations were obtained for the Time 1 and Time 3 scores, as the smaller the correlation, the larger the standard deviation of the post-test would have to be to produce a positive correlation between the pre-test score and the gain. The standard deviations of the scales were generally large, ranging from 15 to 24; however, the standard deviations for each attitude scale between Time 1 and Time 3 were not significantly different in size. Even though some standard deviations were somewhat larger in the Time 3 post-test than the Time 1 pre-test, these were not larger enough to influence the correlation between the initial scores and produce positive correlations between Time 1 and the difference scores (see Table 25). The negative correlation indicated that respondents with high Time 1 scores showed smaller gains than those with low Time 1 scores (Pedhazur & Schmelkin, 1991). Once the extreme 10% of values in Time 1, high and low, were removed in trimmed t-tests, the middle 80% of Time 1 respondents showed nonsignificant changes for gender and sex education, and significantly positive gains for sexual orientation and sexual coercion (see Table 24.)

In order to further investigate the findings of the trimmed t-tests and the implication of regression toward the mean, Time 1 respondents were divided into 3 groups: the high and low 10th percentiles, and the middle 80%. A significant regression toward the mean effect was observed. As shown in Table 26, the high 10% of scores group at Time 1 experienced a drop in average attitude score at Time 3. The low 10% of scores group at Time 1 experience an increase in average attitude score at Time 3. The attitude difference score Time 1 to Time 3 for all participants depended on

the relationship between these extreme scores rather than the middle 80%, with the exception of attitudes about sexual orientation and, to a lesser extent, sexual coercion.

Table 26
Analysis of Regression Toward the Mean Based on Extremes of Time 1 Attitude Scores

Time 1 Scores by Group	n	Means		
		T1	T3	T1-T3 Difference
		Gender		
Low 10%	12	23.42	42.34	18.80
Medium 80%	96	57.99	57.26	-.79
High 10%	12	85.58	76.71	-8.88
		Sexual Orientation		
Low 10%	12	12.68	29.93	17.25
Medium 80%	104	50.56	57.46	7.08
High 10%	12	93.35	90.98	-2.37
		Sex Education		
Low 10%	12	32.83	45.98	13.15
Medium 80%	106	74.54	75.42	.99
High 10%	12	96.77	94.65	-2.13
		Sexual Coercion		
Low 10%	12	33.48	47.88	14.40
Medium 80%	104	63.06	67.36	4.40
High 10%	13	90.42	82.48	-7.94

Text Analysis

Moral development, cognitive effort, and commitment to one's opinion were developed by analyzing and coding each comment. Moral development reflected the ability of the participant to consider the issues from a simplistic to a systemic context. Cognitive effort was the ability of the participant to focus on the message and issue at hand and was additionally evaluated for influences such as distraction, repetitiveness, favorability, and ability to take more than one's own perspective. Commitment to one's own opinion was the surety of the student's expressed attitude and was additionally evaluated for influences such as life experience, affect, and sense of personal relevance.

Moral Development

Moral development scores ranged from 1 to 4 and the median was 2 on each of the human sexuality topics (see Tables 2 through 5 for details on text scoring criteria and see Table 27 for descriptive statistics). Means levels were highest, or in the direction of more systemic knowledge, for comments about the classes on sexual orientation and sexual coercion. Means level was lowest for comments about the class on gender.

Table 27
Moral Development Descriptives

Variable	n	Mean	Std.Dev.
Gender	117	2.145	.874
Sexual orientation	128	2.336	.958
Sex education	102	2.235	.706
Sexual coercion	110	2.373	.966
Average	133	2.261	.622

There were no significant differences in moral development by age or final grade in the class. Sexual orientation and sexual coercion, however, showed significant sex-related differences, in that responses by women spread more evenly among the moral development categories. Responses by men in these topics, and responses by both sexes in the gender and sex education topics, clustered more toward the lower moral development categories (see Table 28).

Table 28
Influence of Sex on Moral Development Categories

Levels of Moral Development	Male	Female
Gender		
1 Surprised at, use discrimination	11	15
2 Minimal context, my coping	18	41
3 Society problem, context	5	16
4 Systemic, constructed	2	9
Sexual Orientation***		
1 Personal, faith, sex act	15	10
2 Minimal tolerance, real people	15	39
3 Relationship appreciation	10	20
4 Dialogue, culture, diversity	0	19
Sex Education		
1 Delay information, my values	8	5
2 Informing, assume shared values	14	41
3 Decision process, pressures	8	23
4 Values evolution, constructed	1	2
Sexual Coercion*		
1 Personal, no context	4	18
2 Obviously bad, women's problem	19	22
3 Context of relationship	8	23
4 Social construction of climate	2	14

* $p < .05$. *** $p < .001$.

Cognitive Effort and Commitment

Text comments were analyzed for attitude influences of cognitive effort process: cognitive effort, distraction, repetitiveness, favorability, and perspective-taking. They were also analyzed for attitude influences of commitment, or initial opinion strength: commitment to one's opinion, life experience, affect, and personal relevance.

Recoding of most of the cognitive effort text variables was necessary to compare the numeric variable scores so that a higher score consistently meant that thoughtful consideration of the message was more likely and a lower score signified that thoughtful consideration was less likely. Cognitive effort is a continuous variable, initially coded using values 1 to 5 increasing in cognitive focus on the message and issue. The 1st value, no comment, had only one occurrence and was recoded as 2. Distraction was initially coded using values 1 to 7 to specify types of distraction. Since the volume of distraction was low, all distractions were recoded to equal 1 and no distraction, which helped cognitive effort, was coded as 2. Repetitiveness of message was initially coded as continuous, with the higher scores indicating higher experience of message repetition. The 1st value, no mention of message repetition, was recoded as 3, some prior thought, due to its neutrality between the extremes of 2, surprise, and 4 and 5, considerable prior thought and overload, respectively. Favorability toward message presentation was recoded to reflect a continuous progression from 1, a negative reaction, to 2, neutral, to 3, a positive reaction to the class presentation. Perspective taking was coded only for the gender class comments to reflect the student's ability to take the other gender's perspective. No recoding was necessary.

Commitment influence variables indicate duration of an opinion over time and resistance to persuasion. None of the four variables was recoded. Commitment to one's opinion was coded as a continuous variable with higher scores indicating stronger

commitment. Life experience was coded to reflect any mention of having experienced the issues presented in class in an abstract manner, through the experience of another person, or through one's own experience. The majority of students were scored 1 as they made no mention of life experience. Values 2 to 4 reflect increasingly direct and personal experience. Affect was coded as a continuous variable reflecting increasing affect level with increased scores. Low affect implies less commitment and high affect implies more commitment. Since these implications rest on emotional reaction, disinterest as well as very high affect could interfere with thoughtful consideration of an issue. Personal relevance was coded as a continuous variable reflecting increased relevance with higher scores.

Results of text variable coding and recoding are described in Table 29. The results then were compared by sex, age, and final grade for Pearson's chi-square significance.