Influence of sex on cognitive effort and commitment. As shown in Table 30, sex had a significant effect on comments about the class on gender in terms of personal relevance of the message, favorability toward the presentation, and affect level. Cell differences for the variable personal relevance existed in hypothetical relevance, in which 15 men and only 1 woman were placed, as well as anticipated felt reality, in which 57 women and only 14 men were placed. Cell differences for the variable favorability toward the presentation existed in negative to presentation, in which 4 women and 9 men were placed, and positive to presentation, a 75 female:24 male ratio. Cell differences for the variable affect existed in low/minor references at 13 women and 15 men, and in high/multiple references at 30 women and 3 men.

Comments about the class on sexual orientation were significant for sex differences in personal relevance of the message, life experience, and affect (see Table 30). Cell differences for personal relevance of the message existed in all four categories. The overall group was an 88 female:40 male ratio, but not relevant to me was at 6:7 and hypothetical relevance at 26:20 for proportional overrepresentation of men, and anticipated felt reality and historical reality were underrepresented by men at 41:11 and 15:2, respectively. Cell differences for the variable life experience existed in abstract experience at 7:10, overrepresenting men, and personal knowledge of another's experience at 13:2, underrepresenting men. Cell differences for the variable affect existed in all categories with men's representation decreasing as the level of affect in the comment went up.

Comments about the class on sex education yielded significant sex differences in commitment to one's opinion, with a trend toward significance in cognitive effort (see Table 30). The class on sex education was attended by 72 women and 31 men participating in the study. Cell differences for the variable commitment depended on only 2 cases and is not significant in a useful manner. Cell differences for the variable cognitive effort reflected a slightly higher proportion of women's attention to the message (61:21) rather than to their own schemas (11:9).

Finally, Table 30 shows that comments about the class on sexual coercion differed significantly by sex in repetition of topic information, life experience, and commitment to one's opinion. Out of the overall group of 77 women and 33 men, a higher than expected proportion of women were surprised by the information in this class presentation (20:1). Cell differences for the variable life experience showed a higher proportion of men reporting knowledge of someone they personally knew (4:8) and higher proportion of women reporting their own experience (20:5). For the variable commitment to one's opinion, all the men's comments were in the was sure, still sure category, and almost one-third of the women's comments were in either not sure or was sure, but willing to reconsider categories.

Influence of age on cognitive effort and commitment. Text comment scores for cognitive effort, distraction, repetitiveness of message topic, favorability toward presentation, perspective-taking, commitment to one's opinion, life experience, affect, and personal relevance were compared by age category. Table 31 shows that the comments differed by age for only two class topics, gender and sex orientation. However, the variation by age does not appear to be practically useful and there is no linear trend.

Table 30
Influence of Sex on Text Comments by Class Topic

Text Variables	Pearson's χ^2			
	Gender	Orientation	Education	Coercion
Relevance	35.6***	11.8**	1.0	2.4
Repetition	1.85	5.4	0.02	8.1*
Distraction	0.3	0.8	0.05	0.007
Experience	2.1	8.9*	0.5	9.8*
Favorability	13.0***	3.0	4.7	3.1
Affect	17.4***	10.9*	2.3	6.0
Cognitive Effort	0.7	2.9	5.2^{+}	4.6
Commitment	4.1	3.3	4.7*	8.6*
Perspective	0.3			

$^{+}p = .07$. *$p < .05$. **$p < .01$. ***$p < .001$.

Table 31
Influence of Age on Text Comments by Class Topic

Text Variables	F			
	Gender	Orientation	Education	Coercion
Relevance	1.5	0.9	0.7	0.7
Repetition	0.5	0.4	2.8^{+}	0.4
Distraction	1.1	0.5	0.1	0.1
Experience	0.5	4.6**	0.8	1.4
Favorability	1.2	2.0	0.8	0.1
Affect	2.6^{+}	0.3	0.6	0.6
Cognitive Effort	2.4^{+}	1.6	2.2	1.6
Commitment	2.9^{+}	1.0	0.1	0.2
Perspective	2.1			

$^{+}p = .07$. *$p < .05$. **$p < .01$.

Influence of sex, age, final grade, and religious background on Time 1 attitudes and Time 1 to Time 3 attitude score difference. Attitude survey results for Time 1 and the difference from Time 1 to Time 3 were analyzed by sex, age, final grade, and religious background. Attitudes toward gender, sexual orientation, and sexual coercion differed significantly by sex at Time 1 in that women had higher scores. Religious background significantly affected sexual orientation attitudes in that a conservative religious background was consistent with a lower attitude score at Time 1 (see Table 32). None of the demographic variables had a significant effect on attitudes toward sex education or sexual coercion. Likewise, none of the demographic variables had a significant effect on Time 1-Time 3 difference scores for any of the topics.

Table 32
Attitudes at Time 1 by Topic, Sex and Religious Background

	Sex			Religious Background			
Topic	Male	Female	F	Co	Li	No	F
Gender	44.8	63.4	33.7***	56.9	58.9	61.0	0.4
Orientation	43.0	54.1	06.5*	43.2	57.2	58.6	6.5**
Education	71.8	75.3	00.8	70.8	79.0	75.7	2.3
Coercion	56.3	65.7	08.6**	62.0	64.0	63.5	0.2

Note. Co=Conservative; Li=Liberal; No=No Religious Background

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

Influence of Text Comment Issues on Time 1 and Time 3 Attitudes and Time 1—Time 3 Attitude Score Difference

Text variables were tested for their influence on attitudes at Time 1 and Time 3 and on attitude change from Time 1 to Time 3. Simple regression of individual text variables on attitudes was followed by multiple regression for variables showing individual significance. Simple regression revealed significance of favorability toward the class presentation for Time 1 and Time 3 attitudes for all four topics. Cognitive effort toward the message showed significance for sexual orientation and sexual coercion attitudes at Time 1 and for sexual orientation at Time 3. Personal relevance was significant at Time 1 for gender and sexual orientation attitudes. Sexual orientation attitudes at Time 1 and Time 3 were significant for affect level. None of the variables was significant for difference scores from Time 1 to Time 3.

Using a forward selection method, multiple regression analysis yielded significance for only the initial entries: favorability for gender at Times 1 and 3, sex education at Time 1, and sexual coercion at Times 1 and 3. Cognitive effort was significant for sexual orientation at Time 1 and Time 3. There was no significant text variable for sex education at Time 3 (see Tables 33 through 35).

Table 33

Summary of Regression Analysis for Influence of Text Variables on Time 1 Attitudes

Variable	B	SE B	ß
Gender			
Cognitive Effort	2.95	1.91	.15
Distraction	5.03	3.69	.14
Repetition	0.23	2.53	.01
Favorability	8.23	2.48	.32***
Commitment	1.98	1.67	.12
Life Experience	2.46	1.77	.14
Affect	-0.55	1.33	-.04
Relevance	5.44	2.06	.26**
Perspective	0.47	1.40	.03
Orientation			
Cognitive Effort	15.40	4.15	0.32***
Distraction	9.96	5.40	0.17^{+}
Repetition	-1.11	3.93	-.03
Favorability	11.61	3.57	0.28***
Commitment	1.40	1.74	$.07^{+}$
Life Experience	4.75	3.07	0.14
Affect	5.05	2.33	0.19*
Relevance	5.21	2.53	0.18*
Education			
Cognitive Effort	6.94	4.23	.17
Distraction	-4.49	6.56	-.07
Repetition	-1.28	12.74	-.01
Favorability	5.99	2.14	.27**
Commitment	-1.87	4.24	-.04
Life Experience	.10	1.71	.01
Affect	2.03	2.52	.08
Relevance	2.05	2.74	.08
Coercion			
Cognitive Effort	6.35	2.47	.24*
Distraction	-3.99	6.05	-.06
Repetition	.21	3.08	.01
Favorability	8.11	2.39	.32***
Commitment	.05	2.05	.00
Life Experience	-.06	1.23	-.00
Affect	.67	1.33	.05
Relevance	.26	1.40	.02

$^{+}$ p = .07 *p < .05. **p < .01. ***p < .001.

Table 34

Summary of Regression Analysis for Influence of Text Variables on Time 3 Attitudes

Variable	B	SE B	ß
Gender			
Cognitive Effort	3.31	1.80	.18[+]
Distraction	4.71	3.43	.14
Repetition	.89	2.34	.04
Favorability	5.40	2.58	.21*
Commitment	.67	1.52	.04
Life Experience	.61	1.68	.04
Affect	-.03	1.25	-.00
Relevance	3.86	2.05	7.93[+]
Perspective	.64	1.32	.05
Orientation			
Cognitive Effort	16.34	4.51	.31***
Distraction	9.86	5.63	.16
Repetition	-2.34	3.94	-.05
Favorability	12.54	3.63	.30***
Commitment	1.23	1.80	.06
Life Experience	2.97	3.10	.09
Affect	5.16	2.34	.20*
Relevance	3.37	2.58	.12
Education			
Cognitive Effort	3.54	4.61	.08
Distraction	-7.39	7.04	-.11
Repetition	1.89	13.69	.01
Favorability	4.71	2.39	.20*
Commitment	3.03	4.55	.07
Life Experience	.02	1.85	.00
Affect	.16	2.78	.01
Relevance	3.16	2.94	.11
Coercion			
Cognitive Effort	2.26	2.57	.09
Distraction	-2.83	6.43	-.04
Repetition	-3.67	2.97	-.12
Favorability	7.67	2.39	.30**
Commitment	2.91	2.01	.14
Life Experience	.67	1.21	.05
Affect	1.48	1.28	.11
Relevance	.92	1.42	.06

[+] $p = .07$ *$p < .05$. **$p < .01$. ***$p < .001$.

Table 35

Summary of Regression Analysis for Influence of Text Variables on Time 1 to Time 3 Attitude Difference Scores

Variable	B	SE B	ß
Gender			
Cognitive Effort	.58	1.61	.04
Distraction	-1.10	3.02	-.04
Repetition	.17	2.03	.01
Favorability	-1.28	2.25	-.06
Commitment	-1.29	1.34	-.10
Life Experience	-1.60	1.44	-.11
Affect	.26	1.08	.03
Relevance	-1.66	1.77	-.10
Perspective	- .02	1.15	-.00
Orientation			
Cognitive Effort	1.85	2.84	.06
Distraction	-1.77	3.42	-.05
Repetition	-2.25	2.43	-.09
Favorability	.91	2.28	.04
Commitment	.25	1.08	.02
Life Experience	-2.29	1.94	-.11
Affect	.80	1.47	.05
Relevance	-1.81	1.59	-.10
Education			
Cognitive Effort	-3.32	3.48	-.10
Distraction	-2.76	5.35	-.05
Repetition	3.29	10.35	.03
Favorability	-1.87	1.84	-.10
Commitment	4.86	3.41	.15
Life Experience	- .13	1.40	-.01
Affect	-1.78	2.09	-.09
Relevance	1.03	2.23	.05
Coercion			
Cognitive Effort	-3.53	2.38	-.15
Distraction	2.36	5.89	.04
Repetition	-4.25	2.75	-.15
Favorability	-.54	2.29	-.02
Commitment	2.95	1.83	.16
Life Experience	.86	1.12	.08
Affect	.59	1.20	.05
Relevance	.57	1.30	.04

$^{+}$ $p = .07$ $^{*}p < .05.$ $^{**}p < .01.$ $^{***}p < .001.$

Analysis of Hypotheses

Relationship Between Attitudes at Time 1 and Time 3 and Level of Moral Development

Hypothesis 1 predicted that attitudes at Time 1 and Time 3 related to gender, sexual orientation, sex education, and sexual coercion will positively relate to moral development levels indicated in the end-of-class comments.

With attitude as the dependent variable and level of moral development the independent variable, a oneway ANOVA with a test for a linear trend showed significant differences in attitude among the moral development levels indicated in the comments on the sexual orientation class presentation. Linearity was also highly significant in the expected direction. The gender attitudes showed no significant difference among levels, but significant linearity in the expected direction. Sex education attitudes showed no significant differences or linearity. Sexual coercion attitudes were significantly different among groups and, in addition, linearly significant at Time 3 (see Table 36). There were no significant differences among Time 1—Time 3 attitude difference scores (see Table 37).

Sexual orientation attitudes at Time 1 and Time 3 and sexual coercion attitudes at Time 3 correlated significantly with level of moral development in the expected positive direction. With the exception of sex education attitudes, the average moral development score correlated significantly with attitude scale scores at the .05 one-tail level of significance (see Table 38).

Table 36

Influence of Level of Moral Development on Attitude by Time of Measurement

Attitudes	df		F	
	Between	Within	Between Groups	Linearity
Gender				
Time 1	3	96	1.53	3.50
Time 3	3	97	1.43	3.96*
Sexual Orientation				
Time 1	3	119	6.81***	17.07***
Time 3	3	120	3.99**	11.54***
Sex Education				
Time 1	3	93	1.65	3.37
Time 3	3	90	.95	.19
Sexual Coercion				
Time 1	3	102	2.86*	3.16
Time 3	3	103	4.70*	6.18**

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

Table 37

Influence of Moral Development on Time 1 to Time 3 Attitude Difference Scores

	Difference Score		F	
Topic	Mean	SD	Between Groups	Linearity
Gender	-.46	13.7	0.08	0.17
Sexual Orientation	7.3	14.3	2.14	0.63
Sex Education	2.0	14.5	1.49	3.52
Sexual Coercion	3.5	13.9	0.40	0.28

Table 38
Intercorrelations Between Attitudes and Moral Development by Time of Measurement

Topic and Time of Measurement	Moral Development Corresponding By Topic	Overall By Score Average
Gender		
Time 1	.19*	.31***
Time 3	.20*	.26**
Sexual Orientation		
Time 1	.35***	.25**
Time 3	.30***	.26***
Sex Education		
Time 1	.19*	.15
Time 3	.05	.07
Sexual Coercion		
Time 1	.17*	.20*
Time 3	.23**	.30***

Note. One-tailed significance levels are reported.
*p < .05 **p < .01 ***p < .001

Influence of Class Experiences on Attitudes

Hypothesis 2 predicted that attitude scores would change in a positive direction from Time 1 to Time 3. Statistical analysis revealed mixed results by class topic. Table 39 presents the raw psychometric data for the Time 1——Time 3 difference scores as well as the t-test analyses of the significance of these differences.

Paired t-tests of each scale showed a significant change in a positive direction at Time 3 for the sexual orientation and sexual coercion attitudes. T-tests for gender and sex education attitudes were not significantly different from Time 1 to Time 3.

Trimmed t-tests were performed due to the significant regression toward the mean effect. With the high and low 10% of scores at Time 1 trimmed from the sample, sexual orientation and sexual coercion attitudes remained significantly changed in the expected direction. Gender and sex education attitude changes remained nonsignificant.

Change from Time 1 to Time 3 initially was assumed to be influenced primarily by the course material, however, the difference scores obtained by subtracting the pre-test from the post-test scores were influenced by a ceiling effect and regression toward the mean from Time 1 to Time 3. Some students scored high on the pre-test and their scores remained high on the post-test. 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 low pre-test scores and their subsequent scores on the post-test are markedly higher because they started at the floor of the pre-test range and had nowhere to go but up. The degree of increase of the initial low-scorers offset the neutral or decrease in scores of the initial high scorers. The aggregate differences were generally positive, except for the gender topic.

Table 39

Influence of Class Experiences on Attitudes, as Shown by Time 1 - Time 3 Difference Scores

Statistic	Gender	Orientation	Education	Coercion
Mean	-.46	7.3	2.0	3.5
S.D.	13.70	14.3	14.5	13.9
Median	-1.75	6.6	1.25	5.4
Min	-41.75	-33.60	-48.00	-31.00
Max	35.00	45.20	64.50	45.00
IQR	17.25	19.25	11.5	17.8
Skewness	0.007	-.213	0.294	0.070
Correlation	.647***	.821***	.689***	.617***
df	98	121	100	107
t	-.33	5.62***	1.40	2.62*
t, trimmed	-.88	4.97***	.66	2.82**

Note. Trimmed sample (10%) showed minimal change in significance.

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

Association Between Cognitive Effort and Moral Development

Hypothesis 3 predicted that cognitive effort and moral development are different yet associated. Chi-square tests for independence and association were performed on the scores for moral development and cognitive effort in comments associated with each focal topic. The Pearson Chi-square test for independence tests for construct difference and results are shown in Table 40. As shown in Table 41, the Goodman and Kruskal Tau test of association compares the probability of either the column or row variable alone predicting the outcome and reports the percent reduction of error when incorporating the named variable in the calculation. Both cognitive effort and moral development were significant for predicting gender, sexual orientation, and sex education attitude measures of both independence and association. Neither cognitive effort nor moral development were significant for predicting sexual coercion for either independence or association.

Table 40

The Association Between Moral Development and Cognitive Effort by Topic

Topic	Pearson Chi-Sq	df	Phi Coeff.
Gender	22.57**	9	.44**
Sexual Orientation	21.20*	9	.41*
Sex Education	29.51***	6	.54***
Sexual Coercion	8.83	9	.28

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

Table 41

Reduction in Error Using Moral Development and Cognitive Effort by Topic

	Goodman & Kruskal Tau	
Topic	with Cognitive Effort Dependent	with Moral Development Dependent
Gender	.06**	.06*
Sexual Orientation	.07**	.05*
Sex Education	.25****	.10****
Sexual Coercion	.01	.02

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

Chi-square tests for independence and association with moral development were performed also on the variables considered to be possible indicators of cognitive effort: distraction, repetitive exposure to the issue, favorability toward the presentation, and perspective-taking. The Pearson Chi-square test for independence and a Goodman and Kruskal Tau test of association were performed.

Distraction during the class session was significant only for sexual orientation, for both independence and association (see Tables 42 and 43). Repetition of exposure to the issue was significant for all four topics and for both independence and association, except for association with moral development as the dependent variable. This seems to indicate that increased or repetitious interaction with any topic increases the likelihood of a more contextual and complex manner of thinking about the issue (see Tables 44 and 45).

Favorability to the presentation was highly significant for sexual orientation and sex education both for independence and association. Neither gender nor sexual coercion was significant (see Tables 46 and 47). Perspective-taking applied only to the topic gender and was significant for independence but not significant for association (see Tables 48 and 49).

Table 42

The Association Between Moral Development and Distraction by Topic

Attitudes	Pearson Chi-Sq	df	Phi Coeff.
Gender	2.55	3	.15
Sexual Orientation	13.40**	3	.32
Sex Education	4.09	3	.20
Sexual Coercion	2.62	3	.15

**p < .01.

Table 43

Reduction in Error Using Moral Development and Distraction by Topic

	Goodman & Kruskal Tau	
Topic	with Distraction Dependent	with Moral Development Dependent
Gender	.02	.00
Sexual Orientation	.10**	.03*
Sex Education	.04	.02
Sexual Coercion	.02	.01

*p < .05. **p < .01.

Table 44

The Association Between Moral Development and Repetition by Topic

Attitudes	Pearson Chi-Sq	df	Phi Coeff.
Gender	26.31***	6	.47
Sexual Orientation	40.75***	9	.56
Sex Education	11.13*	3	.33
Sexual Coercion	24.21***	6	.47

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

Table 45

Reduction in Error Using Moral Development and Repetition by Topic

	Goodman & Kruskal Tau	
Topic	with Repetition Dependent	with Moral Development Dependent
Gender	.09**	.07***
Sexual Orientation	.08***	.09***
Sex Education	.10*	.01
Sexual Coercion	.15***	.07***

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

Table 46

The Association Between Moral Development and Favorability by Topic

Attitudes	Pearson Chi-Sq	df	Phi Coeff.
Gender	9.92	6	.29
Sexual Orientation	28.81***	6	.47
Sex Education	62.64***	6	.78
Sexual Coercion	6.96	6	.25

***p < .001.

Table 47

Reduction in Error Using Moral Development and Favorability by Topic

	Goodman & Kruskal Tau	
Topic	with Favorability Dependent	with Moral Development Dependent
Gender	.05	.03
Sexual Orientation	.17***	.07***
Sex Education	.49***	.18***
Sexual Coercion	.04	.02

***$p < .001$.

Table 48

The Association Between Moral Development and Perspective Taking by Topic

Attitudes	Pearson Chi-Sq	df	Phi Coeff.
Gender	17.36*	9	.39

*$p < .05$.

Table 49

Reduction in Error Using Moral Development and Perspective Taking by Topic

	Goodman & Kruskal Tau	
Topic	with Perspective Taking Dependent	with Moral Development Dependent
Gender	.04	.04

Influence of Cognitive Effort on Attitude Change

Hypothesis 4 predicted that attitudes at Time 1 and Time 3 and the degree of attitude change from Time 1 to Time 3 would differ by the type of cognitive effort directed at the class presentation message. Comments were coded for attention to one's own cognitive schema or attention to the message of the class presentation and issues raised by the message.

Mean attitude scores at Time 1 and at Time 3 were significantly different for sexual orientation among those in the various cognitive effort categories. Those in the category of addressing one's own schema showed the least sensitive to diversity attitude about sexual orientation for both Time 1 and Time 3. The same pattern held true at a significant level for sexual coercion at Time 1, but not at Time 3 (see Table 50).

Analysis was performed to assess attitude differences from Time 1 to Time 3 for the four topics. There was no significant difference among the groups (see Table 51).

Other indicators of cognitive effort also were evaluated for possible influence on attitudes at Time 1 and Time 3 and attitude difference scores from Time 1 to Time 3. Distraction, repetition of exposure to the topic, favorability toward the presentation and perspective-taking values were examined for attitude means at Time and Time 3 as well as for linear trends.

Distraction was not a significant element in attitude scores at Time 1 and Time 3; and the linear trend test was not applicable. Attitudes about sexual orientation displayed a trend toward significance in that distracted participants reported lower attitude values (see Table 52). Attitude difference scores from Time 1 to Time 3 were not significant (see Table 53).

Repetition was significant only for attitudes about sexual coercion at Time 3. Participants with no mention of or some prior exposure to the topic remained at the same level of attitude, whereas those who expressed little prior exposure or considerable prior exposure to the topic showed increased attitude scores at Time 3 (see Table 54). Attitude difference scores from Time 1 to Time 3 were not significant (see Table 55).

Favorability toward the presentation was significant for all the topics in nearly all the between group comparisons and for all of the linear comparisons. The attitudes about gender at Time 3 displayed a trend toward significance across favorability groups with a significant linear trend. Attitudes about sex education at Time 3 were not significantly different across favorability groups because although those indicating negative favorability increased in attitude score, the neutral and positive participants remained the same. The linear trends were in a positive direction with high favorability scores correlating with high attitude scores (see Table 56). Attitude difference scores from Time 1 to Time 3 were not significant (see Table 57).

Perspective-taking was not significant for difference between groups or for linear trend (see Table 58). Apparently the ability to take another's perspective did not affect attitudes about gender. Attitude difference scores from Time 1 to Time 3 were not significant (see Table 59).