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ABSTRACT

The paper presents data collected by an opinionnaire instrument during the fall of 1975 from people in Tennessee. Though the sample was not randomly selected, an effort was made to include persons from various (adult) age groups, sexes, occupations, and educational levels. The majority of the 404 who responded came from rural or small town environments, were female, were less than 35 years of age, and were either college students or teachers. The analysis across groups for sex, age, occupation, residential background, and educational level of attainment is included in the paper. (Author/EB)

A Comparison of School Personnel and Public Citizens of Middle Tennessee Toward the Teaching of Evolution in the Schools - Some Historical Perspectives

A Paper

Presented to the

National Convention

of the

National Science Teachers Association

Philadelphia, Pennsylvania

by

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21 March 1976

Abstract

A Comparison of School Personnel and Public Citizens of Middle Tennessee Toward the Teaching of Evolution in the Schools - Some Historical Perspectives

by

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Data were collected via an opinionnaire during the Fall Quarter of 1975 from participants living in the Middle Tennessee Area ranging from near Nashville to Knoxville, Tennessee. The sample was not randomly selected but an effort was made to include persons from various (adult) age groups, sexes, occupations and educational levels. The majority of the 404 who responded to the opinionnaire came from rural or small town environments, were female, were less than 35 years of age and were either college students or teachers. The analysis across groups for sex, age, occupation, residential background and educational level of attainment is included in the paper.

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INTRODUCTION

The teaching of evolution in the schools has and continues to be a topic which quickly generates an evangelistic frame of mind within many individuals. When this occurs, egos are set and whatever else happens surely does not promote any form of investigation which resembles scientific thinking. Science teachers in the secondary schools are the individuals who are most likely to find themselves caught between this perpetual "rock and a hard place." How to approach the teaching of theories relating to the evolution of life without falling into the 'trap' of leading to argumentation may well be one of the most difficult questions facing many teachers, especially those who teach in communities populated with high percentages of individuals who follow certain fundamental religious creeds. To show that this problem is not a new one and that it still exists is one of the primary purposes for this paper.

Any brief review of the history of science will quickly convince anyone that forms of conventional wisdom usually embodied in some form of religious heritage or belief have always existed. Leaders of groups who represent widely as well as narrowly accepted views have consistently opposed ideas which focus attention on alternate explanations for events and ideas. Such notable scientists as Copernicus, Galileo and Darwin have been subjected to their share of

criticism as have other scientists who are ever seeking to unveil the robe of truth yet a little more. Teachers who dare approach the teaching of science or any of its individual disciplines such as biology or geology are still subject to some of the same criticisms offered centuries ago. Seldom do they encounter the same problems faced by Galileo or the blasphemy which would have been ringing in the ears of Copernicus had he not waited until his deathbed to publish his works. Many individuals who accept without question the scientific concepts advocated by these 'giants' on whose shoulders Newton stood, are the same individuals who will have no part of the theory of evolution, though it was derived by the same scientific process by Charles Darwin.

One of the most difficult problems which has faced mankind for many centuries has been the tendency to follow a thinking pattern which is teleological in nature, that is, to believe that all things including natural phenomena are determined by an over-all purpose in nature and all things are directed toward a definite purpose or end. The belief in a God controlled universe is not the problem as much as the inflexibility in position taken by those who choose to determine what the purpose really is. When groups of individuals decide that they know what is right and refuse to allow any form of new evidence to be considered they will stubbornly defend their thinking at all costs. Some of the

absolute truths which have been defended by most of mankind in their eras of time include the belief that the earth is the center of the universe, heavy bodies will fall faster than lighter bodies , organisms are spontaneously generated, planetary bodies are perfectly smooth creations and (even Copernicus believed) travel in perfectly circular orbits around the sun, and man and all forms of life on the earth were created as they now are. The last of these beliefs is still probably a part of the thinking of a majority of individuals in the United States as of this date. It took centuries to overcome the thinking of the masses regarding many of the other dogmas and there is little doubt that centuries will pass before the theory of evolution will be more commonly accepted than its counter explanation, the creationists viewpoint.

This year our country is celebrating its 200th birthday. The theme of this convention centers on the progress which has been made over the past two centuries. Consistent with the theme, this writer will attempt to parallel the thinking in America regarding the origin of life over the same period of time. The prevailing scientific explanations for the origin of life at the time of the signing of the Declaration of Independence included the unification of scientific ideas such as that of catastrophism which had been ardently supported by such notable individuals as Cuvier of France, a most influential naturalist, and the Biblical account. These

ideas were particularly popular since they were most easily fitted into the time frame then accepted as the age of the earth of approximatly 6000 years. (Dott and Batten, p. 82). The lack of knowledge relating to the magnitude of the diversity of species and the now recognized time frame for the geological periods made it speculative indeed for anyone to approach anything similar to what is now generally accepted as a theory of evolution. The works of individuals such as Buffon of France and Erasmus Darwin of Great Britain, grandfather of Charles Darwin, were somewhat influential in centering the thoughts of a few scientists and philosophers on ideas which were related to evolution. The ideas of Lamarck, published in 1809, gained some popularity but very little in comparison to the more widely accepted theories centered on catastrophism and spread with great fervor by men such as Abraham Werner. (Eicher, p. 6). Lamarck proposed that 'changes in the environment will lead to changes in the needs of organisms.' (Dott and Batten, p. 81). Though he was filled with ideas he had little experimental documentation to support his thesis and as a result did not gain any substantial support for his ideas.

The last 15 years of the 18th century also included another publication which was to become one of the most significant influences to the field of geology. The theory of uniformitarianism was promoted by Hutton and later amplified by Lyell in his publication of Principles of

Geology in 1830. This idea was foreign to the much more accepted theories based on catastrophism but has been accepted as one of the supporting bases for the theory of evolution, and the knowledge which led Hutton and Lyell to promote the idea of uniformitarianism has since been multiplied several fold and the concept has somewhat supplanted the older views of catastrophism. Much recent work has now revealed that forms of catastrophism have also occurred within the long time frame documented by uniformitarianism. (Kauffman, pp. 13-17). The idea of a much longer time span than 6000 years was first offered by Buffon who estimated the age of the earth to be 75,000 years. This estimate was changed to millions of years as a result of the introduction of the new concept of uniformitarianism. (Dott and Batten, p. 97).

On February 12, 1809, two men were born: Abraham Lincoln and Charles Darwin, (Dott and Batten). One of the men is lauded with constant praise and the other is lavished with both praise and criticism. In general, the scientific community recognizes Charles Darwin as a genius who broke the intellectual barrier which had tied man's thinking to a constant attempt to offer scientific support for already accepted truths, namely, certain religious creeds. His very careful documentation of each scientific concept which he introduced was a first major breakthrough for support for the theory of evolution. Here was an individual who had collected data during his voyages in the 1830's and had

meticulously analyzed the data and had devised an experimentally sound basis for supporting his theory. His first publication was jointly sponsored by A. R. Wallace who had arrived at the same theory at a slightly earlier date and had been persuaded by Darwin's friends to jointly publish it with him. (Dott and Batten, p. 84). The major thesis of his theory was supportive of the already existing concept of natural selection. The publication of the major volumes of his study in 1859 has stimulated constant growth in the biological and geological sciences in spite of the forces which have continuously fought to attain recognition for the views relating to creationism which his work undermined. His works quickly became widely known and recognized through the efforts of a most vocal lecturer and debater named T. H. Huxley. (Dott and Batten p. 84).

The past one hundred years have been noted for unprecedented change as a result of an increasing expansion of knowledge in all fields of science and technology. The support for scientific research and development and the general belief of the citizenry in the notion that what science produces is good for the country has prevailed for the most part. Concerns for the environment have been manifested in the pre-World War II period and have recently been amplified by scientific documentation for some of the menaces brought on by the scientific and technological society in which we live and enjoy. However, intellectual

freedom in the secondary schools and to some extent in the colleges and universities has not always been afforded its rightful place. One of the battlegrounds which has offered its quota of casualties is the battle to teach science as it is known to the scientist with an emphasis on a continuous and open search for new information. Unfortunately one must conclude that this has not been possible in many secondary schools because such ideas as the theory of evolution have not been found to be compatible with the religious views of many individuals. The literature over the past one hundred years is filled with examples such as the notable Scopes Trial in Tennessee and many more recent attempts to thwart instruction in the science of biology. Though the Supreme Court ruled in 1968 in favor of a teacher of Biology named, Mrs. Susan Epperson, within the past two years a law has been passed again in the State of Tennessee which required teachers of science to include other theories of creation as well as the theory of evolution in high school biology courses. This law has been found to be unconstitutional by the Supreme Court in the State of Tennessee. This has not changed the thinking of individuals within the state as is noted by the results which follow from an opinionnaire administered by this writer.

RESULTS FROM THE ANALYSIS OF THE OPINIONNAIRE

During the Fall Quarter of 1975 data were collected from 404 individuals who live in the middle and eastern regions of Tennessee. These individuals represent different

age groups, sexes, occupations and educational levels. The sample was not randomly selected from the population though it represents certain groups within the area. It is a better representation of freshman level college students and teachers than of individuals in the population at large. The proportion of individuals who have educational backgrounds below the high school level are least represented yet these individuals represent a proportionately greater part of the population than do any of the other groups. It is recommended that inference to the population not be made since the sample is not representative. In spite of these weaknesses a number of interesting findings are presented.

The format used for the presentation includes (1) the listing of the item from the opinionnaire; (2) the frequency and percentage of the responses across the categories specified; and (3) a discussion of any significant findings. Items 1-5 are descriptive of the sample and are the basis for comparisons which were made for the remaining items. A crosstabulation and two way chi squared test was computed to determine the distribution of responses over each category for the first five items according to response on items 6-15. The chi squared significance test was used as a basis for determining whether the distributions were different from chance. Before computing chi squared over the categories in items 1-5 for each of the ratings in items 6-15, the undecided choices (C) were eliminated from the calculations.

The strongly agree and agree choices (A and B) were combined and compared to the combined choices (D and E) which represent disagreement, thus making the significance test more straightforward and simplified.

1. Residential background (A) rural or small town (B) small city 5000-30000 population (C) urban area -over 30000 population

   (A) 246 or 60.9% (B) 91 or 22.5% (C) 67 or 16.6%

   Significantly different responses across these categories were determined for items 6,10,11 and 13. (These results are discussed under those items.)

2. Age (A) 17-25 (B) 26-35 (C) 36-45 (D) over 45

   (A) 166 or 41.2% (B) 120 or 29.8% (C) 41 or 10.2% (D) 76 or 18.9%

   Significantly different responses were made on the categories on items 6,8,10,11,13 and 14.

3. Sex (A) Male (B) Female

   (A) 178 or 44.4% (B) 223 or 55.6%

   Statistical significance was determined to exist across these categories for items 8,10,11 and 13.

4. Occupational Status (A) college student (B) teacher or school administrator (C) Other

   (A) 109 or 27.0% (B) 178 or 44.1% (C) 117 or 29.0%

   Statistical significance was determined to exist across these categories for items 8,10,11,14 and 15.

5. Level of school attended (A) elementary (B) secondary (C) college (D) graduate or professional.

   (A) 25 or 6.2% (B) 65 or 16.1% (C) 146 or 36.1% (D) 168 or 41.6%

   Statistical significance was determined to exist across these categories for items 6,8,11,14 and 15.

For each of the following items the respondent was requested to rate each according to the scale: (The overall frequencies and percentages for each item are given as well as the breakdown across categories for each comparison where significant differences occurred.)

(A) Strongly Agree (B) Agree (C) Undecided (D) Disagree (E) Strongly Disagree

6. The Bible is historically accurate.

(A) 163 or 40.3% (B) 153 or 37.9% (C) 46 or 11.4% (D) 37 or 9.2% (E) 5 or 1.2%

The results indicate that an overwhelmingly statistically significant majority of those who responded (78.2%) agreed with the statement. Further analysis across the categories in items 1-5 indicated that statistical significance beyond the 0.05 level was obtained for items 1,2, and 5. The profiles for each of these are listed below:

Item 1.	Rural	Small City	Urban Area	Total
Agreement	212(92.6%)	62(81.6%)	42(79.2%)	316(88.3%)
Disagreement	17(7.4%)	14(18.4%)	11(20.8%)	42(11.7%)

Chi squared = 11.56 sign. at 0.003 level with 2 degrees of freedom

It is evident from the distributions that though agreement was strong across each demographic breakdown that more disagreement (proportionately) is evident in the larger population centers.

Item 2.	17-25	26-35	36-45	over 45	Total
Agreement	122(90.4%)	96(87.3%)	29(74.4%)	68(93.2%)	315(88.2%)
Disagreement	13(9.6%)	14(12.7%)	10(25.6%)	5(6.8%)	42(11.8%)

Chi squared = 9.62 sign. at 0.02 level with 3 degrees of freedom

It is evident from the distribution that the major differences exist in the distributions are in the middle age groups, especially the group ages 36-45.

Item 5.	Elem.	Secondary	College	Grad or Prof	Total
Agree	24(100%)	58(96.7%)	110(87.3%)	124(83.8%)	316(88.3%)
Disagree	0(0%)	2(3.3%)	16(12.7%)	24(16.2%)	42(11.7%)

Chi squared = 10.26 sign. at 0.02 level with 3 degrees of freedom.

It is evident from the distribution that general agreement was much stronger than disagreement across educational levels. However, there is a significant trend toward more disagreement with the higher educational level.

7. The Bible is scientifically accurate.

(A) 88(21.9%) (B) 82(20.4%) (C) 109(27.1%) (D) 95(23.6%) (E) 28(7.0%)

The results indicate that more individuals agree with the statement than disagree but a chi squared significance test indicates that no statistically significant differences exist between agreement and disagreement at the 0.05 level. (chi squared = 3.77 with 1 degree of freedom). Further analysis across the categories in items 1-5 indicated no significant differences.

8. I have an excellent understand of scientific theories of evolution.

(A) 34(8.5%) (B) 140(34.8%) (C) 82(20.4%) (D) 119(29.6%) (E) 27(6.7%)

The results show no significant differences between agreement and disagreement at the 0.05 level of significance. (chi squared = 1.23 with df = 1)
Further analysis across the categories in items 1-5 revealed that significant differences existed for items 2,3,4 and 5. The distributions for each of these are listed below:

Item 2.	17-35	26-35	36-45	over 45	Total
Agree	80(58.4%)	58(66.7%)	10(29.4%)	26(42.6%)	174(54.5%)
Disagree	57(41.6%)	29(33.3%)	24(70.6%)	35(57.4%)	145(45.5%)

chi squared = 18.13 sign. at the 0.001 level with 3 degrees of freedom

The results indicate that the younger groups tend to agree more than to disagree with the statement while the older groups tend to disagree rather than agree with it.

Item 3.	Male	Female	Total
Agreement	89(65.4%	83(45.6%)	172(54.1%)
Disagreement	47(34.6%)	99(54.4%)	146(45.9%

chi squared = 11.55 sign. at the 0.001 level with 1 degree of freedom

The results indicate that male respondents tend to agree with the statement more than disagree while female respondents tend to disagree more than agree with it.

Item 4.	student	teacher	other	total
Agreement	60(63.8%)	71(53.8%)	43(45.7%)	174(54.4%)
Disagreement	34(36.2%)	61(46.2%)	51(54.3%)	146(45.6%)

The results indicate that the student group believe they understand the theory of evolution proportionately more than the other two groups. Those constituting the other category were less in agreement with the question than in disagreement while the other two groups tended to agree with it more than to disagree.

Item 5.	Elem.	Secondary	College	Grad or Prof.	Total
Agree	6(28.6%)	21(45.7%)	69(59.0%)	78(57.4%	174(54.4%
Disagree	15(71.4%)	25(54.3%)	48(41%)	58(42.6%)	146(45.6%)

chi squared = 8.53 sign. at the 0.05 level with 3 degrees of freedom

The results indicate that individuals with higher educational training tend to agree more with the statement while respondents with less education tend to disagree.

9. I have an excellent understanding of the Biblical account of creation.

(A) 124(30.8%) (B)184(45.7%) (C)42(10.4%) (D) 5(1.2%)

The results indicate that an overwhelming majority of the group believe they have an excellent understanding of the Biblical account of creation. This was consistent across each category within the first five items resulting in no significant differences at the 0.05 level.

10. I believe man and ape descended from a common ancestor.

(A)31(7.75%) (B)57(14.1%) (C)78(19.4%) (D)93(23.1%)
(E) 144(35.5%)

The results indicate that a highly significant majority of those responding disagree with the statement. (chi squared = 34.16 with 1 degree of freedom). Further analysis across the categories indicated that significant differences existed on items 1,2,3 and 4. Interestingly, there was no significant difference across the educational levels in item five beyond the 0.11 level of significance. The distributions for the significant items are listed below:

Item 1.	Rural	Small City	Urban Area	Total
Agreement	40(19.6%	26(37.7%)	22(42.3%)	88(27.1%)
Disagree	164(80.4%	43(62.3%)	30(57.7%)	237(72.9%)

chi squared = 15.80 sign. at the 0.001 level with 2 degrees of freedom

It is evident from the distributions that respondents from rural areas tend to disagree more strongly with the statement than those from small cities and urban areas.

Item 2.	17-35	26-35	36-45	over 45	Total
Agree	42(35.0%)	31(32.0%)	4(10.5%)	11(15.9%)	88(27.2%)
Disagree	78(65.0%)	66(68.0%)	34(89.5%)	58(84.1%)	236(72.8%)

chi squared = 14.56 sign. at the 0.002 level with 3 degrees of freedom

It is evident from the distributions that respondents from the younger group are not as strongly in disagreement with the statement as are those from the two older age groups.

Item 3.	Male	Female	Total
Agreement	53(37.6%)	35(19.3%)	88(27.3%)
Disagreement	88(62.4%)	146(80.7%)	234(72.7%)

Chi squared = 12.39 sign. at the 0.001 level with one degree of freedom.

It is evident from the distributions that male respondents are not as strongly in disagreement with the statement as are the female group.

Item 4.	Student	Teacher	Other	Total
Agreement	30(38%)	37(24.7%)	21(21.9%)	88(27.1%)
Disagree	49(62.0%)	113(75.3%)	75(78.1%)	237(72.9%)

Chi squared = 6.51 sign. at the 0.05 level with 2 degrees of freedom

It is noted from the distributions that the student group were less strongly in disagreement with the statement than the other two groups. The teacher group responded similarly to the non-educator group with 75.3% of those who reacted to the item disagreeing with it.

11. I feel that it should be unlawful to teach evolution in the public schools.

(A) 68(16.9%) (B) 43(10.7%) (C) 62(15.4%) (D) 138(34.3%) (E) 91(22.6%)

The results indicate that a highly significant majority of those who responded disagree with the statement. (Chi squared = 20.47 with 1 degree of freedom) Further analysis over the categories in items 1-5 resulted in significant differences for all five items. The distributions for each of these are included below:

Item 1.	Rural	Small City	Urban Area	Total
Agreement	79(39.7%)	22(26.5%)	10(17.2%)	111(32.6%)
Disagree	120(60.3%)	61(73.5%)	48(82.8%)	229(67.4%

Chi squared = 12.18 sign. at the 0.002 level with 2 degrees of freedom

It is evident from the distributions that respondents from larger population centers are less likely to feel that the theory of evolution should be eliminated from the curriculum.

Item 2.	17-25	26-35	36-45	over 45	Total
Agreement	25(18.5%)	26(25.5%	16(43.2%)	44(67.7%)	111(32.7%)
Disagree	111(81.5%)	76(74.5%)	21(56.8%)	21(32.3%)	228(67.3%)

Chi squared = 52.74 sign. beyond the 0.001 level with 3 degrees of freedom

It is evident from the results that proportionately more of the younger groups are willing to tolerate the teaching of the theory of evolution. It is noted that the group over 45 years of age were in agreement with the item, thus believing that the theory of evolution should not be included in the curriculum.

Item 3.	Male	Female	Total
Agreement	39(25.8%)	70(37.6%)	109(32.3%)
Disagree	112(74.2%)	116(62.4%)	228(67.7%)

Chi Squared = 4.78 sign. at the 0.05 level with 1 degree of freedom

The male respondents were significantly more in disagreement with the statement than the females.

Item 4.	student	teacher	other	Total
Agreement	22(23.7%)	45(29.8%)	44(45.8%)	111(32.6%)

Disagree	71(76.4%)	106(70.2%)	52(54.2%)	229(67.4%)

Chi squared = 11.57 sign. at the 0.003 level with 2 degrees of freedom

As is indicated by the distribution, the group comprised of other than students and teachers were more inclined to agree with the statement with 45.8% of them believing that evolution should not be taught in the schools.

Item 5.	Elem	Secondary	College	Grad Or Prof	Total
Agree	15(68.2%)	28(50.9%)	34(28.8%)	34(23.4%)	111(32.6%)
Disagree	7(31.8%)	27(49.1%)	84(71.2%)	111(76.6%)	229(67.4%)

Chi squared = 27.35 sign. at the 0.001 level and beyond with 3 degrees of freedom

It is evident from the data that the responses vary according to the educational level of the respondents. Individuals with more training are more tolerant toward the teaching of evolution than those with less training.

12. I believe it should be unlawful to teach the Biblical account of creation in the public schools.

(A) 23(5.7%) (B) 28(6.9%) (C) 38(9.4%) (D) 178(44.1%) (E) 137(33.9%)

The results are overwhelmingly in disagreement with the statement with 78% of the respondents indicating disagreement. There were no significant differences across the categories in items 1-5.

13. The teaching of evolution violates my religious beliefs.

(A) 76(18.9%) (B) 54(13.4%) (C) 60(14.9%) (D) 129(32.1%) (E) 83(20.6%)

The results indicate that the majority of those responding (52.7%) do not believe that the teaching of evolution violates their religious beliefs. A chi squared test of significance yielded a value of 9.83 which is significant at the 0.01 level with 1 degree of freedom. Further analysis across categories in items 1-5 resulted in significant differences for items 1,2, and 3. The distributions for these tests are included below:

Item 1.	Rural	Small City	Urban Area	Total
Agreement	96(45.9%)	19(26.0%)	15(25.0%)	130(38.0%)
Disagree	113(54.1%)	54(74.0%)	45(75.0%)	212(62.0%)

Chi squared = 14.33 sign. at the 0.001 level with 2 degrees of freedom

It is evident that the respondents differ in their opinions according to their demographic origins. Individuals from rural areas are more inclined to agree with the statement than those from larger population centers (45.9% versus 25%).

Item 2.	17-25	26-35	36-45	Over 45	Total
Agree	41(31.5%)	36(32.4%)	14(45.2%)	38(55.1%)	129(37.8%)
Disagree	89(68.5%	75(67.6%)	17(54.8%)	31(44.9%)	212(62.2%)

Chi squared = 12.99 sign. at the 0.01 level with 3 degrees of freedom

It is evident from the distributions that respondents from the older age groups are more likely to agree with the statement than are those from the younger groups.

Item 3.	Male	Female	Total
Agreement	46(30.5%)	82(43.6%)	128(37.8%)
Disagreement	105(69.5%	106(56.4%)	211(62.2%)

Chi squared = 5.62 sign. at the 0.02 level with 1 degree of freedom

It is evident from the distributions that the female group disagreed less strongly than the male group.

14. School science teachers unduly influence students into accepting the theory of evolution.

(A) 38(9.4% (B) 88(21.8%) (C) 88(21.8%) (D) 138(34.2%) (E) 51(12.7%)

The results indicate that no clear majority agree or disagree with the statement but significantly more of the respondents disagree with the statement than agree. (chi squared

8.46 sign. at the 0.01 level with 1 degree of freedom) Further analysis across the categories in items 1-5 indicated that significant differences existed for items 2, 4 and 5. The distributions for these are included below:

Item 2.	17-25	26-35	36-45	Over 45	Total
Agreement	58(43.6%)	25(26.9%)	11(34.4%)	32(57.1%)	126(40.1%)
Disagree	75(56.4%)	68(73.1%)	21(65.6%)	24(42.9%)	188(59.9%)

Chi squared = 14.65 sign. at the 0.002 level with 3 degrees of freedom

The results indicate that significantly more of the respondents in the over 45 age group agree with the statement than from the other groups. This group is the only one of the four which agreed with the statement more than they disagreed with it.

Item 4.	Student	Teacher	Other	Total
Agreement	44(50%)	38(27.7%)	44(48.9%)	126(40%)
Disagree	44(50%)	99(72.3%)	46(51.1%)	189(60%)

Chi Squared = 15.21 sign. at the 0.001 level with 2 degrees of freedom

The results indicate that the teacher group is uniquely different in their responses to the item than the two other groups. They disagree very significantly with the statement while the other two groups are approximately equally divided on the issue.

Item 5.	Elem	Secondary	College	Grad or Prof	Total
Agreement	13(59.1%)	24(48%)	54(47%)	35(27.3%)	126(40%)
Disagree	9(40.9%	26(52%)	61(53%)	93(72.7%)	189(60%)

Chi squared = 15.54 sign. at the 0.001 level with 3 degrees of freedom.

The distributions reveal that individuals with elementary educational levels tend to agree with the statement and that individuals in the graduate and professional

level of educational training tend to disagree with the statement. It should be noted that most of the group who have graduate training are also teachers which may actually be a larger factor than educational training.

15. The Biblical account of creation should be taught as a scientific fact.

(A) 43(10.7%) (B) 66(16.5%) (C)104(26.0%) (D)122(30.5%) (E) 65(16.2%)

The results indicate two important findings; (1) a sizable number of the group are undecided on this question(26.0%); and (2) the remainder of the group tend to disagree significantly more than agree with the statement. (chi squared = 10.28 sign. at the 0.01 level with 1 degree of freedom) Further analysis across the categories in items 1-5 revealed that significant differences exist for items 4 and 5. The distributions for these tests are included below:

Item 4.	Student	Teacher	Other	Total
Agreement	27(36.5%)	36(27.3%)	46(51.1%)	109(36.8%)
Disagree	47(63.5%)	96(72.7%	44(48.9%)	187(63.2%)

Chi squared = 13.08 sign. at the 0.001 level with 2 degrees of freedom

It is noted from the distributions that the student group and especially the teacher group were more likely to disagree with the statement while the other group was approximately equally divided on the statement.

Item 5.	Elem°	Secondary	College	Grad or Prof	Total
Agree	11(50%)	26(54.2%)	40(50%)	32(25.4%)	109(36.8%)
Disagree	11(50%)	22(45.8%)	60(60%)	94(74.6%)	187(63.2%)

Chi squared = 15.35 sign. at the 0.002 level with 3 degrees of freedom

It is noted from the distributions that those individuals with greater educational training tend to disagree with the statement while those with less training are fairly equally divided on the statement.

SUMMARY AND CONCLUSIONS

The results from the analysis of these data indicate that a majority (78.2%) of the respondents believe that the Bible is an historically accurate document but are divided in opinion as to its scientific accuracy. They feel that they have an excellent understanding of the Biblical account of creation but are less confident of their knowledge of theories of evolution. They generally do not believe that man and ape evolved from a common ancestor yet they are more tolerant than not toward allowing the theory of evolution to be taught in the public schools. They are strongly in favor of the Biblical account being taught in the public schools with only 12.6% indicating that it should not be. A majority of 52.7% do not believe the teaching of the theory of evolution violates their religious beliefs. While 32.3% believe it does. Significantly more of the group, especially the teachers, do not believe that science teachers unduly influence students into accepting the theory of evolution, but a sizable number (21.8%) were undecided on this question and the nonteacher group was approximately equally divided on the statement. A minority of 27.2% of the group believe the Biblical Account of creation should be taught as a scientific fact and an additional 26.0% were undecided on this question. Only 46.7% of the group disagreed with the item.

The results from crosstabulation across the categories

in items 1-5 generally indicated more acceptance and tolerance toward the theory of evolution to be manifested by respondents from larger population centers, higher educational levels and male versus female respondents. Teachers were usually more tolerant than non-teachers in their responses but these differences could be related to educational background.

The results from this investigation seem to justify the conclusion that teachers in science are supported in their right to teach the theory of evolution. They should realize that tactfulness in approaching the subject is advisable since a definite percentage of those who they teach could be offended. The advice offered by this writer is consistent with that offered by R. A. Lyman in 1969. His advice to teachers of biology was as follows: "Fortunately, teachers need only introduce students to ideas. Unlike missionaries, they should not feel obligated to convince anyone. Students will convince themselves if given a little encouragement and a little time." (Lyman, P. 248). Above all science teachers must teach science as a process of continuous inquiry which assumes no absolute knowledge of anything but an ever growing knowledge of everything.

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