

## HEIGHT OF CHRISTMAS TREE DRAWINGS AS A FUNCTION OF TIME

RAY A. CRADDICK

*New Mexico State University*<sup>1</sup>

*Summary.*—Thirty male and 30 female students in Grade 6 of a local public school were asked to draw Christmas Trees on October 31, November 28, December 19, January 13, February 13, and March 13. Analysis of the height (cm.) of these drawings indicated that Christmas Trees drawn in November and December were significantly larger than those at other times ( $p < .01$ ). There were no over-all sex differences. Sex  $\times$  Trial interactions indicated that the main trial effect was due to the girls drawing the largest Christmas Tree in December and the boys, the largest in November. A control group drawing only trees other than Christmas Trees, showed no differences in size of drawings as a function of time or sex. Similarly, the experimental groups drawing trees other than Christmas Trees in October and March exhibited no statistically significant differences in size of drawing as a function of either sex or time. Therefore, the hypothesis that the time-object relationship evident in previous studies was effective in this type of task was supported. An interesting finding suggested that the size of Christmas Tree drawings was reduced by boys and increased by girls (both at a statistically significant level) as a function of Valentine's Day.

Previous work has suggested that size or height of drawings may be a function of the time at which the drawing was made. For example, the size of Santa Claus appeared to be related to the time of the drawing prior to Christmas, with the size increasing as Christmas approached (Craddick, 1961). Another study (Craddick, 1963) suggested that Halloween may have a suppressive effect upon the drawing size of a witch, perhaps due to the fear relationship between the drawing and the time, since sizes of witches became significantly reduced on Halloween as contrasted to drawings before and after that date. A study of Easter egg drawings (Craddick, 1962) showed no relationship in size to the time before or after Easter, suggesting that the relationship of the object to the drawer may have been a variable. That is, if the object were a humanized form with which *S* might identify or relate, the time appeared to have some effect upon the size of the drawing of the figure. These differences were not found when the object was inanimate. To further test the effects of the content of drawing as related to time, this study used Christmas Trees as drawn by students over a period of time extending from October 31st through March, with approximately one month between drawings. The hypothesis was that, although this was an inanimate object, it was one to which people related more closely than to an Easter egg, i.e., the Christmas Tree often becomes a part of the home during the Christmas season, and subsequently there should be significant dif-

---

<sup>1</sup>Now at University of Alberta, Faculty of Medicine, Department of Psychiatry, Edmonton, Alberta, Canada.

ferences in sizes of trees drawn as Christmas approached, with perhaps a diminution in size following Christmas. Since the Christmas Tree is sexless, there should be no difference in size due to the variable of sex.

#### METHOD

Children from Grade 6 of a local school were given the following instructions under the noted conditions:<sup>2</sup>

One class (the control group) was asked to, "Draw me a picture of some tree other than pine. Do not draw a pine tree." All drawings were made with pencil on a piece of white  $8\frac{1}{2} \times 11$ -in. paper. Drawings were made on the following dates: October 31, November 28, December 19, January 13, February 13, and March 13. With the exception of November to December, all time periods were 4 wk. The December date was the closest Wednesday prior to the Christmas vacation period.

On October 31st, three other Grade 6 classes (the experimental groups) were divided into two equal halves; one half received the instructions as noted, and after this drawing, were given the following instructions for a second drawing on a second piece of paper, "Please take the other piece of paper which you have on your desk, and now draw me a picture of a Christmas Tree. Draw the best Christmas Tree you can." The second half of the class was given identical instructions in a reversed order to counterbalance for sequential effects of the types of figures drawn.

On March 13, the experimental groups were again divided and given instructions in the reversed order to those in October, i.e., the group which in October drew the Christmas Tree and then another tree now drew the other tree first and then the Christmas Tree, and vice versa, again in an effort to control for sequential effects.

Sizes of the trees were measured from the uppermost part of the tree to the lowest point. It was established beforehand that all Ss to be used in the experiment must have completed all 8 drawings if in the experimental groups and all 6 if in the control group. It was further established prior to the study that the *N* in the experimental groups of males and females would be equal, and to maintain this equal *N*, Ss were discarded in a random fashion according to alphabetical series of their last names. In this manner, 30 males and 30 females in the experimental group, and 13 males and 13 females in the control group were selected.

The reliability of measurement was established by a second person measuring 40 of the drawings selected in a random manner. The measurement agreement was 100% between the two individuals.

---

<sup>2</sup>The author would like to acknowledge the fine cooperation of both teachers and administrative staff at Conlee School, Las Cruces, New Mexico, for their aid in gathering data for this study. Appreciation is expressed to Miss R. Nees, Principal, and Miss M. Stewart, Assistant Principal, who assisted directly in gathering the data on appropriate dates.

TABLE 1  
HEIGHT OF DRAWINGS OF TREES (IN CM.)

Groups	N	Oct. 31		Nov. 28		Dec. 19		Jan. 13		Feb. 13		March 13					
		"Other" Tree		Xmas Tree		"Other" Tree											
		M	SD	M	SD	M	SD	M	SD	M	SD	M	SD	M	SD		
<b>Control</b>																	
Boys	13	19.92	3.71			19.54*	5.42	18.62*	4.75	22.23*	4.75	21.00*	4.06			20.92	4.48
Girls	13	21.00	3.61			20.92*	2.71	21.46*	3.86	20.62*	2.97	22.08*	4.23			22.15	2.61
<b>Experimental</b>																	
Boys	30	20.93	3.64	18.23	3.64	18.57	5.07	18.23	4.92	17.80	4.46	16.17	4.74	17.70	5.91	20.03	3.54
Girls	30	21.10	3.17	18.37	4.29	19.13	4.65	19.80	4.25	18.33	4.04	18.90	4.82	18.30	4.85	21.13	3.89

\*Control groups drew only "other" trees.

## RESULTS

The means and standard deviations of the height (in cm.) of drawings of the control and experimental males and females of the Christmas and "Other" trees of the six times are indicated in Table 1.

The analysis of variance of the height of Christmas Tree drawings (see Table 2) indicates significant differences between the sexes. However, there are significant differences for trials. Computing a Duncan's multiple range test (Edwards, 1960) between the means of the various trials, the drawings between November and December are significantly different between themselves. The drawings in February were significantly smaller ( $\alpha = .01$ ) than all other drawings. Although significantly larger ( $\alpha = .01$ ) than the February drawings, the October, March, and January drawings do not differ significantly among themselves. The significant interaction between trials and sex ( $F = 2.5$ ,  $df = 5/295$ ,  $p < .05$ ) was investigated further by computing a Duncan's multiple range test between the means of each time of drawing by each sex, with some inter-

TABLE 2  
SUMMARY OF ANALYSIS OF VARIANCE BETWEEN HEIGHTS (CM.) OF  
CHRISTMAS TREE DRAWINGS

Source	df	MS	F	p
A. Sex	1	94.1	.97	NS
Error (a)	58	97.3		
B. Trials	5	18.6	3.4	<.01
A × B	5	13.9	2.5	<.05
Error (b)	295	5.5		

esting results. The females drew the largest Christmas Tree during the month of December, significantly larger ( $\alpha = .05$ ) than all other drawings by either sex at all other times, tending to support the initial hypothesis. The smallest drawings by the females occurred in October, November, and January, showing no significant differences among these times. The behavior of the males, however, did not follow any expected temporal pattern. The largest male drawing was made in November and was significantly larger ( $\alpha = .05$ ) than drawings in October, December, January, February, and March. Yet, these drawings did not differ significantly from those of the females during October, January, or March. The smallest drawings by the males were made in February, and these were significantly smaller than drawings by any group at any other time.

To investigate the effect of time and sex on the "other tree," an analysis of variance was performed on size of drawings by the experimental group in October and March. The analysis indicated that neither time nor sex factors had a significant effect upon the size of drawings of this tree (i.e.,  $F = .70$  for Sex,  $.61$  for Trials, and  $.70$  for Sex × Trials; NS in all cases). To investigate

whether time or sex had any effect on the drawings of the tree alone, an analysis of variance was performed on the sizes for the control groups of males and females who drew the other tree at the same time that the experimental group drew Christmas Trees. This analysis indicated that Sex and Time were unimportant factors in the size of drawings performed by these groups (i.e.,  $F = .86$  for Sex, 1.56 for Trials, and 1.65 for Sex  $\times$  Trials, NS in all cases).

#### DISCUSSION

The results support the hypothesis that the size of Christmas Tree drawings increases as Christmas approaches, and then exhibits a marked decrease thereafter. Unlike a previous study with Santa Claus drawings, the drawings of Christmas Trees reflect the temporal relationship between Christmas Trees and Christmas more markedly and specifically than the study with Santa drawings. Although there were no over-all sex differences in size of Christmas Tree drawings, there was a significant Sex by Trial difference indicating that females drew the largest Christmas Trees during December and the males during November. Perhaps the males picked up the spirit of Christmas but did not maintain it throughout December, whereas the females not only picked up the spirit by November 28, but maintained this at least up to December 19, and relinquished it in January. The analysis of the size of drawings of other than Christmas Trees by both the experimental groups and a control group indicated that the temporal effects were specific to the Christmas Tree during the period of the Christmas season, and did not generalize to drawings of other trees.

An unexpected sidelight of this study was the effect of the day preceding Valentine's Day upon drawings of Christmas Trees. Sex differences were very noticeable; females showed a statistically significant increase in size of drawings; males showed a significant decrease in size, as compared to their drawings of the preceding month. In March, the females showed a significant decrease in size of drawings; the males showed a significant increase. The relationship of this time to Christmas Tree drawings seems specific since, although similar behavior was exhibited by the two sexes during this time with other tree drawings, the differences did not reach a statistically significant level.

#### REFERENCES

- CRADDICK, R. A. Size of Santa Claus drawings as a function of time before and after Christmas. *J. psychol. Stud.*, 1961, 12, 121-125.
- CRADDICK, R. A. Size of Easter egg drawings before and after Easter. *Percept. mot. Skills*, 1962, 15, 591-593.
- CRADDICK, R. A. Size of Halloween witch drawings prior to, on, and after Halloween. *Percept. mot. Skills*, 1963, 16, 235-238.
- EDWARDS, A. L. *Experimental design in psychological research*. (Rev. ed.) New York: Holt, Rinehart, & Winston, 1960.

*Accepted July 23, 1963.*