# THE PERCEPTION OF VIOLENCE AS A FUNCTION OF AGE AND SEX

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ABSTRACT

THE PERCEPTION OF VIOLENCE
AS A FUNCTION OF AGE AND SEX

This study was undertaken to explore the differential effects of sex role socialization on the perception of violence, and the relation between age and violence perception. Since girls learn to be less overtly aggressive than boys, they should perceive less violence than boys; and since social-role learning is a gradual process, there should be a relation between age and violence perception.

Perception of violence was measured in the binocular rivalry situation with a modified stereoscope. A "violent" picture was tachistoscopically presented to one eye simultaneously with a "non-violent" picture shown to the other. Six such pairs of slides were shown twice in random order to each subject. The "violence" score for each subject was based on the number of violent pictures seen in this binocular rivalry situation. Subjects were fifteen males and fifteen females from each the 3rd, 5th, 7th, 9th, and 11th grades, and college freshmen.

Results confirmed both hypotheses. Males perceived significantly more violence, and the increase of violence perception was linearly related to age in both sexes.

C. Hanley
11 May 1964

# THE PERCEPTION OF VIOLENCE AS A FUNCTION OF AGE AND SEX

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In addition, the author wishes to thank Dr. Hans Toch for the use of his Engel stereoscope--without which the study could not have been attempted.

The object of this study is twofold: to compare the relative effects of sex role socialization on the perception of violence, and to explore the perception of violence as a function of age. Violence perception is measured in the binocular rivalry situation with an Engel (1958) stereoscope.

Binocular rivalry exists when a subject encounters two visual fields simultaneously presented one to each eye. Rivalry occurs as a response to one or the other of the competing visual fields, and to only one at a time. Binocular fusion is a unitary response to the combination of the two fields (Woodworth and Schlossberg, 1954).

Scientists studying binocular processes were not the only persons interested in the stereoscope; thus Toch (1961) writes:

> Long before the advent of television, a small, innocent looking inexpensive device consisting of two prisms, a movable slide holder and a long wooden shaft, served the same purpose as does the Magic Screen today. Our grandparents might even have legitimately worried about the "influence of the stereoscope on children," because many youngsters of two generations or so ago spent long hours watching in fascination as two seemingly identical pictures--one viewed with the left eye and the other with the right--appeared to merge into a convincingly three-dimensional landscape or bridge or building or sparsely attired girl. Of course, a close examination would reveal that the two pictures in the stereoscope were not really completely identical, but that one is slightly shifted in relation to the other. In this fashion, the stereoscope duplicated the process whereby we ordinarily attain perspective by combining the slightly different "flat" images obtained by the left and right eyes.

And further adds:

> The same stereoscope which amused our progenitors by creating three dimensions out of two has recently made a comeback in a different role--as a psychological research tool. We have discovered that we can use the stereoscope for--amoung other things--guading the impact of past experience or personal needs on perception.

Several recent experimenters have simultaneously presented meaningful figures to both eyes in the prism stereoscope. Work of this sort started a decade ago with a series of experiments by Edward Engel. In one study Engel (1956) found that a more familiar figure (an upright face) will predominate in binocular rivalry over a less familiar figure (an inverted face). In another study, Engel (1958) used a pair of photographs of two different people; he placed one photo in one frame of the stereoscope and the second in the other frame. The two faces were similar in size and position of facial features, and stimulated approximately corresponding points on the two retinas. Excellent fusion of the two dissimilar faces was obtained in this situation. Engel found several individual differences in the binocular outcome of his experimental situation: "weighting" of one face over the other, left- or right-eye dominant responses, blending or fusion with neither face dominating, or vertical overlapping and/or superimposition of the two distinct faces. The "binocular face" was "usually reported as more attractive than either of

the monocular faces" (1958, p. 55).

Instead of using photographs, Hastorf and Myro (1959) presented their subjects with postage stamps (faces of George and Martha Washington, and John Adams). The pairs of stamps in the stereoscope were seen in the same manner as Engel's slides--upright vs. inverted and two dissimilar faces--and the results confirmed all of Engel's findings.

Engel's studies have led to a variety of other experiments using the stereoscope technique. Beloff and Beloff (1959) found that when persons construct a "composite" (fused) face out of two different photographs, the result is most pleasing to them when one of the pictures is their own. This nicely supplements Engel's finding regarding the attractiveness of the "binocular face." Precautions were taken to dismiss from the study any subject who recognized his own picture in the experimental situation.

In a cross-cultural study, Bagby (1957) paired a typically "Mexican" scene (such as a bullfight) with a comparable "American" scene (such as a baseball game) and presented the pairs stereoscopically to Mexican and American subjects. Cultural familiarity seemed to determine the slide a subject saw; Mexicans tended to see the Mexican pictures, while Americans more often reported the American scenes. The explanation Bagby offers is that:

> . . .the Transactional school. . .regards perception as being fundamentally determined by previous, rather than present experience. . .the role of meaning is accorded a central position in the perceptual processes. . .Thus, in the binocular rivalry situ-

> ation, those impingements possessing a more immediate first-person meaning would be expected to predominate in preceptual awareness (p. 334.)"

Pettigrew, Allport, and Barnett (1958) used the stereoscope to investigate racial prejudice and identification in South Africa. Different photographs of both sexes and every ethnic group in South Africa (four in all) constituted the stereograms. The stimuli appeared in counterbalanced order, each observer seeing each possible pairing of the two-sex, four-race photos. The authors found that:

1. When the stereogram pair consisted of two different persons of the same ethnic group (and sex), subjects most accurately identified members of their own group, and that

2. When the stereogram pair consisted of two persons of different ethnic groups, highly "prejudiced" subjects (Afrikaans-speaking Europeans) more often failed to fuse the pair, while less prejudiced subjects (the other ethnic groups) more often fused the racially mixed slides.

The Afrikaans-speaking whites were considered moat "prejudiced" on prima facie grounds:

> To maintain white supremacy it seems functionally useful for Europeans to regard all non-Europeans as "blacks," since in this direction the "menace" lies. Intermediate perceptions (fusions) would, so to speak, simply distract one from the main racial threat. In view of the more intense convictions of Afrikaners (on the average) in favor or white supremacy it comes as no surprise that their tendency toward perceptual bifurcation is more marked. . .(1958, p. 278).

Reynolds (1962) also studied prejudice with the stereoscope with white American subjects. He divided subjects into "high" and "low" prejudice groups according their

scores on a modified Adorno Ethnocentricism scale. Contrary to Pettigrew, Alport, and Barnett's (1958) finding, Reynolds reported no significant differences between "high" and "low prejudiced" subjects in the number of times they fused or failed to fuse a negro and a white face in the stereoscope.

Toch and Schulte (1961) presented a "violent" stereogram to one eye and a "non-violent" stereogram to the other. Subjects with three years of Police Administration training saw significantly more of the violent scenes than a group of liberal arts students and a group just entering the police training program. Rather than believe the persons disposed toward violence enter Police Administration, the authors suggest that readiness to preceive is in some manner a function of training. While violent scenes are unusual for most people, they become familiar to advanced Police Administration students. Toch and Schulte note:

> . . .familiar meaning connotations determine perception under non-optimal conditions. . .A momentary exposure of rival fields in a stereoscope presents a perceptual task in which one set of meaning must be elaborated at the expense of another. If the fields are mutually exclusive (so that they cannot "fuse," and if neither field exerts itself through structural advantages. . .familiarity clearly becomes the only remaining basis of choice." (p. 392).

Shelly and Toch (1962) investigated readiness to perceive violence in a group of youthful offenders and found a widely varying distribution of scores of perceived "violent" scenes. The eleven subjects who saw the most vi-

olence were matched with a group of low and normal scorers of the same age and race. Over a period of several weeks seven out of the eleven "high violence" perceivers did not make satisfactory adjustment to the detention camp life (two boys "walked away" from the camp--a relatively rare occurence; five others were transferred to prison or reformatory because of disciplinary reasons). Only one of the control subjects failed to make an adequate adjustment during this time. The authors concluded that the tendency to perceive a relatively great amount of violence in the stereoscope may be diagnostic of a tendency to behave in a troublesome manner.

Berg and Toch (1962) presented inmates with pictures featuring drives other than aggression (violence), such as oral and sexual satisfaction; each pair of stereoscope slides contained a blatant and "socialized" form of the drive being expressed. Berg and Toch confirmed Shelly and Toch's use of the stereoscope as a diagnostic indicator of impulsive behavior; and they were also able to discriminate between inmates previously classified as "impulsive" or "neurotic" on personality measures. Impulsive inmates saw significantly more slides with blatant drive expression than did neurotic prisoners. The authors suggest that their research explored "two positions along a perceptual dimension which ranges from 'extremely socialized' and 'controlled' through 'completely unsocialized' or 'weakly controlled' (1962, p.

15)." The perceptual score, in other words, reflects the extent to which impulses assert themselves in the subjects.

The studies described above tested implications of the general hypothesis that specific past experience acquired under particular conditions or training sensitize a person to related content in the binocular rivalry situation. The present study investigates in the binocular rivalry situation:

1. the effects of differential socialization of the sexes on the perception of violence, and
2. the relation of age to the perception of violence.

Clearly, males and females in Western culture learn different and specified roles. Broom and Selsnick (1955) state, for example, that "all societies distinguish between the roles of men and women. In Western society. . . the female is regarded as non-agressive and passive, the male as aggressive and active."

Interesting evidence for the assertion that American males are more aggressive and active is given by MacFarlane et. al. (1954) in an intensive developmental study on the frequency of behavior problems of normal children. MacFarlane and her associates found that consistently larger percentages of boys than girls between the ages of seven and fourteen scored higher on the frequency of the following problems: overactivity, destructiveness, selfishness in sharing, excessive demands for attention, negativism, and the number

of temper tantrums; likewise boys scored consistently lower in frequency of excessive emotional dependence, shyness, and physical timidity. One can conclude from MacFarlane's data that males are, indeed, more active and less inhibited than females in the expression of aggression.

Furthermore, the socialization of sex roles is a gradual and continual process from childhood to adulthood; the American youngster does not learn the social expression of his drives in a day. It then follows that sex role training should sensitize a person to related content in the binocular rivalry situation, and that the amount of sensitization should vary in some way with age. This study is therefore an investigation of the following two hypotheses regarding the perception of violence.

Hypothesis 1

When presented with a paired series of violent/non-violent stereograms in the binocular rivalry situation, males will see more of the violent slides than females of the same age.

Hypothesis 2

When presented with a paired series of violent/non-violent stereograms in the binocular rivalry situation, different age groups will perceive different amounts of violence.

# PROCEDURE

## Subjects

The subjects came from two sources. From three schools in the Waverly School District (a middle class suburban area near Lansing, Michigan) fifteen boys and fifteen girls were drawn from five grades (3rd, 5th, 7th, 9th, and 11th--ages 8, 10, 12, 14, 16 respectively); fifteen males and fifteen females were obtained from 18 year old Freshmen enrolled in Introductory Psychology classes at Michigan State University.

## Apparatus

The apparatus was a modified stereoscope designed by Engel (1956). In the present experiemnt light intensity was maintained at .2 candles/ft.$^2$ in both fields. An interval timer attached to the stereoscope permitted control of the exposure time of stimulus figures, 15 seconds exposures being used throughout the study.

## Stimulus Figures

Toch and Schulte's (1961) pairs of slides were used. Each "violent" slide was matched with a "non-violent" slide corresponding to it in size and outline, and covering roughly the same part of the visual field. Content of the stereogram pairs was as follows:

1. Mailman - knifed man.
2. Man with suitcase - hanged man.
3. Farmer pushing plow - man with gun standing over dead person.
4. Man standing at microphone - man shooting self in head.
5. Man at drill press - man knifing another man.
6. Man showing another man a picture - man shooting another man.

See Figure 1 for an example.

Figure 1. Stereogram pair number 1 used in this experiment.

Experimental Procedure

Subjects of both sexes in all six groups saw the six pairs of violent/non-violent slides twice. On the second viewing the slide presented first on the right side was changed to the left, and vice versa. Since Toch (1961) has shown that eye dominance is present in most subjects and that it apparently cannot be changed or trained, reversing the right-left position on the second showing controls for eye dominance. Thus each eye was exposed to all the possible figures. Order of presentation was randomized for each subject to control for any series effects.

One might question whether the subjects reported what they actually saw. As a check on the veridicality of the subjects' responses, a pair of "lie slides" (two identical pictures of blatant violence) was presented after the twelve pairs of violent/non-violent slides. If subjects do not faithfully report their perceptions, they should give a non-violent description of the violent scene. Only a few subjects in all age groups failed to give an accurate

description of the "lie slides"; their scores were not used in the analysis.

Before showing the slides to a subject the experimenter adjusted the slide holder for optimal fusion. Subjects who needed glasses wore them. The experimenter dismissed a few subjects who had forgotten their glasses, as well as subjects who planned to obtain glasses because of a known visual problem.

After adjusting the stereoscope for optimal fusion, the experimenter gave subjects the following instructions:

> When I put the top down look into the eyepiece with both eyes open. You will see a picture flash on for a very short time. After you see the picture look away from the eyepiece, then tell me all you can about each picture; describe whatever you see. There are no wrong answers.

If at any point an inattentive subject stated that a pair of slides "just didn't make sense," he was told to "look carefully" and allowed a second trial. This seldom happened.

Verbatim responses were scored according to the standards below; Slide 1 is used for the example in every scoring category:

| POINTS | DESCRIPTION |
|---|---|
| 2 | Clearly the violent stereogram is described by the subject. e.g. "A man with a knife in his back." |
| 1 | Fusion is described with a sensible percept including violent content (a compromise response). e.g. "A mailman with a knife in his back." |
| 1 | Clearly the violent stereogram is described but not in violent terms (a compromise response). e.g. "A man with arms out in front and a stick out the back." |

| POINTS | DESCRIPTION |
|---|---|
| 0 | Clearly the non-violent stereogram is described by the subject. e.g. "A mailman with pouch and letter in his hand." |
| 0 | Fusion is described with a sensible or incomprehensible percept but not including violent content. e.g. "A man running with his arms going in all directions." |

Thus a subject could obtain a score from 0 (violence never reported) to 24 (violent slide reported on all 12 trials). In fact, actual scores ranged from 0 to 11.

Since the data being analyzed was judgments of S's responses rather than S's actual perceptions, the study has to reckon with the problem of scorer reliability. Two persons independently scored all responses; Pearson r between their scores was .98.

# RESULTS

All subjects received a "violence" score according to the standards given above. These raw scores were transformed logrithmically (base 10) to get rid of the correlation between grade means and variances.[1] Figure 2 shows the mean violence scores for each grade tested. There is clearly a difference between sexes at every grade; the amount of violence perceived increases for both sexes as age increases.

Summary Analysis of Variance results with transformed scores appear in Table 1.[2] Table 2 and 3 show trend analyses for the sexes. A first order equation fits the means for both sexes; that is, the linear trend is significant at the .01 level. Thus, the developmental change bearing on Hypothesis 2 is, indeed, simple and clearcut; with age comes a linear increase in perception of violence.

Table 1. Analysis of Variance of Transformed Scores.

| SOURCE | d.f. | SUM OF SQUARES | MEAN SQUARE | F RATIO | p |
|---|---|---|---|---|---|
| Grades | 5 | 2.5303 | .5060 | 6.8010 | <.01 |
| Sex | 1 | 1.1881 | .0542 | 15.9690 | <.01 |
| Grades x Sex | 5 | .1371 | .0274 | .3682 | >.25 |
| Within | 168 | 12.5015 | .0744 | | |
| Total | 189 | 16.3570 | | | |

[1] Means and variances for raw scores are in Appendix I; means and variances for transformed scores are in Appendix II.

[2] Use of raw scores gives the same results.

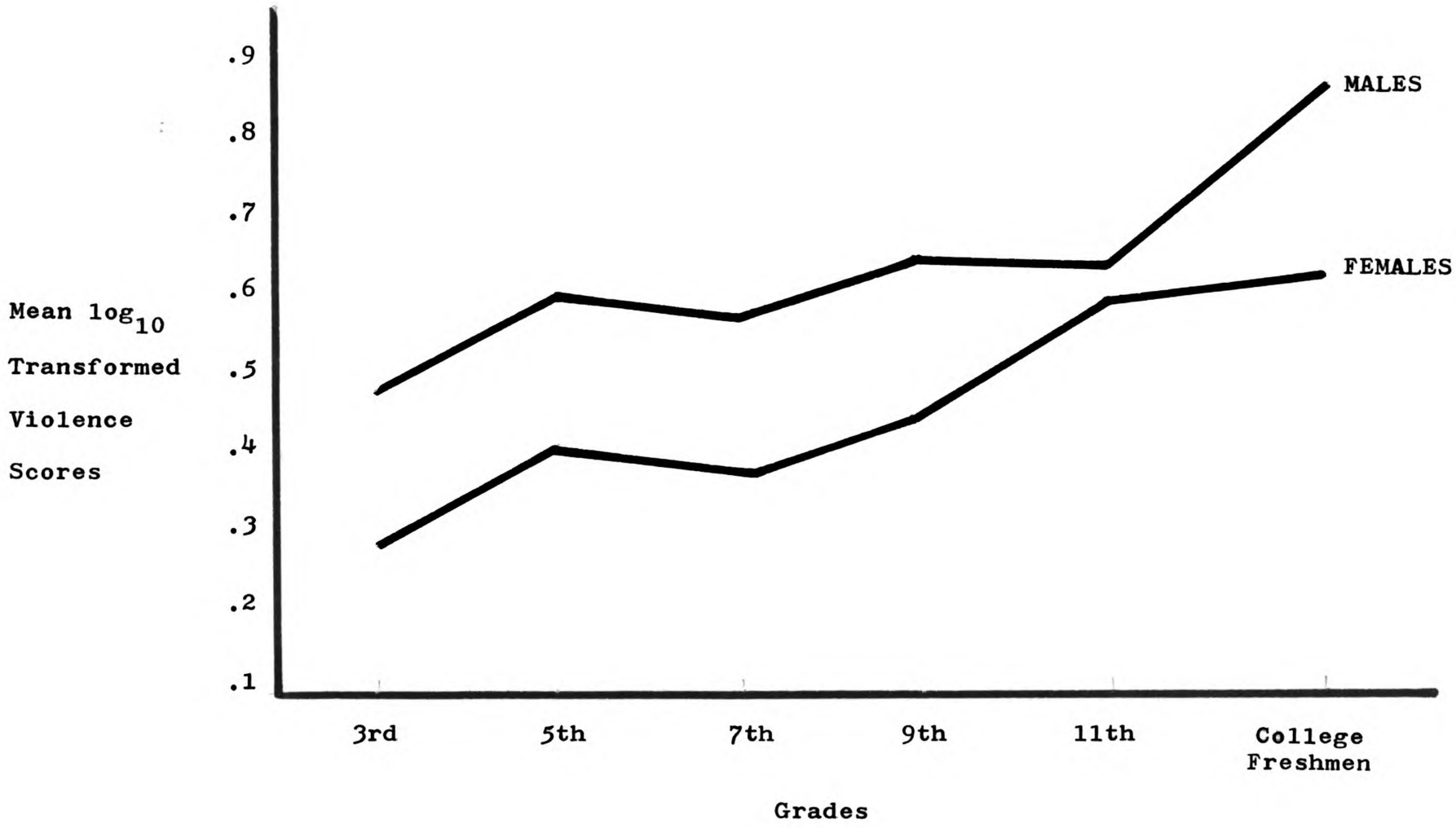


Figure 2. The perception of violence as a function of sex and age.

Table 2. Test for Linear Trend in Males.

| SOURCE | d.f. | SUM OF SQUARES | MEAN SQUARE | F. RATIO | p |
|---|---|---|---|---|---|
| Grades | 5 | 1.4348 | .2870 | 3.92 | <.01 |
| Linear regression | (1) | 1.0822 | 1.0822 | 14.7842 | <.01 |
| Deviations | (4) | .3526 | .0822 | 1.2040 | >.25 |
| Within | 84 | 6.1560 | .0732 | | |
| Total | 89 | 7.5908 | | | |

Table 3. Test for Linear Trend in Females.

| SOURCE | d.f. | SUM OF SQUARES | MEAN SQUARE | F. RATIO | p |
|---|---|---|---|---|---|
| Grades | 5 | 1.2325 | .2465 | 3.26 | <.01 |
| Linear regression | (1) | 1.0639 | 1.0639 | 14.0913 | <.01 |
| Deviations | (4) | .1686 | .0422 | .5589 | >.25 |
| Within | 84 | 6.3455 | .0755 | | |
| Total | 89 | 7.5781 | | | |

In the binocular rivalry situation the oldest subjects fuse the two dissimilar stereograms as often as the youngest ones. All Freshmen and third grade subjects were compared on the number of fusions scored "0"; There was no significant difference.

## DISCUSSION

Both experimental hypotheses were confirmed. In the binocular rivalry situation males perceived significantly more violence than females over the grades sampled (3rd, 5th, 7th, 9th, 11th, and Freshmen), and the increase in violence perception was demonstrated by statistically significant linear trends for both sexes.

Let us now explore possible explanations for these results. If we present one picture to a person's left eye, and another to his right, for a very short time--just long enough for him to see one picture clearly--he will perceive Picture A (violent content), Picture B (non-violent content), or Picture AB (a fusion with either violent or non-violent content predominating). Why then, under these circumstances do the males in this experiment consistently report more percepts with predominantly violent content? We may assume that something in the males' perceptual orientation toward the world makes him relatively more responsive than females to stimuli of violent content.

One explanation for this "something" may be that fewer defensive inhibitions are given by boys' sex role training than by girls'--inhibitions which usually protect against perception of material including hostile, anti-social impulses. Advocates of this "perceptual defense" position could well point to the fact that no subjects reported seeing even half of the twelve possible violence slides.

However, the data can lead to another explanation. Most middle class Americans of both sexes are infrequently exposed to extreme anti-social conduct. "As a consequence, most people may have come to assign a low probability to open violence in their expectation of reality. They may have formed the conception that violence is unusual, whereas more routinely experienced themes are likely to recur. In ambiguous situations (e.g. the perceptual experiments discussed in the introduction of this paper) such prognoses become relevant. Given a choice of interpretation (in the binocular rivalry situation), the most commonly experienced occurence becomes the best 'bet'" (Toch and Schulte, p. 392, 1961). In other words, relative familiarity with violence is the major determinant in resolving the binocular rivalry task.

Likewise, a familiarity hypothesis also explains the consistent sex differences found in this study. No matter how frequently males and females are exposed to extreme violence or portrayals of such, it is socially more acceptable for males to be "familiar" with violence than for females. That is, overt hostility and aggression are more a part of the role "being a boy" than the role "being a girl."

Now consider the developmental trends. Why under the circumstances of this experiment does perception of violence regularly increase as a function of age in both sexes? We already know that violence perception over a period of time can sometimes make persons sensitive to situations they must

know about to function effectively. In the study by Toch and Schulte (1961) subjects with three years of Police Administration training saw significantly more violent slides than a matched group of liberal arts students and a group of students just entering the police training program. If the relatively short but emphatic contact with extreme violence during the police training program can increase violence perception, the less frequent but cumulative contact with violence which the average middle class American has over a longer period of time should have the same effect. "Contact with violence" may be actual or via portrayals such as movies, television, and comic books present. No matter how frequently most persons encounter extreme violence (in any form), it is logical to conclude that they will each year be more familiar with violence than at the end of the previous year. Familiarity with violence seems to be the simplest explanation.

# SUMMARY

This study was undertaken to explore the differential effects of sex role socialization on the perception of violence, and the relation between age and violence perception. Since girls learn to be less overtly aggressive than boys, they should perceive less violence than boys; and since social-role learning is a gradual process, there should be a relation between age and violence perception.

Perception of violence was measured in the binocular rivalry situation with a modified stereoscope. A "violent" picture was tachistoscopically presented to one eye simultaneously with a "non-violent" picture shown to the other. Six such pairs of slides were shown twice in random order to each subject. The "violence" score for each subject was based on the number of violent pictures seen in this binocular rivalry situation. Subjects were fifteen males and fifteen females from each the 3rd, 5th, 7th, 9th, and 11th grades, and college Freshmen.

Results confirmed both hypotheses. Males perceived significantly more violence, and the increase of violence perception was linearly related to age in both sexes.

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# APPENDIX I

## MEANS AND VARIANCES FOR RAW SCORES

| | Males | | Females | |
|---|---|---|---|---|
| Grade | $\bar{X}$ | $s^2$ | $\bar{X}$ | $s^2$ |
| 3rd | 2.4 | 4.83 | 1.73 | 5.07 |
| 5th | 3.87 | 9.55 | 2.13 | 2.98 |
| 7th | 3.2 | 8.6 | 1.80 | 2.74 |
| 9th | 4.67 | 10.38 | 2.53 | 5.98 |
| 11th | 3.87 | 4.55 | 3.13 | 2.41 |
| Freshmen | 6.8 | 8.46 | 4.55 | 3.87 |

# APPENDIX II

## MEANS AND VARIANCES FOR TRANSFORMED DATA

| | Males | | Females | |
|---|---|---|---|---|
| Grade | $\bar{X}$ | $s^2$ | $\bar{X}$ | $s^2$ |
| 3rd | .4510 | .0761 | .3090 | .1144 |
| 5th | .6066 | .0802 | .4256 | .0726 |
| 7th | .5370 | .0746 | .3692 | .0700 |
| 9th | .6590 | .1128 | .4407 | .1086 |
| 11th | .6302 | .0662 | .5768 | .0452 |
| Freshmen | .8619 | .0298 | .6496 | .0352 |