The Poggendorff illusion with obtuse and acute angles*

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The Poggendorff misalignment illusion with the conventional figure and its obtuse- and acute-angle variants was investigated in five experiments. The method of adjustment was used in Experiments I-IV, and in Experiment V compared with a forced-choice procedure. The first experiment showed that the 45-deg acute-angle illusion is positive but smaller than those from the other two figures, the second that it is the same size as that with two 45-deg oblique lines without parallels, and the third that the 30-deg acute-angle illusion is also positive but smaller than that for the other two patterns. In the fourth experiment, the 30-deg acute-angle illusion was insignificant under the same condition in which it was positive in Experiment III, but significantly positive for a reversed contrast (white on black) figure. The results from the last experiment were paradoxical; the 45-deg acute-angle figure again gave a significantly positive illusion with the method of adjustment, but mainly reports of a negative illusion with a forced-choice technique. A possible basis for this difference is discussed in terms of psychophysical procedures and special features of the acute-angle pattern. The weakness of the 30-deg acute-angle illusion is also considered along with other issues.

The Poggendorff illusion in its conventional form is an apparent misalignment of two oblique collinear lines separated by a pair of parallels, as shown in Figs. 1A and 1F. However, the illusion occurs with a variety of figures involving straight and curved lines (Robinson, 1972), including that consisting of only two oblique lines (Day, 1973; Goldstein & Weintraub, 1972). The experiments reported here were designed to investigate more fully the contested claim that a reversed or "negative" misalignment illusion occurs in a figure consisting only of acute angles (Figs. 1C and 1H).

Recently, Restle (1969) investigated the illusion using the method of single stimuli with three versions of the parallel-line figure, one with obtuse and acute angles (the conventional or "standard" figure), one with obtuse angles only, and one with acute angles only (Figs. 1F-1H). The illusion for the figure with obtuse angles was found to be the same in size and direction as that for the conventional figure, but that for the acute-angle figure, although similar in size, was opposite in direction. That is, the acute-angle figure gave a negative illusion.

Restle's (1969) results with the acute-angle figure are not entirely supported by early and more recent observations. While Pierce (1901) also commented on a negative illusion, Green and Hoyle (1964), Judd (1899), and Pressey and den Heyer (1968) noted only a marked reduction or absence of the illusion, but not a reversal. It can be noted, however, that Judd (1899), Pierce (1901), and Pressey and den Heyer (1968) only casually observed the figure. Green and Hoyle (1964) used the method of constant stimuli, and, although the frequency of negative responses was greater than that of positive, the effect was not significant. However, a reduced, but nevertheless positive, illusion with an acute-angle figure

was obtained by Imai (1973), whose report was received during the course of the experiments described here. Using the method of adjustment, Imai found a positive illusion with various acute-angle figures.

The claim that a negative Poggendorff effect occurs in

EXPERIMENT 1

EXPERIMENT 2

EXPERIMENT 3

EXPERIMENT 4

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Fig. 1. The conventional, obtuse-angle, acute-angle, and oblique-line stimulus figures in their circular fields for Experiments I, II, III, and IV. The figure used in Experiment V was the same as that shown in C.

Table 1
Mean Poggendorff Illusions and Standard Deviations
for Experiments I, II, III, and IV*

	Oblique Line	Standard	Obtuse Angle	Acute Angle
Experiment I				
Mean		7.729	8.083	4.427
SD		2.952	2.471	2.213
Experiment II				
Mean	3.273			3.958
SD	1.898			2.810
Experiment III				
Mean		6.302	4.427	1.572
SD		3.168	3.138	2.917
Experiment IV				
			B/W	W/B
Mean			0.958	1.896
SD			2.301	2.548

*For Experiment IV B/W and W/B refer to the directions of contrast with the acute-angle figure.

a figure with only acute angles has at least two significant consequences for this so far unexplained illusion. First, an explanation of the positive effect with the conventional figure based on an assumption of coarser visual resolution of acute angles, as proposed by Chiang (1968), is rendered untenable, as pointed out by Restle (1969). Second, an acceptable theory must be capable of accounting for a change in the direction of the illusion as the angles between parallels and obliques change from obtuse (Fig. 1B) to acute (Fig. 1C).

The aims of the experiments reported here were to investigate further the acute-angle misalignment illusion, to compare it with those for the conventional and obtuse-angle pattern, and to trace the basis of the inconsistency between the independent experiments on the acute-angle illusion. The outcomes were a small, but consistently positive, acute-angle illusion with a 45-deg acute-angle pattern using the method of adjustment, an unstable (positive or insignificant) effect with a 30-deg pattern, and a largely negative effect with the 45-deg acute-angle figure using a forced-choice technique.

EXPERIMENT I

In the first experiment, the obliques were oriented at 45 deg to the parallels to facilitate comparison with data from an earlier series of experiments (Day, 1973). The aim of the experiment was to compare the size and direction of the illusion for the conventional obtuse- and acute-angle figures.

Method

Apparatus and Stimulus Figures

The three stimulus figures are shown in Figs. 1A, 1B, and 1C. Those shown in Figs. 1B and 1C were derived from that in Fig. 1A and contained only obtuse angles and acute angles, respectively. The parallels in the conventional figure (Fig. 1A) were 10 cm long and 3 cm apart, and the 45-deg obliques were

5 cm long and, if extended, would have met at the midpoint of the rectangle defined by the parallels. The gap between the collinear obliques was 4.2 cm. For the conventional figure only, the upper right oblique was adjustable and the lower right oblique and the parallels fixed, but in the other two figures, the complete angle on the right was adjustable and that on the left fixed.

The fixed angle of each figure was inscribed in black on the upper surface of a translucent Plexiglas disk, 20 cm in diam, and the adjustable component, on the lower surface of a transparent Plexiglas slide, 30 cm long and 20.2 cm wide. A translucent annulus, 20 cm in inner diam and 5 cm wide, fitted over the slide and disk so that the figure was presented at the center of a circular area, thus eliminating other straight contours from the field of view (Fig. 1). The slide moved easily between guides to allow the two obliques to be brought into apparent alignment. The circular field was evenly lit from below by an incandescent lamp, thus rendering the figures sharp and clear against the translucent surround and eliminating surface reflections.

The apparatus was mounted on a table, and the standing S was positioned so that his eyes were directly above the center of the circular field. To make an adjustment, the slide was moved either away from S (ascending trial) or towards him (descending trial). During the experiment, the room was darkened so that only the stimulus pattern and the field were clearly visible.

Subjects

There were 24 undergraduate and graduate Ss, 12 men and 12 women. All were paid volunteers.

Procedure

The task was that of moving the slide so that the adjustable upper right oblique was in apparent alignment with that at the lower left. Each S made a pair of adjustments, one ascending and one descending, for each of the three figures, the three pairs being undertaken in one of the six possible orders. Since there were 24 Ss, each order was repeated four times. Half the Ss began each pair of adjustments with an ascending trial, and the other half with a descending trial. The misalignment between the two obliques was measured along a parallel in the standard figure or its hypothetical extension in the other two. If the upper right oblique was set nearer to S, the usual illusion, the misalignment was treated as positive, and if farther, as negative.

Before each pair of trials, S was instructed to adjust the upper right oblique so that it appeared to be perfectly aligned with that at the lower left. To make clear what was required, S was told that when perfectly aligned, the two obliques would coincide with the edge of a ruler or straightedge if it were laid along them. At the beginning of each trial, the slide was moved by E, so that the adjustable oblique was about 2 cm nearer or farther to S than the fixed oblique.

Results and Discussion

The score throughout was the mean misalignment of each pair of ascending-descending adjustments to apparent alignment. The group means based on these scores and their standard deviations are shown for the three figures in Table 1. For the standard and obtuse-angle figure, the illusion was positive for all 24 Ss, and for the acute-angle figure, for 23, 1 S giving no illusion. It can be concluded, therefore, that a significant positive illusion occurred with all three patterns.

A two-way analysis of variance (Hays, 1963; pp. 444-446) showed that the differences between the three conditions were significant. $F(2,46) = 27.130$,

$p < .001$. The differences between Ss also achieved significance, $F(23,72) = 3.719$, $p < .001$, but the Figures by Ss interaction did not, $F(46,72) = 1.069$, $p > .05$. Further analysis (Hays, 1963; pp. 333-335) indicated that, while the illusions for the conventional and obtuse-angle figures were not significantly different, $t(23) = .610$, $p > .05$, those for the conventional and acute-angle figures were, $t(23) = 6.042$, $p < .002$. The difference between the illusions for the obtuse- and acute-angle figures also proved to be significantly different, $t(23) = 7.711$, $p < .002$.

In summary, the results from the first experiment show that a significant misalignment illusion occurs in a figure with 45-deg acute angles when the two obliques are adjusted by S to apparent alignment. However, while significant, the acute-angle illusion is about half that for either the conventional or obtuse-angle figure.¹

EXPERIMENT II

In an earlier series of experiments (Day, 1973), it was shown that a significant misalignment illusion occurred when the 45-deg oblique lines alone were adjusted to apparent alignment. This illusion was about one-third the size of that with the conventional figure. Since, in Experiment I, the illusion with the acute-angle figure was about half those for the other two figures, which were the same in size, the question can be asked as to whether the acute angle contributes at all to the illusion. It is conceivable that the illusion with two acute angles is the same as that with two oblique lines alone and that the acute angles themselves do not contribute to the effect. This possibility was examined in the second experiment.

Method

Apparatus and Stimulus Figures

The apparatus was the same as in the first experiment. The two stimulus figures, which are shown in Figs. 1D and 1E, were of the same dimensions as in the previous experiment; Fig. 1D was identical to Fig. 1C, and Fig. 1E consisted merely of the two 45-deg oblique lines.

Subjects

There were 16 undergraduate Ss, 8 men and 8 women, none of whom had participated in the earlier experiment.

Procedure

The task, procedure, and method of measurement were the same as in the first experiment. All Ss adjusted the obliques in each figure to apparent alignment twice, one ascending and one descending, half beginning with one figure and half with the other.

Results and Discussion

The individual score was again the mean misalignment of each ascending-descending pair of adjustments. The

group mean scores and their standard deviations for the two conditions are shown in Table 1. Of the 16 Ss, 15 obtained positive illusions with both figures and 1 a negative illusion with both. For 10 Ss, the illusion with the acute-angle figure was greater than that with the oblique-line figure, for 1, it was the same, and for 5, less. A *t* test for correlated means showed that the difference between the mean illusions for the two patterns was not significant, $t(15) = 1.717$, $p > .10$ (two-tailed).

As well as confirming that a significant misalignment illusion occurs with two 45-deg oblique lines (Day, 1973; Goldstein & Weintraub, 1972) and confirming the occurrence of a positive illusion with a 45-deg acute-angle figure, the results from the second experiment show that the illusions from these two patterns are of the same magnitude and direction. It can be reasonably concluded that the acute angles do not themselves contribute to the illusion, which presumably derives from the oblique disposition of the two lines.

EXPERIMENT III

The data from Experiments I and II do not agree with those reported by Restle (1969) for an acute-angle figure. However, in Restle's experiment, the obliques intersected the parallels at 30 deg, whereas in those described here, they did so at 45 deg. Furthermore, according to the figures shown in Restle's paper (his Fig. 4), the parallels were closer relative to their length than those used in Experiments I and II. Both angle of intersection and separation distance are known to affect the size of the illusion (Burmester, 1896; Velinsky, 1925; Weintraub & Krantz, 1971) and, therefore, could conceivably have interacted to have produced a different outcome with the acute-angle figure.

The aim of the third experiment was to investigate the size and direction of the misalignment illusion with a conventional, an obtuse-angle, and an acute-angle figure, similar to those described by Restle (1969), with the obliques at 30 deg to the parallels using the method of adjustment.

Method

Apparatus and Stimulus Figures

The apparatus was the same as that used in the earlier experiments. The stimulus figures (Figs. 1F, 1G, and 1H) were made by measuring those shown by Restle (1969), enlarging them to correspond roughly to the overall size of those used in Experiment I, and inscribing them, on disks and slides, as described above. The two parallels of the pattern shown in Fig. 1F were 9.6 cm long and 1.4 cm apart. The obliques were 4.2 cm long, and the gap between them, 2.8 cm. Both intersected the parallels at 30 deg.

Subjects

There were 24 Ss, 14 men and 10 women. All were paid volunteers.

Procedure

The design of the experiment and the procedure, including instructions, starting position, and the method of measurement were the same as for Experiment I.

Results and Discussion

The illusion score for each S was again the mean of the ascending-descending pair. The group means based on these scores, together with their standard deviations, are shown in Table 1.

For the conventional figure, all 24 Ss gave a positive illusion, and for the obtuse-angle figure, 22 did so, the remaining 2 Ss giving a negative illusion. With the acute-angle figure, however, only 17 of the 24 Ss gave a positive illusion and 7 gave a negative effect.

While the illusions for the conventional and obtuse-angle figure could straightaway be regarded as significantly different from zero, the significance of that for the acute angle was questionable. A *t* test, however, has shown that the mean illusion of 1.57 mm was also significantly different from zero effect, $t(23) = 2.640$, $p < .01$ (one-tailed).

A two-way analysis of variance (Hays, 1963, pp. 444-446) showed that the differences between the illusions were significant, $F(2,46) = 26.645$, $p < .001$, as were the differences between Ss, $F(23,72) = 8.115$, $p < .001$. The Figures by Ss interaction did not achieve significance, $F(46,72) = 1.108$, $p > .05$. Further analysis showed that the differences between the illusion for the conventional figure and those for the obtuse- and acute-angle figures were significant, $t(23) = 2.660$, $p < .02$; $t(23) = 4.796$, $p < .002$, respectively. The difference in the illusion for the latter two patterns also achieved significance, $t(23) = 3.947$, $p < .002$.

While the misalignment illusion with the 30-deg acute-angle figure was markedly smaller than those with the other two figures and the frequency of negative effects greater, the mean illusion was nevertheless positive. It can also be noted that, compared with Experiments I and II, which used the 45-deg acute-angle figure, the percentage of positive illusions in Experiment III with the 30-deg figure was notably less. The percentages were 100 and 93 in Experiments I and II, respectively, and 71 in Experiment III. It can be concluded, therefore, that, while the occurrence of a positive misalignment illusion with the 45-deg acute-angle figure is a robust effect, that with the 30-deg figure is not.

EXPERIMENT IV

The stimulus figures used by Restle (1969) were light on a dark field; those used in Experiments I-III of the present series were dark on light. In the absence of an acceptable explanation of the Poggendorff illusion, it is reasonable to suppose that the disagreement between the data from the two groups of experiments derived in part from the opposed contrast relations between figure and

ground. It was considered desirable, therefore, to compare the illusion under the two contrast conditions with a 30-deg acute-angle figure.

Method

Apparatus and Stimulus Figures

Because the apparatus used in Experiments I, II, and III did not lend itself to the presentation of a light figure on a dark ground, two new units were constructed, with the shapes and spatial dimensions of the display areas and the dimensions of the acute-angle figures the same as in Experiment III. One adjustable unit was constructed of stiff white card, with the two components of the figure drawn in black on a circular white disk and the lower surface of a movable acetate slide, respectively. The other unit was made of black card, with the components drawn in white. The drawing inks (Pelikan Nos. 17 and 18) were chosen to give high contrast on the white and black surfaces. Apart from materials and contrast relationships, the figures, including the mode of slide operation, were essentially the same as in Experiment II. The two displays are shown in Figs. 1J and 1K.

Subjects

There were 12 paid volunteer Ss, 6 men and 6 women, all recruited from among undergraduate and graduate students.

Procedure

Each S underwent an ascending and descending trial with the two figures, the four trials being undertaken in a different order, with half the group beginning with the light figure and half with the dark. Half the Ss in each subgroup began with an ascending trial and half with a descending trial. All other details of procedure, including the method of deriving the illusion, were the same as in the earlier experiments.

Results and Discussion

The group means, together with the standard deviations, are shown in Table 1. With the light-on-dark figure, 9 Ss gave a positive illusion, 2, negative, and 1, no illusion, and with the dark-on-light figure, 8 Ss gave a positive illusion, 3, negative, and 1, no illusion. The misalignment illusion for the light-on-dark figure proved to be significantly different from zero effect, $t(11) = 2.577$, $p < .025$, but that for the dark-on-light figure did not, $t(11) = 1.443$, $p > .10$. It will be recalled that, although the mean 30-deg acute-angle illusion achieved significance in Experiment III, 7 of the 24 Ss gave a negative illusion, a substantially greater number than for the other two figures. This occurrence of individual negative effects in the last experiment, together with an insignificant mean illusion for the same figure in Experiment IV with Ss drawn from the same population, indicates that the 30-deg acute-angle illusion is not a robust effect. However, while the effect has so far proved to be either small and positive or insignificant, there is no evidence so far for a large negative effect.

EXPERIMENT V

Among the differences between Restle's experiment

and those described here, which could conceivably have contributed to the disagreement, were the psychophysical methods used in the two studies. Restle used the method of single stimuli with nine separations, including zero, between the obliques and six response categories, three for misalignments in the positive direction and three for those in the negative direction. Thus, S was forced to make a positive or negative response for each stimulus arrangement, including that of perfect alignment. Throughout the experiments described here so far, the method of adjustment was used.

Coren and Girgus (1972) found that essentially similar results were obtained with two illusions, the Mueller-Lyer and the Ebbinghaus circles, using the methods of adjustment, reproduction, and selection from a graded series. Results from a rating scale method and magnitude estimation were different from those using the first group. These findings suggest that the differences reported here and by Restle might have been due to the different psychophysical techniques. Therefore, the purpose of the last experiment was to establish whether differences in the direction of the misalignment illusion with a 45-deg acute-angle pattern derived from alternative psychophysical methods: specifically, a forced-choice of illusion direction and the method of adjustment. The 45-deg acute-angle figure (Fig. 1C) was selected, since it had resulted in consistently positive illusions in Experiments I and II.

Method

Apparatus and Stimulus Figure

The 45-deg acute-angle pattern was the same as that used in Experiments I and II. It was presented with the two obliques either perfectly aligned for the forced-choice procedure or misaligned by 2 cm for an ascending or descending judgment.

Subjects

There were 10 undergraduate Ss, 5 men and 5 women, all of whom were volunteers and had not participated in earlier experiments.

Procedure

There were two tasks: a forced-choice judgment of the direction of apparent misalignment of the objectively aligned obliques, with the upper right oblique judged relative to that of the lower left, and two adjustments, ascending and descending, of the upper right oblique to apparent alignment with the lower left oblique. The order was always the same, the forced choice followed by adjustments. If any variation in the direction of illusion using adjustments occurred as a result of an earlier forced choice, it would have been obvious from comparison with earlier data. In any case, interest in this experiment was focused on the forced-choice data.

The meaning of alignment was again made quite clear to Ss by reference to a ruler or straightedge. For the forced-choice judgment, the two obliques were arranged in perfect alignment and S merely indicated whether the top right oblique was "too high" or "too low" for apparent alignment. No S appeared to experience any difficulty in making this judgment, all responding

readily and quickly to the instruction. The procedure for the adjustment task was the same as in earlier experiments, each S making two adjustments, one ascending and one descending, with order balanced across the group.

Results and Discussion

Of the 10 Ss making the forced-choice judgment, 7 indicated that the upper right oblique was "too low" relative to the lower oblique and 3 that it was "too high." Reports of "too low" indicated that in order to adjust it to apparent alignment it would have been moved upward in the field (i.e., away from S), a *negative* illusion. The mean illusion for the 10 Ss based on the means of ascending-descending pairs was 4.19 (SD = 1.764), with only 1 of the 10 Ss giving a negative illusion. It can be noted that the mean illusion is of the same order of magnitude as that found for the 45-deg acute-angle figure in Experiments I and II. It can be assumed, therefore, that undertaking the forced-choice judgment before the adjustment task did not affect the latter.

Although they are paradoxical, the data from this experiment are convincing in showing that the illusion with a 45-deg acute-angle pattern using a forced-choice of the direction of apparent misalignment of collinear obliques is largely opposite to that using the method of adjustment from initial physical misalignment. Since care was taken to make the instructions, including the criterion of adjustment, as similar as possible, it is unlikely that the difference is due to instructions. A possible basis for the marked discrepancy between procedures will be taken up in the general discussion which follows.

GENERAL DISCUSSION

It will be useful first to summarize the results from the five experiments. In the first, using a 45-deg conventional figure, an obtuse-angle figure, and an acute-angle figure, the Poggendorff illusion was significantly positive with all figures, although it was smaller with the latter than with the other two. This finding confirms that of Imai (1973). In the second, a comparison of the illusion for the 45-deg acute-angle figure with that for the two oblique lines alone revealed that there was no difference between the magnitude of the two mean effects. The third experiment, with the same three variants of the figure as in the first, but with 30 deg between oblique and parallel, again resulted in a significantly positive illusion for all conditions, with the acute-angle figure giving a smaller effect and a greater proportion of negative illusions. However, in the fourth experiment, the illusion with the same acute-angle figure as that used in the third was not significant, although the reverse-contrast figure (white on black) resulted in a significant illusion. The last experiment showed that the misalignment illusion for the aligned obliques of a 45-deg acute-angle figure using a forced-choice method

was opposite in direction to that using the method of adjustment for a position of initial separation between the obliques.

Among the central issues from these experiments are the absence of a difference between the illusion with the oblique-line figure and the acute-angle figure and the different outcomes with the method of adjustment and forced choice.

The data from the second experiment are convincing in showing that the acute angles, by themselves, do not contribute to the illusion, at least when the method of adjustment is used. Rather, the illusion derives from the obliqueness of the two lines, as shown earlier (Day, 1973). However, the greatly increased illusion with the conventional and obtuse-angle figures indicates that features of these two patterns contribute to the effect. But, while the acute-angle illusion probably derives from the obliqueness of the two lines, it is not yet possible to explain further the basis of this effect.

There are two aspects of the difference between the data for the method of adjustment and that of single stimuli involving forced choice as used by Restle (1969) that seem relevant. First, in Restle's experiment, the presence of three response buttons for three magnitudes of negative illusion may themselves have encouraged negative responses. Requesting Ss to use such categories for negative illusions conceivably could have implied the occurrence of the negative effect and indirectly encouraged S to use the categories when the illusion was slight or absent. Second, and related to the first point, the arrowhead configuration of the oblique and parallel is another possible source of negative illusion. The arrow on the right points *below* that on the left when the obliques are aligned (Figs. 1C and 1H). It is possible that the apparent alignment of the obliques is either confused with or "assimilated" to the direction of pointing of the two arrow configurations. If so, then the right oblique would be seen as "too low," a negative illusion relative to the usual effect with the conventional pattern. Initial separation of the two components of the pattern and movement of one of them, as in the method of adjustment, could conceivably reduce this tendency. Nevertheless, a greater frequency of negative responses would be likely, as found throughout with the acute-angle figure. It can be noted also that, in the obtuse-angle figure, the direction of pointing is in a direction which would not lead to the same confusion in the direction of pointing as in the acute-angle figure. It is also worth noting that Weintraub and Krantz (1971) found no difference between the staircase method (Cornsweet, 1962), a forced-choice method, and adjustment with conventional figures. Furthermore, unpublished data based on the staircase method (Cornsweet, 1962) with two 45-deg oblique lines alone (Fig. 1E) also showed a consistently positive illusion. Since the staircase method also involves forced-choice of direction of illusion with aligned obliques, it seems likely that the arrowhead configuration of the acute-angle

figure is implicated. Another issue concerns the misalignment illusion with the 30-deg acute-angle figure. The second experiment showed that the 45-deg acute-angle illusion was not significantly different from that with two 45-deg oblique lines. An earlier experiment (Day, 1973) showed that the oblique-line effect at 30 deg is not significant. Since the acute-angle illusion is the same magnitude as the oblique-line effect, the instability of the 30-deg acute-angle illusion found in these experiments is consistent with the earlier study. It is reasonable to conclude that the illusion with both 30-deg and oblique-line figures will vary between insignificance and a slight positive effect from sample to sample.

Finally, it is worthwhile to comment on the difference in magnitude of the conventional illusion with the obliques at 45 and 30 deg. Earlier studies (Burmester, 1896; Velinsky, 1925) have shown that the illusion is *less* at greater oblique-parallel angles, not larger as here. However, in the 30-deg figure, the parallels were closer together, 1.4 cm compared with 3 cm, a condition which results in a marked decrease in the effect (Burmester, 1896). It is probable that the decrease in the separation between the parallels in the 30-deg figure exercised a greater effect than the change in angle between obliques and parallels.

In general terms, the results of these experiments confirm the findings of Imai (1973) for the three versions of the Poggendorff figure. However, while the basis for the negative effect with the acute-angle pattern is now clearer, it demands closer scrutiny in a more comprehensive experiment.

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NOTE

1. A supplementary experiment with three independent groups of six Ss resulted in essentially the same magnitudes of illusions for the three figures. Failure to obtain a negative effect with the acute-angle figure cannot, therefore, be attributed to the effect of the conventional and obtuse-angle illusion or the acute-angle effect.

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