

## On Preaching the Commandments of Proper Research: A Rejoinder

CURTIS HARDYCK

*University of California, Berkeley*

NINA F. DRONKERS

*Veterans Administration Medical Center, Martinez, California*

CHRISTINE CHIARELLO

*Syracuse University*

AND

GREGORY V. SIMPSON

*University of California, Berkeley*

In our recent article (Hardyck, Dronkers, Chiarello, & Simpson, 1985), we examined the effect of prolonged exposure durations on visual half-field presentation. Moscovitch (1987) has taken exception to our conclusions, and his rejoinder has taken the form of citing some of the commandments of *good* research, such as proper controls, adequate numbers of subjects, etc.

One commandment that seems to have been overlooked, both in recitation and in observation, is the necessity for thorough review of the relevant literature. There are errors both of fact and of interpretation in Moscovitch (1987), as well as what we consider a fundamental misunderstanding of the intent of our report.

In his review of the paper, Moscovitch states that "In the *baseline* condition the stimulus appears once in the LVF or RVF for 25 msec."

Requests for reprints should be sent to Curtis Hardyck, University of California, School of Education, Tolman Hall, Berkeley, CA 94720.

Actually (Hardyck et al., p. 433), the stimulus conditions were constant, the baseline condition being a 50-msec presentation as in the other conditions. A moment's reflection should have been sufficient to realize that a baseline condition using a different exposure interval might produce differences in results that would be rather difficult to explain. As an error in proper experimental procedure, it would be much more deserving of censure than those aspects of the work Moscovitch has chosen to attack.

In the same section of his paper, Moscovitch apparently misread another aspect of our procedure. He states "In the *orienting* condition, however, the stimulus is first lateralized to one field, as in the previous conditions, but then appears a second time, after a 400-msec delay of [*sic*] central fixation, so that it is now directed to both hemispheres." Actually, our procedure, as stated in the paper, is as follows:

In the Orienting condition, after the determination of the baseline visual field performance, a second series of judgments were undertaken in which the subject initially received a peripheral exposure of 25 msec located 2 deg. of visual angle to the left or right of fixation. Immediately upon seeing the first exposure, the subject initiated a saccade to the area where the item had been exposed and was given a second exposure of 25 msec. Timing of the second exposure was controlled by the computer monitoring the subject's eye position and initiating the second exposure when the eye monitor indicated the saccade had halted within the area of the first exposure. (Hardyck et al., p. 434)

While, in retrospect, the above description could be improved, it does not seem so ambiguous as to warrant the interpretation given by Moscovitch. In our orienting condition, the peripheral exposure was limited to 25 msec. Once the exposure ended, we resumed sampling of eye position once every 16.66 msec, ending our sampling when, following a saccade, the eye position coordinates indicated that foveal fixation was on the screen area where the peripheral exposure *had originally appeared*. Differences in time between peripheral and foveal exposures were a function of individual differences in onset of a saccade and the sampling period (16.66 msec) of the eye movement monitoring system. In this context, it should be pointed out that Moscovitch, in a later section of his paper, calls for a control condition that seems very close, if not identical to the above condition: "One control could be to tell the subjects to change their fixation from the center to the periphery as soon as the lateralized stimulus appears and to compare visual field differences in that condition with one in which the subjects maintain central fixation throughout."

Our orienting condition differs in only one respect from the condition suggested by Moscovitch: in our experiment the stimulus is erased during

the saccade—a perfectly reasonable way of controlling for individual differences in saccadic onset time, thus ensuring equal exposure times for all subjects. The only effect Moscovitch's approach would have is to increase the peripheral exposure time to an interval approaching 150 msec—the usual onset time to initiate a saccade. Since our accuracy rate is already 100% with only 25 msec of peripheral exposure followed by 25 msec of foveal exposure after orienting, it is difficult to see what effect this proposed control condition might have. One possibility is the attenuation of the slight RVF-LH reaction time advantage that was present in our study.

Moscovitch also finds fault with our use of blocked presentations to visual fields, stating that randomized presentations should have been used, to minimize the role of expectancies. His point would have merit, if we were not able to monitor eye fixation. Our basis for not using randomized presentation stems from our belief in the validity of our recently reported work (Hardyck, Chiarello, Dronkers, & Simpson, 1985), demonstrating that advance knowledge as to the visual field location of a letter string has no discernible effect on either accuracy or reaction time.

It is not our intent to dismiss or derogate Moscovitch. His criticisms would be appropriate, if our intent had been to replicate his work or to criticize his findings or interpretations.

There is no statement anywhere in our report calling into question the findings of those investigators we cited. Our purpose was to investigate the effects of prolonged exposure times on visual field differences, not to replicate Moscovitch or any other investigator. Our results indicate that visual field differences are not likely to be found if orienting movements to a stimulus take place. Since the papers we cited in our article did, in fact, find half-field differences, we interpret our results as *supportive* of the work cited. At worst, we are guilty of accusing Moscovitch, Sergent, etc., of having subjects who were actively cooperating in the conduct of the research—not a particularly heinous crime in our view.

We regret that our work was seen as an attempt to challenge the findings of others. Had such been our intent, a genuine replication with many more subjects would, of course, have been necessary. Since our object was to demonstrate what happens under a given set of conditions, and not to establish statistical significance contradicting other results, a single subject would have been sufficient to demonstrate the phenomenon.

## REFERENCES

- Hardyck, C., Chiarello, C., Dronkers, N. F., & Simpson, G. V. 1985. Orienting attention within visual fields: How efficient is interhemispheric transfer? *Journal of Experimental Psychology: Human Perception and Performance*, **11**, 650–666.

- Hardyck, C., Dronkers, N. F., Chiarello, C., & Simpson, G. V. 1985. The eyes have it: Exposure times and saccadic movements in visual half-field experiments. *Brain and Cognition*, **4**, 430-438.
- Moscovitch, M. 1987. Can very long stimulus exposure durations be used in reaction time studies of visual laterality? A reply to Hardyck, Dronkers, Chiarello, and Simpson, 1985. *Brain and Cognition*, **6**, 234-237.