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LETTERS TO THE EDITOR

Mallett unit or fully fusionable images for prisms against asthenopia?

Parmar et al.[1] remarked that a "dissociative environment" could produce anomalous results of Mallett's test. They cite work from our lab,[2] suggesting that our use of rotary Risley prisms could have brought about such a dissociative environment. Yes, the frame of the Risley prisms restricted the peripheral visual field, but this appeared acceptable, since the text of the Mallett unit around the target remained fully visible. We had a good reason to apply the continuously adjustable Risley prisms rather than putting on prisms step by step: Risley prisms allowed our subjects to choose the appropriate power on their own, thus avoiding suggestive influences from the examiner, and to record the procedure with a computer.

Sensibly, Mallett aimed at viewing conditions as normal as possible in order to find the smallest prism that could alleviate asthenopia. In his test, the only deviations from normal vision are monocular markers in the form of Nonius lines. To examine whether these monocular markers represent a source of artefact, we determined the vergence position of rest (the position in which the sensory-motor system is unburdened from any strain to fuse the images of the two eyes), comparing Mallett's display with and without the Nonius lines. With the monocular markers, our subjects were asked to align the Nonius lines. Without the monocular markers, i.e., with fully fusionable pictures, our subjects adjusted the prism so that viewing appeared most relaxing. We found that the vergence position of rest differed up to 7 prism diopters between the two conditions, with an overall correlation of only $r \approx 0.75$. This suggests that monocular markers lead to an artefact, possibly via binocular rivalry in the area of the Nonius lines.

To determine the influence of the monocular markers, we deliberately aimed at the full vergence position of rest, not at the smallest power of the prism that aligns the Nonius lines. The latter strategy would have been appropriate for the prescription of therapeutic prisms, according to Mallett's recommendations.

A large body of research supports the use of the Mallett unit for finding prisms that can alleviate asthenopic symptoms. Our study suggests that it may be worthwhile to investigate whether even better results can be obtained by presenting natural stimuli without monocular markers, relying on the patient's sense of comfort. Many of Mallett's recommendations may apply to this approach.

References

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2. Kommerell G, Kromeier M, Scharff F, et al. Asthenopia, associated phoria, and self-selected prism. *Strabismus*. 2015;23:51—65. https://doi.org/10.3109/09273972.2015.1036080.

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Reply to: Mallett unit or fully fusionable images for prisms against asthenopia?

We thank Professors Kommerell and Bach for their interest in our article.[1] Mallett advocated the use of a trial frame with his test as it allows a normal head posture and visual field.[2] Mallett advocated using small step sizes (1D horizontally);[2] "gradually increasing the strength until the slip disappears — never the reverse procedure";[3] and "between changes of prisms or spheres the patient should read two or three lines of print surrounding the target".[3] These instructions depart markedly from the procedure adopted by Kommerell and Bach,[4] where the participant continuously adjusts a Risley prism, on several occasions starting with 10Δ, and is asked to "play a little"(with the prism power). We agree with Kommerell and Bach, their method did not aim at the smallest power of the prisms and may not be appropriate for prescribing.

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