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## Presentation Abstract

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Abstract Title: **Validation of a Haploscopic Brightness Comparison Method for Quantifying Cataract Degree**

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Keywords: 446 cataract, 469 clinical research methodology, 438 brightness and lightness

**Abstract Body:** **Purpose:** The aim of this work is to evaluate the performance of a Haploscopic Brightness Comparison (HBC) method, quantifying cataract degree (*A new system to measure intraocular scattering based on brightness, Barrionuevo et al., ARVO, 2007*). In order to validate the HBC, two commercial systems were used: the OQAS (Visiometrics, Spain) that determines the Objective Scatter Index (OSI), and the C-Quant (Oculus, Germany) that determines the stray-light parameter (log S). We analyse the obtained data from HBC in reference to the OSI and log S scales.

**Methods:** HBC system gives a GI parameter, which is computed as the relation  $Lr'/Lm-1$ , where  $Lr'$  and  $Lm$  are the haploscopic matching luminance without and with glare respectively. The OSI parameter is obtained from the relative intensity of fan external area of the PSF double-pass image. The log S is obtained in base on a psychophysics compensation comparison method. We measure the performance of the systems with three different groups of young subject with normal vision, 10 with OQAS (20 eyes), 10 with C-Quant (20 eyes) and 7 with HBC (7 eyes). To do a uniform comparison among the three systems we simulate cataracts placing scattering filters in front of the eye. In the case of HBC we perform two measurements, the former placing the filter on the glaring eye and the second placing filters on both eyes. The filters used were Tiffen BPM1 and BPM2 -simulating early cataracts- and Rosco Cinegel 3020 -simulating a mature cataract producing a VA reduction of 50% and CS reduction of 75%-. A control experiment was made without any filter.

**Results:** In spite of the three system use different parameters to quantified the scattered light we approximately obtain a 2 to 1 relation between GI and OSI values and a 4 to 1 relation when the values of GI are compared with the values of log S. In the case of simulation of binocular cataracts these relations diminish close to the half.

**Conclusions:** In relation to the involved scales the HBC method showed a consistent behavior with respect to the OQAS and C-Quant evaluating a same set of grading scatter filters. According with the actual results, the comparisons with the OQAS and C-Quant should be appropriate to assess the ability of the HBC to discriminate different cataract degrees in patients.

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