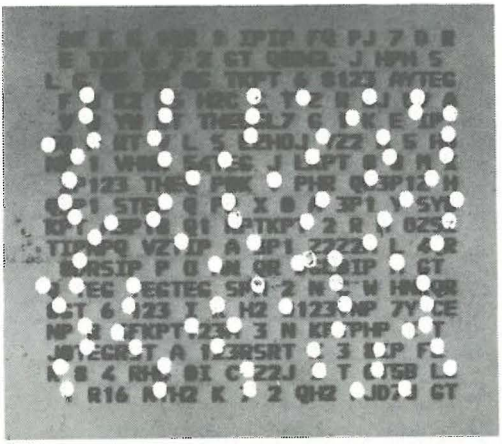
Eye movements, performance and visual comfort using VDTs

sample of pseudo text
with fixation marks



Example of fixation pattern (white spots) searching for the letter 'A'. The eye movements were recorded, starting from the fourth line. The angular width of the characters was 14 arcmin. The descender width was 1.7 arcmin.

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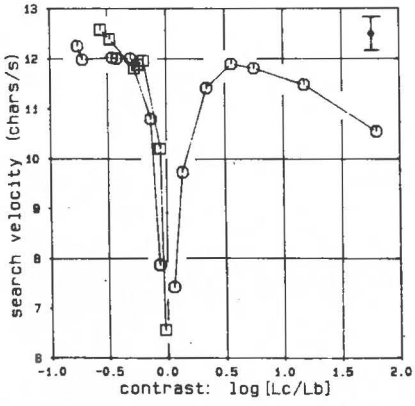
correlation of the
objective variables
with judgement:
r=0.87 +/- 0.03

2.
search velocity

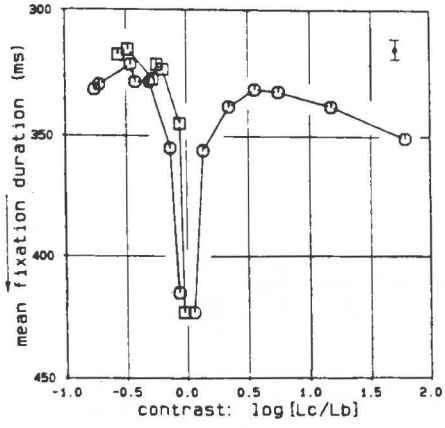
3 subjects; 4 presentations; N=12
o: mean luminance = 40 cd/m**2
□: mean luminance = 200 cd/m**2



Velocity of search for the character 'A', expressed in number of scanned characters per second, as a function of the log of the luminance contrast ratio.

3.
fixation duration

3 subjects; 4 presentations
o: mean luminance = 40 cd/m**2
□: mean luminance = 200 cd/m**2



Fixation duration as a function of the log of the luminance contrast ratio. Short fixation durations correspond to fast information intake. Note the reversal of the usual ordinate direction convention.

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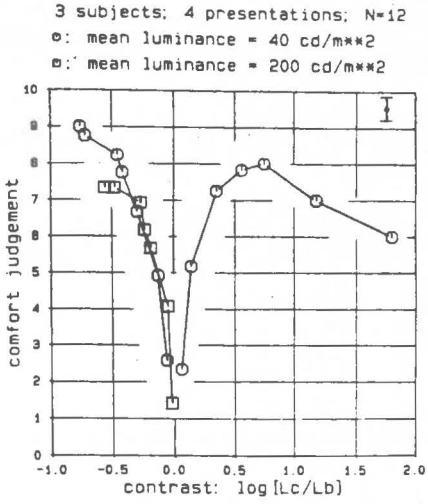
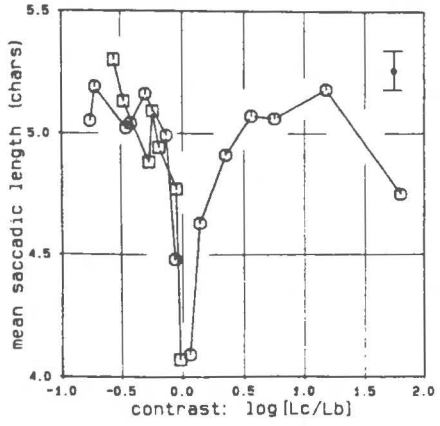
Conclusions:
- High correlation of scaled visual comfort with fixation duration, saccadic length and search velocity, which are considered to be measures of the ease of information intake.
- There is an optimal positive contrast at a contrast ratio of about 5. Probably, also an optimal negative contrast exists at a ratio of about 1/5.
- Negative contrast seems slightly better.

1.
comfort judgement



Comfort judgement on a 10 point scale as a function of the log of the luminance contrast ratio. Positive values correspond to "positive contrast" (Lc is character luminance, Lb is background luminance).

4.
saccadic length



Saccadic length as a function of the log of the luminance contrast ratio. The more difficult to read, the smaller the saccades are.

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