

# The Effect of Lightless Environment on the Creativity of People

## Summary of Results for "Lichtlos" Project

Are people more creative in a lightless environment? This idea has several factors in its favour, such as the unusual and highly stimulating situation with fewer interruptions and distractions. Darkness may also lead to greater openness and confidence, as well as fewer inhibitions and deeper levels of relaxation. However, the influence of the absence of light on human creativity has not yet been scientifically proven.

### Aim and Methods

The aim of the "Lichtlos" project was to take a closer look at this phenomenon. In Mai/ June 2012 a total of 14 workshops were carried out. Half of these took place in a lightless room, the other half in normal lighting conditions. Seven of the workshops were held with managers, while students made up the participants in seven workshops. Each workshop group included 4 to 6 members, recruited over press releases and networks and randomly assigned to a workshop. During the one to two hour sessions the participants were given eight different tasks. These tasks, which were assigned in two rounds with four tasks each, included subtests from the "Torrance Test of Creative Thinking (TTCT)" by Torrance (1966), the most widely used creativity test in Europe. Tests by Wallach and Kogan (1965) and Guilford (1950) were also used. Examples for typical questions used in these tests are "name all the round things that you can think of!", "think of unusual uses for chewing gum!" and "what would happen if people could become invisible at will?". Participants had four minutes to find answers to each question. The workshops were recorded and all answers to the creativity tests transcribed. Questionnaires were handed out before and after the workshops, asking participants to rate their perceived creativity, level of relaxation, stimulation, self-confidence and openness and similar aspects.

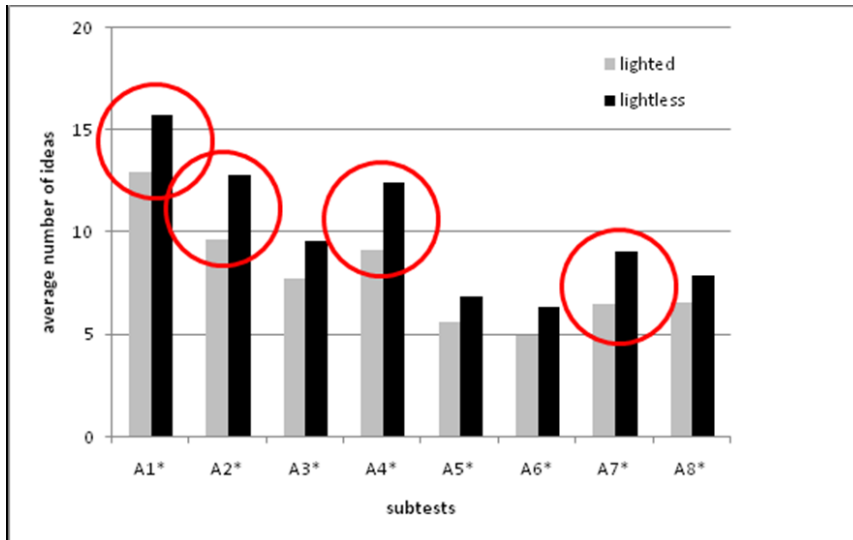
The ideas generated in each workshop were evaluated by three independent expert jurors. The jurors did not know whether the ideas had been generated in lightless or normally lighted conditions. The ideas were rated according to fluency or quantity, which reflects the number of ideas produced in each workshop, flexibility or quality (number of different kinds of ideas), elaboration (how well developed the ideas were) and originality (how unusual and therefore statistically rare the ideas were). The scales used for evaluating ideas ranged from 1 (very low) to 10 (very high). The differences between the workshops were examined using statistical analyses methods, especially variance analysis.

### Sample

A total of 74 participants took part in the experiment (including test runs). The sample included 40 students, mostly business or industrial engineering students. 34 participants were managers; predominately project managers and managing directors. 31 people took part in a workshop held in conventionally lighted conditions whereas 43 people participated in a lightless workshop. The sample included 41 female and 33 male individuals. Participants were aged between 20 and 73 years, the average age was 33.

## Results

### 1. Quantity/Number of Ideas

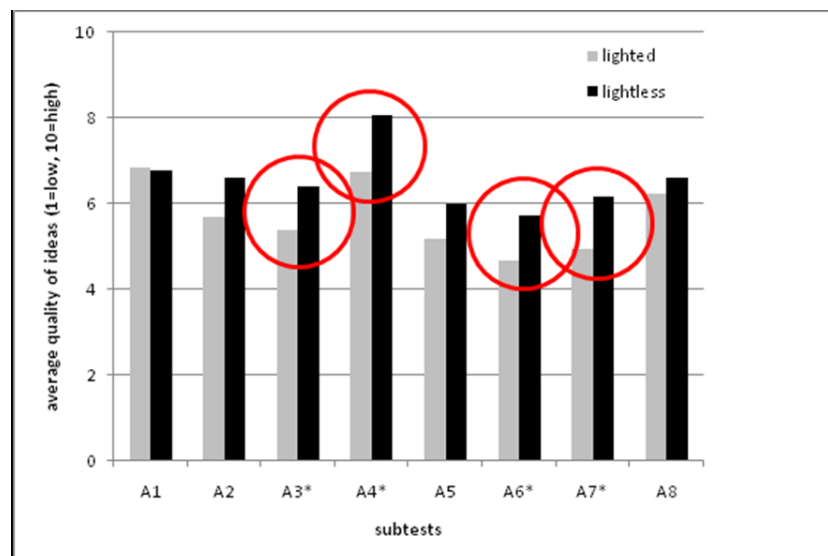


The number of ideas generated in the workshops held in lightless conditions is significantly higher (at the 5% level) for all eight creativity tasks. On average, almost 30% more ideas were generated in these workshops than in those carried out in normal lighting. These differences are particularly marked for subtests 1, 2, 4, and 7.

Looking at the results for the two subgroups managers and students, similar results are found. The management groups generated significantly more ideas for almost all tasks in the lightless workshops than in the lighted ones (exceptions: subtests 5 and 6). The student group also found significantly more answers to most creativity tasks under lightless conditions (excepting subtest 1).

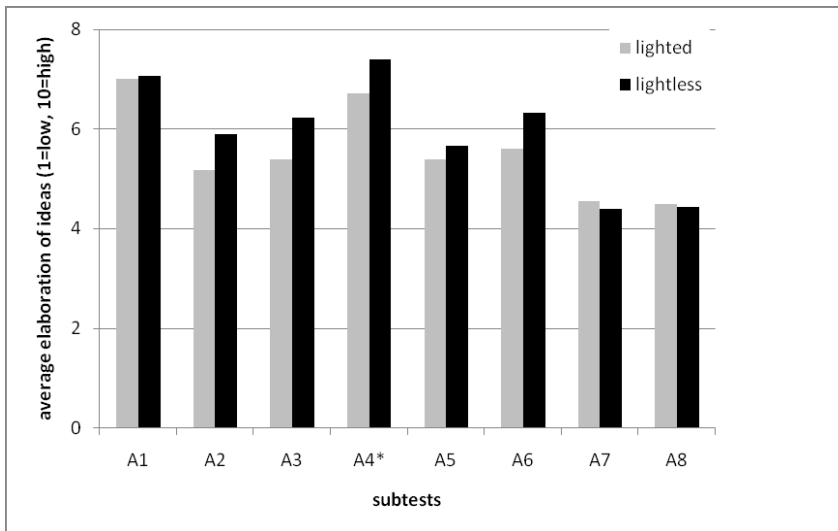
### 2. Quality / Variety of Ideas

In the total sample the quality of ideas generated in the lightless workshops is generally rated higher than that of the ideas generated under lighted conditions. Significant differences (at the 5% level) exist for subtests 3, 4, 6, and 7. The quality of answers given in the lightless workshops is significantly higher in all cases.



This also holds true for the subsamples managers and students, where the ideas given in the lightless workshops are mostly rated to be of higher quality than those coming from the lighted workshops. However, due to the small sample numbers these differences cannot be shown to be statistically significant.

### 3. Originality

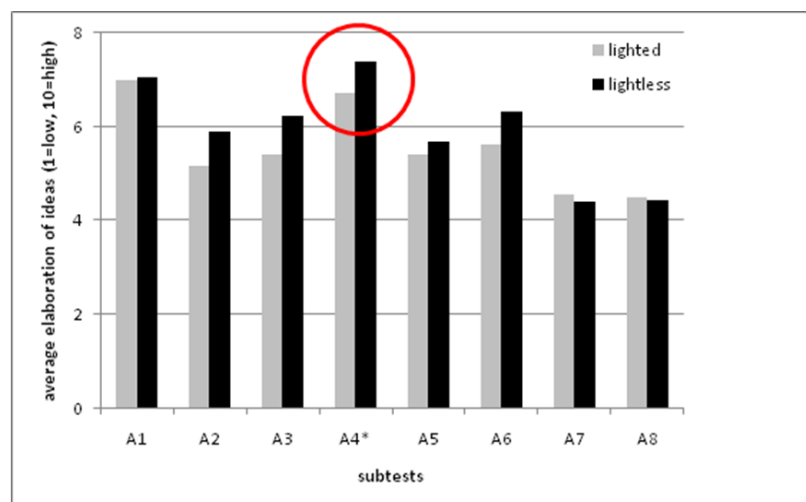


There are no significant differences regarding the originality of ideas from lightless and lighted workshops. However, the ideas generated in lightless workshops tend to be rated marginally more original than those originating from workshops held in lighted conditions. This can also be seen in the subsample groups.

In the subset managers there were even significant differences in the ideas given for subtest 4, with ideas from lightless workshops being rated as more original than those from lightless workshops. The difference for responses given in subtest 3 is at a similarly high level - though not significant at the 5 % level. In the student subsample the originality of responses from lightless workshops is also generally rated higher than in lighted workshops. This is particularly the case for subtests 2 and 6.

### 4. Elaboration

The final evaluation criterion looked at by the jurors was elaboration - how well developed the ideas were. As was the case for the other criteria, the ideas generated in lightless workshops were generally rated better than those from the lighted workshops. The differences for subtest 4 were even significant, underlining the trend described above.



With regards to the manager subsample no significant differences can be found. The responses from the managers were generally more elaborate than those given by the student groups. Some significant differences can be found for the student subsample, particularly for subtests 2 and 4. For both these tasks, as for most of the other subtests, the ideas from the lightless conditions are generally rated as more elaborated as those from lighted conditions.

## 5. Survey Results

Participants were asked to answer surveys on various aspects before and after the workshops. These included questions concerning their arousal and a self-assessment of their person. The after-questionnaires also asked participants to rate the workshops.

A comparison of participants' mood before and after the workshop shows a marked difference in many of the cases. After the workshop most participants were happier and more content, as well as feeling more stimulated and animated. Before the workshop people had reported being more exited and agitated. When looking at the differences between the groups taking part in workshops in lightless and lighted conditions, those participating in lightless workshops were slightly happier, more cheerful, more content and relaxed than those from the lighted environments. However, these results were not statistically significant.

Few differences could be found regarding the self-assessments of participants before and after the workshops. One such difference was that the characteristics "creative" and "imaginative" were rated higher after the workshops. The ability to solve complex problems and to cope with unfamiliar situations was also rated more positively after the workshops. Significant differences between participants in the lightless and lighted workshops could only be found for the characteristic "adventurous", with participants from the lightless workshops feeling more adventurous.

As can be expected, the workshops were rated differently according to whether it was held in lightless or lighted conditions. In general, the lightless workshops were rated more positive. Differences are particularly noticeable for items such as "new experience" and "novel experience" as well as "workshop was worth it".

### Conclusion

To sum up the results, it can be said that the absence of light appears to positively impact creativity. The study clearly shows that

- the fluency (number of ideas) is always higher in lightless workshops (mostly significantly so),
- the quality of ideas was generally rated higher in lightless workshops (in part significantly so), and
- the originality and elaboration of ideas in lightless workshops was rated marginally higher (partially significantly higher).
- Participants from lightless workshops felt happier and more content and felt that they had made a novel experience.