

Analyse of the survey on the office workers' interest in windows

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ANALYSE OF THE SURVEY ON THE OFFICE WORKERS' INTEREST IN WINDOWS 2

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Analyse of the survey on the office workers' interest in windows

This survey was completed in the framework of the IEA 31 task.

At the beginning, the objective was to compare the results obtained in several countries (USA – New Zealand – Belgium and Italy) but, due to founding reasons, the work was only done in Belgium. The result of this study can however be compared to the same survey made in New Zealand, 20 years ago by Kit Cuttle. Some of his comments and comparisons between the two studies are included in this report which presents a succinct result analysis of the Belgian survey.

This survey was done in 54 office buildings, between the 21st of January 2004 and the 30th of May 2004.

141 persons were interviewed. 117 of the 141 questionnaires were valid. 24 questionnaires were uncompleted and were thus invalid for the analysis.

1 General data on window interest

The first question is ~~was~~ about the interest of windows in office rooms. To the question "Should offices have windows ?", 99 % of the persons answered "Yes" and 1 % "It does not matter". Nobody answered that the offices should not have windows, which is not astonishing. In conclusion to this question, office workers believe that their workplaces should have windows.

1. Should offices have windows ? Please tick your response in the box below.	
Yes, offices should have windows	99.1%
It does not matter whether offices have windows	0.9 %
No, offices should not have windows	0 %

Table 1 : Answers to question 1

2 Positive aspects of windows

This question tries to determine which are the effects that are felt ~~felt~~ positively, linked to the presence of windows and what is their relative importance.

89 % of the questioned people answered "Yes" to each affirmation.

2. What are the positive aspects of windows ? Read the statements in the box below. Do you believe them ?		
	yes	no
a) Office workers like to have visual contact with the outside.	92.3 %	7.7 %
b) Daylight improves the appearance of an office.	89.7 %	10.3 %
c) Sunlight in an office makes you feel good.	95.7 %	4.3 %
d) Office workers prefer to work by daylight rather than electric lighting.	90.6 %	9.4 %

Table 2 : Answers to question 2

We then ask to classify the assertions according to their importance (from 1 to 4, in this case). Figure 1 shows the cumulated answers for each assertion. This type of graph allows us to analyse and to compare the assertions to each other. Indeed, assertion a) can have a lot of 1

and few 2, while assertion b) can have an average of 1 and 2 and be, finally, more important than assertion a). This type of graph makes it possible to evaluate an assertion in comparison to another, without analysing only the number of values “1”.

In the case of the positive aspects of windows, the questioned persons affirmed that, first of all, the sun has a positive impact on their well being. Then, came the visual contact with the outside. Thirdly, the persons affirmed that office workers prefer to work by daylight conditions rather than electric lighting.

The less important point, according to this survey, is that daylight improves the appearance of an office. We can notice that the classification corresponds to the classification obtained as a function of the percentage of answers “Yes”.

What are the positive aspects of windows ?

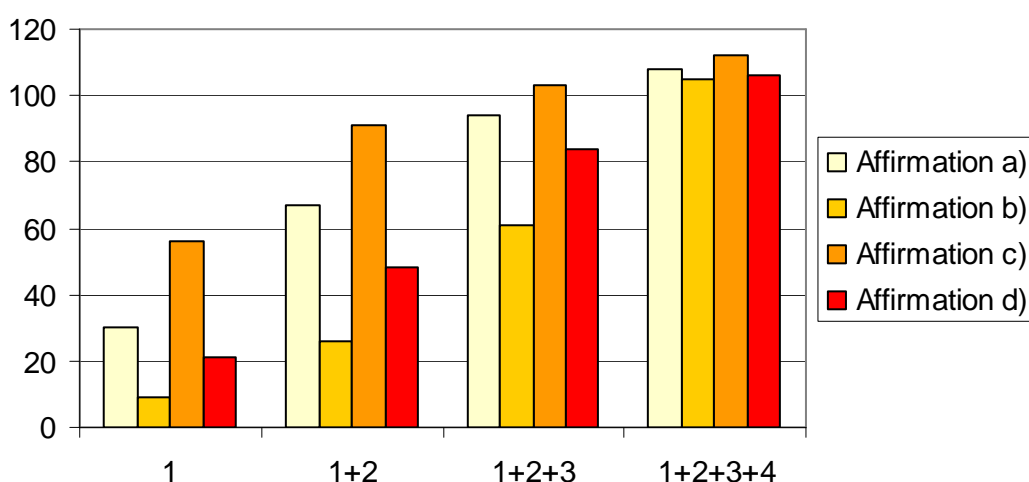


Figure 1 : Classification of assertions proposed at question 2

3 Negative aspects of windows

When we quote the four negatives aspects linked to windows, the opinions are more divided than for the previous question.

Three fourth of the persons thought that windows make details on computer screens difficult to see. 60 % of the people affirmed that solar shadings must be frequently adjusted so as to avoid glare.

Only 57 % of the people said that windows are glare sources, and even less (54 %) affirmed that windows cause discomfort such as overheating or draughts. These values are weak, at least for the assertions concerning glare.

3. What are the negative aspects of windows? Read the statements in the box below. Do you believe them?		
	yes	no
a) Windows cause glare which leads to eyestrain.	57.3 %	42.7 %
b) Windows make detail on computer screens difficult to see.	76.1 %	23.9 %

c) Windows cause discomfort such as overheating or draughts.	53.8 %	46.2 %
d) Window blinds or curtains must be frequently adjusted to avoid glare.	59.8 %	40.2 %

Table 3 : Answers to question 3

If we analyse the classification, we find that results are less obvious than for question 3. The assertion b) (problems on computer screens) is clearly the first. Assertions a) and d) share the second place; assertion a) has more 1 but assertion d) as more 1+2. Assertion c) is the last. Here again, the classification obtained as a function of the percentage of answers “Yes” is identical to the classification obtained by the graph (Figure 2).

What are the negative aspects of windows ?

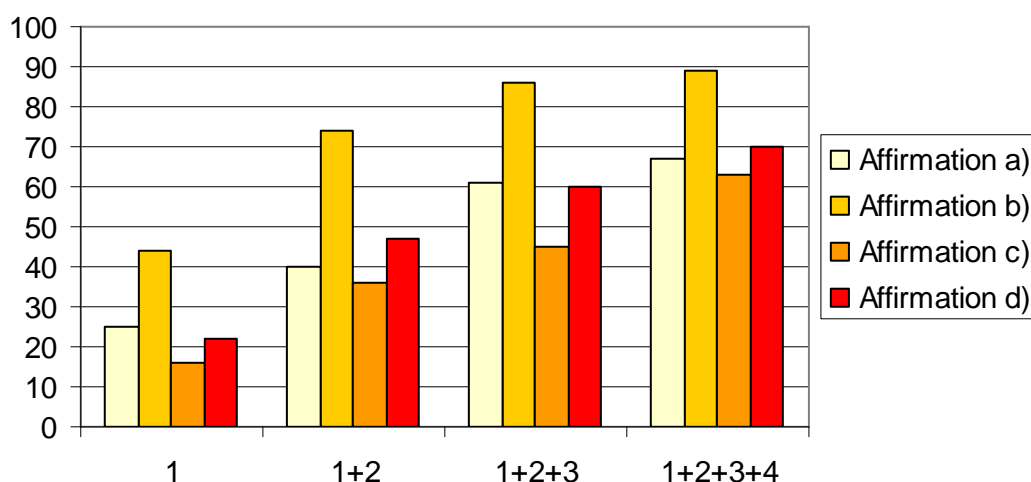


Figure 2 : Classification of the assertions proposed at question 3

In conclusion to question 3 and 4, the most positive impact is the presence of sunlight while the most negative impact is the visibility of computer screens. This raise a tricky challenge for designers ; how to provide sunny offices with good screen visibility ! Let’s notice that with the apparition of a new type of computer screens, the reflexions problems will be soon less present than before.

4 Best lighting to work by

We then ask-people if they prefer to work with artificial light or with daylight.

We observe that 62 % of the questioned people prefer daylight. This value seems low considering the high percentage obtained at question 2d.

Indeed, 91% of the questioned people said that they prefer to work under daylight conditions (question 2d) and only 62 % say that daylight is the best to work by (question 4).

Answers to question 4 teach us that 37 % of the office workers think that daylight and electric lighting are equally good to work by.

4. In your opinion, which type of lighting is best to work by ?	
Daylight is the best light to work by - go to question 5.	61.5 %
Daylight and electric lighting are equally good to work by - go to question 7.	36.8 %

Electric lighting is the best light to work by - go to question 6.	1.7 %
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Table 4 : Answers to question 4

The response obtained to question 4 are quite similar to what was found in the survey made more than twenty years ago; daylight is the most preferred illumination and a combination of daylight and electric lighting is quite acceptable. Very few people prefer electric lighting to daylight.

5 Reasons why people consider daylight to be the best light to work by

The main reason for which people prefer daylight in comparison to artificial light is the comfort. For more than 97% of the questioned persons, daylighting is more comfortable than electric light and reduces the stress of work. The second reason is that daylight creates a more healthy environment than electric lighting (85%). The third reason which gains a high percentage of “Yes” is that daylight causes less eyestrain than does electric lighting (82%).

The two reasons that have the less answers “Yes” are the following :

- Daylight is less harmful to eyesight than is electric lighting (62.5 %),
- Daylight helps you to work better. The detail that you need to be able to see is more clearly visible (64 %).

5. Why do you consider daylight to be the best light to work by ? Read the statements in the box below. Do you believe them ?		
	yes	no
Daylight helps you to work better. The detail that you need to be able to see is more clearly visible.	63.9	36.1
Daylight is more comfortable than electric lighting. It reduces the stress of work.	97.2	2.8
Daylight creates a more healthy environment than electric lighting. You maintain better overall health if you work by daylight.	84.7	15.3
Daylight causes less eyestrain than does electric lighting. You are less likely to suffer from headaches or discomfort associated with the eyes.	81.9	18.1
Daylight is less harmful to eyesight than is electric lighting. Your eyesight will deteriorate less than if you are working by electric lighting.	62.5	37.5

Table 5 : Answers to question 5

Once again, the classification corresponds with the one we would obtain by considering the percentage values.

Why do you consider daylight to be the best light to work by ?

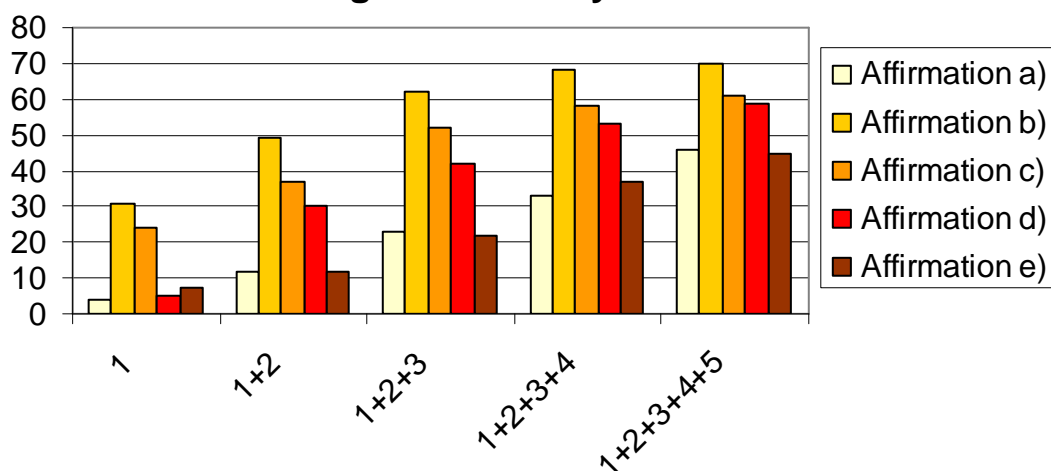


Figure 3 : Classification of the assertions proposed at question 5

There is one striking observation similar to the first surveys (20 years ago) : people do not believe that they perform better under daylight. For the past century, lighting people have been seeking a performance link between lighting and productivity, but except where visual tasks are very demanding, this has proved elusive. These surveys show that as far as working people are concerned, what they want is lighting that enables them to perform their tasks with minimum stress and adverse effects to their health. This survey adds confirmation to this important finding.

Now we come to an important difference compared with the earlier surveys. Daylight is perceived to be a positive attribute, whereas the earlier surveys indicated that office workers preferred daylight because they associated electric lighting with negative attributes. The electric lighting industry may take some satisfaction from this change of perception, but it should not be overlooked that the majority of respondents considers all of the statements to be true, including the ‘electric light negative’ ones. Also, it is clear from the preceding questions that they prefer daylight.

Finally, it can be inferred that short-term comfort effects are rated as more important than long-term health effects. It seems that although most people believe that it is true that their “eyesight will deteriorate less [if they are working by daylight than if they are] working by electric lighting”, it is more important to them that they feel comfortable and unstressed at the end of a working day. For this, they clearly see daylight to be a positive attribute. However, we must keep in mind that overall, they consider sunlight and view-out to be more important than the illumination on their desktop.

6 Reasons why people consider electric lighting to be the best light to work by

We notice that only 1,7% of the questioned people answered to this question. These people find that electric lighting helps you to work better; the detail that you need to be able to see is more clearly visible (100%).

These persons are then divided (50%/50%) with regard to assertions d) and e) (“Electric lighting causes less eyestrain than does daylight” and “Electric light is less harmful to eyesight than is daylight”).

6. Why do you consider electric lighting to be the best light to work by ? Read the statements in the box below. Do you believe them ?		
	yes	no
a) Electric lighting helps you to work better. The detail that you need to be able to see is more clearly visible.	100%	0%
b) Electric lighting is more comfortable than daylight. It reduces the stress of work.	0%	100%
c) Electric lighting creates a more healthy environment than daylight. You maintain better overall health if you work by electric lighting.	0%	100%
d) Electric lighting causes less eyestrain than does daylight. You are less likely to suffer from headaches or discomfort associated with the eyes.	50%	50%
e) Electric light is less harmful to eyesight than is daylight. Your eyesight will deteriorate less than if you are working by daylight.	50%	50%

Table 6 : Answers to question 6

Considering the few people having answered to this question, we do not analyse the classification of the five assertions mentioned here above.

7 Working activities

7. While you are in the office, how do you spend your time ? If, for example, you typically spend 30% of your time on paperwork, mark 30 in the percent column.

Figure 4 presents the occupancy rate of questioned people.

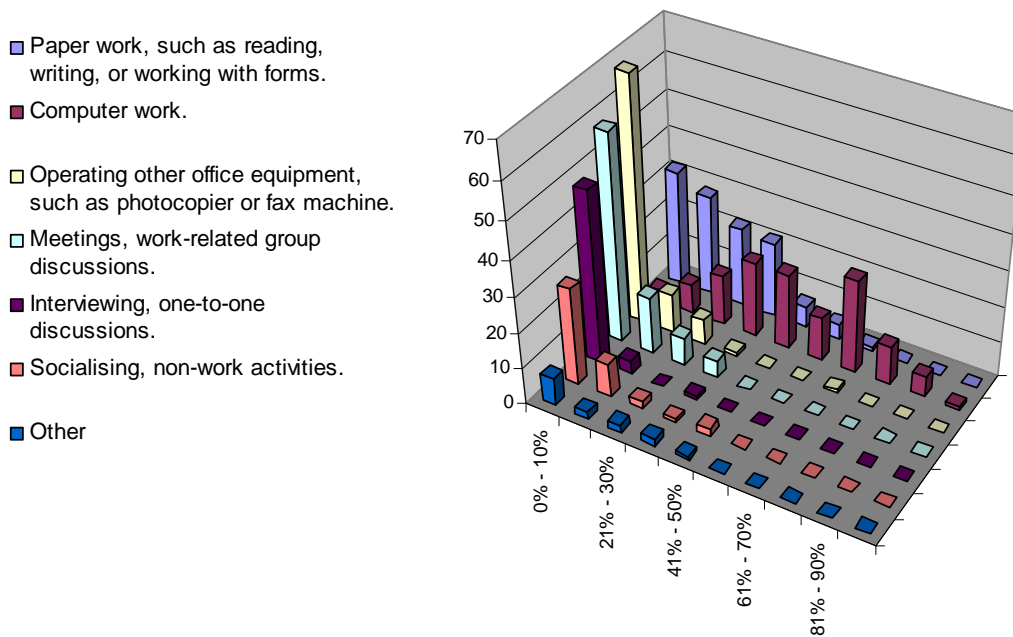


Figure 4 : Daily occupation of questioned people

8 Distance to the window

When we question people on their position to the window, we remark that 42 % are seated at less than three meters to the window whereas 33 % are seated beside a window. 20 % of the people are placed between 3 meters and 6 meters from a window and 5 % at more than 6 meters.

8. How close do you sit to a window ?	
Immediately beside a window	33.3%
Less than 3m (10 feet) from a window	41.9%
Between 3m and 6m (20 feet) from a window	19.7%
More than 6m from a window	5.1%

Table 7 : Answers to question 8

9 Preferred position as regard to the window

36 % of people wish to seat beside the window. It is 3 % more than the persons that already seat at that position.

The preferred position of half the questioned people is at less than 3 meters from a window. While 15 % wish to seat at a distance located between 3 and 6 meters from a window, nobody wishes to be located at more than 6 meters from a window.

9. How close would you like to sit to a window ?	
Immediately beside a window	35.9%
Less than 3m (10 feet) from a window	49.6%

Between 3m and 6m (20 feet) from a window	14.5%
More than 6m from a window	0.0%

Table 8 : Answers to question 9

10 Conclusion

As a conclusion, we can say that daylight is appreciated by the questioned people and that its most positive impact is on the well-being.

The most negative impact is the reflexion of daylight on computer screens.

A majority of people judge that daylight is better than electric light for office working.

More than one third of the people do not make any difference between daylight and artificial light. The main reason why daylight is preferred is because it is more comfortable than electric light : it reduces the stress of work.

The last thing that this study teaches us is that office workers prefer to be seated near a window or at less than three meters from a window.