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Koroluk, W.

Publisher's version / Version de l'éditeur:

CABA Home & Building Automation Quarterly, Autumn, pp. 28-29, 1998

National Research Council Canada
Conseil national de recherches Canada

NRC · CNRC

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IRC-VISI-135

A version of this paper is published in / Une version de ce document se trouve dans :
CABA Home & Building Automation Quarterly, Autumn 1998, pp. 28-29

www.nrc.ca/irc/ircpubs

Research shows no clear link between
lighting control and better performance

By WILL KOROLUK

"If I can't control the lighting in my office, I'm unhappy and unproductive."

It's easy to agree with such a statement. But although lighting controls can let you tailor lighting to tasks and to save energy, recent research at the National Research Council (NRC) suggests that having control doesn't have a simple, direct, or immediate effect on worker satisfaction or performance. Longer-term effects remain unknown.

Dr. Jennifer Veitch and Dr. Guy Newsham have been working on an experiment to determine whether it might be beneficial for office workers to have control over their lighting. They are researchers in the Indoor Environment Research Program at the Institute for Research in Construction (IRC) which is part of the NRC, Canada's premier science and technology agency. In their experiment, people were paired off in the IRC's indoor environment test laboratory and spent a day doing typical, computer-related office work. In each pair, one person had control of the lighting while the other wasn't even told lighting was at issue. At the start of the day, the person with control set the conditions under which the day's work would be done.

"So this isn't a strict test of how lighting controls would work in the real world," Dr. Veitch said in an interview. "But it does tell us some important things about how people might use lighting controls or how they might benefit from them in the long run."

"We were expecting-hoping-we might see some simple effects in which people who had control would be more satisfied and would work better. That didn't happen.

"What we did find was that the two groups were about the same in satisfaction and performance."

Satisfaction was so high, in fact, that it is unlikely that giving them additional control would do anything to improve it. That means it is possible that if people already have good lighting there might not be a lot of benefit in adding those individual controls.

As the experiment progressed a pattern emerged that showed the kinds of lighting conditions people prefer.

Some people had expressed worry that given control of lighting, workers will choose very high levels that would use a lot of energy. But, Dr. Veitch found, "most workers chose lighting levels that were typical of current practice, which is fairly energy-efficient."

That is an significant finding, she said, because "it gives us some encouragement that we can achieve good-quality lighting while still being energy-efficient."

The researchers found that workers can identify some lighting problems and fix them, if given the opportunity.

For example, talking to experiment subjects at the end of the day, the research team offered those who had not had a choice a chance to adjust the lighting to the way they wished it had been. They opted for settings that would minimize glare on the computer screens. And some of those who had choices in the morning said at the end of the day they, too, would like to reduce glare.

That suggests, she said, that increased satisfaction might result if workers have the opportunity to fix things as they go wrong.

"So even though there was no simple, short-term benefit from having

individual controls, there may be some long-term benefits. "

But she cautioned that installation of sophisticated systems can produce the possibility of a backlash.

Research has shown that "we need to be really careful about rushing into building in very complex controls for lighting in particular, because those systems are very expensive," she said. "And I don't think we're quite certain yet that those things are going to pay off in terms of improved satisfaction or, indeed, improved lighting quality."

"For example, studies in the United Kingdom show that if a system-not just restricted to lighting-is too complex and people can't understand it, it can be a source of dissatisfaction.

"So we need to know a little bit more about what people want and what they will really use before we rush into a wholesale provision of individual controls."

The lighting experiments are being funded by the National Research Council, Natural Resources Canada, the Panel on Energy Research and Development and the Canadian Electrical Association, with in-kind support from various lighting manufacturers.

During the next few months, more analytical work will be done on the preferences expressed by the participants in the experiment, so more will be known about the luminance conditions people prefer.

Dr. Veitch can be reached at (613) 993-9671 (voice), (613) 954-3733 (fax), or by e-mail at:

jennifer.veitch@nrc.ca

Will Koroluk is an Ottawa-based freelance writer specializing in building science and research. This article was commissioned by the Institute for Research in Construction.