THERMAL COMFORT
MENTAL HEALTH
Research Brief

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INTEGRATED DESIGN LAB
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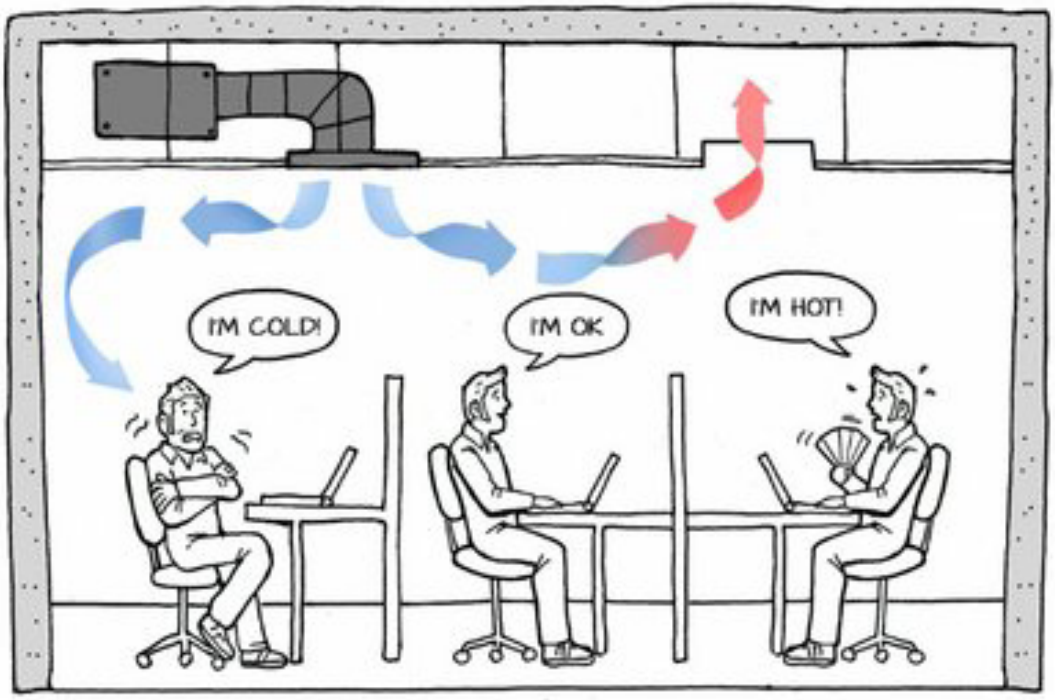

Figure 1
The thermal environment of a space impacts the psychological state of occupants.

Source: https://caseybuildingconsultants.com.au

Keywords:
Thermal Comfort, Mental Health, Vitality, Mental Fatigue, Personal Control, Anxiety

CONTENT OVERVIEW

THERMAL COMFORT + MENTAL HEALTH SUMMARY

Thermal comfort impacts the psychological response of the building occupant. The impact of primarily manifests itself by reducing mental fatigue, improving vitality, and reducing anxiety of the occupant.

The thermal environment of a space has an impact on the psychological state of the occupants (Yoshida 2015, Tanabe 2007, Akimoto 2010, Wagner 2006, Van Hoof 2010, Fossum 2001).

I. Mental Fatigue and Vitality

Studies have shown that thermal discomfort can lead to mental fatigue (Yoshida 2015, Tanabe 2007). One study by Yoshida at Osaka Prefecture University found that temperatures above the recommended thermal threshold (78.8 degrees Fahrenheit) correlated with mental fatigue (Yoshida 2015). In addition, the test subjects felt relaxed when experiencing thermal comfort or thermal neutrality (Yoshida 2015). A different study by Tanabe at Waseda University confirms the claims made by Yoshiba, finding that an increase in temperature increased mental fatigue in the test subjects (Tanabe 2007). An additional study conducted by Akimoto at Shibaura Institute of technology indicated that when in thermal discomfort, fatigue symptoms were present for most of the working hours in the test subjects (Akimoto 2010). The study also indicated that worker vitality – referring to the desire to participate in activities after work hours—decreased in the thermally uncomfortable environment over the course of the day. There is a correlation between mental vitality and fatigue -- the longer a subject is in thermal discomfort, the more their fatigue increases and their vitality level decreases (Akimoto 2010).

II. Personal Control and Anxiety

Personal control over the thermal environment of a space has also been correlated to positive psychological responses (Wagner 2006, Van Hoof 2010). A study conducted at a hospital by Wagner at North Georgia College and State University found that when a patient had control over their environment before a procedure, there was a decrease in anxiety (Wagner 2006). The agency that personal control mechanisms allow occupants will improve their overall thermal satisfaction (Ring et. al. 2000). The study by Wagner also found that for patients about to undergo treatment, a warmer environment can decrease the patient's anxiety and improve thermal comfort (Wagner 2006). Another study conducted by Fossum at the American Society of Peri Anesthesia Nurses looking at preoperative thermal comfort in a hospital associated warm air with positive feelings of comfort and decreased anxiety in preoperative patients (Fossum 2001).

VIII. KEY REFERENCES

Review Articles

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