

Accepted Manuscript

Gender differences in physiological and psychological responses to the thermal environment with varying clothing ensembles

Hong Liu, Yuxin Wu, Danni Lei, Baizhan Li



PII: S0360-1323(18)30307-X

DOI: [10.1016/j.buildenv.2018.05.040](https://doi.org/10.1016/j.buildenv.2018.05.040)

Reference: BAE 5478

To appear in: *Building and Environment*

Received Date: 3 February 2018

Revised Date: 16 May 2018

Accepted Date: 18 May 2018

Please cite this article as: Liu H, Wu Y, Lei D, Li B, Gender differences in physiological and psychological responses to the thermal environment with varying clothing ensembles, *Building and Environment* (2018), doi: 10.1016/j.buildenv.2018.05.040.

This is a PDF file of an unedited manuscript that has been accepted for publication. As a service to our customers we are providing this early version of the manuscript. The manuscript will undergo copyediting, typesetting, and review of the resulting proof before it is published in its final form. Please note that during the production process errors may be discovered which could affect the content, and all legal disclaimers that apply to the journal pertain.

Gender differences in physiological and psychological responses to the thermal environment with varying clothing ensembles

Hong Liu^{1,2}, Yuxin Wu^{1,2}, Danni Lei^{1,2}, Baizhan Li^{1,2,*}

*Corresponding Author: baizhanli@cqu.edu.cn

¹ Joint International Research Laboratory of Green Buildings and Built Environments (Ministry of Education), Chongqing University, Chongqing 400045, China

² National Centre for International Research of Low-carbon and Green Buildings (Ministry of Science and Technology), Chongqing University, Chongqing 400045, China

Abstract: Although clothing is a critical factor in assessing human thermal comfort, gender differences exist in thermal responses. This paper presents research on gender differences in adult physiological and psychological responses to the thermal environment, using 12 different clothing ensembles. The experiment was conducted at four air temperatures: 10, 16, 22, and 28 °C, with three different series of clothing ensembles in each air temperature.

The main conclusions are as follows: women are more sensitive to a colder thermal environment. Their measured overall skin temperatures were lower than those of their male counterparts and the predicted values for cold environments. This was particularly true in the case of hands, feet, and lower body parts, resulting in women feeling colder than men in the same cold environment. However, there were no significant differences in thermal sensations between the genders when their measured skin temperatures were the same. Different body parts showed different levels of thermal adaption to cold environments: the head, hands, and lower body had lower neutral skin temperatures in cold environments than those recorded in a previous study of a neutral environment, especially in the case of women. Due to these physiological and psychological differences of local body, more men than women preferred to add warmer or additional pants in cold environments.

Download English Version:

<https://daneshyari.com/en/article/6696909>

Download Persian Version:

<https://daneshyari.com/article/6696909>

[Daneshyari.com](https://daneshyari.com)