

# The Japanese-specific out-of-place Feeling Due to Clothing: A Combined Objective and Subjective Assessment Approach

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## Abstract

The feeling of being out-of-place from dressing differently from others is prevalent in Japanese individuals. However, previous studies have not objectively assessed this out-of-place feeling using physiological indices. Therefore, this study aimed to compare out-of-place feelings in Japanese individuals measured using questionnaires as subjective assessments and electroencephalography, R-R interval of heartbeats, and number of blinks as objective assessments. The results indicated that the participants felt out-of-place because of the differences in clothing and the recipient of the letter they wrote to as the task. The out-of-place feeling had a significantly negative correlation with alpha waves and a significantly positive correlation with beta waves. The more the participants felt out-of-place, the more uncomfortable they were when the collaborator entered or left the room wearing different clothes. The more their beta waves activated when they wrote a letter to their supervisor than when they wrote to children. The decrease in middle-alpha waves suggested that the participants were uncomfortable when they were the only people in a different outfit.

*Keywords:* Out-of-place; Japanese Female; EEG; Heartbeat R-R Interval; Questionnaire

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## 1 Introduction

In Japan, primary schools commonly conduct ‘clothing education’ lessons in home economics classes, teaching students how to dress appropriately for different occasions according to time, place, and occasion (TPO) [1]. TPO is a term coined by Kensuke Ishizu, founder of the VAN brand, and refers to the use of different methods, attitudes, clothing, etc., depending on the time, place, and occasion. In 1964, this concept was used in Japan, when it hosted the Olympic Games for the first time, to indicate the suitability of clothing for Japanese people as Olympic hosts [2]. For instance, if a person wears casual clothes at a fancy restaurant, they may be considered ‘out-of-place’ because of the mismatch between their clothing and the setting. This feeling of

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being out-of-place stems from a lack of common feelings and embarrassment for inappropriately dressing based on the occasion. In modern Japan, wearing Western clothing is the norm in most situations, as there is no strict dress code such as the traditional kimono. If an individual dresses differently from others in a social setting, they may feel that their clothing is inappropriate. This feeling of being out-of-place is particularly prevalent among Japanese people, who are highly concerned about others' perceptions. Uchida et al. [3–6] used dolls dressed in different outfits to explain the sense of out-of-place feeling felt by people around them. However, there are no reports on how people feel when they experience a sense of out-of-place and what physiological changes occur. Furthermore, no measures have been proposed to deal with this.

Studies related to out-of-place have focused on the psychological aspects of street vendors in the urban environment [7], older adults from different countries who could not age properly due to the feeling of being out-of-place [8], and those who are out-of-place, allochthon, or autochthonous based on their discourse identity [9]. Previous studies have used physiological indicators to assess the comfort of various types of support wear [10–13]. However, few studies have used physiological indicators to objectively assess the feeling of being out of place when wearing clothes. Therefore, the current study aimed to create a situation to develop the Japanese-specific feeling of being out-of-place and to compare the subjective assessments with objective measures [14]. To this end, we have set up a situation in which people wore different clothes than those worn by people around them and investigated how their mental stress was affected using subjective and objective assessments.

## 2 Experimental Method

Sixteen female university students aged 20–23 years, and three female collaborators aged 21–22 years, who had never met the students, participated in the experiments. All study participants provided informed consent, and only those who agreed were recruited. A questionnaire was used for the subjective assessment, while electroencephalography (EEG), heartbeat, and number of blinks were measured as physiological indices in the objective assessment. Two experiments were conducted, which differed in clothing and tasks. In Experiment I, all four individuals, one participant and three collaborators, wore white shirts. In Experiment II, only the participant wore a white shirt, whereas the three collaborators wore black suits. EEG activity was recorded at three measurement points using a digital EEG measuring system [15]. Simultaneously, heartbeat and blinks were measured, and high frequency (HF) and low frequency (LF)/HF were determined from the R-R interval fluctuations of QRS heartbeat waves. As the task in Experiment I, the participants wrote a letter to the children in the class they took charge of during their educational training. In Experiment II, they wrote a thank you letter to the homeroom class teacher. The same questionnaire (Questionnaire 1) was administered to compare the results. The participants were asked about their feelings of comfort and rejection on a 5-point scale. After the experiments, Questionnaire 2 on clothing behaviour regulation was administered online.

### 2.1 Experimental Schedule

The experimental schedule is shown in Fig. 1. The participants performed a task for 10 minutes (from the 15th to the 24th minute). From the first to the 21st minute, EEG, heart rate, and blinks were measured. From the 19th to the 21st minute, the participants responded to Ques-