Benefits of using culturally unfamiliar stimuli in ambiguous emotion identification: A cross-cultural study

Katja Koelkebeck [a,*], Waldemar Kohl [a], Julia Luettgenau [a], Susanna Triantafillou [a], Patricia Ohrmann [a], Shinji Satoh [b], Seiko Minoshita [c]

[a] Department of Psychiatry and Psychotherapy, Muenster University, Medical School, Muenster, Germany
[b] Institute of Social Psychiatry, Tsukuba, Ibaraki, Japan
[c] Department of Psychology, Kawamura Gakuen Women's University, Faculty of Liberal Arts, Abiko, Chiba, Japan

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ABSTRACT

A novel emotion recognition task that employs photos of a Japanese mask representing a highly ambiguous stimulus was evaluated. As non-Asians perceive and/or label emotions differently from Asians, we aimed to identify patterns of task-performance in non-Asian healthy volunteers with a view to future patient studies. The Noh mask test was presented to 42 adult German participants. Reaction times and emotion attribution patterns were recorded. To control for emotion identification abilities, a standard emotion recognition task was used among others. Questionnaires assessed personality traits. Finally, results were compared to age- and gender-matched Japanese volunteers. Compared to other tasks, German participants displayed slowest reaction times on the Noh mask test, indicating higher demands of ambiguous emotion recognition. They assigned more positive emotions to the mask than Japanese volunteers, demonstrating culture-dependent emotion identification patterns. As alexithymic and anxious traits were associated with slower reaction times, personality dimensions impacted on performance, as well. We showed an advantage of ambiguous over conventional emotion recognition tasks. Moreover, we determined emotion identification patterns in Western individuals impacted by personality dimensions, suggesting performance differences in clinical samples. Due to its properties, the Noh mask test represents a promising tool in the differential diagnosis of psychiatric disorders, e.g. schizophrenia.

1. Introduction

To interact with other humans, the ability to identify facial emotional expressions is essential. It was assumed that across cultures the facial expression of emotions (Brandt and Boucher, 1985) as well as the ability to identify them (Ekman and Friesen, 1971) is universal. However, socio-cultural decoding rules that relate to sanctions and appraisals of societies have been shown to impact on emotion identification (Markham and Wang, 1996). For example, the expression of certain (negative) emotions is perceived as too strong or inadequate in Japanese society (Aune and Aune, 1996), and even subtle emotions are rated as intense (Matsumoto et al., 2000).

Moreover, when faced with different cultural groups (out-group), emotion identification is considered to be more difficult. In a study that utilized an Asian and a Caucasian version of the "reading the mind in the eyes task", a better in- vs. out-group performance was identified in white Americans and Japanese

(Adams et al., 2010). Between white Americans and Japanese, the variability of successful facial emotion ratings by the other group ranged between 64–99% (Matsumoto, 1992). Furthermore, emotion identification is (unconsciously) triggered by context and race (Amodio et al., 2004). Emotion identification is typically faster for positive than negative emotions, but the reverse is true, and facial expressions are judged differently (Hugenberg and Bodenhausen, 2003), when Caucasians judge Black faces (Hugenberg, 2005). In line with this, subcategories of emotions are identified more easily in members of one's own cultural group (Russell, 1991), with some emotions (e.g. contempt, embarrassment) being more universal (Haidt and Keltner, 1999) than others (e.g. shame, excitement, interest), which seem to depend on gaze direction and head position (Izard, 1971).

In psychiatric disorders, abnormal emotion identification patterns have been identified (Koschack et al., 2003; Lewis and Garver, 1995; Suslow et al., 2003). While a differential deficit between patients with schizophrenia as compared to those with depression has been shown on few conventional emotion identification tasks (e.g. Weniger et al., 2004), a specific impairment of the identification of emotional subcategories (Burch, 1995) and

* Corresponding author. Tel.: +49 251 8356678; fax: +49 251 8356612.
E-mail address: koelkebeck@uni-muenster.de (K. Koelkebeck).

ambiguous emotions (Tsui et al., 2013) has been detected. It has been suggested that conventional emotion identification tasks employing full-strength emotions differ markedly from facial expressions encountered in daily life and might thus be less useful (Tsui et al., 2013).

Minoshita et al. (1999) introduced a novel paradigm, the Noh mask test, which utilizes ambiguous facial stimuli. Participants are presented with photos of a wooden female mask taken from traditional Japanese Noh theater (see Fig. 1 for examples) which displays a range of emotional expressions (Miyata et al., 2012). This effect is achieved, on the one hand, through the carving procedure of the mask, which exaggerates certain facial parts, such

as the mouth and brow region. By tilting the mask on the vertical line, Noh actors create the effect of varying emotional expressions, due to the change of angle and disposition of these regions (Lyons et al., 2000). On the other hand, this effect is enhanced by asymmetrical lighting (Kawai et al., 2013), most probably influencing the perception of the three-dimensional shapes. On this task, patients with schizophrenia previously displayed less sensitivity for negative emotions as compared to samples of other psychiatric diagnoses (Minoshita et al., 2005). Since a mask, i.e. a single non-human object is used, the stimulus material is homogeneous and bias due to subjective feelings towards the face models is reduced (Yrizarry et al., 1998).
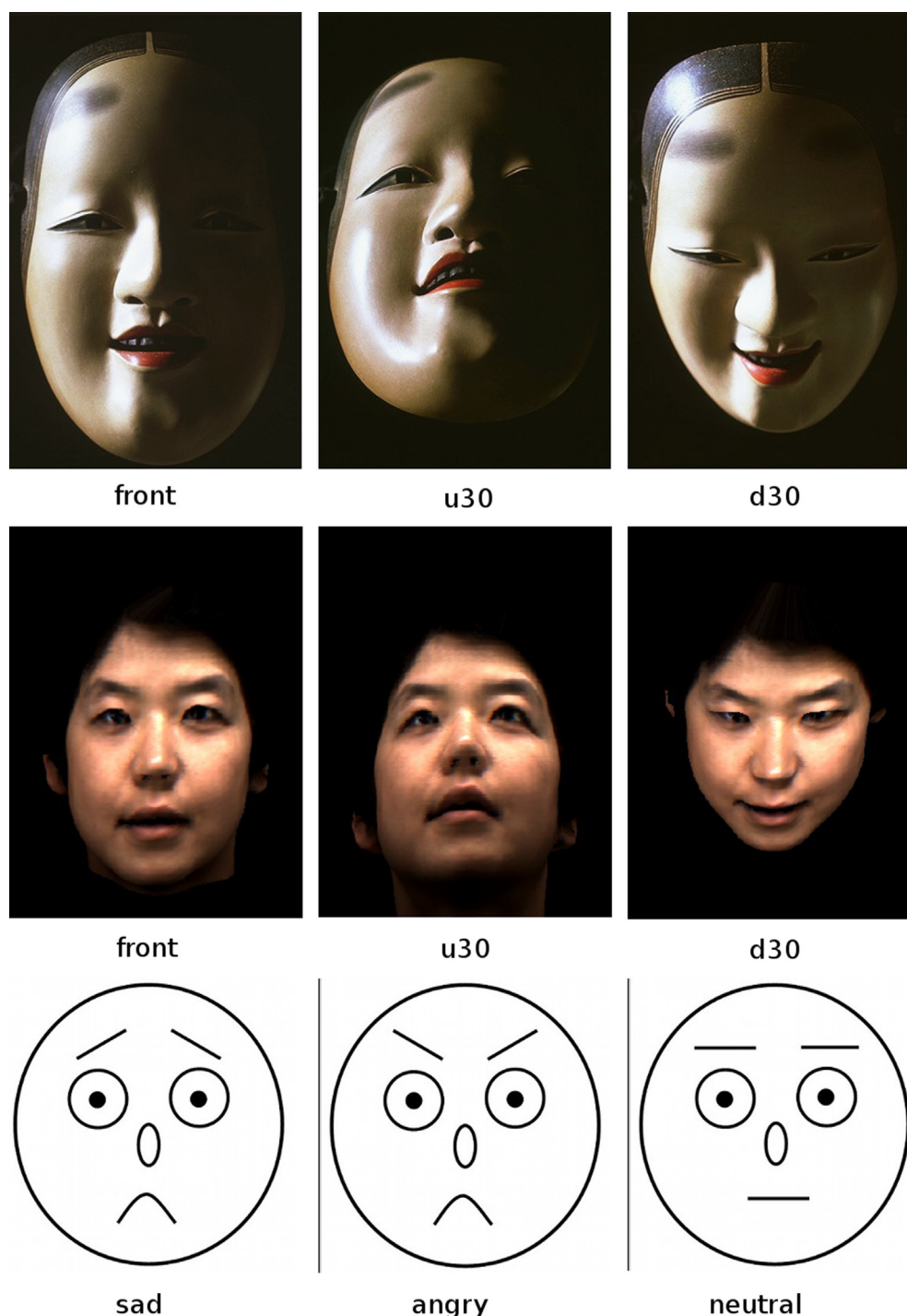

Fig. 1. Examples for Noh mask stimuli (upper row), tilted neutral Asian female face (middle row) and smiley face icons (bottom row) (inclination angles: front, up (u) 30°, down (d) 30°).