

## Sitting posture and moral impression formation: a focus on traditional Japanese sitting posture (*Seiza*)

AYANO FUKUICHI<sup>1</sup>, GENJI SUGAMURA<sup>2</sup>

<sup>1</sup> Graduate School of Psychology, Kansai University, Osaka, JAPAN

<sup>1</sup> Japan Society for the Promotion of Science, Tokyo, JAPAN

<sup>2</sup> Faculty of Letters, Kansai University, Osaka, JAPAN

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### Abstract:

**Problem Statement:** Posture plays an important role in communicating to others the characteristics a person possesses. However, most studies deal with postures when sitting on a chair, and few focus on sitting on the floor. Previous studies have shown that the traditional Japanese sitting posture, *seiza*, has moral implications, but it is not clear whether it actually conveys a moral nonverbal message. We hypothesized that *seiza* gives a moral impression from the viewpoint of previous research on posture and metaphorical reasoning. **Approach:** We examined the differences in personality impressions of morality between a person sitting in *seiza* and a person sitting on a chair. We presented photographs of people sitting in *seiza* or on a chair, including sitting in an upright, slumped, or leaning back posture, and asked 132 Japanese university students to rate their impressions of the sitter's morality in terms of moral cleanliness and the factors of the Moral Attitude Scale. **Purpose:** This study aimed to quantitatively examine individuals' impressions of people adopting *seiza* (a traditional Japanese sitting posture), using psychological constructs. **Results:** We found that the people sitting in *seiza* and those sitting in an upright posture on the chair were perceived as more moral than those sitting in a slumped or leaning back posture. The context of *seiza* being considered polite in Japanese tradition, and the metaphorical reasoning for sitting upright, are implied in the results. **Conclusions:** The findings provide implications that support the link between the physical body positions and morality in impression formation, suggesting that postural education is meaningful not only for the physical aspects such as health and sports, but also for the mental and social aspects.

**Key Words:** sitting postures, impression formation, Japanese culture, morality

### Introduction

The word "posture" conveys both the positional relationship of the body and the individual's attitudes and perspectives toward the external world (Pearson Education, 2014). This close connection between physical posture and attitudes is not limited to the English language. The same tendency can be seen in various other languages, such as Indo-European (e.g., Kempcke, 2000) and Austronesian languages (e.g., Chandra, 1991), and Kanji cultural spheres (e.g., Li, 2004; Shinmura, 2008).

Posture is also considered a nonverbal behavior in psychological research as it expresses an inner attitude (e.g., Coulson, 2004). In other words, posture plays a role in communicating to others what characteristics the person possesses and what kind of state the person is in. For example, Hall et al. (2005) stated that, depending on the context, a straight back posture can be considered a confident posture. Weisfeld and Beresford (1982) showed that boys with a straight posture were considered by their peers as superior, and high school students with a straight posture were regarded as having a temperament associated with social success. In addition, Haruki and Suzuki (1994) reported that a slumped posture received negative impressions, such as "unlively" and "weak," and Kitamura and Watanabe (2021) showed that participants who saw a picture of a person standing in a "good posture" considered the person as attractive and reliable.

To date, many studies have been conducted, examining not only standing but also sitting postures; however, most of them are related to postures adopted when sitting on a chair. Therefore, although it is a common way of sitting in Asia, little consideration has been given to floor-sitting. *Seiza* is a traditional Japanese way of sitting with the knees bent and thighs resting on the calves; it is a common floor-sitting method. As described by Noro et al. (2006), in the 16th century in Japan, office work was also done sitting on the floor, and even after the introduction of chairs, traditional floor-sitting was not completely eliminated (Hewes, 1955). Even today, it is common to sit in *seiza* in daily activities, such as during interpersonal interactions and meals (Menicatti et al., 2018), traditional Japanese activities such as *kendo* (Japanese fencing) and *kado* (Japanese flower arrangement) (Demura & Uchiyama, 2005), and classical theatrical performances (Bender, 2005). *Seiza* is a formal way of sitting and is considered a polite posture in various situations (Ueda, 1994).

Previous studies have indicated that sitting in *seiza* reduces subjective sleepiness in quasi and actual classroom situations (Fukuichi et al., 2019a, 2019b). In addition, short periods of sitting in *seiza* were found to

increase recognition performance on memory tasks (Sameshima et al., 2009, 2010). However, there are few studies on the effect of one's posture on others' perception of the individual (Fukuichi & Sugamura, 2021). A kneeling posture like *seiza* is also associated with religious worship and respect in various cultures, including among Christians and African people (Benfayed et al., 2017; Clark, 2009; Olko, 2014; Omari-Obayemi, 1996); in Japan, *seiza* is the posture adopted in religious ceremonies (Menicatti et al., 2018). Thus, *seiza* is a posture that has social, religious, and moral implications. Nevertheless, it is not clear whether *seiza* actually conveys a moral nonverbal message; that is, whether it has any impact on forming a moral impression of the sitter. Therefore, in this study, we examined whether people sitting in *seiza* conveyed an impression of morality in terms of its behavioral and awareness aspects, compared to people sitting on a chair in an upright, slumped, or leaning back posture, targeting Japanese people who are familiar with *seiza*.

Based on previous studies, a straight back posture in the same sitting position leads to a metaphorical impression of an "upright person" (Lakoff & Johnson, 1980), implying that the person is honest and straightforward, whereas a slumped posture may convey the opposite. In addition, a leaning back posture gives the impression of being relatively impolite (Bond & Shiraishi, 1974; Kudoh & Nishikawa, 1984). From these findings, it can be assumed that a sitting position with a straight back may convey a more moral impression than a slumped or leaning back posture does, and based on its cultural background, *seiza* may convey a more moral impression. The link between morality and cleanliness has been demonstrated in many studies. For example, Ding et al. (2020) have empirically shown that cleanliness, morality, dirtiness, and immorality are unconsciously linked at the conceptual level. Other studies have shown that cleaning oneself can lead to stricter judgments of moral violations (Helzer & Pizarro, 2011; Zhong et al., 2010) and stronger religious beliefs (Preston & Ritter, 2012). Thus, physical cleanliness is strongly related to mental cleanliness. As Lee et al. (2015) pointed out, by taking facial cleansing as an example, moral cleanliness has a culturally specific significance, and its existence is common to all cultures. In Japan, as in other cultures, cleanliness is a part of morality (Kitamura & Matsuo, 2021). There is also the culture of *kegare* that captures the link between dirtiness and sin, linking dirtiness with moral violations (Prusa, 2021).

We hypothesized that: a) people sitting in *seiza* and upright chair-sitting posture will be perceived as using public facilities in a clean manner and not making a mess; b) people sitting in *seiza* and upright chair-sitting posture will be perceived as giving emphasis to moral behaviors; and c) people sitting in *seiza* will be perceived as using the facilities more cleanly, less messily, and giving more emphasis to moral behaviors than those in an upright chair-sitting posture.

## Material and Methods

### Participants

The survey was conducted among 150 Japanese university students (69 men and 81 women;  $M_{\text{age}} = 19.0$ ,  $SD = 1.2$ ). They were recruited during an introductory psychology class. Informed consent was obtained orally from all participants.

### Photographs of people

Photographs of six undergraduate and graduate school students (two men and four women) were presented. The photographs were sorted according to the questionnaire, which indicated whether the people were sitting in a *seiza*, upright, slumped, or leaning back posture (Figure 1).



**Figure 1.** An example of photographs of persons in the *seiza*, upright, slumped, and leaning back postures.

The people in the photographs were engaged in typing, reading, writing, Japanese calligraphy, or folding towels. Two photographs of people engaged in Japanese calligraphy were duplicated. In the *seiza* condition, the people in the photographs sat in a *seiza* posture on the floor. In the upright sitting condition, the participants in the photographs sat straight-backed. In the slumped condition, the people in the photographs sat in

a slumped posture with their backs rounded. In the leaning back condition, the people in the photographs were leaning against the backrest, and the position of the chair was shifted where necessary (for example, to adjust the distance to the desk). The background was a composite of photographs of a room downloaded from the Internet. The photographs of the students were approximately 65 mm in height and 55 mm in width and were presented in grayscale. For the participants to evaluate the students in the six photos as a group rather than as individuals, participants were told that all six of them were students belonging to the same seminar.

*Clean-dirty assessment*

Five pairs of photographs of clean facilities (“clean scene”) and dirty facilities (“dirty scene”) were presented (Figure 2).



**Figure 2.** Examples of photographs of clean and dirty scenes

Participants were asked to indicate the extent to which they believed the six people in the photographs used each place in a clean or messy way, based on how they left the place after use. Responses were rated on an 8-point Likert scale, where 1 = “not at all” and 8 = “extremely.” Ten photographs of facilities depicted various scenarios, such as a table in a cafeteria, a desk with a computer on it, a bookshelf, a bicycle parking lot, and a desk in a library. The facility photographs were approximately 55 mm in height and width and were presented in grayscale.

*Moral Attitude Scale*

The Moral Attitude Scale (MAS; Teshima & Anbo, 2017) was developed based on the moral chapter of the 2015 revision of the lower secondary school national curriculum standard by the Ministry of Education, Culture, Sports, Science, and Technology, Japan. It comprises 31 items divided into the following five factors: “pursuit of self (e.g., “Set higher goals and aim to achieve them,” “Overcome difficulties and failures and get things done steadily,”  $\alpha = .89$ ),” “contribution to group and society (e.g., “As a member of society, actively try to be involved in its formation,” “Have a spirit of doing something for the benefit of society as a whole,”  $\alpha = .90$ ),” “observance of rules and manners (e.g., “Willing to obey laws and regulations,” “Strive to realize a disciplined and stable society,”  $\alpha = .81$ ),” “respect for others (e.g., “Do not discriminate or treat people with prejudice,” “Respect the individuality and position of the other party,”  $\alpha = .84$ ),” and “a sense of reverence (e.g., “Awe of things beyond human power, like nature,” “Understand the importance of humbly facing nature,”  $\alpha = .81$ ).” The reliability coefficient for the entire scale was  $\alpha = .94$ . Participants were asked how important they thought the six people in the photographs considered each of the 31 items to be. Responses were rated on a 6-point Likert scale (1 = “not important at all” to 6 = “extremely important”).

*Procedure*

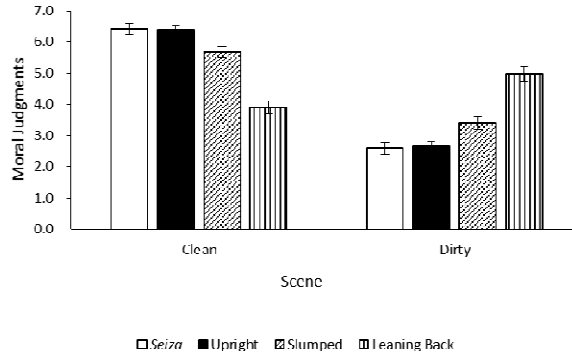
Participants were shown photographs of six people and asked to evaluate their impressions of them, based on the clean-dirty assessment and the MAS. At the end, a descriptive question was included, asking participants what they thought this study was being conducted for; this was to confirm whether participants understood the purpose of the study. Questions on demographic information, including participants’ gender, age, and frequency of adopting each posture in their lives (ranging from 1 = “not at all” to 5 = “adopt it frequently”), were also included. All procedures performed in the study were in accordance with the ethical standards of the institutional and/or national research committee and with the 1984 Helsinki Declaration and its later amendments.

**Results**

We considered the possibility that participants' perception of this as a study about posture may cause demand characteristics; responses from 132 people (63 men and 69 women;  $M_{age} = 19.0, SD = 1.2$ ), excluding those who had incomplete answers and those who mentioned "posture" and "sitting" in the descriptive question about the research purpose, were analyzed.

*Behavioral aspect of morality*

A one-way analysis of variance (ANOVA) was conducted with posture as a factor, with the average rating of each of the five photographs of clean and dirty scenes as the final ratings of the scenes (Figure 3).

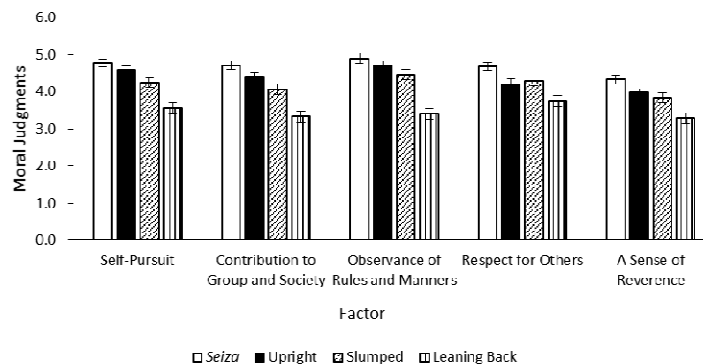


**Figure 3.** Mean moral judgments as a function of posture and scene. Higher scores indicate a more pronounced moral impression. Error bars represent standard errors.

The Bonferroni method adjustment was used for multiple comparisons. The effect of posture in a clean scene was significant, and there was no significant difference between the *seiza* ( $M = 6.41, SD = 1.04$ ) and upright postures ( $M = 6.38, SD = 0.80$ ); however, these two postures gave the impression that the facilities were cleaner compared to the slumped ( $M = 5.67, SD = 0.99$ ) and leaning back postures ( $M = 3.90, SD = 1.16$ ) ( $ps < .03$ ). Additionally, the slumped posture gave the impression of a cleaner facility than the leaning back sitting posture ( $p < .001$ ),  $F [3, 128] = 42.38, p < .001, \eta_p^2 = .50$ . The effect of posture in a dirty scene was also significant, and there was no significant difference between the *seiza* ( $M = 2.60, SD = 1.40$ ) and upright postures ( $M = 2.66, SD = 0.85$ ); however, the slumped ( $M = 3.41, SD = 1.16$ ) and leaning back postures ( $M = 4.99, SD = 1.21$ ) gave the impression that the facilities were dirtier compared to the *seiza* and upright postures ( $ps < .02$ ). Additionally, the leaning back posture gave the impression of a dirtier facility than the slumped posture ( $p < .001$ ),  $F [3, 128] = 31.95, p < .001, \eta_p^2 = .43$ .

*Awareness aspect of morality*

A one-way ANOVA was conducted with posture as a factor (Figure 4).



**Figure 4.** Mean moral judgments as a function of posture and moral factor. Higher scores indicate a more pronounced moral impression. Error bars represent standard errors.

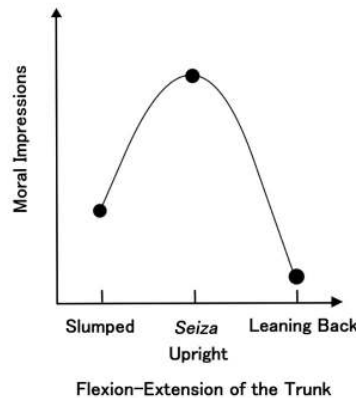
The Bonferroni method adjustment was used for multiple comparisons. Regarding "pursuit of self," there were no significant differences between the *seiza* ( $M = 4.77, SD = 0.59$ ) and upright postures ( $M = 4.56, SD = 0.71$ ), and the rating for *seiza* was higher than that for the slumped posture ( $M = 4.24, SD = 0.72$ ) ( $p = .02$ ). The rating for the leaning back posture ( $M = 3.56, SD = 0.84$ ) was lower than the other three postures ( $ps < .01$ ),  $F [3, 128] = 17.20, p < .001, \eta_p^2 = .29$ . Regarding "contribution to group and society," there were no significant differences between the *seiza* ( $M = 4.71, SD = 0.73$ ) and upright postures ( $M = 4.38, SD = 0.72$ ); the rating for *seiza* was higher than that for the slumped posture ( $M = 4.06, SD = 0.82$ ) ( $p < .01$ ), whereas the rating for the leaning back posture ( $M = 3.32, SD = 0.83$ ) was lower than the other three postures ( $ps < .02$ ),  $F [3, 128] = 18.78, p < .001, \eta_p^2 = .31$ . In "observance of rules and manners," there were no significant differences between the *seiza* ( $M = 4.90, SD = 0.87$ ) and upright postures ( $M = 4.70, SD = 0.72$ ), and the rating for the leaning back

posture ( $M = 3.39$ ,  $SD = 0.78$ ) was lower than the other three postures ( $ps < .001$ ),  $F [3, 128] = 22.68$ ,  $p < .001$ ,  $\eta_p^2 = .35$ . Concerning “respect for others,” there were no significant differences between the *seiza* ( $M = 4.68$ ,  $SD = 0.71$ ) and upright postures ( $M = 4.20$ ,  $SD = 0.86$ ;  $p = .06$ ), whereas the rating for the leaning back posture ( $M = 3.75$ ,  $SD = 0.70$ ) was lower than the *seiza* and slumped postures ( $ps < .05$ ),  $F [3, 128] = 8.38$ ,  $p < .001$ ,  $\eta_p^2 = 0.16$ . Regarding “a sense of reverence,” there were no significant differences between the *seiza* ( $M = 4.33$ ,  $SD = 0.72$ ) and upright postures ( $M = 3.96$ ,  $SD = 0.70$ ); the rating for *seiza* was higher than the slumped posture ( $M = 3.83$ ,  $SD = 0.78$ ), while the rating for the leaning back posture ( $M = 3.28$ ,  $SD = 0.80$ ) was lower than the other three postures ( $ps < .05$ ),  $F [3, 128] = 10.83$ ,  $p < .001$ ,  $\eta_p^2 = .20$ . *Seiza* scored the highest among the four postures on all five factors of the MAS, indicating that it created a more moral impression than the other postures. However, no significant difference was observed between the *seiza* and upright postures.

**Discussion**

The purpose of this study was to compare the moral impressions made by people sitting in the *seiza*, upright, slumped, or leaning back postures. The results of the survey showed that, in the clean-dirty assessment, people in the *seiza* and upright postures gave the impression that they had used the public facilities in a cleaner manner than those in the slumped and leaning back postures. In addition, regarding each factor of the MAS, it was found that people in the *seiza* and upright postures were perceived as more likely to place higher importance on moral behavior than those in the slumped and leaning back postures. The clean-dirty assessment was an approach from the behavioral aspect of morality (i.e., morality in actions), and the MAS was an approach from the awareness aspect of morality. In this study, it was shown from both aspects that people in the *seiza* and upright sitting postures were evaluated as being more moral than people in the slumped and leaning back postures, and the results partially supported the hypothesis that people sitting in *seiza* or upright chair-sitting posture will be perceived as using the facilities in a clean manner and not making a mess, and giving emphasis to moral behaviors.

This study suggests that a change in moral impression due to posture is not a linear relationship in which the flexion-extension dimension and the moral-immoral dimension correspond directly. In other words, the change in the impression of morality due to the flexion and extension of the trunk is understood to draw an inverted U-shaped curve, peaking at the upright spine (Figure 5).



**Figure 5.** Possible inverted U-shaped relationship between moral impressions and trunk extension/flexion.

In that case, it can be explained that the moral impressions of the *seiza* and upright sitting postures with straight backs are high, and the moral impressions of the slumped sitting posture away from the upright posture in the flexion direction, and the leaning back sitting posture away from the upright posture in the extension direction are low. Further, in this case, the inverted U-shape is not entirely symmetrical, meaning that the leaning back posture may create a lower moral impression than the slumped posture. In the present study, the difference between the slumped and leaning back postures was examined as a secondary purpose. The results showed that both these postures created a moral impression. However, the leaning back posture was rated as more immoral than the slumped posture. The mean value for the slumped posture on the MAS was close to four, which indicates a “rather important” rating. Therefore, the slumped posture is not considered immoral in absolute terms, but it can be interpreted as being relatively immoral compared to the *seiza* and upright postures. In addition, the slumped posture was evaluated as relatively more moral than the leaning back posture, which was rated as “rather unimportant,” implying immorality. It is also appropriate to interpret the slumped posture as being close to the negative rating of “rather unimportant” and forming the impression that it was deemed relatively more moral than the leaning back sitting posture, which was evaluated as immoral.

*Theoretical implications*

There are two possible mechanisms by which *seiza* and upright sitting posture make a person look moral. The first is that, based on its cultural background, *seiza* conveys an impression of morality to the same

degree as the upright posture. As Lakoff and Johnson (1980) showed, the word “upright” is sometimes used in “upright posture” to describe a straight back posture, and a phrase like “she is upright” (p. 24) is used to imply “honest” and “straightforward.” In line with the current study, it is possible that the “upright” spine was reminiscent of the personal “uprightness” of an individual, as described by Lakoff and Johnson (1980). In contrast, the leaning back posture gave an immoral impression because the posture may have been perceived as arrogant by the participants in this study. Thus, such unconscious metaphorical inferences may have influenced impression formation. Another possibility is that the straightness of the spine, rather than the cultural implication, made the people in *seiza* appear moral. *Seiza* is a posture in which the rotation angle of the pelvis is close to that of the standing position, and the spine is extended (Noro et al., 2006). Therefore, it can be interpreted that this posture gave a moral impression by the same mechanism as the upright sitting posture. More rigorous manipulations will be necessary to determine whether the moral impressions given by *seiza* are due to cultural background, straight back, or both.

#### *Awareness aspect of morality*

We measured moral impressions using the five-factor MAS. First, “pursuit of self” is paraphrased as aspiration, and can be described as being moral to oneself. The finding that people with upright postures are more likely to be inferred to have higher “pursuit of self” may be related to the fact that upright spinal postures actually improve self-control (Murakami & Sugamura, 2016) and emotional engagement (Murakami & Sugamura, 2017). Furthermore, it is known that an upright posture with a straight back is sometimes regarded as a self-confident posture (Hall et al., 2005), and it is also known that stretching the back makes one feel self-esteem (Nair et al., 2015; Wilkes et al., 2017), confident (Briñol et al., 2009) and lively (Haruki & Suzuki, 1994, Sugamura et al., 2016). Therefore, the impression of them may have directed participants to judge that people in a *seiza* or upright posture are aspirational. Similarly, “contribution to group and society” targets groups and the society, “observance of rules and manners” targets discipline, and “respect for others” targets behavior toward others in terms of morality. These may be related to the judgment of moral violations, which have traditionally been used as indicators of morality.

What is characteristic of this scale is that “a sense of reverence” is composed of items of morality toward nature. Suzuki (2015) argued that the richness of the seasons and frequent natural disasters such as typhoons and earthquakes have brought the Japanese in close contact with nature since ancient times; moreover, they are fearful of nature because they consider it as something beyond human knowledge. This is also why nature has been an object of worship. For example, Japanese shrines are usually found in groves and forests, strongly reflecting the idea of tree worship (Ono & Woodard, 1962). Therefore, a highly moral attitude toward nature may be close to the heightened religious beliefs shown in the study by Preston and Ritter (2012). Considering that the scores of the *seiza* and upright postures were higher than those of the slumped and leaning back postures on all factors of the MAS, the moral impression conveyed by the *seiza* and upright postures may be open to a wide range of targets for studying morality, including those examined in previous moral studies.

#### *Limitations*

There were three methodological limitations to the current study. First, the people sitting in each posture were only depicted in photographs, not in person. Sato et al. (2009) investigated the differences in impressions among photographs of people by changing the brightness and contrast, assuming that factors such as photographic techniques and image quality characteristics were involved. The results indicated that brightness was related to friendliness, while contrast was related to social desirability. This reveals a difference in impression formation between looking at a photograph and meeting a person face-to-face. In addition, factors beyond the person may also be involved in face-to-face meetings. In daily life, we do not see a fixed subject in the same room, but encounter people in various situations. Thus, in real-life situations, there are many variables different from those in photographs, such as facial expressions, interpersonal distance, clothing, and the surrounding environment, that influence impression formation. In addition, interactions between one’s own posture and that of another person also occur. These points should be considered when applying the present findings to real-life situations. In the future, we may gain more realistic insights by examining the impressions conveyed by different postures in face-to-face settings. Second, the present study was limited to examining impressions and did not investigate the relationship between a person’s actual personality traits and posture. Therefore, the hypothesis that the tilt of the spine and the degree of moral impression of personality form an inverted U-shape is only applicable to an impression of morality. In the future, the generalizability of these results can be enhanced by using indicators of moral behavior, examining the posture of moral individuals, and examining whether postural manipulation is likely to elicit moral behavior.

Finally, the present study was conducted only among Japanese university students. Comparisons with people in cultures that do not have the custom of sitting in *seiza*, or between those who have knowledge of Japanese traditions and those who do not would yield different results. In addition, because interior decoration in Japan has become more westernized in recent years, Japanese university students may have fewer opportunities to sit in *seiza* in their daily lives than in the past. Therefore, intergenerational comparisons may reveal further differences. Future intercultural and intergenerational comparisons should be made and examined from both cross-cultural and cross-generational perspectives to expand the current results.

## Conclusions

Posture is an important channel of nonverbal behavior that serves to provide information about oneself to others (Mehrabian, 2017). A number of studies have shown that standing posture or sitting posture on a chair conveys emotional cues to others (Hall et al., 2005; Weisfeld & Beresford, 1982), but few have examined more cognitive impressions, especially when sitting on the floor. The traditional Japanese floor sitting posture, *seiza*, which has been used in religious ceremonies (Menicatti et al., 2018), is, thus, thought to have courteous impressions, whereas it has not been investigated whether *seiza* actually conveys a more significant moral dimension to others, compared to other postures. In this study, we examined whether *seiza* gives a moral impression, in terms of the subjective and behavioral aspect of cleanliness, in comparison with other common sitting postures. We found that *seiza* and upright sitting postures gave the interpersonal impression that the person would use the facilities in a cleaner and more neat way and would have a moral view of oneself, others, and natural environment than slumped or leaning backward posture.

This result is consistent with previous studies showing associations between upright posture and positive emotions or impressions, and with metaphorical reasoning suggesting a correspondence between "upright posture" and "personal uprightness". Furthermore, it was found that a linear change in posture corresponds to a change in moral impression in the form of an asymmetric parabola rather than a linear drawing. These findings are not limited to the study of the relationship between posture and morality, but also provide an important perspective for studying the association between the human body and psychology. It has been found that morality is related to the body from multiple aspects, such as gustatory sense (Eskine et al., 2011), proprioception (Yap et al., 2013), and clothing behaviors (Frank & Gilovich, 1988). This study also provides implications that support the link between the physical body positions and morality in impression formation, suggesting that postural education is meaningful not only for the physical aspects such as health and sports, but also for the mental and social aspects.

**Conflicts of interest** – The authors declare that they have no conflict of interest.

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