

Core body temperature is associated with visual representations of social group members

Youngki Hong^a

^a Department of Psychology and Neuroscience, University of Colorado Boulder, Boulder, CO, 80309, United States of America

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ABSTRACT

Core body temperature (CBT) reflects a physiological state that may correspond with variation in social perception. In two exploratory studies, we examined whether individual differences in CBT correspond with visual representations of social group members. In Study 1, American participants generated visual representations of Arab faces using a reverse correlation task. A machine learning model predicted participants' CBT from the classification images they generated above chance levels. In Study 2, participants generated representations of novel ingroup and outgroup members. Classification images generated by individuals with higher CBT were associated with greater differentiation in trusting behavior between ingroup and outgroup members. Together, these findings suggest that physiological variation indexed by CBT corresponds with how individuals visually construct representations of social group members.

Warmth is one of the most central dimensions of social perception, shaping how individuals perceive and respond to others (Asch, 1946; Fiske et al., 2002). Although warmth is often discussed metaphorically in the context of interpersonal judgments, previous research suggests that physical and social experiences of warmth may be systematically associated and partly rely on overlapping physiological and neural processes (Inagaki & Eisenberger, 2013). For example, inducing physical warmth has been consistently linked to different aspects of social warmth, including trusting behavior (Kang et al., 2011), and feelings of social connection (Inagaki et al., 2015; Inagaki & Eisenberger, 2013). Others have found that loneliness (i.e., absence of social warmth) is related to perception of physical coldness (Zhong & Leonardelli, 2008), decrease in skin temperature (IJzerman et al., 2012), and tendency to seek physical warmth (Bargh & Shalev, 2012). Conversely, feeling physically cold is related to desire for social warmth (Zhang & Risen, 2014). These findings have led researchers to propose that bodily thermoregulation may interact with social processes that regulate affiliation and interpersonal evaluation (IJzerman et al., 2015).

Most research in this area has focused on externally manipulated temperature cues, such as holding warm or cold objects (Williams & Bargh, 2008) or experiencing changes in ambient temperature (IJzerman et al., 2012; Inagaki & Human, 2020). However, internal physiological states may also be relevant. Core body temperature (CBT) is a tightly regulated physiological signal reflecting metabolic activity, circadian rhythms, and autonomic processes (Mekjavic & Eiken, 2006;

Satinoff, 1978). Because CBT covaries with neural systems involved in interoception, arousal, and affective regulation (Craig, 2002), variation in CBT may correspond with differences in how individuals process socially relevant stimuli. Despite this possibility, relatively little research has examined whether natural variations in CBT correspond with how people perceive and represent other individuals.

One domain where such associations may be observable is the perception of social groups. Group membership strongly shapes how individuals interpret social information and form impressions of others (Brewer & Brown, 1998; Tajfel & Turner, 1986). These processes operate not only at the level of explicit attitudes but also at the level of perceptual representation. Using reverse correlation methods, prior research has shown that individuals generate systematically different visual representations of ingroup and outgroup members, even when group distinctions are minimal or arbitrary (Dotsch & Todorov, 2012; Hong & Ratner, 2021). These representations reflect the perceptual features people associate with social categories and can influence downstream judgments and behavior.

Although research has identified many psychological factors that shape these representations, less is known about whether internal physiological states like CBT correspond with variability in how individuals construct mental images of social groups. Several theoretical perspectives have proposed potential links between thermoregulatory processes and social perception. For example, the behavioral immune system framework proposes that physiological cues associated with

E-mail address: youngki.hong@colorado.edu.

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disease vulnerability may heighten sensitivity to potential threats, including unfamiliar outgroups (Schaller & Park, 2011). Research on temperature and aggression has similarly suggested that elevated temperature may increase arousal and defensive responses (Anderson et al., 2000). In contrast, social thermoregulation theory proposes that physiological coldness may increase affiliative motivation and broaden social engagement (IJzerman et al., 2015, 2018). These perspectives imply that thermoregulatory states could correspond with differences in how individuals perceive or represent members of social groups.

The present research explores this possibility by examining whether individual differences in CBT are associated with visual representations of social group members. However, the present studies do not attempt to adjudicate among these perspectives or directly test their proposed mechanisms. Rather, these frameworks are used to motivate an exploratory investigation of whether physiological variation indexed by CBT corresponds with variability in social representations. To do so, we combine reverse correlation techniques with behavioral measures and machine learning analyses. In Study 1, we examine whether participants' CBT can be inferred from the visual representations they generate of outgroup members. In Study 2, we examine whether CBT relates to intergroup differentiation in visual representations of novel social groups. Most work on intergroup perception has focused on social or motivational factors shaping these representations (Dotsch & Todorov, 2012). The present research examines whether variation in a basic physiological state, such as CBT, is reflected in the visual structure of those representations and whether such differences correspond with downstream social responses. By linking physiological measurement with reverse correlation methods and behavioral outcomes, the present studies provide an initial test of whether internal bodily states may be reflected in how individuals visually represent and respond to social group members.

All data and analysis scripts are publicly available at https://osf.io/8z4pt/overview?view_only=1423b7c1df5b4e9297499a79c184507c. No hypotheses or sample sizes were preregistered prior to conducting this research.

1. Study 1

Study 1 examined whether participants' CBT is associated with the visual representations they generate of social outgroup members. American participants completed a reverse correlation task in which they generated face representations of Arab individuals. Because this study did not directly assess evaluative direction or intergroup differentiation, we tested a more general possibility: that individual differences in CBT may be reflected in the visual structure of these representations. To examine this possibility, we used a machine learning analysis to test whether participants' CBT could be predicted from the classification images they produced. This approach allowed us to assess whether internal physiological states are systematically reflected in visual representations of a social group.

1.1. Methods

1.1.1. Participants

We recruited 342 student participants from a large public university in California (Mage = 19.26, SD = 1.83; 223 female, 118 male, and 1 unidentified; 98 Asian, 96 White, 77 Latinx, 34 Multiracial, 12 Black, 2 Native American, 1 Pacific Islander, 21 other, and 1 unidentified) as part of a larger project (Hong et al., 2024). Our analytic approach used permutation-based significance testing, which is a non-parametric method; traditional power analysis is not applicable. Instead, we relied on best practices in high-dimensional modeling, where cross-validation and permutation tests mitigate risks of overfitting and Type I error (Yarkoni & Westfall, 2017). The sample size of 342 was determined by the availability of data from the broader project. Notably, prior studies using SVR on image-level features with similar or smaller

samples have successfully predicted individual-level variables from reverse correlation data (Hong et al., 2023). Thus, while the sample was determined by practical constraints, it falls within the accepted range for exploratory high-dimensional analyses in visual cognition.

1.1.2. Procedure

At the beginning of the experiment session, each participant's body temperature was measured twice using an Exergen temporal artery thermometer, and the two readings were averaged. If the two readings were discrepant by more than 1 °F, a third reading was taken, and the two closest readings were averaged. CBT ranged from 96.30 °F to 99.75 °F (M = 97.99, SD = 0.59). All sessions were scheduled between 3:00 PM and 5:00 PM to minimize circadian variation in CBT. Because ambient temperature can influence not only core body temperature itself (Lu & Dai, 2009) but also social perception (IJzerman et al., 2012; Inagaki & Human, 2020), the experiment room temperature was kept at 71 °F at all times. Participants then completed a 300-trial reverse correlation face categorization task. On each trial, they selected the face that looked more like an Arab person from a pair of grayscale face images. Each pair was generated by superimposing a unique sinusoidal noise pattern and its mathematical inverse onto a neutral average White male face (Lundqvist et al., 1998).

Following standard reverse correlation logic (Dotsch & Todorov, 2012), classification images were generated by averaging noise patterns from participants' selected faces. These images visually reflect participants' mental representations of what an Arab person looks like. We then created a classification image for each participant by averaging the noise patterns of their selected faces and superimposing this average onto the base image, resulting in a visual rendering of their mental representation of an Arab person.

We then used support vector regression (SVR; Drucker et al., 1997) to test whether individuals' CBT could be predicted from their mental representations of outgroup (Arab) faces. Each participant's classification image was treated as a high-dimensional feature vector consisting of 4096 pixel intensity values (64 × 64 resolution). We used participants' CBT as the continuous outcome variable. SVR was implemented in R using the e1071 package (Meyer et al., 2024). We used a linear kernel with default parameters (C = 1). No hyperparameter optimization or tuning procedures were performed, as the primary goal was to test whether classification images contained information associated with CBT under a fixed and transparent modeling procedure, rather than to maximize predictive accuracy. Because a linear kernel was used, kernel-specific parameters such as gamma and coef0 were not applicable. No additional feature scaling was applied beyond the image preprocessing used to generate the 64 × 64 classification images.

Model performance was evaluated using 10-fold cross-validation: the data were divided into 10 equal subsets, and the model was trained on 9 folds while testing on the remaining fold, rotating through all subsets. The prediction accuracy was quantified using mean absolute error (MAE), which measures the average absolute difference between predicted and actual CBT. Lower MAE values indicate better model performance. To assess statistical significance, we ran 5000 permutation tests (Ojala & Garriga, 2010) in which CBT values were randomly shuffled across participants and the SVR was re-trained and re-tested using the same cross-validation procedure. This created a null distribution of 5000 MAE values. We then computed a *p*-value as the proportion of permutation models that achieved lower MAEs (i.e., higher accuracy) than the model trained on the actual, unshuffled data. This approach estimates the likelihood that the observed predictive performance could have occurred by chance.

Due to a data collection error, we did not have CBT data for thirteen participants whose data were therefore excluded from the analysis. The final sample size was 329.

1.2. Results

The SVR model achieved an MAE of 0.46 (SD = 0.03) when predicting CBT from unshuffled data. To evaluate statistical significance, we conducted 5000 permutation tests in which CBT values were randomly shuffled across participants. None of 5000 permutations yielded a lower MAE than the model trained on the true data, resulting in a p -value of .0002 (Fig. 1). This indicates that the SVR model predicted CBT from participants' mental representations significantly better than chance. These findings suggest that an indicator of internal physiological state, CBT, is systematically encoded in participants' visual representations of a socially meaningful group.

While MAE is a conventional metric for evaluating the performance of SVR models (Hong et al., 2023), we also computed the correlation between SVR-predicted CBT and the observed CBT values across the 10 folds. We found a small but significant positive relationship between predicted and observed CBT, $r(327) = 0.12$, $p = .03$, providing converging evidence for the permutation results using a more interpretable metric (Fig. 2). However, this correlation should be interpreted cautiously because the predicted values were generated using a nonparametric method (SVR), whereas the association was evaluated using a parametric statistic (Pearson correlation).

2. Study 2

Study 2 examined whether core body temperature (CBT) is associated with intergroup differentiation in face representations. Participants were randomly assigned to minimal groups and completed a reverse correlation task to generate visual representations of ingroup and outgroup members. Based on prior research linking physiological states to social perception, we predicted that higher CBT would be associated with greater differentiation between groups, whereas lower CBT would be associated with reduced differentiation. Reverse correlation methods generate visual representations that capture the features people associate with social categories (Brinkman et al., 2017; Dotsch & Todorov, 2012), but these representations are meaningful only insofar as they influence downstream evaluations and behavior. Previous work shows that facial representations captured by reverse correlation methods shape behavior (Lloyd et al., 2020; Ratner et al., 2014). In Study 2, we tested these hypotheses by examining whether these representational differences were associated with downstream behavioral responses in an economic trust game. We chose to examine intergroup differentiation using trusting behavior because trust is one of the central dimensions for evaluating faces (Oosterhof & Todorov, 2008) and is an important

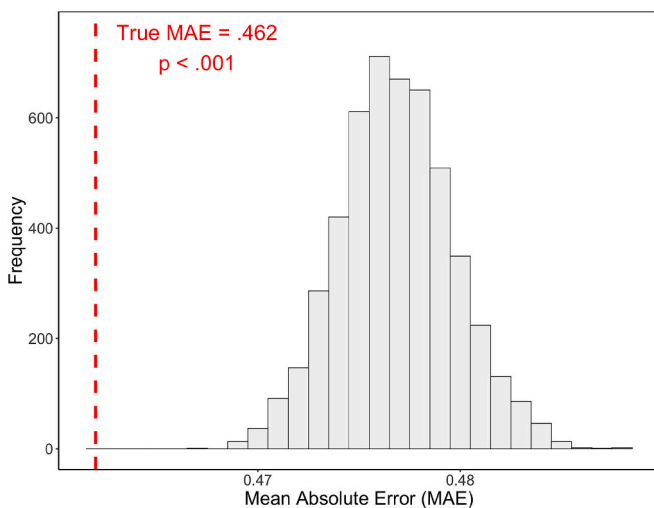


Fig. 1. Permutation-based significance test for predicting core body temperature from outgroup face representations.

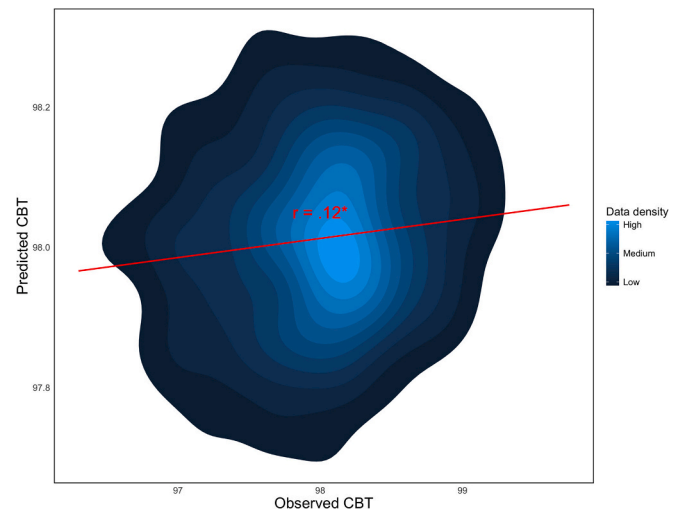


Fig. 2. The relationship between actual CBT (x-axis) and SVR-predicted CBT. While the Pearson correlation coefficient was statistically significant, providing converging evidence to the permutation results, the primary purpose of this analysis is to better characterize the SVR results.

aspect of both intergroup and interpersonal interactions (Foddy et al., 2009; Tanis & Postmes, 2005; Tracy et al., 2020). Thus, trust judgments provide a behavioral test of whether representational differences which may vary as a function of CBT translate into social evaluation.

2.1. Method

2.1.1. Participants

We used a reverse correlation dataset collected by Hong and Ratner (2021). The dataset included 362 undergraduate participants from a large public university in California (Mage = 18.92, SD = 1.61; 245 female, 109 male, 8 unidentified; 110 White, 106 Latinx, 90 Asian, 22 multiracial, 2 Pacific Islander/Hawaiian, 15 other, 8 unidentified). The sample size was determined by the preregistration of the original study (https://osf.io/yv65m/wiki/home/?view_only=5fe72212596547698f8b145a6c71beb8).

An additional 107 undergraduate participants from the same university (Mage = 18.77, SD = 1.37; 67 female, 40 male; 40 White, 32 Asian, 20 Latinx, 1 Black, 10 multiracial, 4 other) were recruited to play economic trust games with partners represented by the reverse correlation images generated by the 362 participants.

2.1.2. Procedure

CBT was measured for the participants who generated the reverse correlation images ($N = 362$) at the beginning of their experimental session using a temporal artery thermometer. Two readings were taken and averaged unless they differed by more than 1 °F, in which case a third reading was taken and the two closest readings were averaged. These CBT measurements correspond to the individuals who generated the classification images used as stimuli in the trust game described below. CBT ranged from 95.20 °F to 101.95 °F ($M = 98.28$, $SD = 0.73$). Participants were then randomly assigned to arbitrary “overestimator” or “underestimator” groups via a dot estimation task (Tajfel et al., 1971). To reinforce group identity, participants declared their group aloud, typed it on screen, and had it posted on their monitor. They then completed a reverse correlation face categorization task with 450 trials, selecting between two noisy variants of a neutral base face (Lundqvist et al., 1998). On each trial, participants viewed two images created by adding a random noise pattern and its mathematical inverse to the base face and were asked which face better matched the target category (e.g., “Which is the overestimator?” or “Which is the underestimator?”). Participants were not told that the alternative image corresponded to the

other category; rather, the task required only selecting the face that best matched the target category.

Here, the classification images reflected participants' mental representations of what an overestimator or underestimator should look like. Depending on the participant's own group membership, they categorized faces of ingroup (e.g., an overestimator participant classifying faces of other overestimators) or faces of outgroup members (e.g., an overestimator participant classifying faces of underestimators). Thus, the face categorization task was a between-participant design, in which participants categorized faces of either ingroup members or outgroup members, but not both. This resulted in a classification image of an ingroup member or an outgroup member for each participant. Classification images were generated by averaging the noise patterns associated with the faces selected by participants across trials, following standard reverse correlation procedures (Dotsch & Todorov, 2012).

Next, an independent sample of 107 participants who were not aware of the face-generation stage played economic trust games with a series of interaction partners represented solely by the 362 ingroup and outgroup face images generated by the earlier participants whose CBT had been measured. On each trial, they imagined receiving \$10 and chose how much to share with a partner (\$0, \$2, \$4, \$6, \$8, or \$10). Shared amounts would be quadrupled and given to the partner, who could then return half the total. No feedback was provided, and participants were told that each image was blurred to protect the partner's identity. The amount shared was taken as an index of how much the partner was trusted. Participants made 362 trust decisions in total, one for each unique face presented in randomized order.

2.2. Results

To examine whether intergroup differentiations significantly varied as a function of CBT, we tested whether trust toward ingroup and outgroup classification images differed depending on the image generator's CBT. First, we excluded two classification images of participants whose CBT indicated potential fever or measurement error ($>100.4^{\circ}\text{F}$ or $<95.9^{\circ}\text{F}$), which correspond to widely used clinical thresholds (Mackowiak et al., 1992). We then analyzed trial-level trust decisions using a linear mixed-effects model predicting the amount of money shared for each image by each rater (107 raters). Fixed effects included group membership (contrast coded: ingroup = +0.5, outgroup = -0.5), mean-centered CBT of the image generator, and their interaction. Random intercepts were included for both classification images and

raters. Random slopes for group membership and CBT were included for raters.

We found a significant main effect of group membership, such that classification images of ingroup members received more money ($M = 2.98$, $SD = 2.47$) than those of outgroup members ($M = 2.82$, $SD = 2.45$), $b = 0.16$, $SE = 0.07$, $t(357) = 2.30$, $p = .022$, 95% CI [0.02, 0.30]. The main effect of CBT was not significant, $b = -0.03$, $SE = 0.05$, $t(356) = -0.67$, $p = .50$, 95% CI [-0.13, 0.07]. Importantly, the group $\times$ CBT interaction was significant, $b = 0.26$, $SE = 0.10$, $t(362) = 2.51$, $p = .013$, 95% CI [0.06, 0.46], indicating that the magnitude of intergroup differentiation varied as a function of CBT (see Fig. 3).

Simple slope analyses showed that trust toward outgroup images decreased as CBT increased, $b = -0.16$, $SE = 0.07$, $p = .025$, whereas the relationship between CBT and trust toward ingroup images was not significant, $b = 0.09$, $SE = 0.07$, $p = .19$. Complementary simple slope analyses examining the effect of group membership at different levels of CBT indicated that intergroup differentiation increased with CBT. At low CBT (-1 SD), trust toward ingroup and outgroup images did not differ, $b = -0.02$, $SE = 0.10$, $p = .87$. At mean CBT, ingroup images received significantly more trust than outgroup images, $b = 0.16$, $SE = 0.07$, $p = .023$. At high CBT ($+1$ SD), this difference was larger, $b = 0.33$, $SE = 0.10$, $p < .001$.

2.2.1. Sensitivity analysis

Because sensitivity estimation for fully crossed mixed-effects models with random slopes is computationally intensive and does not yield straightforward closed-form solutions, we conducted an approximate sensitivity analysis using aggregated participant-level data and a standard linear regression framework. This simplified approach was used solely to provide an approximate estimate of the detectable size of the group $\times$ CBT interaction, which represented the primary effect of interest in Study 2. The observed group $\times$ CBT interaction accounted for approximately 1.8% of the variance in trust judgments (partial $R^2 = 0.018$). Based on the observed sample size and $\alpha = 0.05$, the design had 80% power to detect interaction effects of approximately partial $R^2 = 0.022$. Thus, the observed interaction was slightly smaller than the effect size detectable with conventional 80% power, suggesting that the study was somewhat underpowered for small interaction effects.

3. General discussion

The current research examined whether variation in core body

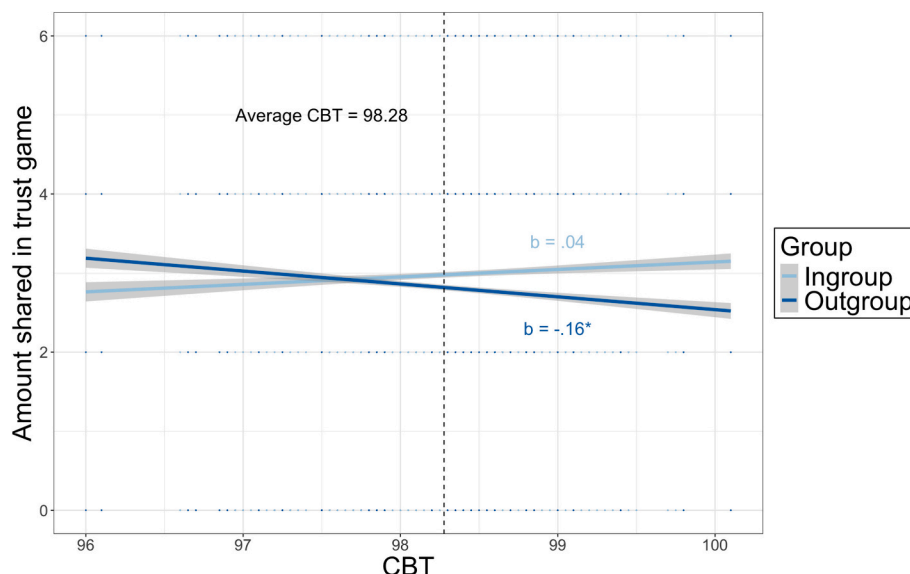


Fig. 3. Intergroup differentiations in trusting behavior as a function of CBT. The dashed line indicates the average CBT of our sample (98.28 °F).

temperature (CBT) corresponds with differences in how individuals mentally represent social group members. Across two studies using reverse correlation methods, we found evidence that variations in CBT are associated with variability in visual representations of social targets. In Study 1, a machine learning model was able to predict participants' CBT from the facial representations they generated of a social outgroup member. In Study 2, CBT was associated with intergroup differentiation in representations of novel social groups, such that classification images generated by individuals with higher CBT were associated with larger trust differences between ingroup and outgroup targets, whereas images generated by individuals with lower CBT were associated with smaller trust differences between ingroup and outgroup targets. Together, these findings suggest that physiological states associated with CBT may be reflected in the structure of mental representations of social groups.

Previous work linking thermoregulation and social cognition has primarily examined externally manipulated temperature cues, such as holding warm objects or changes in ambient temperature (IJzerman et al., 2012; Williams & Bargh, 2008). In contrast, the present studies focus on endogenous variation in core body temperature (CBT), a tightly regulated physiological signal associated with metabolic activity, circadian rhythms, and autonomic processes (Mekjavic & Eiken, 2006; Satinoff, 1978). CBT can vary meaningfully across individuals within the healthy physiological range. Normal adult CBT typically differs by approximately 0.5–1 °F across individuals due to variation in normal physiological changes, such as metabolic activity and hormonal regulation. These differences are stable enough to serve as indicators of physiological state in psychophysiological research (Craig, 2002), with factors such as age, sex, BMI, and time of the day that are linked within- and between-individual variability contributing less than 7% of the variability in CBT (Ley et al., 2023). Thus, naturally occurring variation in CBT may covary with broader physiological and regulatory processes that relate to cognitive and affective functioning. That is, we examined whether such physiological variation corresponds with how individuals visually represent socially meaningful targets.

Our findings suggest that physiological variation indexed by CBT may correspond with social representations in ways that are detectable at the perceptual level. The results therefore raise the possibility that broader physiological states associated with CBT may correspond with how individuals construct visual representations of social groups, although several psychological mechanisms are possible and remain to be established. For example, the behavioral immune system framework suggests that physiological cues associated with disease vulnerability may heighten vigilance toward unfamiliar social targets (Schaller & Park, 2011), such as outgroup members. In contrast, social thermoregulation theory argues that physiological coldness may increase affiliative motivation and broaden social engagement (IJzerman et al., 2015, 2018).

Our work also contributes methodologically by combining reverse correlation techniques with machine learning analyses. Reverse correlation methods have been widely used to visualize mental representations of social categories (Dotsch & Todorov, 2012), but they are typically analyzed through group-level classification images or trait ratings, which may be prone to Type I error rate inflation (Cone et al., 2021). In Study 1, we instead treated individual classification images as high-dimensional visual feature vectors and used support vector regression to predict a continuous physiological variable (Hong et al., 2023). This approach suggests that perceptual representations may contain information associated with physiological variation indexed by CBT. While the predictive accuracy observed here is modest and should not be interpreted as a practical decoding method, it provides a proof-of-concept that image-based representations can contain measurable information about internal physiological states.

Despite these contributions, several limitations should be considered. First, the current studies are correlational and therefore do not establish causal relationships between CBT and social perception. Although direct manipulation of CBT is difficult in lab settings, future

research could examine whether experimentally induced thermal states, such as changes in ambient temperature or thermal feedback manipulations, produce similar patterns in visual representations. Such approaches would help clarify whether CBT itself influences social perception or whether both variables are influenced by shared underlying factors. In addition, the observed interaction effect in Study 2 was relatively small, and sensitivity analyses suggested that the study was somewhat underpowered for effects of this magnitude. Accordingly, the Study 2 findings should be interpreted cautiously and would benefit from future replication with larger samples.

Second, CBT is influenced by multiple biological and contextual variables, including circadian rhythms, recent physical activity, hormonal cycles, and general health (Craig, 2002; Satinoff, 1978). CBT reflects both relatively stable individual differences and momentary physiological fluctuations. Although CBT varies within individuals across the day due to circadian rhythms and situational factors such as activity or environmental conditions, research suggests that individuals also show consistent differences in their typical temperature set points within the healthy range (Ley et al., 2023; Mekjavic & Eiken, 2006; Satinoff, 1978). Thus, the present findings could reflect stable between-individual differences in physiological set points, transient state variation at the time of testing, or some combination of the two. Because CBT was measured at a single time point in the present studies, we cannot distinguish between these possibilities. Longitudinal or repeated-measure designs would be necessary to determine whether the observed associations reflect stable individual differences, transient physiological states, or interactions between the two. We therefore take a cautious approach and interpret CBT as an index of physiological state at the time of measurement that may reflect both transient situational influences and stable individual differences in thermoregulatory set points, rather than as a purely trait-like marker of baseline thermoregulation. Future research incorporating more extensive physiological and contextual measures will be necessary to determine the extent to which the observed associations reflect CBT specifically, broader physiological states that covary with CBT, or interactions among multiple biological and situational processes. The present studies cannot determine whether the observed associations are specific to CBT itself or whether CBT functions as a broad physiological proxy for other biological, hormonal, behavioral, or contextual factors that covary with body temperature, none of which were controlled in the current research. Accordingly, the present findings should be interpreted cautiously as preliminary associations rather than evidence for a uniquely interpretable role of CBT in intergroup representation.

Third, the current work does not identify the psychological mechanisms linking thermoregulation and social representations. Although frameworks such as the behavioral immune system, temperature-linked arousal processes, and social thermoregulation provide possible explanations, these accounts were not directly tested here. Future studies should incorporate measures of potential mediating variables, such as perceived warmth or coldness, social affiliation motives, pathogen concern, or physiological arousal, to clarify the pathways through which thermoregulatory states may influence social perception. Finally, our studies were not powered or designed to examine how between-individual differences (e.g., gender, age, BMI) and within-individual differences (e.g., exercise, caffeine intake, menstrual cycle) might interact with CBT or its role in visual representations of social groups. Future research with more diverse samples could investigate whether cultural, biological, or environmental variation in thermoregulatory functioning shapes intergroup cognition through distinct pathways.

4. Conclusion

Together, these findings provide initial evidence that variation in core body temperature corresponds with differences in how individuals visually represent social group members. Across two studies combining reverse correlation methods, behavioral measures, and machine

learning analyses, we found that physiological variation indexed by CBT was associated with variability in visual representations of both real world and minimal social groups. Although the present studies are exploratory and require replication under more rigorously controlled physiological conditions, they speak to a broader question in social cognition: why individuals differ in the way they mentally represent social groups. Whereas most research has focused on social, motivational, or cultural factors shaping these representations, the present findings suggest that internal physiological states may also be reflected in the visual structure of those representations and in downstream social responses. Furthermore, our findings suggest that variability in social representations may correspond with broader patterns of physiological variation indexed by CBT. In conclusion, the present work highlights the potential value of integrating physiological measurement with visual modeling approaches when investigating individual differences in social perception.

CRedit authorship contribution statement

Youngki Hong: Writing – review & editing, Writing – original draft, Visualization, Validation, Supervision, Software, Resources, Project administration, Methodology, Investigation, Formal analysis, Data curation, Conceptualization.

Declaration of competing interest

I have nothing to declare.

Data availability

All data and analysis scripts are publicly available at https://osf.io/8z4pt/overview?view_only=1423b7c1df5b4e9297499a79c184507c.

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