Human-human chain of moral disgust

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***Abstract*—An object that has been in physical contact with an immoral person is contaminated with the characteristics of the immoral person even after a single instance of contact (contagion of moral disgust). We refuse and are disgusted by the object. Previous studies have examined the contagion of moral disgust from person to objects, but the occurrence of contagion from person to person has not yet been examined. We examined whether moral disgust would contaminate third parties via physical contact. Participants were shown a video in which an experimenter shook hands with a murderer or an office worker. The participants were asked to shake hands with and have a conversation with the experimenter. The response time was recorded, and the participants were asked to assess impressions about the experimenter after the session was over. The results mostly supported our hypothesis. The experimenter was evaluated as more disgusting by the group that was shown the murderer handshaking video than the one that was shown an office worker handshaking video. In addition, the length of time that passed before the handshake with the experimenter was related to individual disgust sensitivity in the murderer video condition. This study shows the possibility that notions of moral disgust contaminate a neutral person who comes in contact with an immoral person.**

***Keywords-* disgust; contamination; contagion; moral disgust; immoral; law of magic contagion.**

I. INTRODUCTION

Disgust is an emotion that occurs when faced with bad tastes, gross-looking objects, and proposals of immoral or unfair behaviors [1]. These objects generate a sense of offensiveness and revulsion. The sense of offensiveness makes us avoid these elicitors of disgust from entering into the body. Additionally, we act to avoid objects that are contacted by elicitors of disgust to protect ourselves from contagion of pathogens. Contact with an elicitor of disgust leads to thoughts of contagion of disgust and change of perception from a neutral object to a carrier of disgust. For example, a glass of juice with a cockroach in it is disgusting, because the juice is contagious [2]. Interestingly, when a person confronts an object that is a disgust elicitor, even if it is not physically contagious, the person reacts to avoid contagion of the disease. For example, if it is said about a sweater that “this was once worn by an evil person who was morally disgusting to other people,” the sweater also becomes disgusting like the person who wore it, and the listener who heard about it refuses contact with it [3].

Previous studies have revealed that there is an aversive contagion from an object to another object. Further, it was found that an object is contaminated with from a disgusting person, and it was also found that the impression of objects related to a murderer declined [4]. However, the contagion of disgust from one person to another has not been verified yet. Society consists of human relations, and its network includes both good and bad people. Whether moral disgust spreads over the relation is an important issue from the viewpoint of impression management. Our hypothesis is that disgust is passed from an immoral person to a neutral person without emotionally-laden properties. Specifically, we expected that a neutral person who physically contacts a murderer (i.e. an immoral character) forms an offensive impression. In addition, we expected that contact with the neutral person would be deemed offensive if the person is perceived to become a carrier of disgust. Additionally, we expected that the neutral person would be refused contact. To investigate these hypotheses, we examined evaluations of the carrier’s impressions and length of time before contact is made with the carrier.

II. EXPERIMENT

A. Participants

A total of 47 students (19 male, age range = 18-23 years, $SD = 1.42$) participated in this experiment.

B. Stimulus

Scale We used the Japanese version of the Disgust Scale-Revised (DS-R-J) [5].

Video A 1 min 25 sec video movie was presented to the participants. In the video, a male client talks to a female counselor in a suit. This counselor was played by Experimenter B. The video begins with the male client sitting on a chair with his back turned to the camera. A few seconds later, the counselor enters there and extends her hands for a handshake to the client. The client talks about his physical condition and daily anxiety with the counselor after the handshake and when they are sitting

across the table with each other. The counselor's face is visible in the video, but the client's face is not visible in the video.

Fig.1. Arrangements in the room where the experiment was conducted

C. Procedure

The experiment was carried out in a clean classroom, and the settings were recorded in the video (Figure 1). It was explained to the participants that they were expected to participate in Sections (a) and (b). Section (a) was explained as a survey to examine individual differences in disgust sensitivity and Section (b) was explained as research for examining impressions about the counselor. Section (a) was carried out by Experimenter A. Section (b) was carried out by Experimenter B. First, participants entered the classroom. Experimenter A greeted and asked the participants to shake hands and to take a seat afterward regardless of their reaction. Length of time before the participants shook hands with Experimenter A was measured. The participants completed the DS-R-J. Next, Experimenter A informed the participants that Section (a) had ended, and Section (b), which was unrelated to Section (a) would start soon. Experimenter A then handed over the profile of the counselor (Experimenter B) and that of the client. The participants were handed one of two types of profiles. The profile offered to the control group explained that the client was an office worker (neutral condition). The profile offered to the experiment group described that the client was an imprisoned murderer (immoral condition). Participants were randomly assigned to each group. After confirming that the participants silently read the profile, Experimenter A asked the participants to watch the stimulus video that has been earlier described in *B. Stimulus*. In addition, it was explained that a conversation session with the counselor was impending after watching the video. After Experimenter A left, Experimenter B entered as the counselor. She greeted and asked the participants for a handshake after entering the room. Length of time before each participant shook hands with Experimenter B was measured. Experimenter B conducted a simple conversation session with the participants for several minutes after shaking hands. In the conversation session, Experimenter B asked questions of the Big Five short version [6]. Finally, the participants answered a questionnaire seeking their impressions of the counselor (Experimenter B) after Experimenter B exited the classroom. Impression answer sheets consisted of six-point scales. The participants rated three questions (dislike/

offensive/ disgust) on impressions about Experimenter B (Negative impression score). Furthermore, participants rated the degrees of offensiveness experienced at the time of meeting Experiment B and shaking hands with Experiment B (Negative contact score). After the experiment, debriefing time was scheduled to confirm that the participants were not aware of the intent of the experiment and the counselor's true identity. The length of time before a handshake was calculated from the videos.

III. RESULTS

To clarify the effects of contact with an immoral person, an independent *t*-test was carried out. "Negative impression score" refers to the sum of bad impressions, offensiveness degree, and disgust experienced upon encountering the counselor (Cronbach's $\alpha = .838$). "Negative contact score" is the sum of the scores of at the time of meeting the counselor and at the time of the handshake (Cronbach's $\alpha = .66$). These scores were calculated and treated as dependent variables. For the negative impression score, a significantly higher score was obtained when the participants thought that the counselor was making contact with the murderer ($M = 2.64, SD = 0.85$) than the office worker ($M = 2.14, SD = 0.73$), $t(43) = -2.07, p < .05, d = -.62$. These results are presented in Figure 2. There was no significant difference in negative contact score between immoral ($M = 2.43, SD = 0.84$) and neutral conditions ($M = 2.27, SD = .17$), $t(43) = -.18, p = .86, d = -.05$.

Analyses for the amount of time that had passed before a handshake were conducted for 42 out of 25 participants. The three excluded participants did not shake hands with Experimenter A. A length of time before a handshake with A was baseline of an individual handshake response. The reason why the three participants were removed was that we could not get the length of time before a handshake with A.

In order to compare the length of time before the participants responded to the handshake with the experimenters, we conducted two between-subjects (contact: murderer vs. office worker) x two within-subject (handshake: Experimenter A vs. Experimenter B) mixed analyses of variance (ANOVAs) with log-transformed length of time before a handshake (base 10) as the dependent variable. The following results are presented in Figure 3: Handshake with Experimenter A in the office worker condition ($M = 3.03, SD = 0.22$), Handshake with Experiment A in the murderer condition ($M = 3, SD = 0.16$), Handshake with Experiment B in the office worker condition ($M = 2.88, SD = 0.17$), Handshake with Experiment B in the murderer condition ($M = 2.92, SD = 0.14$). There was a significant main effect of handshake ($F(1,40) = 13.56, p < .001, \eta_p^2 = 0.25$) while not in contact ($F(1, 40) = 0.29, p = .058, \eta_p^2 = .087$). There was no interaction between contact and handshake ($F(1, 40) = 3.8, p = .06, \eta_p^2 = .007$).

Participants completed the DS-R-J in Section (a). The participants who scored lower than the median of DS-R-J were defined as a low disgust sensitivity group. The participants who scored higher than the median were defined as a high disgust sensitivity group.

We conducted a series of two-way ANOVAs with disgust sensitivity 2 (disgust sensitivity: high vs. low) x 2 condition (contact: murderer vs. office worker) on negative impression scores and negative contact score. The ANOVA on negative impression score revealed a significant main effect of contact ($F(1,41) = 5.8, p = .021, \eta_p^2 = .124$). No significant main effect of disgust sensitivity was found ($F(1,41) = 1.17, p = .285, \eta_p^2 = .028$). There was no interaction between contact and disgust sensitivity ($F(1,41) = 1.9, p = .176, \eta_p^2 = .044$). The ANOVAs on negative contact score revealed no significant main effects of disgust sensitivity ($F(1,41) = .06, p = .81, \eta_p^2 = .001$) and no significant main effects of contact ($F(1,41) = .56, p = .46, \eta_p^2 = .014$). There was no interaction in the negative impression score ($F(1,41) = .77, p = .39, \eta_p^2 = .018$).

Additionally, we conducted a series of two-way ANOVAs with disgust sensitivity: two (disgust sensitivity: high vs. low) x two conditions (contact: murderer vs. office worker) on the length of time before the handshakes with Experiments A and B, respectively.

The ANOVA on length of time before handshake with Experimenter A revealed a significant main effect of disgust sensitivity ($F(1,38) = 4.91, p = .03, \eta_p^2 = .11$). There were no main effects of contact ($F(1,38) < .001, p = .98, \eta_p^2 < .01$). There was no interaction between contact and disgust sensitivity ($F(1,38) = 2.64, p = .11, \eta_p^2 = .065$). The ANOVA on the length of time before a handshake with Experimenter B revealed a significant main effect of disgust sensitivity ($F(1,38) = 4.91, p = .03, \eta_p^2 = .11$).

Fig.2. Average rating score of negative impression for each condition

Fig.3. Average length of time until the participant shook hands with Experimenters A and B for each condition

=.11). There was a main effect of contact ($F(1,38) = 7.48, p < .01, \eta_p^2 = .164$). An interaction was found between contact and disgust sensitivity ($F(1,38) = 6.22, p < .05, \eta_p^2 = .141$).

There was no correlation between the DS-R-J score and negative impression score ($r = .001, p = 1$), negative contact score ($r = -.01, p = .95$), and length of time before the handshake with Experimenter A ($r = -.55, p = .72$) or Experimenter B ($r = -.17, p = .26$).

IV. DISCUSSION

In this experiment, a disgust contagion occurred, and the impression of a neutral third party was declined by immorality. The t -test results for each contact condition in the negative impression score was significant. A bad impression was formed about the person who made contact with an immoral person.

In the case of disgust contagion to a human, people could not identify the source of disgust unlike disgust contagion to an object. This could be deciphered from the absence of a significant difference in the t -test results in the negative contact score. Participants judged that the source of disgust was the neutral third person's character. Participants did not think that it was offensive to make contact with the counselor. Touching or meeting a person who had made contact with an immoral person was not disgusting. The results of this study correspond to those of a previous study indicating that the impressions about people standing near fat people (disgust for disease) decline [7]. However, the evaluator did not notice that the fat person was causing impression reduction. In this way, the impression about an unrelated person declines only by looking at information visually related to disgust. We can guess that participants in the immoral condition either felt disgusted by the immorality of the term "murderer" or disgust for the immoral carrier who had been contaminated by contact with the murderer. Therefore, we could reasonably assume that the participants in this experiment felt offended during this experiment. We think that the participants in the immoral condition considered that the sense of offensiveness that they felt was because of the poor attitude of the person they were facing.

There is a possibility that physical contact plays a role in the mechanism of disgust contagion among humans. The statistical results about the length of time before a handshake with Experiment B revealed that people might suppress touching behavior when faced with a moral disgust carrier. We refer to the effects of disgust sensitivity. In the length of time before a handshake with Experimenter A, there was only a main effect for the disgust sensitivity. In the case of a normal handshake, only people with high DS-R-J hesitated to make contact with a stranger. The ANOVA on length of time before a handshake with Experimenter B showed the main effect of disgust sensitivity, the main effect of contact condition, and significant interaction in the length of time before a handshake with Experimenter B. These results revealed that it took time to shake hands regardless of whether the participant had a low disgust sensitivity or a high one in the immoral condition. From the analysis results of the length of time before a handshake with Experimenters A and B, it can be seen that when the participant made contact with an immoral

person, the contact was delayed irrespective of the disgust sensitivity of the individual. There was a main effect of negative impression score in contact. This is consistent with the result of the *t*-test. Additionally, the possibility that participants with a high DS-R-J score biasedly participated was denied by no significant differences and correlation in other results.

However, we cannot explain clearly whether “physical contact” was essential for the mechanism of disgust contagion in this experimental procedure. The reason is that the result of the length of time before a handshake have no significant differences, and the effect size is small in a two-way mixed model ANOVA with length of time before a handshake as the dependent variable. We considered that these results occurred because the Japanese do not have a custom of shaking hands frequently. Many participants took time to shake hands with Experimenter A. Since the handshake with the counselor was the second time, participants were possible to predict that the counselor would require them to shake hands. There is a high possibility that this was why handshakes with Experimenter B were prompt. Therefore, the baseline of length of time before a handshake was greatly variable for each participant. Even if there was some difference in the length of time before a handshake, it would have been difficult to detect it from the present experimental procedure. This might made a big noise at an important dependent variable. Additionally, we can explain that the main effect of the handshake was significant from the above.

In summary, these results mostly supported the hypothesis that a contagion of disgust from human to human exists. There is a possibility that the mechanism of changing a neutral person to disgust carrier is related to physical contact. This contagion has effects of conscious impression reduction and unconscious suppression of contact with a carrier of disgust.

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