The Modulation of Positive Emotional Contagion by Negative Prior Emotions: Reversal and Threshold Reduction—A Case Study of Teaching Contexts (Postprint)

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Date: 2018-09-07T00:00:00+00:00

Abstract

Previous studies have demonstrated that cognition exerts a moderating effect on emotional contagion. Does participants' prior emotion similarly exert a moderating effect on emotional contagion? This study investigates the reverse modulation and threshold-lowering modulation of aggressive negative prior emotion and depressive negative prior emotion on happiness contagion. Both experiments employed a within-subjects design, utilizing a BioNeuro eight-channel biofeedback instrument to record participants' physiological indicators while they viewed videos in a simulated teaching context. In the reverse modulation experiment, hatred emotion was evoked by having participants watch Nanjing Massacre videos, after which two humorous videos depicting the daily lives of Oriental people were presented. Through varied instructions, the reverse modulating effect of hatred emotion on happiness contagion was examined. In the threshold-lowering modulation experiment, participants' irritability emotion was induced through repeated failures, and differences in emotional contagion when viewing two humorous videos before and after irritability emotion induction were compared. The experimental results revealed: (1) In the reverse modulation experiment, when participants watched the "Japanese" humorous video, the trend of physiological indicator changes was identical to that observed when watching the Nanjing Massacre video, with an even greater magnitude; (2) In the threshold-lowering modulation experiment, participants' physiological arousal level when viewing humorous videos after experiencing irritability emotion was stronger than before the experience. The experimental results indicate that participants' hatred prior emotion reversely modulated the happiness contagion of "Japanese people" ; participants' irritability prior emotion rendered participants susceptible to others' happiness emotion.

Full Text

Abstract

Previous research has demonstrated that cognition can regulate emotional contagion. The present study investigates whether individuals' prior emotions exert a similar regulatory effect. We examined two types of regulation by antecedent negative emotions on positive emotional contagion: counter-regulation and threshold-descent regulation. Both experiments employed a within-subjects design, using a BioNeuro eight-channel biofeedback system to record participants' physiological responses while they watched videos in a simulated teaching context. In the counter-regulation experiment, we induced hatred by having participants view footage of the Nanjing Massacre, then presented two humorous videos of Asian daily life. Through different instructional manipulations, we examined how hatred counter-regulated the contagion of happiness. In the threshold-descent experiment, we induced restlessness through repeated failure and compared differences in emotional contagion when participants viewed humorous videos before and after this negative experience. Results showed: (1) In the counter-regulation experiment, participants' physiological responses to the "Japanese" humorous video followed the same trend as their responses to the Nanjing Massacre footage, with even greater magnitude; (2) In the threshold-descent experiment, physiological arousal while viewing humorous videos was stronger after experiencing restlessness than before. These findings indicate that participants' antecedent hatred counter-regulated their contagion of happiness from "Japanese" individuals, while antecedent restlessness increased susceptibility to others' positive emotions.

Keywords: counter emotional contagion; threshold-descent emotional contagion; antecedent emotion; subsequent emotion; teaching situation

Introduction

Emotional contagion refers to the automatic, unconscious transmission of sensory emotional information between individuals (Zhang & Lu, 2013). The perceiver' s mimicry-feedback mechanism influences their emotional experience, resulting in a detectable emotional state and thus "infection" by the perceived emotion. This process can be represented as: perception → mimicry → feedback → emotion (Falkenberg, Bartels, & Wild, 2008). Zhang and colleagues have provided detailed theoretical and empirical discussions of the concept and mechanism of emotional contagion, establishing its scientific validity (Zhang & Lu, 2013; Zhang, Lu, Yan, & Chen, 2016). According to interpersonal theories of emotional contagion, the process is influenced by relational factors such as solidarity, interpersonal trust, and attitudes (Vijayalakshmi & Bhattacharyya, 2012). These group-level evaluations belong to the cognitive domain, demonstrating that cognition regulates emotional contagion, as does prior belief (Zhang & Lu, 2015). Research also indicates that appraisal determines the nature of emotional responses and feelings (Urry, 2009). Evaluations of solidar-

ity, trust, and attitudes carry affective valence, and this "antecedent affect" may determine the infectiousness of others' emotions. For instance, positive political attitudes can enhance EMG responses to positive facial expressions of political leaders (Tee, 2015). This process can be described as: the perceiver unconsciously and automatically retrieves their affective relationship with the target, which activates corresponding emotional experiences that determine the level and direction of emotional contagion. Because this emotional experience precedes emotional contagion, we term it the *antecedent emotion* of emotional contagion. If this reasoning holds, the perceiver' s antecedent emotion should regulate the level of contagion from others' emotions, potentially operating in two directions: counter-regulation and positive facilitation.

Based on differences in target orientation, we initially categorize negative emotions into aggressive and depressive types. Aggressive negative emotions such as hatred, anger, contempt, and hostility involve motivational tendencies to attack others, characterized by clear target orientation and desire to harm. These emotions tend to produce opposite valence to the target' s emotion, generating counter emotional contagion. Therefore, we selected *hatred* as the antecedent emotion in our counter-regulation experiment. Depressive negative emotions such as restlessness, sadness, fear, and despair lack clear target orientation or capacity to attack. When experiencing these emotions, individuals strongly desire to escape their current state, making them more receptive to positive emotional contagion—this is when threshold-descent contagion occurs. In this study, we used *restlessness* as an example of depressive antecedent emotion.

Aggressive antecedent emotions and counter-regulation of emotional contagion: Counter emotional contagion occurs when the perceiver' s antecedent emotion causes them to experience an emotion opposite to that of the target. For example, seeing a disliked person laughing with friends may intensify our aversion rather than infecting us with their joy. This phenomenon helps explain why emotional contagion is stronger in cohesive, high-trust groups than in fragmented ones (Torrente, Salanova, & Llorens, 2013), and why schadenfreude —pleasure at an enemy' s misfortune—can emerge between adversaries. This "counter emotional contagion" demonstrates that emotional contagion can be reverse-regulated by antecedent emotions.

Depressive antecedent emotions and threshold-descent regulation: Antecedent negative emotions may also facilitate positive emotional contagion. Previous research has examined cases where antecedent emotions share the same valence as the contagion emotion (e.g., positive political attitudes enhancing positive responses to leaders). However, we ask whether antecedent emotions of opposite valence can facilitate contagion—for instance, whether antecedent restlessness (negative) can increase susceptibility to others' happiness (positive).

Mood-congruence theory suggests that mood-congruent bias influences attention to matching emotions (Bhullar, 2012). Positive moods increase susceptibility to positive emotions, while negative moods increase susceptibility to negative emotions (Knott & Thorley, 2014). This consistency effect appears not only in

emotion but also in learning, memory, and attention. For example, Connelly and Gooty (2015) found that individuals in positive moods perceive leaders as more charismatic, while those in negative moods view them as less charismatic. From this perspective, a negative antecedent emotion should facilitate contagion of negative emotions, yet this is not always the case. Stockholm syndrome —where victims develop positive feelings toward captors—represents a classic example of reverse emotional psychology. Victims may progress through stages of anger → fear → despair → affection, where the initial negative emotion amplifies the intensity of subsequent opposite-valence emotions. This "reverse emotional psychology" describes how antecedent emotions of one valence can intensify subsequent opposite-valence experiences, directly contradicting mood-congruence theory.

Can this reverse emotional psychology occur in emotional contagion, and if so, what is its mechanism? We term this phenomenon in emotional contagion *threshold-descent emotional contagion*.

Numerous studies show that emotions influence cognitive appraisal, making evaluations consistent with emotional states. If negative antecedent emotions can both counter-regulate and threshold-descent regulate emotional contagion, they should also affect subsequent cognitive appraisals, as people tend to evaluate events consistently with their current emotions (Zebrowitz et al., 2017). Conversely, appraisals can reflect emotional states, allowing us to verify whether regulatory phenomena have occurred.

Based on this reasoning, we propose two hypotheses:

H1: In counter emotional contagion, the perceiver' s negative antecedent emotion blocks the sender' s positive emotion (subsequent emotion). The sender' s positive emotion not only fails to infect the perceiver but intensifies the perceiver' s negative antecedent experience, pushing emotional contagion in a more negative direction. Consequently, the perceiver will strengthen or amplify their original evaluation of the target. For example, antecedent hatred may intensify following counter contagion, leading to more negative evaluations.

H2: In threshold-descent emotional contagion, the perceiver' s negative antecedent emotion facilitates the infectiousness of the sender' s positive emotion (subsequent emotion). The perceiver escapes their negative antecedent state and shows greater susceptibility to the sender' s positive emotion. Consequently, as the negative antecedent emotion disappears and positive emotion emerges, the perceiver's evaluation of the event changes accordingly. For example, antecedent restlessness may lead to more positive evaluations following threshold-descent contagion.

Experiment 1: Counter Emotional Contagion

2.1 Research Objective

To demonstrate that participants' antecedent hatred experience exerts a counter-regulatory effect on others' positive emotional contagion, such that it not only blocks positive contagion but intensifies the hatred experience.

2.2 Methods

2.2.1 Participants We recruited 50 non-psychology/non-education majors from Yangzhou University. All participants had normal or corrected-to-normal vision, normal hearing, and no history of psychiatric disorders. Four participants were excluded due to incomplete data, leaving 46 valid participants aged 18–22 (23 male, 23 female).

2.2.2 Materials We selected footage of the Nanjing Massacre: a 30-minute video (*The Nanjing Atrocities* by John Magee, disclosed by CCTV) and a 5-minute edited documentary (resolution: 720×576). Two humorous videos of Asian daily life (without dialogue) were selected, each 5 minutes long. We assessed the funniness of these videos using a 7-point scale (0–7), with higher scores indicating greater funniness. The mean scores were 4.13 ± 1.34 and 4.46 ± 1.41 for videos 1 and 2, respectively, with no significant difference: $t(55) = -1.73$, $p = 0.09 > 0.05$, Cohen' s $d = 0.25$, $1- = 0.41$.

2.2.3 Apparatus We used the BioNeuro eight-channel biofeedback system (model INFINITI SA7900C) from Thought Technology, Canada, with MULTIMEDIA BIOFEEDBACK SOFTWARE (version 5.2.4). Four channels were utilized: Channel A (MyoScan-Pro400) monitored left cheek EMG (μV); Channel B (EEG-Z) monitored EEG (, SMR, and waves at central-parietal Cz); Channel D (SC-Pro/Flex) monitored skin conductance (SC, mho) on the index and ring fingertips of the dominant hand; and Channel G (HR/BVP-Pro/Flex) monitored blood volume pulse (BVP amplitude and frequency, beats/min) on the middle fingertip.

2.2.4 Procedure One day before the experiment, participants viewed *The Nanjing Atrocities* and engaged in a brief discussion to establish a consistent hatred emotion, facilitating rapid reactivation during the formal experiment. On the experimental day, participants received instructions and signed informed consent. After a 6-minute music relaxation training, we recorded 300-second baseline physiological measures. Participants then watched the 5-minute Nanjing Massacre documentary while physiological data were collected, followed by a subjective emotion rating (−7 to 7). Next, in a simulated classroom setting, participants viewed two humorous daily-life videos (order counterbalanced). Before each video, instructions stated: "You will now watch a humorous video from Japan/China. Please watch carefully and rate the funniness of each comedic moment." Funniness ratings used a 7-point scale (0–7).

The experiment used a within-subjects design with the flowchart shown in [Figure 1: see original paper].

2.3 Results

2.3.1 Infectiousness of the "Japanese" Humorous Video We compared physiological indices during the Nanjing Massacre documentary (Condition II) and "Japanese" humorous video (Condition III) with baseline (Condition I).

Repeated measures ANOVA on seven physiological indices revealed a significant main effect of condition, $F(14, 32) = 31.15$, $p < 0.001$, Partial $^2 = 0.93$, $1- = 1$. Descriptive statistics are shown in [Figure 2: see original paper]. Univariate tests examined each physiological index across conditions (see).

All seven indices showed significant differences. wave had lower statistical power ($1- = 0.65$), so its multiple comparison results should be interpreted cautiously. Multiple comparisons across conditions appear in .

Comparing the Nanjing Massacre with baseline, all indices showed extremely significant differences ($p < 0.001$). Changes in BVP amplitude, BVP frequency, and SC confirmed successful induction of negative emotion (post-viewing interviews verified "hatred"). Comparing the "Japanese" humorous video with baseline, six indices (excluding wave) showed extremely significant differences ($p < 0.001$) with the same trend as the massacre video, indicating failed induction of positive emotion. Comparing the "Japanese" video with the massacre video, BVP amplitude decreased extremely significantly ($p < 0.001$). BVP amplitude reflects vascular dilation; it decreases under stress or conscious effort (Hirvikoski et al., 2011). This suggests Chinese participants experienced stress while watching the "Japanese" video, confirming that it intensified anger rather than inducing happiness—demonstrating counter emotional contagion.

Paired t-tests on subjective funniness ratings showed no significant difference between the massacre and "Japanese" video: $M \pm SD = -6.50 \pm 0.59$ vs. -6.67 ± 0.56, $t(45) = -1.66$, $p = 0.10 > 0.05$, Cohen's $d = 0.29$, $1- = 0.38$, indicating a floor effect.

2.3.2 Infectiousness of the "Chinese" Humorous Video We compared physiological indices during the Nanjing Massacre documentary (Condition II) and "Chinese" humorous video (Condition IV) with baseline (Condition I).

Repeated measures ANOVA showed a significant main effect, $F(14, 32) = 334.23$, $p < 0.001$, Partial $^2 = 0.99$, $1- = 1$. Descriptive statistics appear in [Figure 2: see original paper]. Univariate tests () revealed significant differences for all indices (SC: $p < 0.05$; others: $p < 0.001$), though SC had lower power (0.71).

Multiple comparisons () showed that compared with baseline, the "Chinese"video produced extremely significant increases in wave, SMR, and wave (attention indices), extremely significant increases in BVP amplitude, and extremely significant decreases in BVP frequency—opposite to the pattern for hatred induction.

Cheek EMG also increased significantly ($p < 0.05$), confirming successful positive emotion induction. Compared with the massacre video, the "Chinese" video produced extremely significant increases in BVP amplitude and cheek EMG ($p < 0.001$) and extremely significant decreases in BVP frequency ($p < 0.001$), demonstrating successful happiness induction.

Paired t-tests on funniness ratings revealed extremely significant differences: M $\pm$ SD = 3.98 $\pm$ 1.27 vs. -6.67 ± 0.56, $t(45) = 48.36$, $p < 0.001$, Cohen' s d = 10.85, 1− = 1.00.

These results confirm that the Nanjing Massacre video successfully induced negative emotion (anger), as evidenced by decreased BVP amplitude and increased BVP frequency relative to baseline. BVP amplitude correlates significantly with subjective happiness experience (Lai, Li, & Lee, 2012); negative stimuli (e.g., aversive sounds) decrease BVP amplitude (Ooishi & Kashino, 2012), as does sighing from empathy (Peper et al., 2007). Conversely, less distress (more positive emotion) yields higher BVP and lower heart rate (Park et al., 2014). Fink et al. (2015) found significant heart rate differences in children' s empathic responses. SC and cheek EMG increased significantly during the massacre video. SC measures pleasant or anxious emotional responses (Gouizi, Reguig, & Maaoui, 2011; Balconi & Canavesio, 2013); anxiety and hatred (both negative) elevate SC. EMG relates directly to automatic emotional processing beyond conscious control (Magnée et al., 2007). Happiness increases cheek EMG, producing smiling or micro-expressions that activate facial muscles (Dimberg, Andréasson, & Thunberg, 2011; Balconi & Canavesio, 2013). Balconi and Bortolotti (2012) found that cooperative contexts increase zygomatic EMG and positive emotion, while conflict increases corrugator EMG, SC, and heart rate. The increased cheek EMG during anger in our study may reflect "gnashing teeth" micro-expressions, which also activate facial muscles.

Comparing the "Japanese" video with baseline revealed the same physiological trend as the massacre video, confirming failed positive emotion induction. Comparing the "Japanese" video with the massacre video showed identical directional changes with amplified arousal, further demonstrating that the "Japanese" video intensified anger—producing counter emotional contagion.

Experiment 2: Threshold-Descent Emotional Contagion

3.1 Research Objective

To demonstrate that antecedent restlessness facilitates others' positive emotional infectiousness, making participants more susceptible to positive emotions after experiencing restlessness compared with before.

3.2 Methods

3.2.1 Participants We recruited 53 non-psychology/non-education majors from Yangzhou University (aged 18–22). All had normal or corrected-to-normal

vision and normal hearing. Three participants were excluded due to incomplete data, leaving 46 valid participants (25 male, 25 female) aged 18–22.

3.2.2 Materials The same two humorous Asian daily-life videos from Experiment 1 were used.

3.2.3 Procedure Participants first completed a 6-minute music relaxation training, followed by 300-second baseline physiological recording. They then received instructions: "You will now watch a humorous video. Please watch carefully and rate the funniness of each comedic moment." Two humorous videos were presented in counterbalanced order (Module 1), with funniness ratings on a 7-point scale (1–7). Next, a bogus experimental task was repeated three times, with participants informed of "unsuccessful" outcomes each time to induce restlessness. To verify successful induction, participants watched a 180-second video of the bogus task while physiological data were recorded. Without explanation, participants were then told the final phase involved watching another humorous video, following the same procedure from instructions to ratings (Module 2). The flowchart appears in [Figure 3: see original paper].

The experiment used a within-subjects design following the procedure in [Figure 3: see original paper].

3.3 Results

3.3.1 Comparison of Positive and Negative Emotion Physiological Indices We compared physiological indices during humorous video 1 (Condition II) and the bogus task video (Condition III) with baseline (Condition I).

Repeated measures ANOVA on seven physiological indices showed a significant main effect, $F(14, 36) = 27.84$, $p < 0.001$, Partial $^2 = 0.92$, $1- = 1$. Descriptive statistics appear in [Figure 4: see original paper]. Univariate tests examined each index across conditions ().

All seven indices showed significant differences with high statistical power. Multiple comparisons () revealed that compared with baseline, humorous video 1 produced extremely significant differences ($p < 0.001$) across all indices except SC, with changes in BVP amplitude, BVP frequency, and cheek EMG confirming successful positive emotion induction. The bogus task video produced extremely significant differences ($p < 0.001$) in BVP amplitude, BVP frequency, and SC, with trends opposite to those for humorous video 1. Post-experiment interviews confirmed participants experienced "restlessness" after three unsuccessful attempts. Comparing the bogus task video with humorous video 1 showed extremely significant decreases in BVP amplitude ($p < 0.001$), which reflects anxiety or tension (Park et al., 2014).

3.3.2 Regulation of Positive Emotional Contagiousness by Antecedent Negative Emotion We compared physiological indices during humorous

video 1 (Condition II) and humorous video 2 (Condition IV) with baseline (Condition I).

Repeated measures ANOVA showed a significant main effect, $F(14, 36) = 40.28$, $p < 0.001$, Partial $^2 = 0.94$, $1- = 1$. Descriptive statistics appear in [Figure 4: see original paper]. Univariate tests () revealed extremely significant differences ($p < 0.001$) for all indices except SC.

Multiple comparisons () showed that compared with baseline, humorous video 2 produced extremely significant increases in wave, SMR, and wave (attention indices), extremely significant increases in BVP amplitude, and extremely significant decreases in BVP frequency—matching the pattern for positive emotion induction. Cheek EMG also increased extremely significantly ($p < 0.001$). Comparing humorous video 2 with humorous video 1 revealed significant increases in BVP amplitude and cheek EMG ($p < 0.001$ and $p < 0.05$, respectively) and extremely significant decreases in BVP frequency ($p < 0.001$), indicating that video 2 evoked more intense happiness than video 1.

Paired t-tests on funniness ratings showed extremely significant differences: M $\pm$ SD = 4.02 $\pm$ 1.27 vs. 3.40 $\pm$ 1.03, $t(49) = 6.29$, $p < 0.001$, Cohen' s d = 0.54, $1- = 1.00$, with video 2 rated significantly funnier.

In the threshold-descent experiment, humorous video 1 successfully induced positive emotion, while the three failed attempts successfully induced negative emotion. Post-experiment interviews confirmed participants experienced varying degrees of "restlessness."Research shows BVP is a sensitive index of emotional arousal; cyberbullying victimization decreases BVP amplitude (Caravita et al., 2016). The opposite BVP changes between humorous video 1 and the bogus task video confirmed induction of opposite-valence emotions.

Comparing humorous video 2 with humorous video 1 revealed extremely significant increases in BVP amplitude and significant increases in cheek EMG. According to facial feedback theory, emotions can be activated by facial muscle actions (Dzokoto et al., 2014). Exciting stimuli produce greater cheek EMG (Dimberg et al., 2011); happy expressions raise lip corners while sad expressions lower them (Dezecache et al., 2013), and even reading the word "frown" activates corresponding muscles (Cheshin et al., 2011). The dimensional hypothesis of facial feedback posits that emotion comprises potency, activity, and withdrawal-approach dimensions, with activity reflecting emotional intensity. For the same participants, facial response intensity positively correlates with autonomic response intensity, so differences in cheek EMG reflect differences in physiological arousal and emotional experience intensity. Thus, participants experienced more intense positive emotion during humorous video 2 than video 1, confirmed by higher subjective funniness ratings. Logically, the three failed experiences (restlessness) facilitated susceptibility to happiness.

General Discussion

4.1 An "Emotion-Drive" Explanatory Model of Counter Emotional Contagion

Previous research on prior belief regulation randomly designated teachers as "authoritative" or "novice," finding that "authoritative" teachers had stronger positive emotional contagion, while "novice" teachers had stronger negative contagion (burnout) (Zhang & Lu, 2015). These designations are concepts that unconsciously activate stereotypes, regulating subsequent emotional contagion. In our study, after viewing the Nanjing Massacre footage, telling participants they would watch a "Japanese" humorous video activated not just the "Japan" concept but also strong hatred through the documentary footage. This emotional experience constituted an antecedent emotion relative to the humorous video. Prior belief regulation operates through "focus" and "rationalization," producing "susceptibility" or "immunity" (Zhang & Lu, 2015). However, aggressive antecedent emotions in counter contagion do more than block infection—they intensify the negative antecedent experience. Seeing an enemy' s laughter not only fails to infect you but intensifies your hatred. This can be explained as: the "enemy" is not merely a concept but an emotional symbol that triggers hatred upon perception. Exposure to emotionally charged concepts can activate facial muscle actions expressing emotion (Ekman, 2009), making concept-to-emotion activation plausible. Tomkins argued that emotion serves a motivational function: drives alone are insufficient in intensity and urgency, requiring affective amplification. The motive to retaliate arises from retaliatory emotional needs combined with the enemy' s presence—the best way to alleviate hatred. Any social constraint (short of forgiveness) merely suppresses rather than resolves hatred, and seeing the enemy' s joy, which contradicts the retaliatory motive, intensifies rather than reduces the drive. This strengthens the antecedent hatred, producing counter emotional contagion. H1 predicted that counter contagion would strengthen or amplify original evaluations (e.g., intensifying hatred), leading to more negative evaluations as a covert form of hatred expression. However, anti-Japanese sentiment showed a ceiling effect, preventing detection of differences that future research should address.

4.2 A "Motivation-Relative Threshold" Explanatory Model of Threshold-Descent Emotional Contagion

In Module 2, participants experienced three unsuccessful attempts, inducing restlessness. As noted, depressive negative emotions create motivation and desire to escape the current state (e.g., "I don' t want to continue this experiment"). Watching humorous videos aligned with this motivational state, lowering the threshold for experiencing subsequent positive emotions and amplifying positive emotional experience—this is the psychological mechanism of "threshold-descent regulation." In Stockholm syndrome, when captors show small kindnesses during victims' despair, victims' motivation to protect themselves and escape despair lowers their perception threshold for "kindness," increasing susceptibility to

captors' positive emotions and potentially producing affection exceeding that from equivalent kindness in normal circumstances. While Stockholm syndrome involves cognitive regulation, the "threshold-descent" phenomenon remains.

Threshold-descent regulation in emotional contagion requires two conditions: First, *motivation*—implicit motivation to accept emotional contagion. Without this, immunity or counter contagion may result (as in Experiment 1). Post-experiment interviews confirmed participants' motivation to escape the "unsuccessful" experience (restlessness), with desire for positive emotion representing the original impetus for self-regulation. Watching humorous videos satisfied this motive. Second, *threshold-descent*—the antecedent emotion lowers the threshold for experiencing subsequent emotion. In our experiment, restlessness lowered the threshold for happiness. Susceptibility reflects low threshold and high sensitivity. Positive antecedent emotions can also lower thresholds for negative subsequent emotions, explaining why smooth-sailing lives may crumble at small setbacks—though this represents threshold-descent psychology rather than interpersonal emotional contagion.

Threshold-descent contagion also relates to attribution of the antecedent emotion. First, restlessness was event-caused and not person-directed; person-directed negative emotion might become aggressive, violating threshold-descent conditions. Second, restlessness was controllable—participants could self-regulate or leave the experiment if it became excessive. This controllability created desire to escape the antecedent state and motivation to accept happiness, enabling threshold-descent contagion.

Conclusions

1. Participants' antecedent hatred prevented infection by the "Japanese" humorous video and intensified their hatred experience, demonstrating counter emotional contagion. Participants showed no positive evaluation of the "Japanese" video, instead producing even more negative evaluations.
2. After three unsuccessful experiences, participants showed greater positive emotional responses to humorous videos, indicating that antecedent negative emotion produced susceptibility regulation of positive contagion. Funniness ratings were also more positive. This demonstrates that antecedent emotions have a "threshold-descent" effect, lowering the threshold for experiencing opposite-valence emotions.

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Note: Figure translations are in progress. See original paper for figures.