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The Effects of Autonomous Sensory Meridian Response (ASMR) on Modality, Mood, and Mindfulness (3Ms)

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Autonomous sensory meridian response (ASMR) is a sensory phenomenon in which individuals experience a specific tingling sensation that arises in the scalp, travels across the spine, and induces a feeling of relaxation and well-being in response to particular audio and visual stimuli. However, the underlying mechanism of how each element of ASMR works to influence users' psychological responses needs more empirical inquiry. To address this gap in prior research, two experimental studies were conducted to examine the effects of multimodal (audiovisual) and unimodal (audio and visual) ASMR videos on cognitive absorption, mood, and state mindfulness. Study 1 results revealed that multimodal ASMR video leads to higher absorption than a unimodal ASMR video. Moreover, absorption mediated the relationship between multimodal ASMR on mood and state mindfulness relative to audio-only unimodal ASMR. Study 2 supported the results of Study 1, finding that the multimodal ASMR video (audiovisual) leads to the highest absorption, state mindfulness and enjoyment.

Public Policy Relevance Statement

In general, the finding of this study shows that autonomous sensory meridian response (ASMR) with audio and visual modalities are associated with positive mood and mindful experiences. This provides valuable insights for guiding trends on social media, with an emphasis on understanding how modality shapes the psychological impact of ASMR. More specifically, this study adds a valuable asset in the field of ASMR, which consumption of ASMR could influence public mental health and well-being.

Keywords: ASMR, modality, mood, mindfulness

What happens when someone whispers in your ear? What about the sound of eating food or the crisp turning of a page? Each of these seemingly disparate stimuli has something in common: they are frequent triggers for a unique phenomenon known as the autonomous sensory meridian response (ASMR; Barratt & Davis, 2015; S. D. Smith et al., 2017). Scholars describe ASMR as a tingling, static-like sensation that arises in the scalp and travels across the spine. The experience of ASMR is anecdotally described to bring a pleasurable, comfortable, or even arousing sensation to the body (Poerio, 2016). Perhaps it is not surprising then that video hosting sites have recently seen the rise of many user-created videos dedicated to eliciting the ASMR experience. According to Pew Research Center (van Kessel et al., 2019), the term "ASMR" among English language videos on YouTube had a 450% boost in views, thus attesting to the popularity of the ASMR genre.

Many ASMR videos are often marketed by their creators with titles and keywords such as "cozy," "hypnotic," "relaxing," "satisfying," or "tingling" (Barratt & Davis, 2015). Labels such as these seem to suggest that ASMR videos have a potentially positive impact on mood among viewers. With that said, few studies have yet to be conducted that empirically test the effects of ASMR videos on outcomes such as mood, so it is unclear if the benefits that users seek from these videos are actually being fulfilled. The empirical question thus arises: do ASMR videos have a causal effect on outcomes commonly associated with ASMR video viewing such as mood or state mindfulness? Moreover, although some people prefer ASMR visual triggers over audio triggers and vice versa (MasterClass, 2021), there have not been any empirical studies that examined the separate effect of audio and visual triggers within ASMR content. Accordingly, the current study aims to test how audio and visual modality in ASMR each affect absorption, mood, and mindfulness.

This question holds clear practical implications, yet there is also the potential for theoretical innovation through the study of ASMR videos. Previous literature on uses and gratification (U&G) theory suggests that people can have a variety of motivations for media use such as

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social interaction, information seeking, entertainment, passing time, convenience, opinion expression, information sharing, mood management, and relaxation, to name just a few (Bowman & Tamborini, 2015; Pentina et al., 2016; Ruggiero, 2000; E. M. Stevens & Carpentier, 2017; Whiting & Williams, 2013). Particularly relevant to ASMR, a more recent study suggested sensory gratification as another motivation to engage with media (Harrison et al., 2019).

Consistent with U&G s theory, Harrison et al. (2019) media sensory curation theory suggests that people strategically seek out media to regulate their senses and maintain a comfortable sensory environment. For example, individuals who are stressed might seek out ASMR videos that feature relaxing stimuli whereas those with low arousal levels might seek out ASMR videos that titillate the senses. In general, ASMR offers triggers that are both auditory and visual in nature. Initial exploratory research on ASMR experience suggests that some viewers felt the tingles mainly through the audio component but not visual, or vice versa (Kovacevich & Huron, 2019). This raises the following questions: Does ASMR still elicit a favorable effect when received through a single channel? If ASMR effects are not observed when a single channel is used, is it possible that multimodality is a potential boundary condition for theoretical perspectives like media sensory curation theory?

To test these possibilities, two experimental studies were conducted to examine how exposure to different forms of ASMR (audio-only vs. visual-only vs. audiovisual) affects mood, state mindfulness, and absorption. Study 1 ($N = 884$) and Study 2 ($N = 150$) were both conducted online with between-subject experimental designs.

Literature Review

What Is ASMR?

Among the first ASMR video to be posted on a YouTube channel was named WhisperingLife in 2009 (Richard, 2016). The YouTuber was one of the first ASMR artists (ASMRtist) who created a whispering video with the specific purpose of bringing relaxation to the body. Since then, various types of ASMR content have been uploaded on media platforms to give viewers a tingling sensation. Popular ASMR triggers include hair cutting, massaging, clinical role-play, playing with slime, tapping objects, and eating (Barratt & Davis, 2015). These audiovisual stimuli have the potential to provide rich, multimodal perceptual experiences, such as synesthesia. Synesthesia is a phenomenon where individuals experience an unrelated secondary sensation to a particular sensory stimulus (Hubbard & Ramachandran, 2005). For example, people experiencing synesthesia may feel relaxed or show higher levels of absorption (Barratt & Davis, 2015), which increases people's acceptance even toward negative emotions and lets them enjoy music that evokes negative emotions (Hall et al., 2016). Ahuja (2013) found that one of the most popular ASMR content, role-playing, lets the viewer be absorbed in the video. However, how certain modalities and absorption are related is uncertain in the context of ASMR.

Why Do People Watch ASMR?

According to U&G theory, people use media with various motivations including information seeking, social interaction, passing time, entertainment, relaxation, managing stress, communication facilitation, and convenience (Bowman & Tamborini, 2015; Katz et al., 1973; Palmgreen & Rayburn, 1979; Papacharissi & Rubin, 2000; Pentina et al., 2016; Ruggiero, 2000; E. M. Stevens & Carpentier, 2017; Whiting & Williams, 2013). In addition to these motivations, Harrison and colleagues recently argued that people also seek media for sensory gratification and regulation. Based on these two theories, the current article posits that ASMR is a media content that people use for relaxation and sensory gratification.

This argument can be backed up by previous ASMR studies that have been conducted in the field of neuroscience. Previous functional magnetic resonance imaging experimental studies found that ASMR videos stimulated brain activity in sensorimotor areas connected to sleep, senses, vision, emotion, and attention (Lochte et al., 2018; S. D. Smith et al., 2017, 2019). The activation of these brain regions including the prefrontal cortex, striatum, insula, and amygdala suggests that ASMR experiences involve a complex interplay between sensory processing, emotional regulation, and social cognition. Specifically, the activation of the insula and amygdala reflect the intensity of ASMR experiences while the activation of the prefrontal cortex and striatum reflect the reward value of ASMR modalities. Overall, these study findings provide important insights into the neural basis of ASMR, shedding light on the underlying mechanisms of this phenomenon.

Multimodality, Sensation, and Mindfulness in ASMR

One way to consider the impact of ASMR is to recognize that ASMR videos employ multimodal content. Many studies of computer-based communication compare the social and psychological effects of different modalities such as visual and audio, but the possible impacts of media formats such as digital games and hypertext that combine multiple modalities into one have not been compared much in the past work. In general, multimodal experiences are more engaging in processing information through multisensory perceptions (Sundar, 2008). Since multimodality reduces uncertainty by facilitating the sense-making process and delivering more precise information, multisensory channels foster better learning (Ritterfeld et al., 2009).

Based on sensory curation theory, contemporary audiovisual media are now capable of providing kinesthetic sensations such as proprioception (awareness of self-movement) and vestibular sensation (awareness of gravitation forces) (McLaughlin et al., 2001). The theory also claims that media devices help people reach an optimal level of arousal by creating an environment to maintain sensory balance (Seckman et al., 2017). Audiovisual stimuli in ASMR, which are usually made with high volume, repeated sound, and repeated visual action satisfy the five senses (J. Stevens et al., 2015) and consequently increase absorption into media.

The first exploratory online survey by Barratt and Davis (2015) revealed that most people found ASMR videos relaxing and used ASMR to sleep, relieve stress, and maintain a positive mood. A more recent experimental study by Fredborg et al. (2018) discovered that compared to the control group who watched non-ASMR videos, those who watched ASMR videos reported higher levels of mindful attention awareness and mindful curiosity. However, to our knowledge, there are limited studies that explore whether viewing ASMR videos have a causal effect on outcomes commonly associated with absorption or state mindfulness, nor have such studies tested the role played by different modalities used in ASMR.

Although there is a drastic increase in the public interest in ASMR and emotions, studies on how different modalities of appealing media content affect mood are limited. Mood management theory (Zillmann, 1988) predicts that individuals strive to minimize

negative moods and maximize positive moods by being exposed to pleasurable media stimuli. As absorbing media content is known to be an effective method to provide an enjoyable experience to media users (Green et al., 2004), the ASMR experience may lead to similar results given its potential for promoting absorption. Previous research found that people exposed to music-induced musical stimulation increased heart rate, recovery rates, respiratory depth, and skin conductance response (Salimpoor et al., 2011). These results show that audio has a strong influence on people's feelings and that it can also lead to emotional therapy.

Not only audio but visual stimuli also have an effect on mood. Soft fascination is a term that describes people's mixed feelings of fascination and gratification when looking at a stimulating visual object (Kaplan, 2001). Watching stimulating objects effortlessly can allow viewers to get a chance to meditate and introspect (Berman et al., 2008). If viewers were to use only a single modality when watching ASMR content, will it still elicit a favorable effect? Thus, the following hypotheses are posited:

Hypothesis 1: Exposure to a multimodal (audiovisual) ASMR video will lead to more positive (a) mood, (b) state mindfulness, and (c) absorption relative to the no ASMR control condition.

Hypothesis 2: Multimodal (audiovisual) ASMR video will lead to more positive (a) mood, (b) state mindfulness, and (c) absorption relative to unimodal ASMR video (audio-only or visual-only).

Hypothesis 3: The effect of multimodal ASMR on (a) mood and (b) state mindfulness will be mediated by absorption.

Study 1

Method

Participants

A total of 966 responses were collected. Of that, those who responded to the questions with no variation in answer choices (0 = *variance*) were removed ($N = 34$; $N = 932$). The exclusion criteria also removed outliers with the shortest and the longest durations recorded upon completion of the survey (less than 2 min, more than 10 min) ($N = 3$; $N = 929$). Finally, anyone who failed the manipulation check was removed, resulting in a final sample size of 884. The average age of participants was 37 years old (ranged from 18 to 84 years old) with 54.8% of the sample identifying as male.

Stimulus

Among different types of ASMR videos, we chose a slim mixing video (known as Hong Giang DIY Slime), one of the most popular and most viewed videos on social media including YouTube. The video features chunks of colorful slimes being mixed in a bowl. This 50 s-long video was edited to be one of three versions; audiovisual (original), visual-only, or audio-only. Unimodal (one sensory stimulus) videos had either the video with no sound (visual-only) or audio with a static image (audio-only).

Measures

Mood. Participants completed the Brief Mood Introspection Scale (BMIS; Mayer & Gaschke, 1988) that assesses participants' current mood based on their responses to 16 adjectives (Cronbach's $\alpha = .87$; $M = 4.94$, $SD = 1.00$), from 1 (*definitely do not feel*) to 7 (*definitely do feel*). Answer choices included eight positively-worded and eight negatively-worded adjectives such as "lively," "happy," "gloomy," and "tired." Negative words were reverse-coded and the mean score of 16 emotions was used as an indicator for the present mood.

Cognitive Absorption. Cognitive absorption was adapted from Agarwal and Karahanna (2000), with 11 out of 31 items selected to measure the perceived track of time (temporal dissociation), the level of attraction (focused immersion) during the story, heightened enjoyment, and curiosity toward the ASMR content (Cronbach's $\alpha = .89$; $M = 4.24$, $SD = 1.31$). The items were measured on a 1–7 scale, ranging from *strongly disagree* to *strongly agree*. Questions include statements like "time appeared to go by very quickly during the video" and "I felt absorbed in the video."

Mindfulness. The state-mindfulness scale (Tanay & Bernstein, 2013) was adapted to assess how ASMR experience can affect state mindfulness. Specifically, this study used one subcategory of mindfulness; psychological-only impact (15 out of 21 items; Cronbach's $\alpha = .92$; $M = 4.08$, $SD = 1.25$). The questions include "I noticed pleasant and unpleasant emotions" and "I was aware of different emotions that arose in me."

Procedure

The study was conducted in compliance with the Institutional Review Board of the primary investigator. Participants were recruited on Amazon Mechanical Turk (MTurk). Each participant was randomly assigned to one of four conditions; one non-ASMR slime-making video for a control group, and three slime ASMR videos in different sensory modalities; one audiovisual, one audio-only, and one visual-only. Participants voluntarily signed an informed consent form to start participating in the online survey. To control individual differences in ASMR experience, questions asked how much one knows about ASMR and how often one watches ASMR videos. A non-ASMR control video was an instructional video showing how to make a slime with raw materials, with a narration in the background explaining the role of each ingredient and the steps to mix them. Three other conditions showed one of three videos with different levels of modalities; audiovisual, visual-only, or audio-only. At the end, participants completed a demographic questionnaire and received their code for compensation.

Results

Cell sizes are uneven across conditions due to an error during data collection that oversampled subjects in the "audio-only" condition. The control variables of ASMR knowledge, ASMR experience, and mindfulness experience were not significantly different across conditions (see Table 1).

Manipulation Check

In order to ensure that participants in each condition watched the assigned ASMR videos by experiencing the right sensory stimuli, the following question was asked: "When you watched the video, what did you see or hear?." The data (available on OSF; Kim & Lee, 2021) with wrong answers to the manipulation check ($N = 45$) were removed ($N = 884$).

Table 1
Mean Scores of ASMR Modality on ASMR Knowledge, ASMR Experience, and Mindfulness Experience (Study 1)

Control variables	Control ($N = 182$)	Audiovisual ($N = 174$)	Visual-only ($N = 183$)	Audio-only ($N = 345$)
ASMR knowledge	2.99 (2.10)	3.13 (2.14)	3.02 (2.09)	3.08 (2.12)
ASMR experience	2.01 (1.60)	2.24 (1.77)	2.07 (1.68)	2.18 (1.86)
Mindfulness experience	7.03 (4.00)	6.78 (4.26)	7.69 (3.91)	7.23 (3.99)

Note. *M* (*SE*); ASMR = autonomous sensory meridian response.

Hypotheses Testing

Three one-way analyses of variance (ANOVAs) were conducted to test H1, which predicted that multimodality of ASMR would improve mood, state mindfulness, and absorption relative to a no ASMR control. A one-way ANOVA indicated that there was no significant difference between multimodal ASMR and non-ASMR control on mood, $F(1, 354) = .33$, $p = .568$, $\eta_p^2 = .001$; state mindfulness, $F(1, 354) = 1.91$, $p = .168$, $\eta_p^2 = .005$; and absorption, $F(1, 354) = .03$, $p = .869$, $\eta_p^2 = .000$ (see Table 2).

H2 predicted that multimodal ASMR will show higher absorption, state mindfulness, and more positive mood than unimodal ASMR. The post hoc comparisons showed that there was a significant difference only between multimodality and audio-only conditions on absorption; $F(2,699) = 15.719$, $p < .001$, $\eta_p^2 = .043$. That is, audio-only stimulus led to the lowest absorption ($M = 3.90$, $SD = 1.19$). It also shows that visual-only stimulus ($M = 4.39$, $SD = 1.27$) and multimodality ($M = 4.47$, $SD = 1.36$) ASMR videos were not different in absorption. Mood, $F(2,699) = 2.04$, $p = .13$, and state mindfulness, $F(2,699) = 1.97$, $p = .14$, were not significantly different between multimodal and unimodal ASMR videos.

H3 predicted that absorption would mediate the relationship between ASMR exposure and the outcome variables of interest. To that end, a series of simple mediation models were conducted using the PROCESS macro Model 4 (mediation model; Hayes, 2013) with 5,000 bootstrapped samples and 95% bias-adjusted confidence intervals. Given that the preceding analyses revealed that only the audio condition varied significantly from control, each model was run with audio-only as the independent variable ($0 = control$ and $1 = audio\ ASMR$) while dummy coding and statistically controlling for subjects in either the visual-only or multimodality conditions.

The indirect effect of audio ASMR on mood through the indirect pathway of absorption was statistically significant, 95% CI [−.25, −.10]. Audio ASMR decreased absorption (−.60, $p < .001$) which was subsequently related to increased mood (.29, $p < .001$). The direct effect of audio ASMR on mood independent of absorption was *ns*, $p = .73$.

Table 2
One-Way ANOVA, ASMR Modality on State Mindfulness, Absorption, and Mood (Study 1)

Dependent variables	Control ($N = 182$)	Audiovisual ($N = 174$)	Visual-only ($N = 183$)	Audio-only ($N = 345$)
SM	4.07 (0.09)	4.25 (0.10)	4.02 (0.09)	4.03 (0.07)
ABS	4.50 (0.10)	4.47 (0.10)	4.39 (0.10)	3.90 (0.07)
BMIS	5.05 (0.07)	4.98 (0.08)	5.00 (0.07)	4.84 (0.05)

Note. *M* (*SE*); ANOVA = analysis of variance; ASMR = autonomous sensory meridian response; SM = state-mindfulness; ABS = absorption; BMIS = Brief Mood Introspection Scale.

The indirect effect of audio ASMR on mindfulness through the indirect pathway of absorption was also statistically significant, 95% CI [−.40, −.17]. Audio ASMR decreased absorption (−.60, $p < .001$) which was subsequently related to increased mindfulness (.47, $p < .001$). The direct effect of audio ASMR on mood independent of absorption was also statistically significant, $p = .01$.

Discussion, Study 1

The results of Study 1 revealed several interesting findings. First, the study finding indicated that there were no differences between control and multimodal ASMR on absorption, mood, and state mindfulness. Specifically, slime ASMR videos with audiovisual triggers neither enhanced people's emotional state nor moment-by-moment cognition awareness than a common slime advertising video. The absence of a main effect in comparison between control and multimodal ASMR video indicates that the slime ASMR videos may have weak impacts on mood change or state mindfulness or the chosen control video was too immersive in terms of visual and audio impacts. This result is different from prior work (Barratt & Davis, 2015) which found that participants who viewed various types of ASMR content such as whispering, crisp sounds, and slow movement reported a heightened flow state, increased absorption, and mood enhancement. As participants in the current experimental study were asked to watch only one type of ASMR, slime ASMR video, some participants might have been disturbed by the slime ASMR video. In fact, Barratt and Davis revealed that people experience pleasant feelings with different types of triggers because ASMR is not a universal experience.

Secondly, the study finding indicated that the multimodal ASMR video leads to higher absorption than a unimodal ASMR video. Particularly, the result suggested that watching an ASMR video with both audio and visual triggers increased absorption than watching an ASMR video with audio-only stimuli. This finding echoes previous research in that if some sound, listened in isolation without any visual orientation, may drive people to imagine unpleasant image and fails to induce the positive effect (Barratt & Davis, 2015). In the context of slime-touching ASMR video, the slimy, sticky, and squeaky sound may have hindered people from getting cognitively absorbed into the video. People only experience enjoyment when they get cognitively transported into media (Green et al., 2004). Hence, unpleasant experience with the content leads to a decrease in absorption. Accordingly, based on the previous research and current study findings, it can be concluded that for a slime ASMR video, audio-only modality of ASMR was not effective without the visual modality when it comes to enhancing absorption.

Third, study results indicated that absorption mediated the relationship between multimodal ASMR on mood and state mindfulness relative to audio modal ASMR. A multimodal ASMR video was

associated with more immersive ASMR experience, in line with a previous study by McErlean and Osborne-Ford (2020). However, compared to multi-modal ASMR video, participants who were less absorbed in the audio-only ASMR video reported better mood and increased state mindfulness. Without the visual modality, participants would pay the most attention only to the sounds. Then, the disturbing noise from mixing the slimes associated with low absorption seems to have distracted viewers, which consequently led to better mood states. This contradictory outcome could also be explained by the avoidance coping mechanism that people use when they face unexpected and disturbing sensations in life, such as a misophonia coping strategy (Potgieter et al., 2019). In order to avoid dealing with stress from the slime noise, participants could have reduced their attention level, which eventually led to less negative emotional experiences.

The study has both theoretical and practical implications. Although the emergence of the ASMR community calls for the great interest in academia, only a few studies have examined people's tingling sensation in response to particular audiovisual stimuli. Theoretically, findings of the study extend previous literature in that multimodal media contents provide a more immersive experience than unimodal content. Also, the findings of the study generate theoretical insights for the media sensory curation theory (Harrison et al., 2019) in the ASMR context by showing that people use media to reach the optimal level of arousal. Practically, the study suggests that avoiding the use of disturbing audio stimuli and visual stimuli is the key to create effective ASMR content. As the current study found that slime touching sound was unpleasant, this concludes that not all sounds are pleasing to hear, even in the ASMR context. Thus, those who intend to develop effective ASMR content must use more enjoyable sound that increase people's mood.

There is a limitation that must be taken into account despite the results. It should be noted that the current study's use of a specific type of slime ASMR may have shown different results from other types of ASMR videos in terms of the soothing and relaxing effect of sound expected from the most ASMR videos. As the audio-only condition in our slime ASMR video led to a decrease in mood, the squeaking sound of touching and mixing the slime may have been unpleasant and uncomfortable. With this limitation in mind, we conducted Study 2 to test the effect of each modality in different types of ASMR videos.

Study 2

The needs for broader applications and generalization of the findings on the effects of modality in ASMR videos from Study 1 led to an additional study, with the aim to test how modalities work in the different types of ASMR videos. We assumed that ASMR videos can be categorized into different types based on the levels of soothing and relaxing experiences the videos provide to viewers. Thus, we chose multiple different types of ASMR videos and pretested the impacts on viewers. Then, the final two ASMR types were chosen for the main stimulus in Study 2; whispering and crunchy (eating) videos.

Accordingly, we hypothesized that two different ASMR videos will lead to different levels of emotion and mindful experiences, as well as absorption and relaxation. On top of that, we expected to see the consistent findings as Study 1 showed, specifically, that multimodality will lead to higher level of absorption and mindful experience compared to unimodality (visual-only and audio-only). Setting the experimental conditions just the same as they were in Study 1, we proposed these fourth hypotheses:

Hypothesis 4: The multimodal (audiovisual) ASMR video will lead to stronger (a) absorption, (b) enjoyment, (c) state mindfulness, and (d) relaxation, relative to unimodal ASMR videos (audio-only or visual-only).

Research Question 1: How are relaxing type and irritating type of ASMR videos different on (a) absorption, (b) enjoyment, (c) state mindfulness, and (d) relaxation?

Research Question 2: Is there any interaction effect between modalities and ASMR types on (a) absorption, (b) enjoyment, (c) state mindfulness, and (d) relaxation?

Method

Pretest

Participants. Participants ($N = 87$) were recruited on MTurk for the pilot tests. Participants were randomly assigned to watch one of eight 20-s ASMR videos and rated how much they thought the video was soothing, relaxing, irritating, and uncomfortable.

Stimulus. Eight ASMR triggers we chose for the pilot test included tapping, scratching, liquid sound, crinkly, whispering, slime, crunchy (eating), and sticky eating videos (Sharkey, 2019). We used videos created by one famous ASMR YouTuber named Gibi (Gibi ASMR, 2016), in order to control any confounding effects (different individuals, angles, and performance styles, which may affect the experiences). In the pilot tests, the whispering video was rated as the most relaxing ($M = 3.28$, $SD = 1.28$), and the crunchy (eating) video was rated as the least relaxing ($M = 2.62$, $SD = 1.38$) (Gibi ASMR, 2018). Based on the result (two ASMR types) of the pilot test, two new ASMR videos (20 s each) were created for the main study (see Figure 1). Both whispering and crunchy (eating) videos were edited from different parts of one long ASMR video, created by the YouTuber Gibi to control the angle, lighting, background, and the appearance of the person who appeared in the video. The whispering video features the YouTuber Gibi talking with a low and soft voice, whereas the crunchy (eating) video features the person eating hard-textured snacks while making crunchy noises.

Manipulations. With these two ASMR videos, we edited and created more videos in different levels of modalities. The factorial design of Study 2 was Modality (3: Audiovisual vs. Visual-Only vs. Audio-Only) × ASMR Type (2: Whispering vs. Crunchy). Accordingly, a total of six videos were used to test the experiences.

Participants

A total of 150 responses were collected. The average age of participants was 39 years old (ranging from 22 to 78 years old) and 48% were male. Participants all passed the manipulation check by answering the question, "When you watched the video, what did you see or hear?." This question was intended to check the modality of the videos they were assigned to watch; audiovisual, visual-only, or audio-only.

Procedure

Participants were recruited on MTurk. Each participant was randomly assigned to one of six conditions: whispering videos and

Figure 1
Manipulation: Stimulus Videos (ASMR Type)

Note. Screenshots (*whispering* on the left; *crunchy* on the right), adapted with permission from Gibi ASMR. (2018, October 25). *Mochi ice cream & macarons / ASMR chat & eating* [Video]. YouTube. https://www.youtube.com/watch?v=6nGeE-18kog. ASMR = autonomous sensory meridian response. See the online article for the color version of this figure.

crunchy (eating) videos, each in three levels of modality. Participants voluntarily signed an informed consent form to start participating in the online survey. In terms of visual presentations, whispering videos feature the YouTuber talking to the viewer about the macaron she likes, with frequent eye contact with the camera. Crunchy (eating) videos involve fewer eye contact but show the YouTuber eating some cookies with satisfying facial expressions. In terms of the sound, whispering videos include a low and quiet tone of voice that the YouTuber whispers to the viewers, while crunchy (eating) videos include a relatively louder sound while she chews and cracks the hard cookie. Participants in the audiovisual condition watched videos with sound and visual, while those in unimodal conditions watched the same videos with only one sensory stimulus, either sound or visual-only. Upon completion of watching the video, participants completed a postexposure questionnaire and then received their code for compensation.

Measures

Cognitive Absorption. Cognitive absorption was adapted from Agarwal and Karahanna (2000). Four among 31 questions in the scale were selected and modified (Cronbach's $\alpha = .875$) and measured on a 1–5 scale, ranging from *strongly disagree* to *strongly agree*. Questions include statements like "I felt absorbed in the video." and "The story aroused my imagination."

Mindfulness. State-mindfulness scale (Tanay & Bernstein, 2013) was adapted to assess how ASMR experience can affect state mindfulness. Specifically, this study selected five among 21 items in the original scale (Cronbach's $\alpha = .890$). The questions include "I noticed physical sensations come and go." and "I changed my body posture and paid attention to the physical process of moving."

Mood. Participants rated *enjoyment* using three items in the original scale on the 5-point differential emotions scale (DES scale; Izard, 1972) from 1 indicating *not at all* to 5 indicating *very strongly* affecting their feelings (Cronbach's $\alpha = .902$). The items include three current emotions; "delighted," "happy," and "joyful." The measures can be found in Appendices A–C.

Relaxation. Relaxation was measured using four items from two subsections including "physical relaxation" and "at ease" from Smith Relaxation States Inventory 3 (SRSI3; J. C. Smith, 2001). The chosen questions are "I felt at peace," "My muscles were so relaxed that they felt limp," "I felt at ease," and "My hands, arms, or legs were so relaxed that they felt warm and heavy" (Cronbach's $\alpha = .719$).

Results

Each condition, the sample sizes were evenly distributed across conditions ($n = 25$ in all six groups; 150 participants in total). Participants reported their ASMR knowledge, ASMR experience, and mindfulness experience; none of them were significant across conditions (see Table 3).

Hypothesis 4 predicted that multimodal (audiovisual) ASMR video would lead to stronger (a) absorption, (b) enjoyment, (c) state mindfulness, and (d) relaxation relative to unimodal ASMR video (audio-only or visual-only). H4 was fully supported; the main effect of modality was statistically significant on absorption, $F(2, 144) = 21.136$, $p < .001$, state mindfulness, $F(2, 144) = 11.812$, $p < .001$, enjoyment, $F(2, 144) = 10.669$, $p < .001$, and relaxation, $F(2, 144) = 6.967$, $p = .001$ (see Tables 4 and 5).

RQ1 was proposed to see if two different ASMR types have different impacts on absorption, state mindfulness, mood, and relaxation. The only significant differences between whispering and crunchy (eating) ASMR videos were measured on the level of relaxation, $F(1, 144) = 9.301$, $p = .003$. More specifically, whispering videos ($M = 4.52$, $SD = .98$) were reported to be more relaxing than crunchy (eating) videos ($M = 3.97$, $SD = 1.30$). Thus, RQ1 was partially supported.

Lastly, RQ2 expected some level of an interaction effect between modality and ASMR type. However, there was no interaction found

Table 3
Mean (and Standard Error) Scores of ASMR Modality on ASMR Knowledge, ASMR Experience, and Mindfulness Experience (Study 2)

Control variables	Audiovisual	Visual-only	Audio-only
ASMR knowledge	5.46 (1.17)	5.26 (1.21)	5.22 (1.53)
ASMR experience	5.08 (1.63)	4.18 (1.59)	4.56 (1.83)
Mindfulness experience	6.41 (3.29)	6.15 (2.93)	6.96 (2.53)

Note. ASMR = autonomous sensory meridian response.

Table 4
Two-Way MANOVA, ASMR Modality and ASMR Type on Absorption, State Mindfulness, Mood (Enjoyment), and Relaxation (Study 2)

Independent variable	Dependent variable	*F*	*df*	Significant	Partial η^2
Modality	Absorption	21.136	2	.000*	.227
	Mindfulness	11.812	2	.000*	.141
	Mood	10.669	2	.000*	.129
	Relaxation	6.967	2	.001*	.088
ASMR type	Absorption	0.523	1	.471	.004
	Mindfulness	0.052	1	.819	.000
	Mood	0.398	1	.529	.003
	Relaxation	9.301	1	.003*	.061
Modality × ASMR Type	Absorption	0.771	2	.464	.011
	Mindfulness	0.670	2	.513	.009
	Mood	0.640	2	.529	.009
	Relaxation	0.122	2	.885	.002

Note. MANOVA = multivariate analysis of variance; ASMR = autonomous sensory meridian response.
* Significant effect is reached.

between modality and ASMR type on absorption, state mindfulness, mood, and relaxation.

General Discussion

Study 2 tested H4, RQ1, and RQ2 by conducting a between-subjects experiment. Unlike Study 1, Study 2 excluded non-ASMR videos and directly compared the effects of multimodal and unimodal ASMR videos on absorption, state mindfulness, enjoyment, and relaxation. The result revealed that, in line with Study 1, audiovisual ASMR video induced higher absorption, state mindfulness, enjoyment, and relaxation compared to audio-only and visual-only ASMR videos, supporting H4. This finding echoes and extends previous ASMR studies (Barratt & Davis, 2015; Del Campo & Kehle, 2016; Fredborg et al., 2018; McErlean & Osborne-Ford, 2020), which found the positive effect of multimodal ASMR on mindfulness, absorption, and mood.

Regarding RQ1, results indicated that relaxing ASMR video (whispering content) induced higher relaxation compared to irritating ASMR video (crunchy food eating content). However, there was no difference between these two ASMR videos on absorption, state mindfulness, and enjoyment. This finding is in alignment with previous studies by Barratt and Davis (2015), Del Campo and Kehle (2016), as well as McErlean and Banissy (2018), which found an association between misophonia and ASMR. Misophonia is hatred toward a particular sound that may cause an uncomfortable physiological response. ASMR contents with repetitive irritating sounds (e.g., repetitive scratching, chewing, vacuum cleaning, laughing, and crisping) increases annoyance and displeasure and decrease relaxation. According to the U&G theory, people use media for various reasons, and mood management and relaxation are critical motivations behind media consumption (Bowman & Tamborini, 2015; Pentina et al., 2016; Ruggiero, 2000; E. M. Stevens & Carpentier, 2017; Whiting & Williams, 2013). Our work further expands the literature on ASMR and misophonia in that repetitive displeasing sounds may decrease relaxation, but do not necessarily impact content enjoyment and cognitive absorption.

Table 5
Main Effects of Modality on Absorption, State Mindfulness, Mood (Enjoyment), and Relaxation (Study 2)

Dependent variable	Modality	*M*	*SD*
Absorption	Audiovisual	3.84[a*]	0.78
	Visual-only	3.30	1.09
	Audio-only	2.53[a*]	1.13
State-mindfulness	Audiovisual	3.73	0.84
	Visual-only	3.34	1.02
	Audio-only	2.74	1.15
Mood	Audiovisual	3.81[b*]	0.84
	Visual-only	3.22[b*]	1.19
	Audio-only	2.77	1.27
Relaxation	Audiovisual	4.72[c*]	0.94
	Visual-only	4.05	1.39
	Audio-only	3.97[c*]	1.02

* Significant differences in post hoc Tukey.

Lastly, regarding RQ2, study findings revealed that there was no interaction between modality and ASMR type on absorption, state mindfulness, enjoyment, and relaxation. As there was a strong main effect of modality type on dependent variables, this shows that in order for media users to fully enjoy and get absorbed into the ASMR content, audio and visual triggers must coexist. As people have different tastes toward ASMR video types, more emphasis in future research should be placed on the modality type than the content type (Barratt & Davis, 2015).

The result of the study has indicated that the modality of ASMR video contents is effective in predicting the level of absorption. In addition, Study 2 found that state mindfulness and mood could be associated with modality effects, with the spotlight on multimodality as having the strongest impact on immersive psychological experiences. Besides theoretical implications, Study 2 offers practical implications as well. Adding on to Study 1, Study 2 results suggest that ASMR content creators should focus more on creating relaxing content that can appeal to a broader audience. As the finding showed that whispering ASMR content with audiovisual triggers was most enjoyable, ASMRtist should focus on producing this type of content to fulfill media users' content consumption motivations.

Nevertheless, this study implies some limitations in that it failed to find the impact of ASMR types on different psychological experiences. Although we found different levels of relaxation perceived from different ASMR videos, the level of relaxation was not associated with absorption, mindfulness, and mood. Accordingly, focusing on the theory of U&G theory, we suggest future research to test more ASMR types based on the level of different psychological aspects beyond relaxation, such as personal needs for belongingness and desire for social presence, which could be associated with individual differences of the current emotional status. Furthermore, it is important to note that ASMR content created by different ASMRtists may induce varying degrees of relaxation, mindfulness, and emotional valence, potentially impacting the outcomes of our study. Therefore, to ensure the generalizability of our findings, future research should use a more diverse sample of ASMR content produced by various ASMRtists.

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(*Appendices follow*)

Appendix A

Modified (or Simplified) Absorption Scale (Agarwal & Karahanna, 2000)

ABSORPTION

Please rate your level of agreement with the following statements about your experience while watching the video, with (1) representing Strongly Disagree and (7) representing Strongly Agree:

	Strongly disagree				Strongly agree
I felt absorbed in the video.	○	○	○	○	○
I had fun watching the video.	○	○	○	○	○
The video provided me with a lot of enjoyment.	○	○	○	○	○
The story aroused my imagination.	○	○	○	○	○

Appendix B

Modified State-Mindfulness Scale (Tanay & Bernstein, 2013)

SMS

Read the following situations and rate what you experienced while watching the video.

	Strongly disagree				Strongly agree
I noticed emotions come and go.	○	○	○	○	○
I tried to pay attention to pleasant and unpleasant sensations.	○	○	○	○	○
I noticed physical sensations come and go.	○	○	○	○	○
I clearly physically felt what was going on in my body.	○	○	○	○	○
I changed my body posture and paid attention to the physical process of moving.	○	○	○	○	○

(*Appendices continue*)

Appendix C

Differential Emotions Scale (Izard, 1972)

DES

To what extent do you experience these emotions right now?

	Not at all	Slightly	Moderately	Considerably	Very strongly
Delighted	○	○	○	○	○
Happy	○	○	○	○	○
Joyful	○	○	○	○	○

Note. Reproduced with permission from "Differential Emotion Theory and the Empirical Analysis of Depression," by C. E. Izard, 1972, In C. E. Izard (Ed.), *Patterns of Emotions: A New Analysis of Anxiety and Depression* (pp. 255–282). Academic Press. (https://doi.org/10.1016/B978-0-12-377750-8.50015-5). DES = Differential Emotions Scale.

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