

# Investigating Psychophysiological and Self-Report Responses to Anti-Oral Nicotine Pouch Social Media Videos

Jessica V. Weinberg, Catherine Pinkos, Isabelle Shim, and Russell B. Clayton, Ph.D.

School of Communication, Cognition & Emotion Lab

## Background

- Oral Nicotine Pouches (ONPs) are tobacco-free and smoke-free and have been available nationally in the U.S. since 2019. ONPs are designed to be placed between the upper lip and gum to deliver nicotine to the user.
- Although ONPs may represent a harm reduction opportunity for adults who use combustible tobacco, ONP use by young adults poses risks to public health including nicotine addiction and escalation to more harmful forms of tobacco use.
- Increased popularity of ONPs among young adults has led manufacturers to spend more on marketing of ONPs than traditional smokeless tobacco, specifically via social media.
- To date, evidence on effective features of social media counter-messaging of ONPs is extremely limited. However, oral care providers, including dentists, have taken to social media (i.e., TikTok) to create content warning audiences about the negative oral health effects of ONPs observed by patients.
- This study seeks to examine the processes and effects that occur during and after exposure to user-generated, a-ONP TikTok videos that vary in the presence and absence of disgust images among young adult ONP users.

## Methods

- Participants (N=105) were current (past 30-day), young-adult users of ONPs.
- Participants were exposed to a total of four, 2-minute TikTok simulations that were presented in random order. The last video in each simulation was a 47-second a-ONP TikTok video.
- a-ONP videos contained a dentist communicating the negative health effects of using ONPs by either showing or not-showing disgust images.
- After answering baseline questions, participants were shown a 10-second black screen to return psychophysiological measures to baseline before the onset of the first TikTok simulation.
- Self-reported ONP craving, behavioral intentions to use ONPs, perceived harm reduction, arousal, and negative emotional valence were measured at post TikTok simulation.

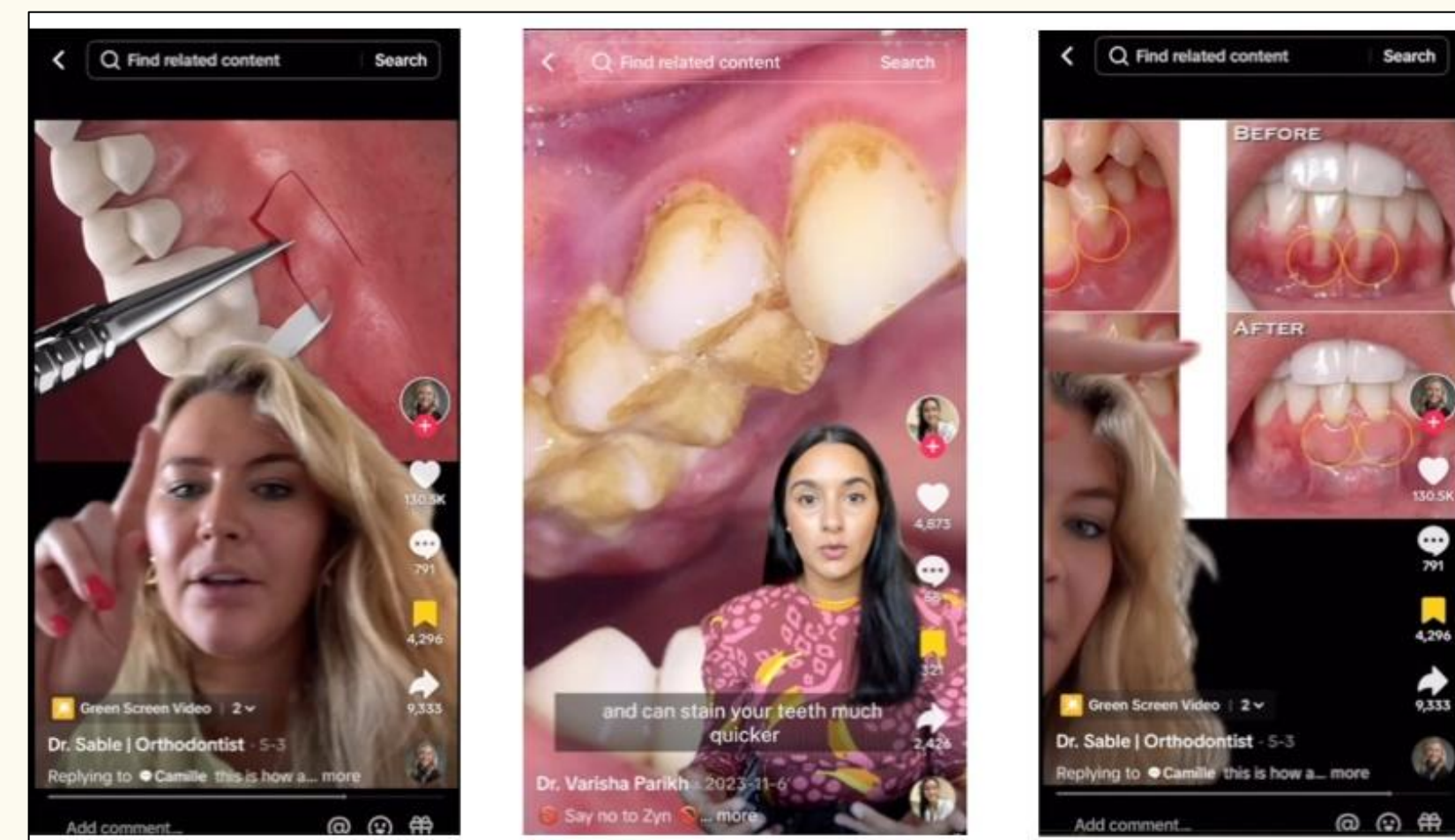


Figure 3. Example of disgust images in a-ONP videos on TikTok used for preliminary data collection.

## Results

Table 1

Means (M) and Standard Deviation (SD) for a-ONP videos absent and present in disgust images

Self-Reported Dependent Variables	Omnibus F or t	$\eta^2$	Disgust Absent	Disgust Present
Craving	3.25	.03	1.45 (SD = .75) <sup>a</sup>	1.39 (SD = .71) <sup>a</sup>
Craving Baseline = 1.62 by Message Con.	11.27***	.56	***	***
Behavioral Intentions to use ONPs	7.78**	.07	2.03 (1.02) <sup>a</sup>	1.81 (SD = .88) <sup>b</sup>
BI Baseline = 2.55 by Message Con.	7.02***	.33	***	***
Perceived Harm Reduction	1.30	.01	3.85 (SD = 1.58) <sup>a</sup>	3.78 (SD = 1.52) <sup>a</sup>
PHR Baseline = 4.27 by Message Con.	8.80***	.43	***	***
Arousal Ratings	22.46***	.18	2.36 (SD = 1.11) <sup>a</sup>	2.94 (SD = 1.40) <sup>b</sup>
Negative Emotional Valence	13.82***	.12	4.73 (SD = 1.82) <sup>a</sup>	5.42 (SD = 1.82) <sup>b</sup>

Note. Means which do not share a superscript going across differ significantly from one another ( $p < .05$ ). Note. Craving was measured on a 1-7 Likert scale, Behavioral Intentions to use ONPs was measured on a 1-5 Likert-type scale, Perceived Harm Reduction was measured on a 1-7 Likert-scale, and self-reported arousal and negative emotional valence were measured on a 1-9 Likert-type scale.

Figure 1 Message Condition x Time for Heart Rate (BPM) for High and Low Disgust a-ONP TikTok Videos

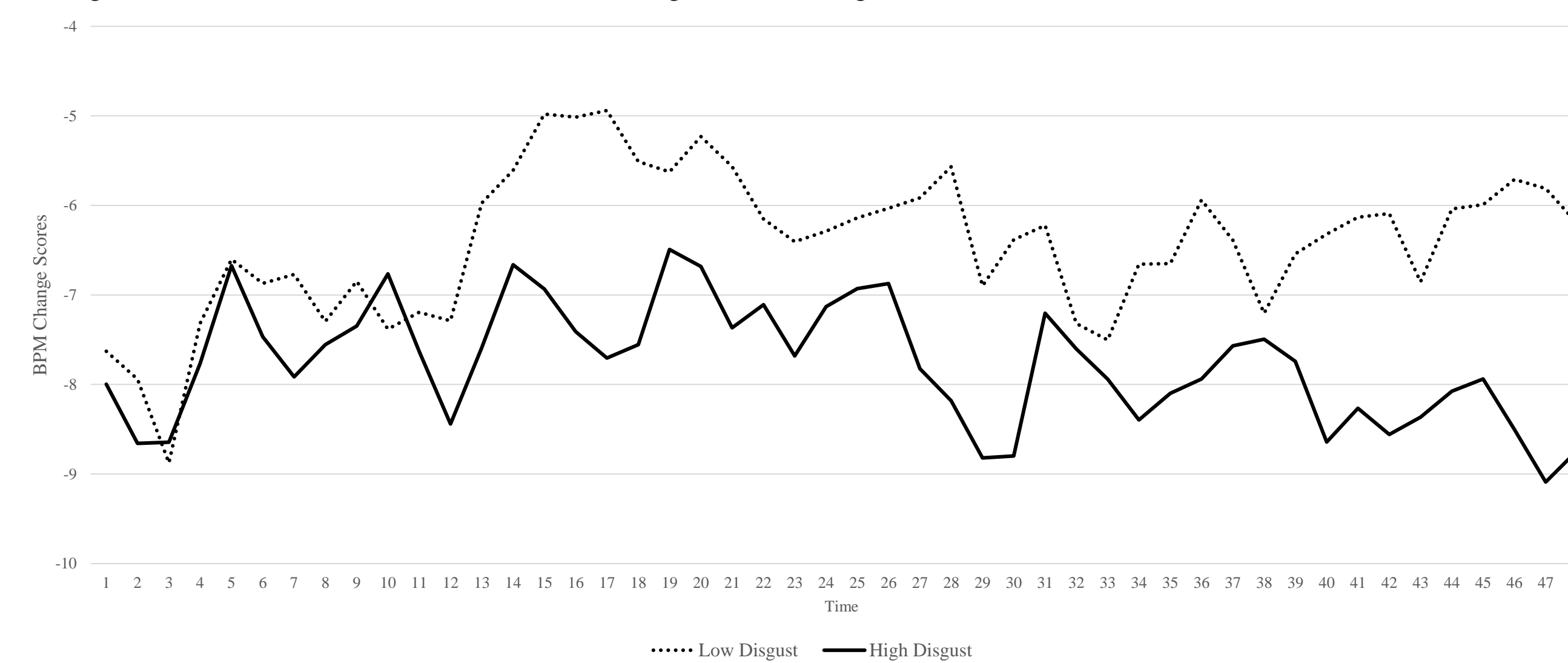
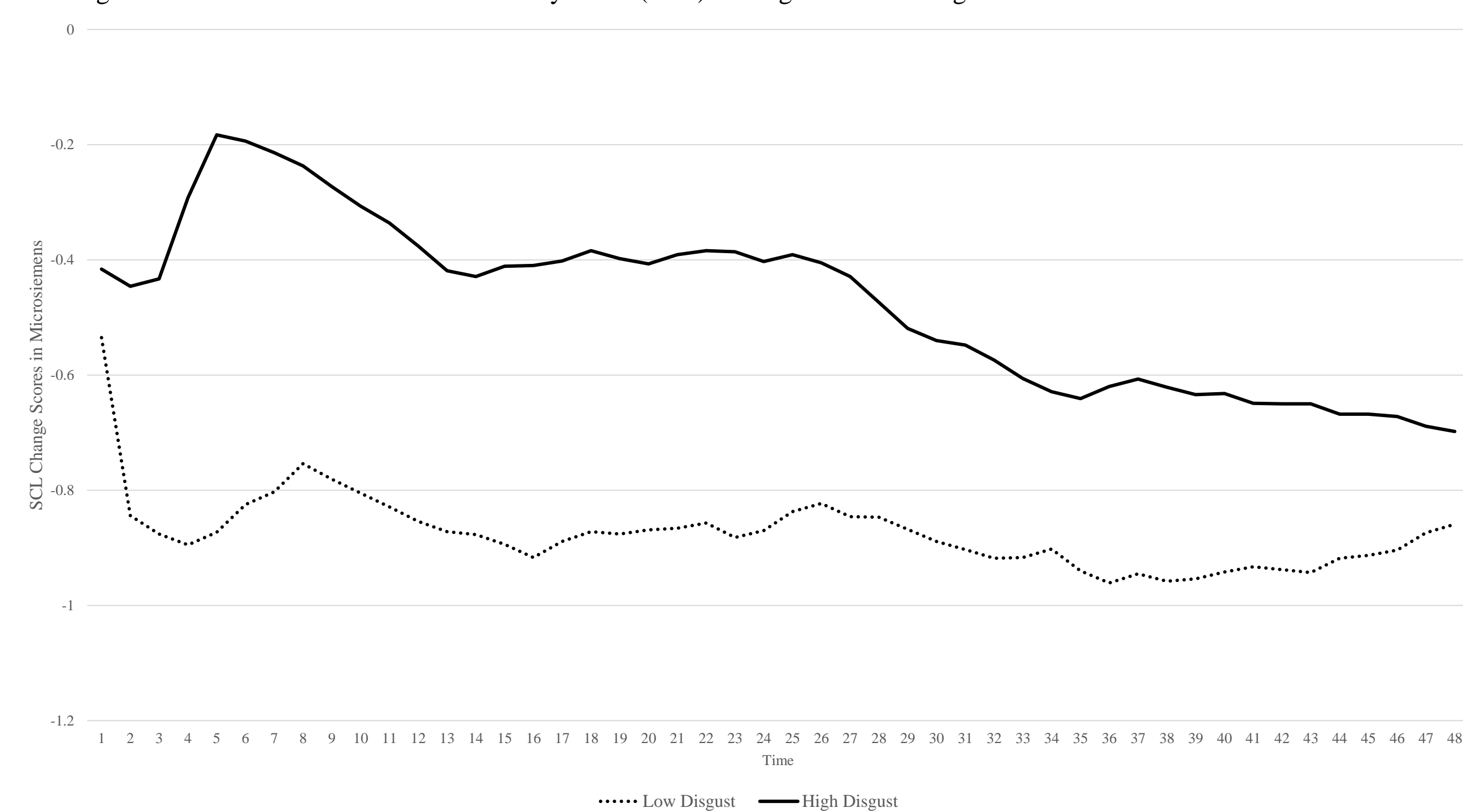


Figure 2 Message Condition x Time for Skin Conductivity Level (SCL) for High and Low Disgust a-ONP TikTok Videos



## Discussion

- a-ONP videos present in disgust images led to fewer behavioral intentions to use ONPs relative to a-ONP videos absent in disgust. Self-reported craving and perceived harm reduction did not differ between message conditions.
- When compared to baseline reports, audiences' craving, behavioral intentions to use ONPs, and perceived harm reduction significantly decreased for a-ONP videos present in disgust.
- a-ONP videos present in disgust resulted in greater attention during video exposure, as well as greater physiological arousal, versus a-ONP videos absent in disgust.
- This study extends on previous literature by investigating the persuasive effects of disgust within a new substance condition and within a natural social media viewing experience.
- Counter-substance messages presented in entertainment contexts, such as TikTok, might be more effective than other presentation venues.
- Counter messages could be designed with a higher level of aversive content (i.e., threat with disgust) in hopes of encouraging cessation outcomes without the risk of creating defensive message responses when presented and strategically embedded in entertainment social media feeds.

## Limitations

- We examined current ONP users (past 30 days) and did not examine or compare their responses to non-users or heavy users.
- A visual recognition memory task would have been useful for assessing how well message content was encoded into short-term memory.
- A strength of the study was that we used real-world, authentic a-ONP TikTok videos; however, this also meant we did not have total control over the message content. Subtle variations across messages, despite using multiple messages per treatment level and being carefully pre-tested (Thorson et al., 2012), could have some influence on the findings.
- Similarly, the a-ONP videos selected for the study were specifically focused on the brand ZYN. Thus, other brands should be considered in future research.

## Conclusions

- User-generated a-ONP TikTok videos that are present in disgust and are presented in a natural TikTok simulation led to effective message outcomes reflected by increased attention and self-reported outcomes.
- This study extends future opportunities to identify other potential message content used on social media to reduce ONP use and demonstrates the validity of viewing a-ONP TikTok videos in a natural media context.

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MPIs: Clayton, Stevens (UMass), and Mays (Ohio State)

## References:

