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Loving Videos: A New Paradigm to Elicit Strong Positive Emotions

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Introduction

Eliciting emotions in a laboratory environment is difficult, especially when it concerns strong positive emotions. Over the last few decades, affect-eliciting videos to evoke both positive and negative emotions have been used in the study of emotions. However, consistently and reliably eliciting strong positive emotions through the use of film clips is challenging. A meta-analysis examining the effectiveness of films to induce positive and negative emotional states found a larger effect size for levels of reported arousal and affective valence in videos designed to evoke negative emotions (such as fear and disgust) than videos designed to induce positive emotions (Fernandez-Aguila, 2019). We developed a paradigm to systematically produce video stimuli to participants designed to induce strong positive emotion in a controlled manner.

Previous research has found that presenting faces and names of loved ones not only elicits stronger subjective reports of positive feelings when compared to control faces and names, but is also associated with stronger physiological responses including the biphasic decelerative-accelerative heart rate response, increases in skin conductance and zygomaticus muscle activity, and decreases in the corrugator muscle activity (Guerra, 2010; Guerra, 2011; Lucas, 2019). In our paradigm, we exploit this personal aspect, and examine physiological and subjective responses to our video stimuli as well as towards video stimuli used to elicit emotion before.

Methods

Participants

A total of 23 participants (14 female, age range between 22 and 78) took part in the study. The study was approved by the TNO Institutional Review Board (IRB) under number 2022-012.

Creating Loving Videos

Participants recruited for the study provided us with the name and information of a loved one to contact for a Zoom interview. We specifically noted that we were looking to speak with someone with whom the participant has a close and loving relationship. An experimental lead contacted the loved one, explained the purpose of the experiment (making a video to elicit strong positive emotions), and scheduled a time to make the video. The loved one was instructed not to inform the participant about the exact purpose of this meeting.

During the recorded zoom meeting, the participant's loved one was asked the following questions:

- What do you admire most in (participant's name)?
- What is your fondest memory with (participant's name)?
- If you were to plan the perfect day with (participant's name) to make (him/her) happy, please describe to me would you do together?
- What is the impact (participant's name) has had on your life?
- What is something you want to say to (participant's name)?

The number of questions asked varied depending on the content and length of the loved one's answers. If needed, the experimental lead edited the video down to four minutes. Loved ones were asked for consent to show their video to their loved ones, and for consent to show their video to other (unknown) participants. All but one loved one consented to showing their video to an unknown participant.

Design and procedure

Participants were presented with two four-minute videos developed as described above: one of their loved one (strong positive emotion), and another pseudo-randomly chosen video of another participant's loved one (more neutral emotion). Twenty two videos were shown one time to an unknown participant, and one video two times. The comparison of responses to these two videos control for effects that the personalized video may have that are not related to the emotional content.

To compare effects of our videos to videos traditionally used in emotion research, we selected two two-minute videos that scored highest in rated valence and arousal as reported by Maffie (2019) (Sea' and 'Waterfalls') and two two-minute videos that scored the most neutral (Maffei, 2019) ('Pietraperzia' and 'Quartesolo', both showing village scenery). The positive emotion videos were combined in one four-minute movie, and the neutral videos were also combined in one four-minute movie. All videos contained appropriate background music for their content.

The four types of movies (own loving video, other's loving video, traditional positive, and traditional neutral) were shown in counterbalanced order across participants.

Following each video, participants were presented with the Self-Assessment Manikin (SAM) and asked to rate their emotion when watching the video using three dimensions of the scale (pleasure, arousal, and dominance). Subsequently, they rated on a 9-point Likert scale the degree to which each of the following emotions were elicited by the clip: fear, sadness, rage, disgust, joy, surprise, and neutral (Maffei, 2019). Participants' heart rate (HR), electrodermal activity (EDA), skin temperature of the face (infrared camera), and electrical brain activity (EEG) were measured throughout the experiment.

Results

First analyses of the HR, EDA and infrared data indicate that differences between responses to the own and other's loving videos are stronger than between the positive and neutral traditional videos. In fact, no clear difference was seen between the two types of traditional videos and the other's loving video, while heart rate was around 5bpm higher for the own loving movie compared to all other movies during the first 40 seconds, phasic EDA quickly rose and stayed around 3.5 µSiemens higher, and nose temperature increased by .7 °C.

Discussion

Our first results indicate that the videos created through our paradigm elicit strong emotions, much more effectively than the standardized video clips. Although through this experiment we demonstrate

that controlled positive stimuli in the lab can elicit strong responses, the data discussed here cannot be conclusive as to whether the strong effects of the own loved one's movie are caused by arousal, apart from the positive valence. To explore that, we will compare data from the present experiment to data of the same participants using the same sensors, but in response to a highly arousing, low valence stressor, the sing-a-song stress test (Brouwer & Hogervorst, 2014). These and other additional results will be presented at the conference.

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