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Proceedings of the Annual Meeting of the Cognitive Science Society

Title

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Permalink

<https://escholarship.org/uc/item/8rw4s61h>

Journal

Proceedings of the Annual Meeting of the Cognitive Science Society, 28(28)

ISSN

1069-7977

Authors

Ginsburg, Harvey J.
Stavinoha, Shannon

Publication Date

2006

Peer reviewed

Tickling: Qualitative and Quantitative Analyses of Facial Expressions and Motions

Harvey J. Ginsburg (hg01@txstate.edu)

Department of Psychology, Texas State University – San Marcos
San Marcos TX 78666 USA

Shannon Stavinoha (ss1184@txstate.edu)

Department of Psychology, Texas State University – San Marcos
San Marcos TX 78666 USA

Introduction

No psychological theory adequately explains our reactions to being tickled (Provine, 2004). Reactions show individual variation. Tickling involves a cognitive component (e.g., people cannot tickle themselves). Ginsburg and Nixon, (2006) reported a significant correlation between raters' nominal evaluations of whether participants could inhibit reactions to being tickled, based upon their anticipatory facial expressions. However, raters were unable to explicitly state the bases for their evaluations. In this subsequent research, we hypothesized that independent, qualitative 1-to-7 ratings of inhibited or disinhibited anticipatory facial expressions would predict ratings of facial expressions during tickling. We also hypothesized that direct frequency counts of observed changes in anticipatory facial expression movements would predict frequency counts of observed changes in facial expression movements during tickling. Predicted correlations were significant beyond .001 alpha.

Method

Participants. 54 undergraduate psychology majors, 40 females and 14 males, consented to be video recorded while being tickled for an unspecified duration.

Materials and Procedure. Participants were instructed to make an attempt to keep from responding to being tickled. They were individually escorted to a small 6 ft x10 ft room that housed an audio- video camera. A female assistant greeted and subsequently tickled participants. Participants stood in front of the tickler facing away from her and toward a video camera positioned approximately 5 ft away from them. A camera operator was also present in the room. An audio beep from the camera indicated to participants that they were being recorded. Participants were instructed to wiggle their right index finger when they were ready to be tickled. A five-sec delay occurred between a participant's signal and onset of tickling. The tickler tickled both sides of participants' ribcages from behind for the next five-sec.

Measurements. Using a 1-to-7 scales, one rater evaluated whether participants were able to inhibit anticipatory reactions to being tickled, or whether they showed disinhibited anticipatory reactions. A second rater evaluated participants' reactions while they were being tickled. Later, 30 automated still images were analyzed for frequencies of changes in facial expressive movements during both the five sec anticipatory and five-sec tickling intervals.

Results and Conclusions

Pearson correlation coefficients were statistically significant for both measures, as shown in Table 1. For 1-to-7 ratings of inhibited or disinhibited facial expressions, $r = .574$, $p \leq .001$, 1-tailed, comparing anticipation and tickling expressions. For anticipation ratings, $M = 3.33$, $SD = 1.71$. Ratings during tickling, $M = 3.67$, $SD = 2.07$.

For frequencies of changes in observed facial expression movements, $r = .474$, $p \leq .001$, 1-tailed. For anticipation, $M = 9.85$, $SD = 5.76$. During tickling, $M = 7.28$, $SD = 6.41$. Results are consistent with Carlsson et. al., (2000) showing MRI data of the neural processing substrata for expectations of being tickled. Reactions to being tickled are typically thought of as emotional. However, a cognitive component is also shown by participants' facial movements in anticipation to being tickled.

Table 1: Correlations before and during tickling for (I) qualitative 1-to-7 ratings of inhibited - disinhibited facial expressions and (II) quantitative frequencies of changes in facial expression movements.

Pearson r	1-tailed Significance
(I) .574	.001
(II) .474	.001

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Acknowledgments

The Psychology Department, Texas State University – San Marcos provided partial funding for the research. We also express thanks to Ms. Casey Nixon for tickling the participants.