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## **Individual differences in gelotophobia and responses to laughter-eliciting emotions**

Ruch, Willibald ; Hofmann, Jennifer ; Platt, Tracey

**Abstract:** Gelotophobes (individuals with a fear of being laughed at) have even been found to express less joy and more contempt towards joyfully smiling/laughing faces compared to non-gelotophobes. However, it is unclear whether the lower levels of joy and higher levels of contempt are related to joy per se or only to those elements of joy associated with laughter. Thus, this study investigated the verbal and facial responses of 20 gelotophobes and 20 non-gelotophobes towards videos of people recalling memories of laughter-eliciting positive emotions (amusement, relief, schadenfreude, tactile pleasure). The facial expressions of the participants were clandestinely filmed and evaluated by the Facial Action Coding System (FACS; Ekman, Friesen, Hager, 2002). Smiles of enjoyment and "markers of contempt" were coded and verbal ratings of the participants obtained. Gelotophobes responded with less joyful smiles and with more expressions of contempt to laughter-eliciting emotions than did non-gelotophobes. Gelotophobes also rated the degree of joy expressed by participants in the video clips of tactile pleasure and relief lower than non-gelotophobes. No differences occurred in ratings of aversiveness. The results suggest that gelotophobes have a negative bias towards laughter-eliciting situations stemming from different positive elicitors.

DOI: <https://doi.org/10.1016/j.paid.2014.08.034>

Posted at the Zurich Open Repository and Archive, University of Zurich

ZORA URL: <https://doi.org/10.5167/uzh-98985>

Journal Article

Accepted Version

Originally published at:

Ruch, Willibald; Hofmann, Jennifer; Platt, Tracey (2015). Individual differences in gelotophobia and responses to laughter-eliciting emotions. *Personality and Individual Differences*, 72:117-121.

DOI: <https://doi.org/10.1016/j.paid.2014.08.034>

This manuscript was published as:

Ruch, W., Hofmann, J., & Platt, T. (2015). Individual differences in gelotophobia and responses to laughter-eliciting emotions. *Personality and Individual Differences*, 72, 117-121. doi: 10.1016/j.paid.2014.08.034

## Abstract

Gelotophobes (individuals with a fear of being laughed at) have even been found to express less joy and more contempt towards joyfully smiling/laughing faces compared to non-gelotophobes. However, it is unclear whether the lower levels of joy and higher levels of contempt are related to joy per se or only to those elements of joy associated with laughter. Thus, this study investigated the verbal and facial responses of 20 gelotophobes and 20 non-gelotophobes towards videos of people recalling memories of laughter-eliciting positive emotions (amusement, relief, *schadenfreude*, tactile pleasure). The facial expressions of the participants were clandestinely filmed and evaluated by the Facial Action Coding System (FACS; Ekman, Friesen, & Hager, 2002). Smiles of enjoyment and “markers of contempt” were coded and verbal ratings of the participants obtained. Gelotophobes responded with less joyful smiles and with more expressions of contempt to laughter-eliciting emotions than did non-gelotophobes. Gelotophobes also rated the degree of joy expressed by participants in the video clips of tactile pleasure and relief lower than non-gelotophobes. No differences occurred in ratings of aversiveness. The results suggest that gelotophobes have a negative bias towards laughter-eliciting situations stemming from different positive elicitors.

*Keywords:* gelotophobia, smiling, laughter, FACS, positive emotions

## **Individual Differences in Gelotophobia and Responses to Laughter-Eliciting Emotions**

### **1. Introduction**

Extravert individuals have been shown to excel in both encoding (expressing) and decoding (interpreting) facial expressions of emotions (Akert & Panter, 1987; Keltner, 1996). Also, extraverts can be accurately identified from the ways they express themselves (Borkenau & Liebler, 1992). Furthermore, extraversion is positively related to the frequency, intensity, and duration of experiencing positive emotions (e.g., Verduyn & Brans, 2012). Moreover, extraverts are known to display facial indicators of positive affect (smiling and laughter) quicker, more frequently, and more intensely than introverts (Ruch, 2007).

For some *neurotic introverts* on the contrary, smiling and laughter are not only less frequently felt and expressed – but the laughter of others is experienced as unpleasant and shame-eliciting to the point they are afraid of being laughed at (gelotophobia; Ruch & Proyer, 2008a). Gelotophobia exists along a spectrum ranging from no to very strong fear of being laughed at (Ruch & Proyer, 2009a, see Ruch, Hofmann, Platt, & Proyer, 2014 for a review). Gelotophobes respond fearfully to *any* kind of laughter – even to positively motivated laughter (Ruch & Proyer, 2009a) and the laughter does not entail positive contagious qualities (see Papousek et al., 2009). This misinterpretation of laughter might lead to relevant consequences for social interactions, as laughter is not only used to express positive emotions, but is also linked to social rewards (e.g., Kashdan, Yarbro, McKnight, & Nezlek, 2014).

Hofmann, Platt, Ruch, and Proyer (2014) investigated the verbal and facial responses to photos of facially expressed joy smiles/laughs and contempt smiles in individuals with or without gelotophobia. Compared to individuals with no fear, gelotophobes rated photos of joy smiles as less joyful and more contemptuous. Furthermore, they mimicked joy smiles less frequently than individuals with no fear. Moreover, gelotophobes expressed more contempt towards joy smiles compared to individuals with no fear. For the photos of contempt smiles, the contempt ratings were similarly intense in both groups, but gelotophobes additionally

rated contempt smiles to contain more joy compared to the no fear group. This suggests that gelotophobes attribute contempt to the joyfully smiling and laughing face, inasmuch as they misperceive joy as being linked to ridiculing others and/or that they may have a specific bias in decoding joy of others (Hofmann et al., 2014). While it could be assumed that gelotophobes are facially less expressive due to their introversion (Ruch & Proyer, 2009a), their introversion could not explain the higher frequency of contempt expressions towards photos of joy smiles and laughs. Still, joy was treated as a single category in this study, and it could not be investigated whether gelotophobes have a bias towards all facets of joy (positive emotions), or only those relating to laughter.

Platt, Hofmann, Ruch, and Proyer (2013) investigated the encoding of joy during an interview session. The facial responses of gelotophobes and non-gelotophobes were assessed while thinking about scenarios of 16 positive emotions (Ekman, 2003). Gelotophobes showed less intense and less frequent genuine displays of joy towards positive emotions that are associated to the expression of laughter (e.g., amusement, relief, tactile pleasure, *schadenfreude*) compared to non-gelotophobes. No differences were found for emotions going along with a low activation, like contentment or gratitude. From this, it seems that gelotophobes may have a specific bias towards those facets of joy that are more likely to be expressed by laughter (laughter-eliciting emotions), and not to joy in general. Still, this previous study did not assess other facial markers than joy smiles.

Thus, the current study aimed at investigating responses of gelotophobes towards the four positive emotions that had previously been linked to the expression of laughter (see Platt et al., 2013): Amusement, relief, tactile pleasure (especially tickling), and *schadenfreude*. Amusement is the facet of joy most likely to induce laughter and empirical evidence supports this close relationship of amusement to laughter (Ruch, 1993; Ruch & Ekman, 2001). Amusement can be benevolently targeting oneself or others, but can also entail derisive elements: people can be amused by laughing *with* others or by laughing *at* others.

Gelotophobes are supposedly afraid of the amusement of others, as they fear that they may be getting laughed at. Three other positive emotions have been shown to have a close association to laughter (see Platt et al., 2013) and are thus germane to be misinterpreted in gelotophobia: *relief* (see Rothbart, 1973), *tactile pleasure* when linked to tickling and thus higher arousal (e.g., Harris & Alvarado, 2005), and *schadenfreude* (e.g., Szameitat et al., 2009).

## 1.2 Aim of present study

The aim of this study was to investigate the response of two samples of subjects, gelotophobes and non-gelotophobes to video clips of individuals telling memories of laughter-eliciting positive emotions: amusement, relief, *schadenfreude*, tactile pleasure. The evaluation of the subjects' responses to these observed emotions was based on (1) self-reports (verbal ratings) and (2) objective measurements (facial responses of joy and contempt).

Firstly, it was expected that gelotophobes would show less facial expressions of spontaneous joy (in line with Platt et al., 2013), and more contempt (in line with Hofmann et al., 2014) towards the videos of laughter-eliciting emotions. Secondly, it was expected that gelotophobes rate laughter-eliciting emotions as less joyful and as more aversive than non-gelotophobes.

## 2. Method

### 2.1. Participants

The sample consisted of 40 adults (24 females, 16 males; age ranging from 18 – 74;  $M = 33.47$ ,  $SD = 12.54$ ). The participants were recruited through two newspaper articles on gelotophobia. The *fear group* (*gelotophobes*: scoring  $> 2.5$  on the GELOPH<15>) consisted of 20 adult volunteers (9 males, 11 females; age range 18 to 66 years,  $Mdn = 29$  years) that exceeded the cut-off point (Min = 2.60, Max = 3.87,  $M = 3.09$ ,  $SD = 0.37$ ) for gelotophobia. Only those participants (of the pretested 240) who scored over 2.5 on the GELOPH<15> on two separate occasions were included in the study. None of the participants were in

psychological treatment or consuming psychotropic medication at the time of the study. The *no fear (non-gelotophobes) group* consisted of 20 participants (7 males, 13 females; age range from 18 to 74 years,  $Mdn = 29$  years). Their GELOPH<15> scores (Min = 1.07, Max = 2.40,  $M = 1.53$ ,  $SD = 0.32$ ) were significantly lower than the ones of the fear group,  $F(1, 40) = 205.46$ ,  $p < .001$ ,  $\eta_p^2 = .840$ .

## 2.2. Instruments

The GELOPH<15> (Ruch & Proyer, 2008b) is a 15-item self-report questionnaire for the subjective assessment of gelotophobia (e.g., “When others laugh in my presence I get suspicious”). All items are positively keyed and utilize a four-point answer scale (1 = “strongly disagree”, 4 = “strongly agree”). Internal consistency in the present sample was high ( $\alpha = .86$ ).

## 2.3. Positive Emotion Video Task

The *16 Positive Emotions Video Task* (Ruch, Platt, Hofmann, 2010) is a standardized task in which individuals’ responses to described memories of 16 positive emotions (5 sensory pleasures, namely auditory, gustatory, olfactory, tactile, and visual pleasure; amusement, ecstasy, elevation, excitement, gratitude, *fiero* (pride in one’s own achievement), *naches* (pride in others’ achievement), relief, *schadenfreude*, wonder; Ekman, 2003) are documented. The stories are presented in 32 video clips and each clip shows a person telling a life event involving a particular positive emotion (two clips for each emotion). Clips included male and female story-tellers of various ages. The task exists in two versions: the second version presents the clips in reversed order from the first.

The *16 Positive Emotions Rating Form* accompanies each video clip and participants are asked to estimate: (a) how much joy the clip expressed, (b) how intense the presented emotion was (c) how aversive the clip was, (d) and how funny the clips was, all on a nine-

point scale (0=lowest; 9= highest). The last question (e) asks participants whether they would like to hear more stories of this kind.

At the end of the task, photos of all the people shown in the videos are presented and participants rate their perceived: honesty, attractiveness, and likeableness on a nine-point scale. This allows a degree of control for answering biases that might be due to features of the presenters. Although 16 positive emotions are presented, the analysis in this study focuses on the four laughter-eliciting emotions, while the others serve as filler items.

## **2.4. Procedure**

### ***2.4.1. Generation of the 16 Positive Emotions Video Task***

A pool of 145 videos showing people recalling a story of one of the 16 positive emotions was obtained. In a fourfold selection process, 32 final clips were chosen. In the first step of the selection, five raters trained in understanding the 16 positive emotions (two males, three females; age  $M = 24.40$ ,  $SD = 2.61$ ) watched all the video clips and rated them (1) for the emotion involved in that clip and (2) joy. In the second step, the rater's facial responses were analyzed for smiling. While some stories did not elicit any facial responses, other stories generated up to two joy smiles from each rater. For the next steps, clips that elicited more joy were favored over clips eliciting little (verbal rating or facially expressed) joy. In the third step the clip's content was checked for containing blends of several emotions. Eleven videos containing blends of different emotions were not considered for the final choice. In the fourth step, an effort was made to include clips featuring people of various age groups and both genders.

### ***2.4.2. Experimental procedure***

Newspaper articles on gelotophobia, linking to a study website, were utilized to obtain participants. The website presented general information on the study and the GELOPH<15> for an initial screening. As gelotophobia has a prevalence of about 5% in the general

population typically several hundred need to be pretested to get a sample of 20 participants. Participants could leave their e-mail addresses when interested in participating. Participants were then contacted to arrange an interview date and were asked to complete the GELOPH<15> again.

Participants came to the lab for a single session and, during the experiment, participants were left alone to complete the task on the computer. An example video was shown and participants were asked to complete the ratings. In case of questions, participants were instructed to approach the experimenter who was waiting in the adjacent room. The task consisted of watching the *16 Positive Emotions Video Task* and then filling out the *16 Positive Emotions Rating Form*. After completion, participants were asked to rate the people seen in the videos with respect to the three characteristics described above. During the procedure, a clandestine, built-in camera videotaped the participant's face without the knowledge of the participant. At end of the session, participants were debriefed and informed about the filming. Written consent allowing the use of the material was collected. On average, the study lasted 120 minutes. All participation was voluntary, but participants received a feedback that gave a general overview on the on the results of the study. The institution's ethics committee approved the study.

#### ***2.4.3. Facial action coding***

The Facial Action Coding System (FACS; Ekman et al., 2002) is an anatomically based, comprehensive, objective technique for measuring all observable facial movement. It distinguishes 44 action units (AUs). These are the minimal units that are anatomically separate and visually distinguishable. FACS allows for the measurement of the movement dynamics, intensity, and frequency. The intensities range from a trace (A) to maximum (E).

Films of participants showed full color, close-up views of the participant's faces. The participant's facial expressions were assessed for each clip separately. Two FACS-certified researchers identified and scored the apex of AUs in relevant events: DDs were considered as

markers of joy (symmetric, simultaneous orbicularis oculi pars orbitalis activation [AU6 “Cheek Raiser”] and zygomatic major muscle activation [AU12 “Lip Corner Puller”], Ekman, Davidson, & Friesen, 1990), and unilateral buccinator muscle action (AU14 “Dimpler”, Ekman & Heider, 1988) were considered as markers of contempt. These markers were rated in terms of frequency and intensity. The inter-rater reliability of the two coders was .86 (see Ekman et al., 2002).

### 3. Results

#### 3.1. Facial expressions towards laughter-eliciting emotions

In a repeated measures ANOVA, the frequency of facial responses towards laughter-eliciting emotions (amusement, relief, *schadenfreude*, tactile pleasure) was summed across the four emotions and used as a dependent variable, the gelotophobia group as predictor, and the contempt markers and Duchenne Displays (DD) as repeated measures (see Figure 1).

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Insert Figure 1 about here

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Figure 1 shows that both main effects for the gelotophobia group,  $F(1, 35) = 6.95, p < .05, \eta_p^2 = .166$ ; as well as the type of facial display (DD, contempt) were significant,  $F(1, 35) = 20.59, p < .001, \eta_p^2 = .370$ . As expected, the effects were qualified by an interaction between the gelotophobia group and the type of facial display,  $F(1, 35) = 19.12, p < .001, \eta_p^2 = .353$  (see Figure 1). In line with the hypothesis, post-hoc tests showed that the non-gelotophobic group displayed DD's more frequently towards laughter-eliciting emotions than the group of gelotophobes,  $F(1, 36) = 14.39, p < .001, \eta_p^2 = .291$ . The gelotophobic group, as expected, showed a tendency to display more contempt markers than the non-gelotophobic group,  $F(1, 36) = 3.29, p = .081$ . The non-gelotophobic group showed clearly more DD's than contempt markers in response to laughter-eliciting emotions,  $F(1, 17) = 28.55, p < .001, \eta_p^2 = .627$ ; while the gelotophobic group displayed markers of joy and contempt similarly frequent,

$F(1, 18) = 0.21$ , n.s.. This suggests a positive emotional contagion towards laughter-eliciting emotions in the group of non-gelotophobes, while this contagion failed for the gelotophobic individuals (see also Papousek et al., 2009).

### 3.2. Verbal ratings of laughter-eliciting emotions

For the ratings of joy, intensity, and aversiveness, the ratings to the two clips of each positive emotion were averaged for each scale (joy, intensity, aversiveness). In tactile pleasure, relief, and *schadenfreude*, the scores were corrected for funniness (to diminish effects of emotion blends with amusement). Means and standard deviations of these aggregated scores are presented in Table 1.

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Insert Table 1 about here

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Next, three repeated measures ANOVAs with the gelotophobia group (gelotophobia vs. non-gelotophobia) as factor, and the four laughter-eliciting emotions as repeated measures, and the intensity of the three ratings (joy, intensity, aversiveness) as dependent variables were computed. Age and gender were included as covariates.

For the joy ratings, the groups differed in the levels of joy they assigned to the clips,  $F(1, 36) = 7.23$ ,  $p < .05$ ,  $\eta_p^2 = .167$ . The gelotophobic group rated joy towards all four emotions numerically lower (see Table 1). Post-hoc tests showed that, in the case of tactile pleasure,  $F(3, 40) = 2.78$ ,  $p < .05$  one-tailed,  $\eta_p^2 = .188$ , and relief,  $F(3, 40) = 2.78$ ,  $p < .05$  one-tailed,  $\eta_p^2 = .188$ , the differences were significant, but not for amusement,  $F(3, 40) = 1.45$ , n.s., and *schadenfreude*,  $F(3, 40) = 1.34$ , n.s.. No interaction between the type of laughter-eliciting emotion and the group membership was found,  $F(3, 34) = 0.13$ , n.s.; and none of the covariates had a significant effect (both n.s.).

For the intensity ratings, there was a main effect for the type of laughter-eliciting emotion;  $F(3, 40) = 3.91$ ,  $p < .05$ ,  $\eta_p^2 = .098$ . This was qualified by an interaction with the gelotophobia group,  $F(3, 40) = 5.10$ ,  $p < .01$ ,  $\eta_p^2 = .124$ . Post hoc tests showed that the two

groups differed in the intensity of tactile pleasure  $F(3, 40) = 5.31, p < .05, \eta_p^2 = .128$  and *schadenfreude*,  $F(3, 40) = 3.4, p < .05, \eta_p^2 = .087$ . The non-gelotophobic group rated the intensity of tactile pleasure higher than those in the gelotophobic group did, whereas in case of *schadenfreude*, the intensity was rated higher by the gelotophobic group than the non-gelotophobic group. The two groups, however, did not differ in amusement,  $F(3, 40) = 3.05, n.s.$ , and relief,  $F(3, 40) = 1.42, n.s.$ . Age and gender also did not contribute significantly (both n.s.). Unexpectedly, no significant differences between the two groups were found for the aversiveness ratings (all effects n.s.), even though the gelotophobic group rated the aversiveness to all emotions but *schadenfreude* numerically higher.

### 3.3. Influences of demographic and control variables

Pearson correlations were computed to evaluate the influence of demographic variables to the verbal ratings. Gender and age correlated with the ratings (joy, intensity, aversiveness) and were taken into consideration in the hypotheses testing. It seemed possible that the perceived honesty, attractiveness, and likeability of the presenters might bias the ratings over and above the content of the story. To test this possibility, three repeated measures ANOVAs with the gelotophobia group as factor (gelotophobia vs. non-gelotophobia), the perceived attractiveness, honesty, and likeability of the presenters as dependent variables, and the presenters as repeated measures were computed. While there were (expected) differences among the presenters on how attractive, likeable, and honest they were perceived, the gelotophobia and non-gelotophobia groups did not differ in these perceptions (all n.s.), thus presenter related factors were not controlled in the hypotheses testing.

## 4. Discussion

The present study investigated how gelotophobes subjectively and objectively respond to laughter-eliciting emotions. A body of research suggested that gelotophobes generally

differ from non-gelotophobes in their responses towards negative emotions and universal joy (see e.g., Papousek et al., 2009; Ruch et al., 2014). Still, the results by Platt and colleagues (2013) indicated that gelotophobes did not differ from non-gelotophobes in all positive emotions, but only those relating to laughter. This notion was confirmed in the present study: gelotophobes less frequently responded joyfully towards laughter-eliciting emotions compared to non-gelotophobes. Titze (1996) first defined the “agelotic face” as being comparable to “a petrified countenance of a sphinx” and this description matches the lower frequency of facial responses found in the current results. Titze’s description was recently further supported by evidence that gelotophobes adopt “freeze-like” postures when being confronted with laughter (see Papousek et al., 2014). Moreover, gelotophobes also showed a tendency to express more contempt towards other’s memories of laughter-eliciting emotions compared to non-gelotophobes– in line with our hypothesis. Both response patterns of gelotophobes (not responding to expressions of joy with the reflection of joyful expressions and showing more contempt) may have detrimental effects on social interactions (Butler, Egloff, Wilhelm, Smith, Erickson, & Gross, 2003; Keltner & Bonnano, 1997; Keltner & Kring, 1998).

Differences between gelotophobes and non-gelotophobes with respect to verbal ratings of the film clips were also found. Gelotophobes reported less joy than non-gelotophobes in response to the presentations involving tactile pleasure and relief. For tactile pleasure, this may be due to the involvement of others (i.e., being tickled); due to their penchant to being introvert– neurotics (Ruch & Proyer, 2009a), gelotophobes may dislike this. The heightened scores in neuroticism might explain the lower liking of relief, as Ekman (2003) postulated that relief is preceded by a negative emotion or the anticipation of a negative emotion/event (which then does not occur). As individuals high in neuroticism (including gelotophobes) have a susceptibility to negative arousal, these negative aspects of the emotion stories might

have been more dominant in the decoding of relief. Consequently, the post event joy is less likely to occur.

Gelotophobes and non-gelotophobes did not differ in the assigned joy towards amusement and *schadenfreude*. This is not surprising for amusement due to the social desirability of being able to appreciate funny things (Craik, Lampert, & Nelson, 1996). It is possible that the level of joy assigned is an indicator of appreciation and thus exaggerated. The latter finding was against our predictions, as we expected that gelotophobes would be sensitive to situations in which somebody is laughed at for a mishap or weakness and should therefore dislike *schadenfreude* stories. Studies on katagelasticism (the joy of laughing at others; see Ruch & Proyer, 2009b), however, have shown a zero correlation between katagelasticism and gelotophobia, indicating that at least a subgroup of gelotophobes enjoys laughing at others too. This might be reflected in the current results.

The present study showed that gelotophobes rated the intensity of tactile pleasure lower and the intensity of *schadenfreude* higher than did the non-gelotophobes. As gelotophobes have been reported to retreat from social situations (see Ruch et al., 2014 for a review) they will be less likely to engage in tactile pleasure and experience it as intense. The higher intensity of *schadenfreude* is convergent with the finding that gelotophobes often show increased anger and aggressive tendencies (see Weiss et al., 2012), as well as the finding that subgroups of gelotophobes also have heightened scores in katagelasticism (the joy of laughing at others; Ruch & Proyer, 2009b). Interestingly, gelotophobes did not differ from non-gelotophobes in the decoding of aversiveness towards laughter-eliciting emotions.

A limitation of this study is that in the case of the facial responses, en- and decoding could not be separated: On one hand, participants may have become engaged in the story they saw in the video clip and generated their own emotion-driven facial response (encoding). On the other hand, the participants saw other people's joy, smiles and laughs, and might have simply mimicked those expressions (decoding), due to emotional contagion. To be

conservative, we limited the interpretation of the facial responses to decoding effects, but it could be argued that these effects might partly be found in encoding as well.

## **5. Conclusion**

Initial evidence showed that gelotophobes are lower in the experience and expression of joy (see Ruch et al., 2014 for a review). When looking at different facets of joy/ positive emotions, a slightly different picture shows: While gelotophobes do not differ from non-gelotophobes in the expression of joy towards low activation positive emotions (e.g., contentment, see Platt et al., 2013), they do differ in the experience and expression of positive emotions linked to laughter, as confirmed by the current results. This is relevant in two ways: Firstly, future intervention studies should target the re-attribution of laughter in gelotophobia, as gelotophobes were shown to interpret laughter as a social rejection cue (Papousek et al., 2014). The training should not only focus on laughter examples coming from amusement situations, but also other laughter-eliciting emotions. Laughter examples from a relief situation and also tickling may be particularly suitable to show gelotophobes that not all laughter is directed at someone or meant in a derisive way. Secondly, future studies may target the fostering of positive emotions in gelotophobes that are non-threatening to them and not related to laughter (e.g., contentment or visual pleasure, see Platt et al., 2013). More generally, the current results speak in favor of differentiating positive emotions and not only looking at the global category of joy. Furthermore, identifying personal preferences towards differential positive emotions or dispositions towards positive emotions might be fruitful for the fostering of positive affect beyond gelotophobia in the general population. Such personal preferences may be assessed with tasks similar to the paradigm utilized in this study and by combining subjective reports and objective measurements of positive responses towards the emotions (i.e., occurrence of joy smiles and absence of contempt).

## References

- Akert, R.M., & Panter, A.T. (1988). Extraversion and the ability to decode nonverbal communication. *Personality and Individual Differences, 9*, 965–972.  
doi:10.1016/0191-8869(88)90130-4
- Borkenau, P., & Liebler, A. (1992). Trait inferences: Sources of validity at zero acquaintance. *Journal of Personality and Social Psychology, 62*, 645–657. doi:10.1037/0022-3514.62.4.645
- Butler, E.A., Egloff, B., Wilhelm, F.H., Smith, N.C., Erickson, E.A., & Gross, J.J. (2003). The social consequences of expressive suppression. *Emotion, 3*, 48–67.  
doi:10.1037/1528-3542.3.1.48
- Craik, K.H., Lampert, M.D., & Nelson, A.J. (1996). Sense of humor and styles of everyday humorous conduct. *Humor: International Journal of Humor Research, 9*, 273-302.
- Ekman, P. (2003). *Emotions revealed: Recognizing faces and feelings to improve communication and emotional life*. New York, NY: Times Books.
- Ekman, P., Davidson, R.J., & Friesen, W.V. (1990). The Duchenne smile: Emotional expression and brain physiology II. *Journal of Personality and Social Psychology, 58*, 342–353. doi:10.1037/0022-3514.58.2.342
- Ekman, P., Friesen, W.V., & Hager, J.C. (2002). *Facial Action Coding System: A technique for the measurement of facial movement*. Palo Alto, CA: Consulting Psychologists Press.
- Ekman, P., & Heider, K.G. (1988). The universality of a contempt expression: A replication. *Motivation and Emotion, 12*, 303–308. doi:10.1007/BF00993116
- Harris, C., & Alvarado, N. (2005). Facial expressions, smile types, and self-report during humor, tickle, and pain. *Cognition and Emotion, 19*, 655–669.  
doi:10.1080/02699930441000472

- Hofmann, J., Platt, T., Ruch, W. & Proyer, R.T. (2014). *Individual differences in the decoding and responding to joy and contempt*. Manuscript under review.
- Kashdan, T.B., Yarbro, J., McKnight, P.E., & Nezlek, J.B. (2014). Laughter with someone else leads to future social rewards: Temporal change using experience sampling methodology. *Personality and Individual Differences, 58*, 15–19.  
doi:10.1016/j.paid.2013.09.025
- Keltner, D. (1996). Facial expressions of emotion and personality. In C. Magai, & S.H. McFadden (Eds.), *Handbook of emotion, adult development and aging* (pp. 385–401). San Diego, CA: Academic Press.
- Keltner, D. & Bonnanno, G.A. (1997). A study of laughter and dissociations: Distinct correlates of laughter and smiling during bereavement. *Journal of Personality and Social Psychology, 73*, 687–702. doi:10.1037/0022-3514.73.4.687
- Keltner, D., & Kring, A.M. (1998). Emotion, social function, and psychopathology. *Review of General Psychology, 2*(3), 320–342.
- Papousek, I., Aydin, N., Lackner, H.K., Weiss, E.M., Bühner, M., Schuler, G., Charlesworth, C., & Freudenthaler, H.H. (2014). Laughter as a social rejection cue: Gelotophobia and transient cardiac responses to other persons' laughter and insult. *Psychophysiology*. doi:10.1111/psyp.12259. Advance online publication.
- Papousek, I., Ruch, W., Freudenthaler, H.H., Kogler, E., Lang, B., & Schuler, G. (2009). Gelotophobia, emotion-related skills and responses to the affective states of others. *Personality and Individual Differences, 47*, 58–63. doi:10.1016/j.paid.2009.01.047
- Platt, T., Hofmann, J., Ruch, W., & Proyer, R.T. (2013). Duchenne display responses towards sixteen positive emotions: Individual differences between no and fear of being laughed at. *Motivation and Emotion, 37*, 776–786. doi:10.1007/s11031-013-9342-9
- Rothbart, M. (1973). Laughter in young children. *Psychological Bulletin, 80*, 247–256.  
doi:10.1037/h0034846

- Ruch, W. (1993). Exhilaration and humor. In M. Lewis, & J.M. Haviland (Eds.), *The handbook of emotions* (pp. 605–616). New York, NY: Guilford.
- Ruch, W. (Ed.) (2007). *The sense of humor: Explorations of a personality characteristic*. Berlin, Germany: Mouton de Gruyter.
- Ruch, W., & Ekman, P. (2001). The expressive pattern of laughter. In A.W. Kaszniak (Ed.), *Emotion, qualia, and consciousness* (pp. 426–443). Tokyo, Japan: Word Scientific Publisher.
- Ruch, W., Hofmann, J., Platt, T., & Proyer, R.T. (2014). The state-of-the art in gelotophobia research: A review and some theoretical extensions. *Humor: International Journal of Humor Research*, 27, 23–45. doi:10.1515/humor-2013-0046.
- Ruch, W., & Proyer, R.T. (2008a). The fear of being laughed at: Individual and group differences in gelotophobia. *Humor: International Journal of Humor Research*, 21, 47–67. doi:10.1515/HUMOR.2008.002
- Ruch, W., & Proyer, R.T. (2008b). Who is gelotophobic? Assessment criteria for the fear of being laughed at. *Swiss Journal of Psychology*, 67, 19–27. doi:10.1024/1421-0185.67.1.19
- Ruch, W., & Proyer, R.T. (2009a). Who fears being laughed at? The location of gelotophobia in the PEN-model of personality. *Personality and Individual Differences*, 46, 627–630. doi:10.1016/j.paid.2009.01.004
- Ruch, W., & Proyer, R.T. (2009b). Extending the study of gelotophobia: On gelotophiles and katagelasticians. *Humor: International Journal of Humor Research*, 22, 183–212. doi:10.1515/HUMR.2009.009
- Szameitat, D.P., Alter, K., Szameitat, A.J., Wildgruber, D., Sterr, A., & Darwin, C.J. (2009). Acoustic profiles of distinct emotional expressions in laughter. *Journal of the Acoustical Society of America*, 126, 354–366. doi:10.1121/1.3139899

Titze, M. (1996). The Pinocchio Complex: Overcoming the fear of laughter. *Humor & Health Journal*, 5(1), 1–11.

Verduyn, P., & Brans, K. (2012). The relationship between extraversion, neuroticism and aspects of trait affect. *Personality and Individual Differences*, 52, 664–669.

doi:10.1016/j.paid.2011.12.017

Weiss, E.M., Schuler, G., Freudenthaler, H.H., Hofer, E., Pichler, N., & Papousek, I. (2012).

Potential markers of aggressive behavior: The fear of other persons' laughter and its overlaps with mental disorders. *PloS one*, 7(5), e38088.

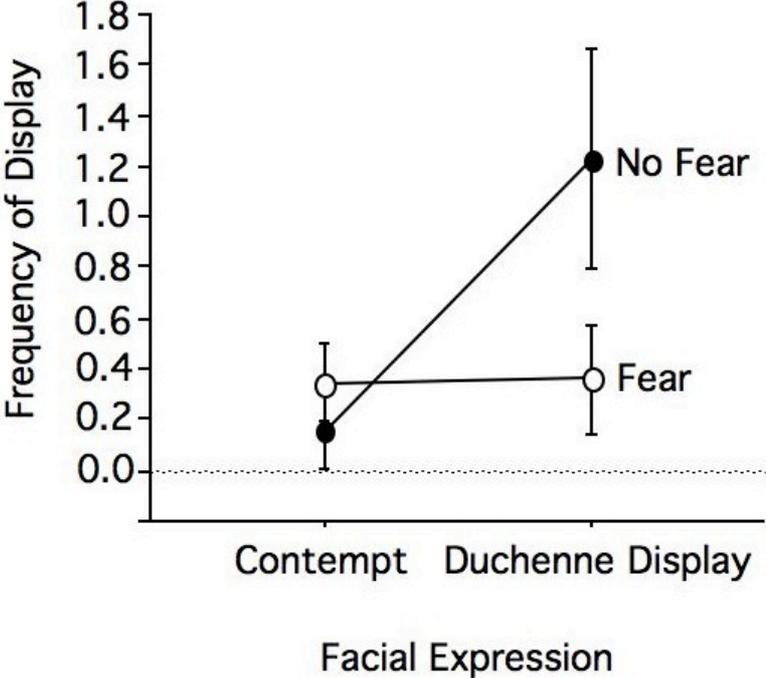
doi:10.1371/journal.pone.0038088

Table 1.

*Means and Standard Deviations of the Verbal Ratings Towards Laughter-Eliciting Emotions Displayed in Video Clips.*

Laughter- eliciting emotion	Group	Joy		Intensity		Aversiveness	
		<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>
Amusement	No fear	7.70	1.63	8.23	0.72	1.35	0.71
	Fear	6.90	2.15	7.77	1.52	2.18	2.17
Relief	No fear	4.52	1.32	8.13	0.74	2.23	1.81
	Fear	3.32	1.45	7.64	1.54	2.50	2.13
<i>Schadenfreude</i>	No fear	2.32	2.06	8.15	0.90	3.20	2.12
	Fear	1.45	1.99	8.61	0.49	2.55	1.75
Tactile Pleasure	No fear	5.05	1.62	7.35	1.06	1.38	0.58
	Fear	3.80	1.79	6.43	1.73	2.45	1.67

*Notes.*  $N = 40$ . Group = gelotophobia group (fear vs. no fear). Joy, Intensity, Aversiveness = Verbal ratings towards the emotion displayed.



*Figure 1.* Frequency of contempt markers and Duchenne displays (DD) during laughter-eliciting positive emotions separately for individuals with gelotophobes (fear group) and non-gelotophobes (no fear).