# Fear of being laughed at and social anxiety: A preliminary psychometric study

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## Abstract

The present study examines the relationship between questionnaire measures of social phobia and gelotophobia. A sample of 211 Colombian adults filled in Spanish versions of the Social Anxiety and Distress scale (SAD; Watson & Friend, 1969), the Fear of Negative Evaluation scale (FNE; Watson & Friend, 1969) and the GELOPH<15> (Ruch & Proyer, 2008). Results confirmed that both Social Anxiety and Distress and Fear of Negative Evaluation scale overlapped with the fear of being laughed at without being identical with it. The SAD and FNE correlated highly with the GELOPH<15> but not all high scorers in these scales expressed a fear of being laughed at. Furthermore, an item factor analysis yielded three factors that were mostly loaded by items of the respective scales. This three-factor structure was verified using confirmatory factor analysis. A measure model where one general factor of social anxiety was specified, or another one where two different factors were defined (gelotophobia *vs.* social anxiety assessed by SAD and FNE) showed a very poor fit to the data. It is concluded that the fear of being laughed cannot fully be accounted for by these measures of social phobia.

Key words: fear of negative evaluation, gelotophobia, questionnaire, ridicule, social anxiety

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## Introduction

When a new concept is put forward rather quickly the question arises whether this is actually something new or already existing albeit under a different name. This is particularly true for an individual differences measure of the fear of being laughed at (gelotophobia), as already numerous accounts of anxiety exist and lots of other personality traits may be located in the introverted neurotic quadrant of personality (Eysenck & Eysenck, 1985). Also gelotophobia understood as a *pathological* fear (Titze, 2009) is claiming ground where already established concepts exist. Indeed, gelotophobia and social phobia (or social anxiety disorder) do overlap to a great extent. For example, both involve social withdrawal. Titze (2009) outlined the similarities and differences between gelotophobia and social phobia and concluded that a person's biased belief that her or his self is intolerably ridiculous is one of the discriminating factors.

Ruch (2009) noted that research on social phobia was not interested in studying the social anxious' stance to humor, laughter, irony, mock, or ridicule and called for an investigation of the relation of the fear of being laughed at and social phobia or social anxiety disorder. The rediscovery (Fairbrother, 2002) of the pioneering work of Hartenberg (1901) gives further evidence that perhaps the same phenomenon is studied here, or that social phobia and gelotophobia at least seem to have a common ancestor in Hartenberg's account of '*timidité*'. Fairbrother (2002) noted that in *Les Timides et la Timidité* the French psychiatrist Paul Hartenberg described a phenomenology of timidity that is surprisingly similar to modern conceptualizations of social phobia. For example, Hartenberg noted that both shame and fear occur in situations where there is no actual danger, and that these emotions occur only in the presence of others. Most importantly, Hartenberg suggested that the fear of ridicule is one of the main reasons why timid people are fearful of self-disclosure and expressing their opinions.

Hartenberg's view that the fear of ridicule is one of the main motivations for the social inhibition of timid individuals has been confirmed recently by Ruch and Proyer (2009a), who showed that gelotophobia was highest in introverted neurotic (i.e., shy) individuals. Hartenberg's account of '*timidité*' may be a valid precursor of social phobia but actual traumatic experiences of being laughed at during childhood or adolescence are not among the etiological factors that Hartenberg listed (see Fairbrother, 2002). This was claimed to be one of the factors causing gelotophobia (Titze, 2009).

The comparison of gelotophobia and social anxiety disorder may incorporate many levels. Besides weighing against the defining criteria (or symptomatology) or comparing the etiological factors one might also think of studying the effects of treatments. May a treatment successfully reduce the one but still leave the other unchanged? Clearly, if the fear of laughter prevails after a successful treatment of social anxiety one might be more inclined to see them as different. If a treatment specifically tailored to cure social phobia also makes people differentiate better between malicious and good-natured laughter (where gelotophobes seem to fail; see, for example, Platt, 2008; Ruch, Altfreder & Proyer, 2009) then gelotophobia might be a redundant concept. Likewise, a further criterion might be investigating the level of gelotophobia (self- and peer-rated) or the per-

formance in more objective laughter-related tasks in a sample of patients with clinically diagnosed social anxiety disorder. If only a few of these patients show low fear of ridicule and laughter one might argue for the necessity of a concept of gelotophobia in spite of the well-established nature of social anxiety disorder.

One might also start with a less ambitious aim, namely a psychometric study of questionnaire indicators of social anxiety disorder and gelotophobia in a non-clinical sample. A variety of measures have been proposed for social phobia in adults and children (see, for example, Beidel & Turner, 2007; Heimberg, Liebowitz, Hope, & Schneider, 1995). Thus far, there are no empirical data on how these instruments correlate with the standard measure for the fear of being laughed at, the *GELOPH<15>* (Ruch & Proyer, 2008). Does the correlation suggest identity of the concepts or are the correlations far from being perfect? Furthermore, can the concepts that are being measured be recovered from a joint analysis of the item pools? Do they load on different factors or are they all measuring the same latent construct? Ideally, such a study should involve patients with clinically diagnosed social anxiety disorder and comparison groups. However, some instruments were designed to be used with students, which are more readily available. Such a study does not make a clinical study superfluous but will give a first estimation of the overlap of the concepts.

**Aim of the present study**

The aim of the study is to examine the degree of overlap and distinctiveness of psychometric measures of social anxiety on one hand and the fear of being laughed at on the other. For this purpose the Social Anxiety and Distress scale (SAD; Watson & Friend, 1969) and Fear of Negative Evaluation scale (FNE; Watson & Friend, 1969) will be administered together with the GELOPH<15>. Social avoidance was defined by Watson and Friend (1969) as avoiding being with or talking to others, or escaping from others, for any reason. Social distress was defined as the reported experience of negative emotion, such as being upset, distressed, tense, or anxious, or the reported lack of positive emotions, such as being relaxed, calm, at ease, or comfortable, in social situations. In this measure, respondents indicate how characteristic distress and avoidance are for them in various social situations. Fear of negative evaluations (FNE) is a core component of social phobia. The self-report measure designed by Watson and Friend (1969) assesses the degree to which an individual fears receiving negative evaluations from others. These researchers defined FNE as apprehension about others' evaluations, distress over their negative evaluations, avoidance of evaluative situations, and the expectation that others would evaluate oneself negatively.

Thus, analyses will be undertaken that will focus on (a) the bivariate relationships between indicators of social anxiety (i.e., the SAD and FNE) and gelotophobia (i.e., the GELOPH<15>); (b) a joint factor analysis of items of social anxiety and the fear of being laughed at to determine whether items measuring these concepts form different factors or load on the same dimension; and (c) a confirmatory factor analysis to evaluate different measure models defined according to the theoretical predictions about the link between

gelotophobia and social anxiety. These analyses will allow for a first and preliminary psychometric evaluation of the relationship between social anxiety and gelotophobia.

## Method

### Participants

The sample was comprised of 211 Colombian participants (104 males, 107 females) with a mean age of 20.62 (18 to 27 years). Most of them (i.e., 93.8 %) were not married.

### Measures

The Spanish language version (Carretero-Dios, Proyer, Ruch & Rubio, in press) of the *GELOPH<15>* (Ruch & Proyer, 2008) is a 15-item questionnaire in a 4-point answer format (1 = "strongly disagree" to 4 = "strongly agree") for the subjective assessment of the fear of being laughed at. All items are positively keyed and the items are averaged to form a total score. In Carretero-Dios and colleagues (in press), the GELOPH<15> demonstrated good reliability (internal consistency; Cronbach's alpha) in Spanish ($\alpha$ = .85) and Columbian ($\alpha$ = .81) samples. The internal consistency was .81 in the present sample. Several factor analytic techniques (e.g., plot of eigenvalues, parallel analysis, Confirmatory Factor Analysis) were used to test the dimensionality of the scale and all indicated that a one-dimensional factor solution did fit the data best. For the German version the retest-reliability was .86 and .80 for a three and a six months interval, respectively (Ruch & Proyer, 2009b). For the German version scores between 1.0 and 2.0 are classified as no fear of being laughed at, and between 2.0-2.5 is considered borderline fearful. Scores higher than 2.5, 3.0 and 3.5 indicate slight, marked/pronounced, and extreme fear, respectively. The GELOPH<15> is widely used in research (see this issue and, for example, Ruch [2009] or Papousek, Ruch, Freudenthaler, Kogler, Lang, & Schulter, 2009). The Spanish version is reprinted in Carretero-Dios et al. (in press).

The *Fear of Negative Evaluation scale* (FNE; Watson & Friend, 1969) is a 30-item self-report measure in a yes/no answer format designed to assess a core component of social phobia, namely the degree to which an individual fears receiving negative evaluations from others. Sample items are: "I rarely worry about seeming foolish to others", and "I am afraid that people will find fault with me". The scale has good reliability (the alpha-coefficient in the present sample was $\alpha$ = .89) and validity. García-Lopez, Olivares, Hidalgo, Beidel, and Turner (2001) developed the Spanish version of the scale. This version consists of 24 items (items 1, 4, 9, 11, 27, and 29 from the original scale are not used) and yields the same factorial structure as the original form.

The *Social Avoidance and Distress Scale* (SAD; Watson & Friend, 1969) is a 28-item measure of social anxiety using a yes/no answer format. Respondents fill in YES if they consider that a statement if true of their feelings most of the time and NO if they don't. Sample items are: "I am usually at ease when talking with someone of the opposite sex";

"I often want to get away from people"; and "I try to avoid situations which force me to be very sociable". This measure was developed for use in student populations. It has good reliability ($\alpha = .88$ in the present sample) and validity, and has been found to differentiate social phobics from simple phobics. The Spanish version of the SAD has only 21 Items, as 7, 10, 16, 17, 19, 22 and 23 were not used (García-Lopez et al., 2001). The internal structure of the scale has also been verified by means of exploratory factor analysis.

### Procedure

To collect the sample, a quota convenience sampling method based on sex (similar number of men and women) was used. The scales were administered either in classrooms or libraries of the University Campus. The scales (GELOPH<15>, SAD, FNE) were preceded by standard instructions and a consent form.

## Results

The fear of negative evaluation and the social anxiety and distress scales correlated significantly with each other ($r = .47$, $p < .01$). Furthermore, both scales correlated highly with the GELOPH>15> confirming that they tap into similar constructs. As expected, the GELOPH<15> correlated highly positively with the Social Avoidance and Distress Scale ($r = .64$, $p < .01$) and the Fear of Negative Evaluation Scale ($r = .52$, $p < .01$). Given the high reliability of the three scales (between .81 and .89) the coefficients show that the constructs are not redundant.

Next the bivariate relationship between the two indicators of social phobia and the fear of being laughed at was examined more closely. Special attention was given to the form of the relationship but also where on the continua defining the social anxiety and distress and the fear of negative evaluation dimensions the individuals with slight, pronounced and extreme fear of being laughed at were located. The application of the cut-off points indicated that 8.5 % of the sample might be seen as gelotophobic. Altogether 15 had a slight fear, two a marked fear and only one extreme fear of being laughed at. The bivariate plots involving the SAD and FNE are displayed in Figure 1 and 2, respectively.

Figure 1 shows that the fear of being laughed at increased linearly as the SAD scores increased. However, slight, pronounced and extreme fear also occurred among people below the midpoint in the SAD. Also among those with very high SAD scores only about 50 % also exceed the threshold for slight fear of being laughed at (i.e., mean scores in the GELOPH<15> $\geq 2.5$). While some of them are in the borderline fear region some clearly indicated that they have no fear of being laughed at. In part this is a matter of imperfect reliability. Nevertheless, these outliers obviously lower the correlation.
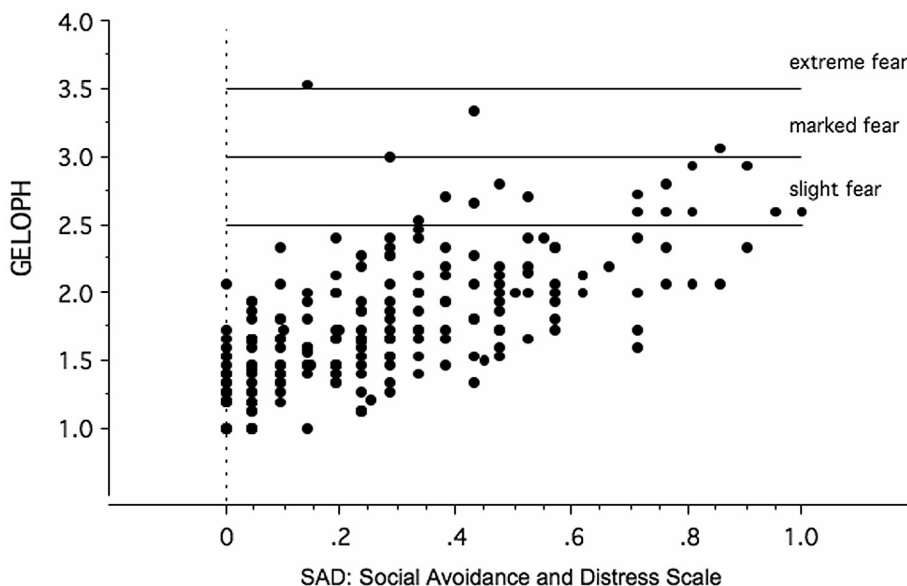
**Figure 1**:
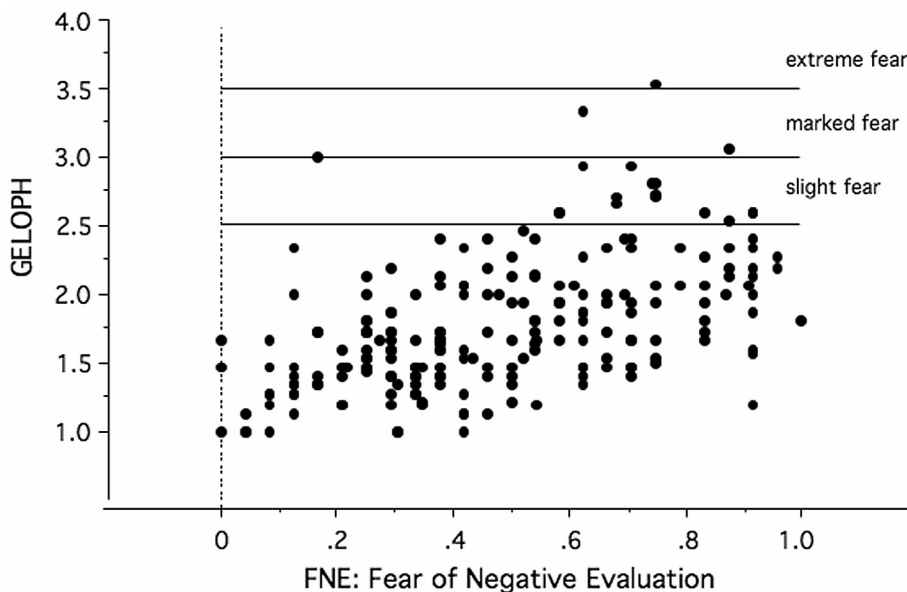Scatter plot depicting the relationship between scores in the SAD and the GELOPH



**Figure 2:**
Scatter plot depicting the relationship between scores in the FNE and the GELOPH

Inspecting Figure 2 reveals an interesting relation explaining why the correlation was not higher for the fear of negative evaluation: while low scores in FNE tended to go along with low scores in gelotophobia, individuals with high scores in FNE tended to have both low and high scores in the fear of being laughed at. A lack of homoscedasticity (i.e., different standard deviations in the criterion for different segments on the predictor dimension) impairs determining the size of the coefficient, however, it also allows for a different psychological interpretation of the relationship. This seems to imply that fear of negative evaluation is a necessary but not sufficient condition for the fear of being laughed at. Without a fear of negative evaluation there is no fear of being laughed at. However, a high fear of negative evaluation does not automatically yield high gelotophobia. Perhaps a history of being ridiculed or laughed at constitutes such a factor.

*Factor analysis of the three scales.* The 60 items of all instruments (15 GELOPH<15>, 21 FNE, and 24 SAD) were subjected to a principal components analysis. Eighteen eigenvalues exceeded unity but the scree test (eigenvalues = 12.20, 4.78, 2.51, 2.13, 1.78, and 1.69) would allow for three or four factors. Factor matrices were derived based on random numbers (with 60 variables and 211 cases) and the eigenvalues were compared with the ones obtained empirically. This parallel analysis (Horn, 1965) also suggested the extraction of three, possibly four factors. Factor 1 was loaded highly by items of all three scales and the loadings were equally high on average. The loadings on the second and third unrotated factor were plotted against each other (see Figure 3).
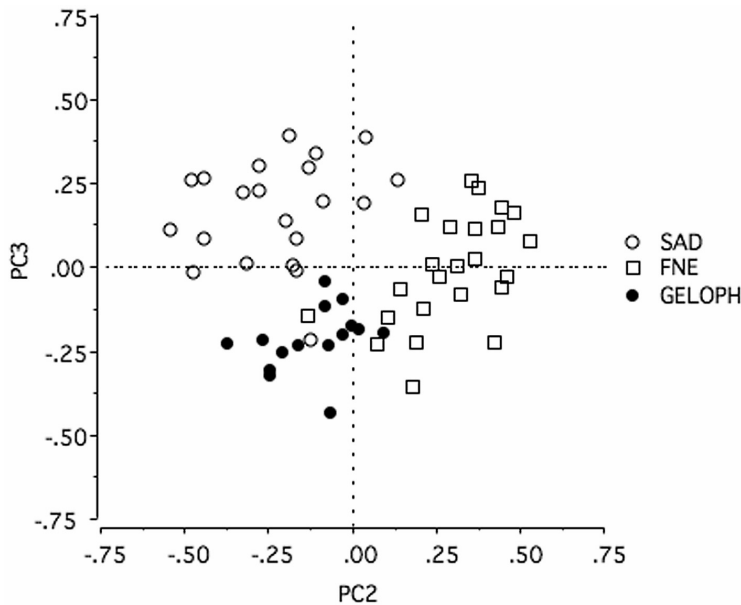


**Figure 3:**
Location of items of the SAD, FNE and GELOPH in a space defined by the second and third unrotated principal component

Figure 3 shows how well the items of the three scales could be separated by the second and third unrotated factor. The majority of the items covered areas that were clearly separate from each other with a maximum of two overlapping items. A few items from the GELOPH<15> primarily loaded on the fourth unrotated factor and this factor was correlated with the means and therefore reflected, in part, item difficulty.

Therefore it was decided to retain only three factors and to rotate them obliquely using Orthothran. The factor loadings (i.e., the reference structure) of the items of the three scales (SAD, FNE, GELOPH<15>) are presented in Table 1.

**Table 1:**
Joint factor analysis of the items of the SAD, FNE, and GELOPH

| SAD Items | F1 | F2 | F3 |
|---|---|---|---|
| I feel relaxed even in unfamiliar social situations (-) | .31 | **.40** | -.07 |
| I try to avoid situations which force me to be very sociable | **.59** | -.14 | -.04 |
| It's easy for me to relax when I am with strangers (-) | **.43** | .34 | -.20 |
| I have no particular desire to avoid people (-) | **.28** | .02 | .07 |
| I often find social settings upsetting | **.38** | .04 | .05 |
| I usually feel calm and comfortable in social situations (-) | **.49** | .01 | -.02 |
| I try to avoid talking to people unless I know them well | **.23** | -.02 | .14 |
| If the chance comes to meet new people, I often take it (-) | **.24** | .00 | .18 |
| I am usually nervous with people unless I know them well | **.38** | .18 | .00 |
| I usually feel relaxed when I am with a group of people (-) | **.49** | .21 | -.13 |
| I often want to get away from people | **.35** | -.10 | .19 |
| I usually feel uncomfortable when I am in a group of people I don't know | **.49** | .20 | -.06 |
| I usually feel relaxed when I meet someone for the first time | **.31** | .29 | .00 |
| Even though a room is full of strangers I may enter it anyway / "I usually prefer the places full of people" (-) | **.51** | .10 | -.23 |
| I would avoid walking up to and joining a large group of people | **.56** | .01 | .04 |
| I often feel on the edge when I talk to a group of people | .11 | .01 | **.41** |
| I tend to withdraw from people | **.51** | -.30 | .09 |
| I often think up excuses in order to avoid social engagements | **.44** | -.23 | .25 |
| I try to avoid formal social occasions | **.47** | -.19 | .14 |
| I usually go to whatever social engagements I have (-) | **.60** | -.18 | -.04 |
| I find it easy to relax with other people (-) | **.60** | .09 | -.03 |

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*Table 1 continued*

| Fear of negative evaluation | F1 | F2 | F3 |
|---|---|---|---|
| I worry about what people will think of me even when I know it doesn't make any difference | .01 | **.39** | .16 |
| I become tense and jittery if I know that someone is sizing me up | .02 | .22 | **.31** |
| I feel very upset when I commit some social error | -.07 | **.28** | .21 |
| The opinions that people have of me cause me little concern (-) | -.08 | **.49** | -.11 |
| I am often afraid that I may look ridiculous or make a fool of myself | .21 | .07 | **.38** |
| I react very little when other people disapprove of me (-) | .10 | **.51** | -.18 |
| The disapproval of others would have little effect on me (-) | -.01 | **.55** | -.12 |
| I rarely worry about what kind of impression I am making on someone (-) | -.05 | **.45** | .05 |
| I am afraid that others will not approve of me | -.08 | **.58** | .15 |
| I am afraid that others will find fault with me | .11 | **.58** | .06 |
| Other people's opinions of me do not bother me (-) | .12 | **.56** | -.13 |
| I am not necessarily upset if I do not please someone (-) | -.05 | **.39** | .07 |
| When I am talking to someone, I worry about what they may be thinking of me | -.07 | .28 | **.37** |
| I feel that you can't help making social errors sometimes, so why worry about it | .13 | **.36** | -.05 |
| I am usually worried about what kind of impression I make | -.10 | **.56** | .18 |
| I worry a lot about what my superiors think of me | -.23 | **.45** | .31 |
| If I know someone is judging me, it has little effect on me (-) | .07 | **.44** | -.01 |
| I worry that others will think I am not worthwhile | .01 | **.35** | .09 |
| I worry very little about what others may think of me (-) | -.10 | **.62** | -.01 |
| Sometimes I am too concerned with what other people may think of me | -.02 | **.47** | .24 |
| I often worry that I will say or do the wrong things | .08 | **.31** | .24 |
| I am often indifferent to the opinions others have of me (-) | -.09 | **.53** | -.17 |
| I often worry that people who are important to me won't think very much of me | -.09 | .09 | **.31** |
| I become tense and jittery if I know I am being judged by my superiors | -.20 | .18 | **.46** |

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*Table 1 continued*

| Gelotophobia items | F1 | F2 | F3 |
|---|---|---|---|
| When others laugh in my presence I get suspicious. | -.09 | .11 | **.26** |
| I avoid showing myself in public because I fear that people could become aware of my insecurity and could make fun of me. | .12 | -.12 | **.51** |
| When strangers laugh in my presence I often relate it to me personally. | .09 | .02 | **.24** |
| It is difficult for me to hold eye contact because I fear being assessed in a disparaging way. | -.17 | -.10 | **.52** |
| When others make joking remarks about me I feel being paralyzed. | -.01 | .08 | **.29** |
| I control myself strongly in order not to attract negative attention so I do not make a ridiculous impression. | .09 | -.06 | **.40** |
| I believe that I make involuntarily a funny impression on others. | .11 | -.20 | **.34** |
| Although I frequently feel lonely, I have the tendency not to share social activities in order to protect myself from derision. | .23 | -.21 | **.45** |
| When I have made an embarrassing impression somewhere, I avoid the place thereafter. | .12 | .11 | **.26** |
| If I did not fear making a fool of myself I would speak much more in public. | .08 | .07 | **.44** |
| If someone has teased me in the past I cannot deal freely with him forever. | -.01 | .02 | **.30** |
| It takes me very long to recover from having been laughed at. | .04 | .11 | **.32** |
| While dancing I feel uneasy because I am convinced that those watching me assess me as being ridiculous. | .10 | -.13 | **.53** |
| Especially when I feel relatively unconcerned, the risk is high for me to attract negative attention and appear peculiar to others. | .06 | -.15 | **.39** |
| When I have made a fool of myself in front of others I grow completely stiff and lose my ability to behave adequately. | .20 | .10 | **.23** |

*Note.* F1 = social avoidance and distress; F2 = fear of negative evaluation; F3 = fear of being laughed at. Main loading per row is in boldface; (-) Item is inverted; highest loading in a row is in boldface.

The factors clearly, and with only a few exceptions, were exclusively loaded by items of a particular scale. Factor 1 was clearly a social avoidance and distress factor; 19 of the 21 items of the SAD had their main loading on this factor and no item of the other two scales contributed substantially to this factor. The second factor is loaded by all except five of the fear of negative evaluation items and by one SAD item ("I feel relaxed even in unfamiliar social situations"). No gelotophobia item loaded on this factor; the loadings

ranged from -.21 to .11. The third factor was loaded by all gelotophobia items, one item of the social anxiety and distress scale ("I often feel on the edge when I talk to a group of people") and five items of the fear of negative evaluation scale. One of the latter ("I am often afraid that I may look ridiculous or make a fool of myself") clearly reflects geloto-phobic contents and the others ("I often worry that people who are important to me won't think very much of me", "I become tense and jittery if I know I am being judged by my superiors", "When I am talking to someone, I worry about what they may be thinking of me", "I become tense and jittery if I know that someone is sizing me up") contain elements of imagining of being judged and therefore perhaps might also involve an element of ridicule.

The interpretation of the factors was also underscored by the fact that the respective scale correlated well with the factor. This was particularly true so for SAD ($r = .77$) and FNE ($r = .77$), and the correlation was still very high for the GELOPH<15> ($r = .69$). As expected the intercorrelation was lower for the factors than for the scale. The intercorrelation among the SAD and FNE factors was low, .29 and both correlated more highly with gelotophobia (SAD: .53; FNE: .42).

Taking into account the previous analyses, a confirmatory factor analysis was performed to explore if the assessed constructs were empirically homogeneous and at the same time independent of each other. Due to the fact that the exploratory analyses revealed very clear factors, it was reasonable to split the scales into several item parcels to separate measurement error from true differences (Eid, Nussbeck, Geiser, Cole, Gollwitzer, & Lischetzke, 2008). Then, on these indicators, the confirmatory factor analysis was applied. Therefore, three indicators per factor were constructed. To do that, the ordered loadings of the exploratory factor analysis were considered, and the items were assigned to each parcel in an iterative process. There was a total of nine observed variables (three indicators for gelotophobia, social anxiety and distress, and fear of negative evaluation, respectively). The robust maximum likelihood (MLR) estimator was used, which takes the nonindependence of observations and also possible nonnormality of the data into account. Analyses were conducted using Mplus 5.0. Initially four models were evaluated:

*Model 1:* a general factor model composed by all indicators of gelotophobia, social anxiety and distress, and fear of negative evaluation.

*Model 2:* two factors of gelotophobia and social anxiety (with all indicators of social anxiety and distress, and fear to negative evaluation) respectively. This model was proposed to analyze if gelotophobia is different from two measures of the social phobia, which are defined as belonging to same general construct of social anxiety.

*Model 3:* two factors (all indicators of social anxiety and distress, and gelotophobia *vs.* fear to negative evaluation). This model was specified due to the high correlations observed between the SAD and GELOPH<15> scales. The model represents the "phobias" (with the avoidance and distress caused) versus the more cognitive evaluation.

*Model 4:* three homogeneous factors (gelotophobia, social anxiety and distress, and fear of negative evaluation) where correlations among the factors were allowed. The fit of these four models is shown in Table 2.

**Table 2:**

Fit of the homogeneous-factors model of gelotophobia, social avoidance and distress, and fear of negative evaluation

| Models | $\chi^2 (N = 211)$ | df | p | CFI | RMSEA | SRMR |
|---|---|---|---|---|---|---|
| One general factor | 334.38 | 27 | .000 | .62 | .26 | .12 |
| Two factors (gelotophobia *vs.* social anxiety) | 253.57 | 26 | .000 | .73 | .22 | .13 |
| Two factors (gelotophobia and SAD *vs.* FNE) | 120.79 | 26 | .000 | .87 | .15 | .09 |
| Three correlated factors | 35.55 | 24 | .06 | .99 | .05 | .04 |
| Three correlated factors and loadings of belonging factor fixed to be equals | 39.26 | 27 | .06 | .99 | .05 | .05 |

*Note.* SAD = social avoidance and distress. FNE = fear to negative evaluation. CFI = comparative fix index. RMSEA = root-mean-square error approximation. SRMR = standardized root mean square residual.

The models with a general factor and with two different factors showed a very poor fit to the data. The inspection of modification indices revealed that the higher values were due to the relations between indicators that belong to the same factor. This means that a model with three independent factors could be a better option. In fact, the model with three correlated homogeneous factors did fit the data well. This demonstrated that in this sample the defined factors were unidimensional for the three indicators of the same factors – although, at the same time the factors were correlated with each other. A more restrictive model specification was introduced, and then the fit of the data was compared with the model where the factors were allowed be correlated. In this model, loadings of indictors belonging to the same factor were fixed to be equals (Model 5). The results on the fit of this model can also be found in Table 2.

The homogeneous factors model with loadings fixed to be equals did fit the data well. The MLR chi-square difference test did not reveal any statistically significant difference between the less and more restrictive models: Scaled $\chi^2$ difference = 3.52, $df = 3$, $p = .32$. This means that homogeneous factors models (free of restrictions) could be replaced by the restrictive-homogeneous factors one (with path loadings fixed to be equals). The defined factors were unidimensional for the three indicators of the same factors, and simultaneously the indicators were parallel measures of belonging factors although different from the indicators of not belonging factors. More detailed outcomes for the more restrictive variant are shown in Figure 4.

The standardized pattern coefficients shown in Figure 4, which can be taken as indices of the accuracy with which the corresponding factors measure the indicators, ranged from .74 to .84 for the gelotophobia factor; from .79 to .87 for the social avoidance factor; and from .85 to .91 for the fear to negative evaluation factor. As can be observed in Figure 2,
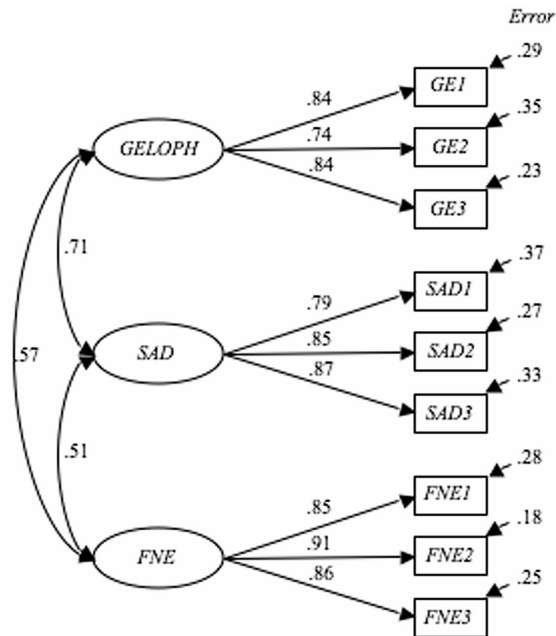
**Figure 4:**
Confirmatory factor analysis of gelotophobia, social avoidance and distress, and fear of
negative evaluation as independent homogeneous factors (standardized solution).
GELOPH = broad gelotophobia factor; SAD = broad social avoidance and distress factor;
FNE = broad fear to negative evaluation factor; GE1, GE2 and GE3 = indicators or observed
variables of gelotophobia factor; SAD1, SAD2 and SAD3 = indicators or observed variables
of social avoidance and distress factor; FNE1, FNE2 and FNE3 = indicators or observed
variables of fear to negative evaluation factor

the correlation pattern (standardized values at the latent level) between the factors as-
sessed across items parcel was similar to the correlations observed when the total scores
in each scale were considered. The fear of negative evaluation and the social anxiety and
distress factors correlated with each other ($r = .51$, $p < .001$). Both factors correlated
highly with the gelotophobia measure. The GELOPH<15> correlated highly positively
with the social avoidance and distress factor ($r = .71$, $p < .001$) and the fear of negative
evaluation factor ($r = .57$, $p < .001$). The correlations between the GELOPH<15>, SAD
and FNE indicators and their reliability are presented in Table 3.

The reliability of indicators was satisfactory (between .60 and .84). The correlations
between indicators that belong to the same factor were high ($.64 \leq r \leq .78$), indicating
that the different parcels were relatively homogeneous indicators of the same factor. The
size of the correlations between indicators of different factors was lower ($.24 \leq r \leq .54$),
reflecting appropriate discriminant validity.

**Table 3:**
Reliability (Diagonal) and Correlations of the GELOPH, SAD and FNE indicators

| Indicators | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 |
|---|---|---|---|---|---|---|---|---|---|
| 1. GE1 | *.71* | | | | | | | | |
| 2. GE2 | **.64** | *.60* | | | | | | | |
| 3. GE3 | **.69** | **.64** | *.77* | | | | | | |
| 4. SAD1 | .46 | .38 | .39 | *.62* | | | | | |
| 5. SAD2 | .54 | .50 | .49 | **.64** | *.72* | | | | |
| 6. SAD3 | .53 | .45 | .50 | **.73** | **.73** | *.76* | | | |
| 7. FNE1 | .41 | .47 | .35 | .40 | .44 | .39 | *.72* | | |
| 8. FNE2 | .41 | .51 | .36 | .39 | .44 | .40 | **.76** | *.83* | |
| 9. FNE3 | .37 | .48 | .31 | .24 | .34 | .28 | **.73** | **.78** | *.84* |

*Note.* Values in the main diagonal (italicized) are the reliabilities. Values in bold indicate correlations within one factor. GE = gelotophobia. SAD = social avoidance and distress. FNE = fear of negative evaluation.

## Discussion

This study provides first psychometric evidence that the GELOPH<15> is related to established measures of social phobia without gelotophobia being a redundant concept. The evidence for the overlap is very clear in as much as the Spanish versions of the Watson and Friend (1969) scales of social avoidance and distress (SAD) and fear of negative evaluation (FNE) correlated highly with the GELOPH<15> in a sample of 211 Colombian students. Thus, generally speaking the fear of being laughed at is higher among those showing social anxiety and social avoidance behavior in social interactions. In the present sample the correlations were higher with the SAD measure than the FNE scale but neither suggests identity of the measures after correction for attenuation (i.e., when the measurement error is considered). The correlation with the SAD and FNE corrected for attenuation would be .76 and .61, respectively suggesting that gelotophobia and the two indicators of social phobia share between 38 and 57 % of the variance if all concepts were measured without error. Relatedly, Edwards, Martin, and Dozois (2010, this issue) found a correlation of .70 between fear of negative evaluation and the GELOPH<15> in their sample of Canadian students. This is an even higher correlation but it does not suggest identity of the latent variables, as the Alpha for the two scales was very high for both the GELOPH<15> ($\alpha = .87$) and the brief FNE ($\alpha = .95$) as well. The coefficient corrected for attenuation is .77 indicating 59 % overlap in variance in the true scores.

Also the factor analysis at the item level and the CFA of item parcels showed that the latent factors are well correlated (with the SAD and the GELOPH<15> being more highly correlated than the FNE and the GELOPH). Nevertheless, it is also clear from both analyses that the three concepts are different; there was no evidence for a general

factor of social anxiety (or social phobia) incorporating all three scales. So how are they different? The plot for both concepts revealed that a fear of being laughed at will be found more likely for individuals with high scores in SAD (or FNE) but also may be found for individuals with lower social avoidance and distress (or lower fear of negative evaluation). More importantly, only about half of the individuals scoring high in the SAD also exceeded the threshold for slight fear of being laughed at. Thus, while the three scales are highly correlated across the entire continuum, there are extreme scorers in one scale that do not necessarily score very high in the other. This, in part, might be affected by imperfect reliability, however, for the fear of negative evaluation a special form of relationship was found in the scatter plot. The range in the GELOPH<15> scores increased with increasing scores in the fear of negative evaluation. Low FNE also implied low fear of being laughed at but high FNE can go along with both low and high fear of negative evaluation. Thus, the fear of being laughed at might reflect the more general tendency of fear of negative evaluation. However, not everyone that fears negative evaluation might fear laughter; e.g., as negative evaluation does not necessarily need to be expressed through ridicule and laughter. Perhaps having a history of being laughed at is needed as an additional factor to predict whether a person high in FNE also will have a higher fear of being laughed at.

The limitation of the present study is that it was conducted with students and the number of high scorers was actually low (but typical for the country). It might be of interest to see how the high scores in the gelotophobia measure are distributed in a sample of individuals with social anxiety disorder (according to fixed diagnostic guidelines as defined in such classification schemes as the DSM-IV-TR by the American Psychiatric Association, 2000). One can assume that a general tendency to be more or less anxious causes the three scales to correlate in the lower range of anxiety – all three scales were developed to be suitable for the use within the range of normality. However, the key question is how independent or correlated the social phobia and gelotophobia measures are in a sample of socially anxious (or gelotophobes). Thus, studies with patients or people coming for consultation with social anxiety problems would be a necessary next step.

The factor analysis at the item level gave additional insights. Despite their higher intercorrelation the SAD and gelotophobia measures were clearly separable and there was only one (SAD) item that loaded more highly on the other factor. However, five items of the fear of negative evaluation scale correlated more highly on the fear of being laughed at factor. One item directly expressed a fear of ridicule. One might argue that the fear of being laughed at is a very narrow aspect best to be subsumed under fear of negative evaluation. However, the fear or being laughed at is broader than just the fear of negative evaluation and hence, alternatively, one might argue that these two concepts overlap. Correlations with personality and personality pathology suggest that the GELOPH<15> has two clusters of predictors, one being social withdrawal and anxiety, the other being a paranoid tendency (Ruch & Proyer, 2009a). It appears that the FNE items that load on the gelotophobia factors will belong to the second cluster as they emphasize the element of others thinking badly of oneself.

As a further limitation of the study it should be mentioned that cultural factors might also account for differences in the expression of the variables that entered the study and that

these factors may have an impact on the results of the present study. For example, for gelotophobia there are data from a multinational study involving more than seventy countries (see Proyer, Ruch, Ali, Al-Olimat, Amemiya, et al., 2009). Though this was an initial psychometric study, cultural differences (e.g., in the endorsement to single items) were apparent. One might assume that factors such as education, styles of relationship, social pressure, media representation along with dimensions described by Hofstede (2001; e.g., collectivism vs. individualism) are of importance in the development of individual and group sensitivity. Nevertheless, it should be kept in mind that the relation between gelotophobia and fear of negative evaluation in the Canadian (Edwards et al., 2010, this issue) and the Colombian sample were rather similar which might indicate that the results generalize across different regions in the world.

All in all, one can tentatively conclude that the present data suggest that gelotophobia and social anxiety disorder do strongly overlap but are also different from each other. As mentioned in the introduction the study of the correlation of measures of both is only one, perhaps even not very central criterion to judge the relationship between the two concepts. Further studies are needed that go into the etiology (see Edwards et al., 2010, this issue), but also life span development, and treatment of the fears and both experimental and clinical studies should complement the psychometric ones. Psychometric studies should involve the most current social phobia scales as well as standardized interviews. Perhaps research on social anxiety might also profit from including ridicule, humor, and laughter in their studies.

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