

Teasing, Ridiculing and the Relation to the Fear of Being Laughed at in Individuals with Asperger's Syndrome

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Published online: 27 July 2010
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Abstract The present paper investigated the fear of being laughed at (gelotophobia) in relation to recalled experiences of having been laughed at in the past in individuals with Asperger's Syndrome (AS). About 45% of the individuals with AS ($N = 40$), but only 6% of the controls ($N = 83$) had at least a slight form of gelotophobia, which is the highest percentage ever found in the literature. Gelotophobia correlated with the frequency and severity of remembered teasing and mocking situations in the past. This indicates that gelotophobia is an important issue in individuals with AS. Furthermore, individuals with AS are less able to laugh at themselves (gelotophilia), but enjoy laughing at others (katagelasticism, a more hostile form of humor) to the same extent as controls do.

Keywords Asperger's syndrome · Humor · Laughter · Gelotophobia · Fear of being laughed at · Teasing

Introduction

Asperger's syndrome (AS) belongs to the high functioning autism spectrum disorders affecting social functioning and

behavioral interests and activities. Individuals with AS show marked deficiencies in social cognition, such as a reduced Theory of Mind and empathy, which results in difficulties in reading other people's minds (beliefs, thoughts, emotions, e.g., Baron-Cohen et al. 1985; Baron-Cohen 1989, 2001). They even have difficulties reading other people's non-verbal cues such as body language (Asperger 1944; Attwood 2000) and initiating appropriate non-verbal communication (Wing 1981). Additionally, they have difficulties with change, prefer sameness, often have obsessive routines and may be preoccupied with a particular subject of interest (e.g., Frith 1991, 2003).

Individuals with AS stand out due to their inappropriate reactions and behaviors in social settings, particularly in childhood. Deviant behavior is often described in the literature as a known source of laughter (e.g., Ferguson and Ford 2008; Martin 2007). It can be seen as incongruent to normal behavior, and incongruity is a core element of humor. Hans Asperger (1944) described several cases of individuals with AS who were laughed at and teased in their childhood due to their peculiarities, and who were particularly sensitive to derision. He referred to, for example: "...the language seems to be unnatural (...) which provokes derision" (p. 114) or "...they don't understand fun (...), one more reason why they get so often picked on" (p. 127). In addition, there is also evidence from case and peer reports that children with AS were teased and laughed at by others because of their social naivety and behavior that might seem to be odd and awkward to other children (e.g., Attwood 2004; Carter 2009; Dubin 2007; Goodman 1987; Little 2002; Van Roekel et al. 2010; Welkowitz and Baker 2005; Wing 1981).

Very few people enjoy being laughed at and it usually evokes negative emotions like anger, sadness, shame, disgust and fear (Platt 2008; Platt and Ruch 2009). Moreover,

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researchers have claimed that there might be long-lasting consequences of being laughed at. In detail, it was argued that intense, repeated, and traumatic experiences of being laughed at or being ridiculed is one factor that leads to the development of the fear of being laughed at, a term recently defined as gelotophobia—from the Greek term “gelos” for laughter and “phobia” for fear (Ruch and Proyer 2008a, b; Titze 2009).

Gelotophobic individuals do not experience laughter and smiling from their interaction partners as something positive, but as a means to put them down. Thus, they show negative reactions towards several types of laughter. This was not only observed in clinical practice (Titze 2009), but was also shown in experimental settings for different types of laughter and smiles (Ruch et al. 2009a). Gelotophobes are very observant when they are together with other people and easily become suspicious when they hear laughter from others, as they assume the laughter is directed at them (e.g. Ruch 2009). Recently, a questionnaire was introduced that measures gelotophobia as an individual difference phenomenon in the range of normality with high reliability and validity (Ruch and Proyer 2008a). In the past 3 years, more than thirty studies have been published that examined the fear of being laughed at in a variety of contexts (e.g. Forabosco et al. 2009; Platt 2008; Ruch et al. 2009a). For example, it was shown that a group of clinically diagnosed gelotophobes could be separated by means of a self-report measure from groups of shame-based and non-shame based neurotics (Nathanson 1992) and from normal controls (Ruch and Proyer 2009a). In non-clinical populations, the prevalence of gelotophobia is ~5% for Switzerland (e.g., Samson et al. in press) and 11.65% for Germany (Ruch and Proyer 2008b).

We assume that individuals with AS score higher on gelotophobia, as they might have been exposed to more teasing and bullying situations in their past. However, clinically diagnosed gelotophobes did not remember more incidents of having been laughed at in their childhood and youth than a control group (Ruch et al. 2010). However, Platt et al. (2009) demonstrated that the expression of gelotophobia was a very potent predictor of remembered incidents of having been bullied, and Proyer et al. (2009) showed that gelotophobes recalled the situations of being laughed at with a higher intensity of feelings.

Recently, the study of the fear of being laughed at was extended to the joy of being laughed at and the joy of laughing at others: if there are people who fear being laughed at, then there may also be people who enjoy being laughed at. This phenomenon is called gelotophilia (Ruch and Proyer 2008a, b). Interestingly, the enjoyment of laughing at others (katagelasticism) was also recently addressed in research. These three individual difference phenomena assessing attitudes towards laughter can be measured with a recently developed questionnaire (i.e., the

PhoPhiKat; Ruch and Proyer 2009b). This instrument was derived by means of factor analysis of statements describing the high scorer. The standard and short versions have 45 and 30 items, respectively. It turned out that gelotophobia and katagelasticism were independent from each other, while gelotophilia correlates negatively with gelotophobia and positively with katagelasticism. The scale has been validated in a variety of settings, such as humor (e.g., Ruch et al. 2009b), ridicule among the elderly (Platt and Ruch 2010) and emotions, such as shame and guilt (Proyer et al. 2010). For example, Samson and Meyer (2010) showed that gelotophobia, gelotophilia and katagelasticism provoked different reactions to aggressive humor.

Aim of the Present Study

The paper aims to investigate the relationship between Asperger's syndrome and the concepts of gelotophobia, gelotophilia and katagelasticism. One aim is to study the proportion of gelotophobes among individuals with AS: we expect to find more gelotophobes among individuals with AS than in the control group. Individuals who experienced situations in which they were laughed at, teased or mocked in their childhood and youth do have a higher risk of developing gelotophobia. In order to clarify the relationship between such experiences, gelotophobia and Asperger's syndrome, the frequency and severity of situations in which the participants of the study were laughed at will be assessed in a short questionnaire, which was developed for this study. We expect to find a positive correlation between the frequency and severity of such experiences and gelotophobia. Furthermore, it is of interest whether individuals with AS experience pleasure when they laugh at others (katagelasticism). Laughing at someone can be seen as a violent act directed towards other people; therefore there is an interpersonal component involved in laughing at others. However, this act was shown to reflect lack of guilt (Proyer et al. 2010) and may also be related to lack of empathy. Antisocial acts including aggression are not considered to be common in individuals with AS (Ghaziuddin et al. 1991; Kohn et al. 1998) but are—if they occur—discussed in relation to lack of empathy (Baron-Cohen 1988). However, we do not expect to find differences between individuals with AS and the control group regarding katagelasticism. Finally, we hypothesized that individuals with AS will be less able to laugh at themselves, as Hans Asperger (1944) noted that “...a characteristic trait of these children is their humorlessness: They are spoilsports, especially when the joke is on them...” (p. 127). Also Lyons and Fitzgerald (2004) claimed that individuals with AS are not able to laugh at themselves, which leads us to the assumption that individuals with AS show lower scores on gelotophilia, the joy of being laughed at.

Method

Individuals with AS and a healthy control group were invited to complete online questionnaires assessing gelotophobia, gelotophilia, and katagelasticism (*PhoPhiKat*; Ruch and Proyer 2009b), the frequency and severity of having been ridiculed in the past (*Ridicule-Experience Questionnaire*, REQ) and a questionnaire that assesses domains connected with the autism spectrum such as social and communication skills, imagination, and attention switching/tolerance of change (AQ-k, the German short version, Freitag et al. 2007, of the *Autism-Spectrum Quotient*, AQ, Baron-Cohen et al. 2001). Individuals with AS were recruited via several ways, as described in the “*Procedure*” section, and all were diagnosed by a psychotherapist (ICD-10: F84.5).

Participants

Of the 130 individuals who started the questionnaires, seven did not complete them. Therefore, they were not included in the analysis. Forty individuals with AS (20 males, 20 females) and 83 control participants (40 males, 43 females) completed the questionnaires online. The control group was 51.8% female, and the AS group was 50%. The distribution of males and females did not differ significantly between the two groups ($\chi^2(1) = .04, p = .85$). The control participants (age $M = 28.72, SD = 9.34$) and the AS individuals (age $M = 31.78, SD = 11.68$) did not differ regarding their age ($F(1,122) = 2.44, p = .12$). However, the two groups differed in their educational level: 50% of the individuals with AS and 83.1% of the control group were students or had a University degree ($\chi^2(1) = 14.21, p < .001$).

Individuals with AS had significantly higher Autism-Spectrum quotients (AQ, Baron-Cohen et al. 2001; $M = 24.50, SD = 5.64$) than the control group ($M = 5.93, SD = 3.71; F(1, 122) = 475.02, p < .001$, see also

Table 1). A score of 17 is seen as the cut-off for individuals with AS. It is important to mention that the AQ-k is not a diagnostic measure per se, but is a reliable and valid self-assessment instrument assessing domains connected with the autism spectrum (AQ-k, Freitag et al. 2007). However, we included four individuals with AS with scores below 17 (ranging from 13 to 16) as they had received a diagnosis of AS by a psychotherapist.

Instruments

The *PhoPhiKat-45* (gelotophobia, gelotophilia, and katagelasticism; Ruch and Proyer 2009b) consisted of 15 statements each for the subjective assessment of *gelotophobia* (e.g., “When people laugh in my presence I get suspicious”), *gelotophilia* (e.g., “I seek situations in everyday life in which I can make other people laugh at me”), and *katagelasticism* (e.g., “Some people set themselves up for one to make fun at them”). All items were positively keyed and a four-point answer scale was used (1 = “strongly disagree”; 2 = “moderately disagree”; 3 = “moderately agree”; 4 = “strongly agree”). Ruch and Proyer (2008b) defined cut-offs for the expression of slight, marked, and extreme presence of gelotophobia in relation to the answer format as well as findings of empirical studies with diagnosed gelotophobes. Scores exceeding 2.50 were interpreted as indicating a slight expression of gelotophobia, as someone with this average score has agreed with half the items and disagreed with the other half. Scores exceeding 3.00 were interpreted as indicating a marked expression of gelotophobia. Scores of 3.50 and higher were interpreted as indicating an extreme expression of gelotophobia as half the symptoms apply strongly and half apply at least slightly.

The *Ridicule-Experience Questionnaire* (REQ) consisted of five questions on remembered situations where the participants were laughed at by different key people (father, mother, same-sex peers, other-sex peers and

Table 1 Descriptive statistics for the AQ-k, gelotophobia, gelotophilia, katagelasticism and the frequency and severity of ridicule experiences

	<i>N</i>	Min	Max	<i>M</i>	SD	Cronbach’s α
AQ-k	123	0	31	11.97	9.79	.95
PhoPhiKat						
Gelotophobia	123	1.00	4.00	1.99	0.59	.89
Gelotophilia	123	1.00	3.40	2.23	0.60	.90
Katagelasticism	123	1.07	3.67	2.01	0.52	.87
Ridicule-experience questionnaire (REQ)						
Frequency of the ridicule experiences	123	.00	2.60	.85	0.52	.73
Severity of the ridicule experiences	118	1.00	6.00	3.76	1.28	.84

M Mean, *SD* Standard Deviation, *Min* Minimum, *Max* Maximum, *AQ-k* short version of the autism quotient, *Pho* Gelotophobia, *Phi* Gelotophilia, *Kat* Katagelasticism

teachers) in their childhood and youth (e.g.: “Do you remember of having been laughed at by your father?”). The participants were asked to indicate how often they were laughed at (from “never” = 0 to “very often” = 3). If a question was answered with at least “rarely” (=1), the participants additionally indicated how bad the experience was for them on a six-point scale (ranging from 1 = “not bad at all” to 6 = “very bad”). From this, two scores were derived: a mean score of the frequency of the remembered situations (REQ-f), (ranging from 0 to 3) and a mean score for the severity of the experience (REQ-s, from 1 to 6).

The German short version (AQ-k; Freitag et al. 2007) of the *Autism-Spectrum Quotient* (AQ, Baron-Cohen et al. 2001) is a questionnaire that covers domains connected with the autism spectrum such as social and communication skills, imagination, and attention switching/tolerance of change. The participants answered the 33 items by indicating on a 4-point scale how strongly they agreed with each statement. If the answer was a slight or definitive agreement to autistic behavior, one point was added to the overall score. The AQ-k was used as an additional measure to check the AS diagnosis. A score of at least 17 is postulated to indicate Asperger’s syndrome (Freitag et al. 2007). We chose to use the short version of the AQ in order to reduce the workload on the participants.

Procedure

Individuals with AS were recruited several ways: (1) subjects with a reliable AS diagnosis who had participated in a previous study (Samson and Hegenloh 2010) were invited to take part in this study and (2) an information packet about this study was sent to several clinical institutions and consulting centers in Germany and the German speaking part of Switzerland requesting the recruitment of individuals with AS. Furthermore, individuals with a valid AS diagnosis who had participated in an fMRI experiment by our research group were invited to participate here as well ($N = 15$). Only individuals with a confirmation (e.g., from a psychotherapist) of the diagnosis (ICD-10: F84.5) were included in the study ($N = 40$). The control group was recruited via mailing lists at Swiss and German universities and by distributed pamphlets at the University of Fribourg and Munich. People interested in taking part in the study were invited to write an email to us in order to get access to the online survey.

In the online experiment, participants received general instruction about the study at the beginning, and then received specific instructions prior to each of the questionnaires. At the end, the participants indicated whether they had been diagnosed with AS and entered in their email addresses. Upon completion of the entire set of questionnaires, participants were rewarded with CHF 30 for participating in the study.

Results

Psychometric properties of the scales used were first evaluated. The means, standard deviations (SDs), minimal and maximal scores as well as Cronbach’s alphas were computed for each subscale of the questionnaires and are presented in Table 1.

Table 1 shows good reliability ($\alpha \geq .73$) for each of the scales. The only gender difference was in katagelasticism, where males scored higher than females ($r(123) = -.28$, $p < .01$). Age was negatively correlated with katagelasticism ($r(123) = -.29$, $p < .01$) and positively with the AQ-k scores ($r(123) = .24$, $p < .01$).¹ As expected, gelotophobia was negatively correlated with gelotophilia ($r(123) = -.38$, $p < .001$), and gelotophilia was positively related to katagelasticism ($r(123) = .26$, $p < .01$). In line with our hypothesis, gelotophobia correlated with both the recalled frequency of being laughed at in childhood (REQ-f, $r(123) = .36$, $p < .001$) and the recalled severity of these experiences (REQ-s, $r(123) = .43$, $p < .001$). Gelotophilia was negatively related to the severity of the ridicule experiences ($r(123) = -.27$, $p < .01$). The frequency and severity of these recalled ridicule experiences correlated significantly ($r(123) = .36$, $p < .001$).

The AS group was compared with the control group using one-way ANOVAs (see Table 2 for descriptive and inferential statistics).

Table 2 shows that individuals with AS reported having been more frequently laughed at in their childhood (REQ-f: medium effect size) than controls, and that these events were perceived to be worse (REQ-s: medium effect size) than by controls. Furthermore, individuals with AS had higher scores on the gelotophobia scale (large effect size) than did controls. This effect persisted even when controlling for the frequency and severity of the ridicule experiences (when included in an ANCOVA: $F(1,114) = 30.45$, $p < .001$). Furthermore, individuals with AS scored lower in gelotophilia (large effect size) than controls. However, no differences between the control and the AS groups were found in katagelasticism.

In a next step, we tested how many participants exceeded the cut-off for a slight fear of being laughed at (>2.5), a marked fear of being laughed at (>3.0), and an extreme fear of being laughed at (>3.5 , see Fig. 1).

Only 6% of controls exceeded the cut-off point of 2.5, which indicates having at least a slight fear of being laughed at. In the group of individuals with AS, 45% exceeded this threshold, which was significantly higher than the control group ($\chi^2(1) = 26.97$, $p < .001$). None of

¹ Age as a covariable did not affect the results of the ANOVAs on gelotophobia, gelotophilia, katagelasticism and the frequency and severity of having been laughed at in the past.

Table 2 Means and Standard deviations for the individuals with AS ($N = 40$) and controls ($N = 83$), and the results of the ANOVAs

	Control group		Individuals with AS		Statistics ^a		Effect size (η^2)
	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>	<i>F</i>	<i>p</i>	
PhoPhiKat							
Gelotophobia	1.76	0.43	2.46	0.60	55.41	<.001	.56 (large)
Gelotophilia	2.41	0.50	1.85	0.61	28.70	<.001	.44 (large)
Katagelasticism	2.05	0.50	1.91	0.54	2.04	.16	
Ridicule-experience questionnaire (REQ)							
Frequency of the ridicule experiences	0.71	0.38	1.15	0.63	22.55	<.001	.39 (medium)
Severity of the ridicule experiences	3.50	1.26	4.28	1.18	10.33	<.01	.28 (medium)

M Mean, *SD* Standard Deviation, *Min* Minimum, *Max* Maximum, *Pho* Gelotophobia, *Phi* Gelotophilia, *Kat* Katagelasticism

^a $F(1,122)$, except for the severity of the ridicule experiences: $F(1,117)$

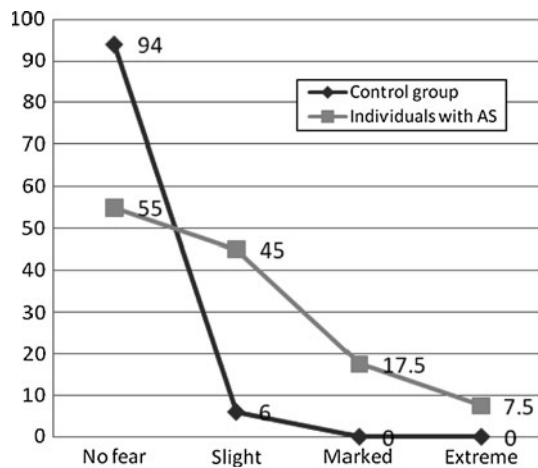


Fig. 1 Percentages of individuals with no fear and at least a slight, at least a marked and extreme form of the fear of being laughed at in the AS ($N = 40$) and control groups ($N = 83$). *Notes* No fear of being laughed at ≤ 2.5 , at least a slight form of gelotophobia > 2.5 , at least a marked form of gelotophobia > 3 , extreme form of gelotophobia > 3.5

the control participants exceeded the cut-off points for a marked form of gelotophobia, but 17.5% of the individuals with AS did. In addition, 7.5% of AS participants indicated even an extreme fear of being laughed at.

In a next step, AQ-k score, gelotophobia, gelotophilia, katagelasticism and the frequency and severity of the situations in which the participants remembered being laughed at were correlated for individuals with AS and controls separately (see Table 3).

Within controls, AQ-k score correlated highly with gelotophobia. In the AS group, where AQ-k is already very high, gelotophobia was uncorrelated with AQ-k. It is striking that AQ-k and gelotophobia strongly correlated with the severity of the recalled situations in which they were laughed at in their childhood among controls, but not with the frequency of these situations. In the individuals with AS, these correlations were significant in a one-tailed test of significance.

Table 3 Correlations between the Autism Quotient, gelotophobia, gelotophilia, katagelasticism and the frequency and severity of the ridicule experiences in the past for the individuals with AS and controls separately

	Pho	Phi	Kat	REQ-f	REQ-s
AS group ($N = 40$)					
AQ-k	.13	-.22	-.27	.12	.28
Pho		-.18	-.02	.21	.29
Phi			.25	.13	-.10
Kat				-.13	-.06
REQ-f					.41*
Control group ($N = 83$)					
AQ-k	.62***	-.41***	.17	.08	.38**
Pho		-.19	.15	.15	.39***
Phi			.21	.12	-.20
Kat				.26*	.23*
REQ-f					.25

AQ-k Autism Quotient, Pho Gelotophobia, Phi Gelotophilia, Kat Katagelasticism, REQ-f Frequency of the ridicule experiences, REQ-s Severity of the ridicule experiences

* $p < .05$, ** $p < .01$, *** $p < .001$

Discussion

The results of the present study reveal that, compared to controls, individuals with AS recalled being laughed at more often in their childhood and experienced these disparaging events more negatively. Using standardized instruments, we have supported Asperger’s (1944) report that individuals with AS have less humor and are ridiculed more than controls. In addition, they possess a high level of fear of being laughed at. Even among controls, gelotophobia is positively associated with autism-spectrum level (AQ-k score). Taken together, these results indicate that gelotophobia and AS are linked closely. Interestingly though, the degree of AQ-k did not increase with the level of fear of being laughed at in the AS group. Also, the

analysis of covariance showed that the difference between the AS and control groups remained when the extent to which they had been laughed at was controlled for. Thus, having been ridiculed correlates with high gelotophobia scores, and it also discriminates between controls and AS. However, it does not fully account for the high scores in gelotophobia (and that individuals with AS have higher gelotophobia scores).

Only 6% of controls exceeded the cut-off point for at least a slight form of gelotophobia. In the group of individuals with AS, 45% exceeded this threshold, with 17.5% having a marked fear of being laughed at and 7.5% an extreme form. Such high rates of gelotophobia have not been reported in other populations or clinical groups. For example, 40% of individuals with eating disorders report a slight form of gelotophobia (cut-off score >2.5), 35.71% of individuals with personality disorders (Forabosco et al. 2009²), and 24.53% of shame-based neurotics (Ruch and Proyer 2008b). This indicates that gelotophobia is a very important, but understudied, phenomenon in individuals with AS.

What are the reasons for the high rate of gelotophobia among individuals with AS? One possibility is that these individuals experienced a higher frequency of situations in their childhood and youth in which they were laughed at. This is supported by our data, as well as by researchers like Little (2002), who showed that children with AS are four times more likely than controls to be victims of bullying. Individuals with AS often become the targets of bullying because they stand out through their particular behaviors and social clumsiness. Not conforming to social norms enhances the risk of being excluded from a group and being bullied. However, we showed that the ridicule experiences do not fully account for the AS group's high gelotophobia scores. Therefore, it is possible that individuals with AS fear being laughed at not only because they were more exposed to teasing and bullying in their past, but also because they lack social awareness. It is important in social communication to be able to differentiate between playful, good-natured teasing and mean-spirited bullying (see Platt 2008) and to be able to correctly interpret acts of pretense (Heerey et al. 2005). However, correctly inferring Theory of Mind is very difficult for individuals with AS, particularly if non-literal speech such as irony or sarcasm is involved (e.g., Happé 1995). This may be one of the factors that contribute to the development of a fear of being laughed at among AS individuals. Furthermore, these individuals have been reported to have difficulties reading non-verbal cues (Asperger 1944; Attwood 2004), which may be highly important when distinguishing good-natured

teasing from mean-spirited bullying. The particular importance of Theory of Mind in the context of bullying and teasing has recently been shown by Van Roekel et al. (2010), who noted that the more often adolescents are bullied, and the less developed their Theory of Mind is, the more they misinterpret bullying situations as non-bullying. However, the assumption that a distorted Theory of Mind, including difficulties reading non-verbal signs, contributes to the development of gelotophobia needs further clarification in studies that test the relationship between Theory of Mind abilities and developing a fear of being laughed at, for example, in a longitudinal design.

Conversely, Platt et al. (2009) claimed that gelotophobes might misinterpret harmless jokes, comments, or playful teasing among colleagues as offensive *because* of their extreme fear of being laughed at. They raised the question of whether some (of course, not all) bullying incidents might be 'false alarms' caused by gelotophobes who are unable to see the playful aspects of laughing among colleagues. In a recent paper, Platt and Ruch (2010) showed gelotophobia to be positively correlated with *worrying* about vulnerable situations, irrespective of whether the individuals had experienced them or not. This is an interesting possibility that could be tested in a future study. However, we know from several studies (also from peer reports) that individuals with AS *are* more often ridiculed, above and beyond misinterpreting harmless teasing situations as ridicule (e.g., Little 2002; Carter 2009).

Whenever we show that gelotophobia is related to the AQ-k and to the situations in the past where the participants were ridiculed, it is important to note the emotional appraisal of these ridicule experiences: the severity of the experiences correlated with gelotophobia in both the control and AS groups (AS only if the correlations were one-tailed). This finding is in line with Proyer et al. (2009) who observed a positive correlation between gelotophobia and the *intensity*, but not frequency, of the situations where the participants remembered being laughed at. This result indicates the enormous potential impact of the appraisal of these ambiguous situations on the later development of a fear of being laughed at. There is evidence that individuals who are unable to regulate their emotions successfully are more prone to mental disorders (e.g., Gross and Munoz 1995; Gross 2007). Two recent studies showed that gelotophobes are indeed relatively weak at regulating their emotions (Papousek et al. 2009) and that gelotophobic individuals use adaptive coping strategies like coping humor and self-enhancing humor to a lesser extent than controls (Ruch et al. 2009b). This points to a potential link for prevention and intervention strategies in relation to gelotophobia: if the cognitive appraisal of situations in which children get laughed at can be successfully manipulated, the development of gelotophobia might be less

² The sample sizes in this study were quite small; for example, only 5 participants had an eating disorder, 14 a personality disorder.

severe or even prevented. However, further studies are needed to address potential prevention techniques in childhood and youth.

Nevertheless, the fear of being laughed at seems to be an important issue in individuals with AS that has rarely been addressed in research and in the applied domain. We feel that there is a paucity of research on the causes of gelotophobia, particularly related to individuals with AS, and possible prevention and intervention techniques (e.g. reappraisal training). However, some literature on strategies to reduce bullying exists (e.g., Attwood 2004; Dubin 2007; Gray 2004; Heinrichs 2003). The proposed strategies focus on encouraging teachers, parents, and bystanders (peers) to intervene. Furthermore, the bullied victims should try to stick around other peers (possible helpers), to maintain self-esteem and stay calm in situations where they are being bullied. It is important to establish comprehension of these tools in individuals with AS, which is difficult due to their problems with mental perspective taking. Gray (1998) proposed supporting this process with methods such as Comic Strip Conversations. These approaches go into a promising direction and have to be pursued further. Furthermore, as we showed that the emotional appraisal of the ridicule experiences seems to have an important effect on the fear of being laughed at, it is important to include the reappraisal of the bullying situations in these and other intervention strategies.

The present paper also addressed the relationship between Asperger's Syndrome, the joy of being laughed at (gelotophilia) and the enjoyment of laughing at others (katagelasticism). The results of the present study revealed individuals with AS to have significantly lower gelotophilia scores, which is in line with early literature describing individuals with AS as not understanding fun, particularly if it is directed at them. According to Asperger, this may be another reason why they are teased: if one can laugh about oneself, the mock is less piercing (Asperger 1944, p. 127). Indeed, gelotophilia is negatively correlated with gelotophobia, which is in line with the latter assertion. Furthermore, it was recently suggested that the concept of gelotophilia is positively related with cheerfulness (see Ruch et al. 2009b; Samson and Meyer 2010). Again, this might be related to the comprehension of pretense: in humor, the "as if" play is crucial. Samson and Hegenloh (2010) recently assumed, that the lack of "as if" play and the lack of suspension of disbelief prevent individuals with AS from recognizing when something is meant to be funny. We claim that the decreased likelihood of getting involved in "as if" humor play prevents individuals with AS from learning to laugh at themselves.

Interestingly, individuals with AS enjoy laughing at others (katagelasticism) to the same extent as controls. This suggests that individuals with AS do not differ from

controls in their engagement in mean-spirited and hostile forms of humor although humor processing and production skills seem to be most often diminished in individuals with AS (e.g., Lyons and Fitzgerald 2004; Samson and Hegenloh 2010). It might be possible that the relative enhanced scores on a more hostile form of humor (laughing at others, katagelasticism) is closely related to the lack of interpersonal sensitivity in individuals with AS. Also, Heerey et al. (2005) found that teasing of individuals with autism is less playful and less good-natured than teasing of control children. Van Roekel et al. (2010) reported a close relationship between being bullied and more poorly developed Theory of Mind skills. Here as well, we assume that decreased empathy and interpersonal sensitivity might be related to katagelasticism. However, the fact that we did not find elevated scores of katagelasticism in individuals with AS compared to controls might be related to lower interest or motivation to interact with others. This—together with interpersonal insensitivity—might lead to the same scores of katagelasticism in the two groups. Although we do not want to claim that the joy of laughing at others is always related to a lack of empathy (one can laugh at someone while knowing exactly how the victim is feeling), we assume that the lack of empathy can lead to a joy of laughing at others. However, more research needs to be done on the relationship between katagelasticism and empathy.

Some limitations of the present study have to be discussed. The present study was limited by its reliance on self-report data and remembered situations where participants were laughed at. Future research should consider implementing other methods of investigating the influence of being mocked in childhood directly, for example by collecting not only self but also peer-reports (e.g., by teachers or parents) of such incidents to investigate their potent influence on the later development of the fear of being laughed at. This would also allow the investigation of the experience of being teased and the fear of being laughed at within the same timeframe. A further limitation is that we did not investigate whether other fears and phobias were present in the participants. It might be possible that individual with AS have higher fear levels in general. In this respect, the literature is mixed: whereas Kuusikko et al. (2008) showed higher scores in social phobia and anxiety symptoms, Leyfer et al. (2006) showed lower rates of social phobia in children and adolescents with autism. However, it was found that children with autism developed specific phobias that are not common in typically developing children (e.g. phobia of loud noises) without showing some of the *specific* phobias that are prominent in typically developing children (e.g., fears of flying, bridges, tunnels etc., Leyfer et al. 2006; Evans et al. 2005). We suggest that further studies must be conducted

in order to expand the knowledge on the specificity of the fear of being laughed at in individuals with AS—particularly in relation to the development of social phobia, a closely related but not fully overlapping concept with gelotophobia (Carretero-Dios et al. 2010; Edwards et al. 2010).

To conclude, the present data revealed a remarkably high rate of gelotophobia among individuals with AS, which calls for specific prevention, interventions (e.g. in school) and therapeutic treatment of individuals with AS, including the sensitization to differentiation between teasing and mocking. Strategies that help individuals with AS to disentangle teasing from hostile bullying are suggested (see also Attwood 2004; Gray 2004). Furthermore, individuals with AS are not able to laugh at themselves, which is probably closely related to the comprehension of pretense and “as if” play. Individuals with AS do not differ from controls in their enjoyment of laughing at others, which might indicate that they use hostile forms of humor to the same extent as controls. We assume that social insensitivity might be closely related to katagelasticism in individuals with AS. However, we do not claim that lack of empathy is the only thing that makes people enjoy laughing at others’ mishaps.

Acknowledgments The authors would like to thank all the participants who contributed to the study. We thank Sandra Utz, Nicole Giuliani and the reviewers for their helpful comments on previous versions of the manuscript. The study was financially supported by the Research fund (Project number: 321) of the University of Fribourg.

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