

Humor as a Coping Strategy for People with Usher Syndrome

Nadja Högner*

Deutsches Taubblindenwerk gGmbH, Albert-Schweitzer-Hof 27, 30559 Hannover, Germany

*Corresponding author: blindenpaedagogik@gmail.com

Abstract Introduction: Usher syndrome (USH) is a genetic condition characterized by hearing loss or deafness and progressive vision loss. Due to their dual sensory impairment, people with USH may have problems perceiving humor in their surroundings. The purpose of this study was to assess the sense and use of humor as a coping strategy in people with USH. Additionally, the differences between depressed and non-depressed people with USH were evaluated. Methods: Two questionnaires were used: The Coping Humor Scale (CHS) and the Sense of Humor Scale (SHS) each in the German version. The questionnaires were filled in by 86 persons with USH, primarily recruited from self-help groups (ages 27-75, mean age = 48; 48 % female; 9 % depressed). As comparison samples German people were used, on which the German edition were normed. Differences between the USH sample and the comparison sample were determined by using methods of classical test theory. Results: In comparison to a given control group, people with USH use less humor to cope with stress in difficult situations ($p = .00$). They are less playful and in a less positive mood ($p = .02$), laugh less ($p = .02$) and use less humor under stress ($p = .00$). Depressive persons with USH are more serious ($p = .01$) and less playful ($p = .05$) than the non-depressed group. Discussion: Overall the results indicate that people with USH may not use humor as a coping strategy. Thus there is a need for special programs such as Humor training and Laughter Yoga, which are based on the tactile sense, in order to develop beneficial coping strategies for people with USH. Such programs may help them to use and understand humor as a resource for stress management. Given this persons with USH and depression should be encouraged to actively engage in humorous situations with a positive mood.

Keywords: *deafblindness, Usher syndrome, humor, coping, stress*

Cite This Article: Nadja Högner, "Humor as a Coping Strategy for People with Usher Syndrome." *American Journal of Educational Research*, vol. 4, no. 17 (2016): 1191-1196. doi: 10.12691/education-4-17-1.

1. Theoretical Background

1.1. Usher Syndrome Defining Framework

Usher syndrome (USH) is one of the leading causes to deafblindness among individuals below 50 years of age [21]. USH is a genetic condition with a combination of congenital sensory inner ear damage and the retinal degenerative disease retinitis pigmentosa (RP). RP starts with night blindness and leads to progressive concentric visual field constrictions from the periphery to the centre ("tunnel vision") and to reduced visual acuity, glare sensitivity, reduced contrast and colour vision and slowed brightness-darkness adaptation. The progress is variable, stagnates in various stages of life and then proceeds again – in most cases leading to blindness in old age [9,23,30].

Depending on the degree and course of the hearing impairment and the presence of vestibular disorders there are three clinical types: USH1 (profound deafness and vestibular disorders), USH2 (various, but relatively stable moderate to severe hearing loss, usually no balance disorders) and USH3 (progressive hearing impairment possibly leading to deafness, partial balance disorders; [9,23,30]).

The prevalence worldwide is 3 to 6 of 100,000 persons [28]. Compared to USH1 and USH2, USH3 is very rare and only frequent in Finland [31]. Frequency estimation based on data from the University Eye Clinic Heidelberg and members of the self-help association for retinal degenerations "Pro Retina Germany e. V." determined an overall prevalence of 6.2 of 100,000 German people, with a USH1:USH2 ratio of 1:3, which correspond to 1,250 persons with USH1 and 3,750 with USH2 [31]. The numbers of patients in self-help associations are approximately 300 people of all three USH types in "Pro Retina Germany e. V." and about 200 persons with USH2 in "Leben mit Usher-Syndrom e. V." (partly double memberships). These numbers significantly do not match the design prevalence as there is a high estimated number of unreported cases.

To date there is no effective medical or genetic therapy available to treat Usher syndrome [23]. Thus it is important to maintain quality of life and to preserve mental well-being in people affected by Usher syndrome. In addition to existing hearing loss, symptoms of RP increasingly affect the ability to compensate for other sensory losses. This does not lead – as often assumed – to an additional sensory loss but to a potentialization, which means increase effectiveness or mutual reinforcement of the effects in terms of $1 + 1 = 3$ [21]. It results in a unique

“disability sui generis” ([1], p. 118). Literature emphasizes impairments in the areas of communication, orientation and mobility, leisure and work, which are mostly associated with social isolation [4,19,20]. These restrictions may lead to stressors or increased risk factors for stress and jeopardise the psychophysical and psychosocial well-being of the person living with Usher syndrome.

Wahlqvist et al. [32] reports impairments to physical and mental health such as headaches, fatigue, anxiety and worry as well as suicidal ideation and attempts in 96 examined individuals with USH2. In a study by the author (2015) a particularly high incidence of stress and stress load were detected in 262 USH2 persons. The highest stress levels were present in the area of orientation and mobility, followed by social participation in leisure, auditory communication, visual independence in daily life skills, social interactions and work. Compared to the German main population, people reported frequent stress in the areas of social tensions, social isolation, chronic worry and being overwhelmed with work [7].

In order to find out how people with USH cope with stress, they were interviewed in an earlier study about their individual coping strategies. In addition to sports and relaxation exercises and exchanges with other USH individuals they mentioned especially the use of humor [6].

1.2. The Importance of Humor in People with Usher Syndrome

Humor can be described as a cheerful-relaxed attitude towards life or fundamental basic temperament [24], which becomes evident in how often a person laughs at different life situations, smiles and is happy [12]. Humor is a complex phenomenon with cognitive, emotional, behavioural, physiological and social aspects [13]. These components can be found in the sense of humor, which is described as a multidimensional construct which contains the following components [16]:

- cognitive ability, for example the ability to create, understand, reproduce and remember jokes and to recognize humor in the environment,
- aesthetic answer, for example to appreciate humor,
- habitual patterns, for example the tendency to laugh frequently, tell jokes and entertain others,
- emotional character trait, for example cheerfulness,
- coping strategy or defence mechanism, for example the tendency to take a humorous perspective in difficult situations.

Humor has a positive impact on health and well-being. On a physiological level, laughter leads to changes in the musculoskeletal, cardiovascular, endocrine, immunological and nervous system [13]. This is expressed in increased blood circulation and digestion, in a cardiovascular stimulation, muscle relaxation, reduced release of stress hormones such as catecholamine and cortisol, in an increased production of endorphins and in an improvement of the immune system [5]. In social relationships humor can improve and facilitate interpersonal interactions, resolve and reduce conflicts and tensions [13], strengthen the feeling of social cohesion, create a positive atmosphere and emotional closeness and access to others [11,13]. On the psychological level, humor leads to a reduction of stress, anxiety and negative

thinking because it helps obtain a different view, achieve distance to problems and to generate objectivity [13]. Moreover, humor contributes to emotion regulation [29], helps to take problems less seriously, deal more effectively with stress [12] and to focus less on the negative elements of a stressful event [3]. Humor increases positive emotions such as joy, satisfaction and optimism [13] and reduces loneliness and isolation. In addition, humor is highlighted as a stress reducing factor, as a coping strategy and as assistance for stress management [2,3,15,17,24]. People with a high compared to lower sense of humor are able to see the humorous part in the demands, frustrations and conflicts of life, don't take their problems too seriously and deal effectively with stress [13]. They have a more positive self-concept, a greater self-awareness, greater satisfaction with their social roles, more positive appraisals in stressful situations and a more positive attitude towards life [15]. They also use more direct problem-solving strategies and more emotion-distancing strategies in stressful situations. They evaluate and manage stressful events and situations in an improving and self-protecting way [15].

In addition to the results of the interviews of individuals with USH by the author [6], the importance of humor was also highlighted in persons with USH who were interviewed during a project funded by the UK Deafblind Organization “Sense” [4]. Humor was also described as the most frequently used coping strategy in patients with RP in a study by Bittner, Edwards and George [2].

Besides the impairments and stressors in USH and the importance of humor for the affected individuals, a study on the use of humor in persons with USH was conducted. The main research question was whether a sense of humor and the use of humor as a coping strategy for people with USH differ from people without USH. In consideration of the possible influence of depression on humor, differences in the sense of humor and the use of humor as a coping strategy between people with and without diagnosed depression should be considered.

2. Methods

2.1. Instruments

The Coping Humor Scale (CHS) and the Sense of Humor Scale (SHS) were used as part of an online survey. In addition, seven open questions on the use of humor and demographic characteristics of the persons were collected.

The CHS was developed in 1983 by Martin and Lefcourt. It measures the degree to which respondents use humor to cope with stress in seven items. The selection is made on a 4-point Likert scale from 1 (strongly disagree) to 4 (strongly agree). A total score is the result of the addition of the scores. The reliability is acceptable ($\alpha = .61$) [14]. For this study, the German version by Ruch (unpublished) was used. For the comparison with the USH-sample the standard values of the German comparison sample of Köhler and Ruch [10] were used because the original study by Martin and Lefcourt [14] yielded no descriptive statistics. The sample of Köhler and Ruch [10] consists of 110 German adults (51 men and 57 women) aged 17 to 83 years ($M = 45.6$ years, $SD = 15.8$ years). Cronbach's α was .66.

The SHS was developed by McGhee and is available in two versions [17,18]. To calculate correlations, the older SHS version from 1996 was used, which – like the CHS – includes a four-point Likert scale as compared to the seven-point version of 1999. The 1996 version, which was used in this study, assesses the sense of humor with 40 items in the following eight scales: Enjoyment of Humor, Playfulness and Positive Mood, Seriousness and Negative Mood, Laughter, Verbal Humor, Finding Humor in Everyday Life, Laughing at Yourself and Humor under Stress. The total score called “Humor Quotient” is formed by adding the averages of the eight subscales; the scale “Playfulness and Positive Mood” is reversed [25]. In the revised version of 1999, the scale “Seriousness and Negative Mood” and “Playfulness and Positive Mood” were converted into the scales “Playful/Serious Attitude” and “Positive/Negative Mood” with each 8 items respectively. In addition six “Sense of Humor Scales” (with each 4 items respectively) are also forming 40 items; together they build the “Total Sense of Humor Score” [22].

The German translation of the McGhee version from 1996 (Ruch, unpublished) was used, which tested 151 German adults (68 men and 83 women) aged 18 to 65 years (M = 33.06, SD = 11.62) who were used as comparison sample (Ruch & Carrell 1998). About 1/3 were students who were surveyed at a university, the remaining part consisted of adults in various professions, who completed the questionnaire at home. The internal consistencies of the subscales ranged from $\alpha = .56$ to $.78$ (median = $.73$; [25]).

2.2. Sample

The link to the online survey was sent via email to USH-members of the self-help associations Leben mit Usher-Syndrom e. V. (n ≈ 180) and Pro Retina Germany e. V. (n ≈ 300) and via a German USH mailing list (n = 65; each with mostly double memberships in these three groups). In addition, the link was posted by the USH group to Facebook and at the German website for the deaf www.taubblindenschlag.de.

In the survey a total of 86 people with USH participated. They aged from 27 to 75 (mean = 48 years, SD = 11.5 years). Two were affected by USH1, 83 by USH2 and one person by USH3. 48 % were female and 80 % in a partnership. Regarding employment, 49 % were employed in full- or part-time jobs, 27 % had a disability pension, 10 % a retirement pension, 1 % were unemployed and 13 % had other income. Regarding diagnosis 64 % were genetically diagnosed as USH and 33 % had additional diseases such as diagnosed depression (9 %) and musculoskeletal diseases (7 %).

The differences between the USH-sample and the samples mentioned above were tested with the t-test for independent samples. Although the Levene test did not reject the equality of variances in almost all cases Welch test is used for all comparisons (t-test for unequal variances) due to a uniform design of the methodology.

3. Results

3.1. Humor as Stress Management

Internal consistency analyses in the CHS show that the total scale of the USH sample has only slightly higher

internal consistencies (Cronbach's $\alpha = .68$) compared with Köhler and Ruch ([10]; Cronbach's $\alpha = .66$) as well as with Martin and Lefcourt ([14]; Cronbach's $\alpha = .61$). The corrected item-total correlations ranged from $.58$ to $.74$. Internal consistency is increased by leaving out item 4 (“I must admit my life would probably be easier if I had more of a sense of humor”) (Cronbach's $\alpha = .74$). This item was also evaluated as inconsistent in a comprehensive CHS survey study by Martin [12].

The descriptive statistics and results of the Welch test are illustrated in Table 1. It is shown that people with USH use significantly less humor to cope with stress in difficult situations compared to the control group (p-value < .001). To eliminate a possible influence of eight people diagnosed with depression they have been excluded from the final calculation. Though there was no difference to the previous result (p-value < .001, Table 1).

Table 1. Results of Welch test for the CHS

Sample	n	M	SD	p-value
Köhler & Ruch [10]	110	20.53	3.84	
USH total	86	18.40	3.42	.000
USH without depression	78	18.51	3.36	.000

n = number of patients, M = Mean, SD = Standard deviation.

3.2. Sense of Humor

The internal consistencies for the SHS scales are shown in Table 2. They vary from $\alpha = .47$ to $.82$ and have a greater range compared to the results of Ruch and Carrell (1998) ($\alpha = .56$ to $.78$). The lowest consistencies relate to the scales “Enjoyment of Humor” ($\alpha = .47$) and “Laughter” ($\alpha = .50$); the highest to the scale “Finding Humor in Everyday Life” ($\alpha = .82$). There is no increase of internal consistency by leaving out an item.

Table 2. Internal consistencies for the SHS

Scale	number of items	Cronbachs α
1. Enjoyment of Humor	5	.47
2. Seriousness and Negative Mood	5	.75
3. Playfulness and Positive Mood	5	.75
4. Laughter	5	.50
5. Verbal Humor	5	.74
6. Finding Humor in Everyday Life	5	.82
7. Laughing at Yourself	5	.80
8. Humor under Stress	5	.75
Humor Quotient HQT-Tot	40	.92

Table 3 shows the descriptive statistics and results of the Welch test for the comparison between the control group [25], the USH total sample and the USH sample without the eight depressed people. Table 3 also includes the calculated correlations by Pearson (Pearson's r) between the CHS and SHS and the corresponding significances. Significant p-values are highlighted.

It could be shown in this study that the USH total sample is less playful and in a positive mood, laughs less and uses less humor under stress compared to the sample of Ruch and Carrell [25]. An influence of the depressed patients on these three scales can only be shown for the scale “Playfulness and Positive Mood” the removal of which resulted in no difference to the comparison sample.

Table 3. Results of Welch test for the SHS and correlations between SHS and CHS (Pearsons r and p-value)

Scale	Sample	n	M	SD	p-value	Correlation
1. Enjoyment of Humor	Ruch & Carrell [25]	151	14.23	2.75		.356 (.001*)
	USH total	86	13.83	2.12	.207	
	USH without depression	78	13.85	2.14	.247	
2. Seriousness and Negative Mood	Ruch & Carrell [25]	151	9.60	2.90		-.426 (.000*)
	USH total	86	10.12	3.12	.211	
	USH without depression	78	9.78	2.96	.658	
3. Playfulness and Positive Mood	Ruch & Carrell [25]	151	15.19	2.43		.508 (.000*)
	USH total	86	14.33	2.89	.020*	
	USH without depression	78	14.59	2.72	.103	
4. Laughter	Ruch & Carrell [25]	151	13.73	2.52		.477 (.000*)
	USH total	86	12.92	2.49	.017*	
	USH without depression	78	12.96	2.45	.027*	
5. Verbal Humor	Ruch & Carrell [25]	151	12.52	3.15		.557 (.000*)
	USH total	86	12.94	3.01	.309	
	USH without depression	78	13.12	3.02	.165	
6. Finding Humor in Everyday Life	Ruch & Carrell [25]	151	14.84	2.50		.627 (.000*)
	USH total	86	14.85	3.10	.982	
	USH without depression	78	14.96	2.94	.756	
7. Laughing at Yourself	Ruch & Carrell [25]	151	14.11	3.11		.524 (.000*)
	USH total	86	14.07	3.12	.924	
	USH without depression	78	14.14	3.22	.944	
8. Humor under Stress	Ruch & Carrell [25]	151	13.06	2.96		.542 (.000*)
	USH total	86	11.57	3.04	.000*	
	USH without depression	78	11.73	2.80	.001*	
Humor Quotient HQT-Tot	Ruch & Carrell [25]	151	113.07	15.12		.691 (.000*)
	USH total	86	109.38	16.86	.095	
	USH without depression	78	110.56	16.27	.260	

n = number of patients, M = Mean, SD = Standard deviation.

In addition, differences between patients with and without depression in the CHS and SHS were examined with a t-test for independent samples (a table is omitted); only differences in the SHS-scale “Seriousness and Negative Mood” (p-value = .009) and “Playfulness and Positive Mood” (p-value = .052) exist. Therefore depressed persons are more serious and less playful than non-depressed.

In view of the correlation tests there are almost positive correlations, which mean high values in the SHS-scales are associated with high values in the CHS. There is only one negative correlation in the scale “Seriousness and Negative Mood”. Therefore a greater seriousness and negative mood are associated with a lower use of humor to cope with stress.

3.3. Relevance of Humor

When in the open questions of the online survey asked about the personal importance of humor the USH persons answered they would use it as a coping strategy by relativizing to reduce own problems, their own impairments and making it easier to inform others about their own limitations. Humor distracts from their problems, worries and negative thoughts and helps people with USH to forget the disease for a moment. Humor also serves to aid with coping with stress and life by facilitating

relaxation and reducing tension in difficult situations, bringing positive thinking and actions, positive emotions, a sense of security and well-being as well as promoting social interactions and providing connections with others.

USH-persons find humor in daily life, for example: during misunderstandings due to hearing loss, in USH-caused mishaps such as stumbling over something, in being together with humorous people (partners, friends, other USH-people, family, work colleagues) and everywhere in daily life (at home, at work, while walking with the guide dog or shopping, in clubs, at the regulars' table, the cinema, theatre, in self-help group meetings, sauna, sports and celebrations). Some are actively seeking humor in everyday life (through funny stories, movies, jokes, and funny people). One person mentioned that it is important to remember humor and enjoy the small things in life.

4. Discussion

The results of both surveys show that people with USH use less humor to cope with stress compared to the reference samples without USH. High CHS scores are linked to less stress, depression and loneliness, greater self-confidence, a stable self-concept, optimism as well as realistic cognitive appraisals [12]. Therefore people with

USH should be supported to use humor and laughter as a coping strategy in stressful situations and to understand humor as a resource for disease management. The answers of people with USH regarding the personal importance of humor show that humor can be seen as an adaptive coping strategy on the one hand and as a cognitive-emotional regulation strategy on the other hand. Developing coping and emotional regulation strategies may contribute to the feeling of control over the situation and positive emotions and can strengthen resilience [17]. The development of humor should be encouraged as an early intervention life skill for people living with Usher syndrome. Benefits will be found across the life span and particularly during adolescence, minimising risk factors for depression and stress for this high risk group.

This can be accomplished through social contacts, the active search for humor in everyday life and promoting an optimistic, positive attitude to life and serenity. Therefore humorous social interactions and situations as well as positive emotions which imply optimism, hope and life satisfaction, for example in self-help groups should be created for people with USH (cf. [13]). Particularly persons with depression should be focused and deliberately engaged in humorous situations with a positive mood. Due to the difficulty of accurately recognizing humor and grasping social situations following dual sensory impairment, people with USH should be included in humorous situations through effective channels of communication such as tactile sign or Lormen, tailored to their unique communication mode.

Specific applications based on humor (like Humor training and Laughter Yoga) as an aid for coping and emotion regulation are increasingly widely used. As an example McGhee's [17] humor program for the promotion of the sense of humor should be mentioned. It consists of specific humor exercises and the following contents:

- creating humorous situations for yourself, for example meeting humorous people, watching specific TV programs or movies,
- encourage your own confrontation with humor, for example find out what kind of humor you like and which humor style you have,
- developing a joyful, positive attitude,
- laughing heartily and telling jokes more often,
- playing with language, for example puns and verbal humor,
- finding humor in everyday life (e.g., irony),
- laughing at yourself and own embarrassing incidents as well as laughing about and with others,
- finding humor in stressful situations and using humor as a coping strategy.

These programs could be useful for people with disabilities to enable frequent and intense laughter and to develop a positive attitude and open access to humor. For people with USH the program point "laughing at yourself and own embarrassing incidents as well as laughing about and with others" could involve humor as a self-irony of the own mishaps and imperfection. Required is access for people with combined vision and hearing impairment which enables perception of humor and laughter via the tactile instead of the auditory and visual sense. Two Laughter Yoga trainings have already been performed with USH-persons as part of self-help group meetings [8].

Because of the combined vision and hearing impairment visually and auditory contagion of laughter is limited. Therefore ways that allow a contagion of laughter via tactile and vibratory means have to be increasingly integrated.

Because of the high stress frequency and intensity in USH-persons [7] psychotherapeutic support services for the reduction of stress, depression, fears and worries need to be established. Stress management interventions and social skills training should also include humor based components because of the health based benefits (cf. [13]).

Humor is primarily an attitude: Laughter creates a positive atmosphere and vice versa. Thus it may be helpful, to become permanently aware of the value of humor and to seek humor in everyday life.

"Humor is a positive kind of attitude towards life and the world around you. Being humorous to self and others, will let all the stresses of worry and hardship disappear into calmness and happiness. Humor is an important attribute in Usher syndrome, because humor allows you to bring out the best of yourself as one with the world. Having this sense of courage and joy will turn our challenges into positives and enable us to see life as full of potentials. Most of all, I can do anything with humor, by having a laugh, feeling good about myself and creating endless possibilities for the deafblind world I live in" (by the author interviewed people with USH2).

References

- [1] Angermann, W., "Taubblindheit als Behinderung eigener Art durch Europaparlament anerkannt," *blind/sehbehindert*, 124 (2), 118, 2004.
- [2] Bittner, A.K., Edwards, L. and George, M., "Coping strategies to manage stress related to vision loss and fluctuations in retinitis pigmentosa," *Optometry*, 81 (9), 461-468, 2010.
- [3] Cann, A., Holt, K. and Calhoun, L.G., "The roles of humor and sense of humor in responses to stressors," *Humor*, 12 (2), 177-193, 1999.
- [4] Ellis, L. and Hodges, L., *Life and changes with Usher: The experiences of diagnosis for people with Usher syndrome*, University of Birmingham/School of Education, 2013. [Online]. Available: <http://www.birmingham.ac.uk/Documents/college-social-sciences/education/projects/final-report-on-life-and-change-with-usher.pdf> [Accessed Jan., 7, 2015].
- [5] Fry, W.F., "The biology of humor," *Humor: International Journal of Humor Research*, 7 (2), 111-126, 1994.
- [6] Högner, N., "Untersuchung zu Stresserfahrungen und -ursachen bei Usher-Syndrom – Ergebnisse und rehabilitationspädagogische Maßnahmen," in Horsch, U. and Wanka, A (Eds.), *Das Usher-Syndrom – eine erworbene Hörsehbehinderung. Grundlagen – Ursachen – Hilfen*, Reinhardt, München, 2012, 141-150.
- [7] Högner, N., "Psychological stress in people with dual sensory impairment through Usher syndrome type II," *Journal of Visual Impairment & Blindness*, 109 (3), 185-197, 2015.
- [8] Högner, N. and Opletalová, V., "Die psychologische Bedeutung von Humor und Lachen bei Menschen mit Hörschädigung und Möglichkeiten der Förderung durch Lachyoga," *Hörschädigtenpädagogik*, 69 (3), 94-100, 2016.
- [9] Kimberling, W.J. and Möller, C., "Clinical and molecular genetics of Usher syndrome," *Journal of the American Academy of Audiology*, 6, 63-72, 1995.
- [10] Köhler, G. and Ruch, W., "Sources of variance in current sense of humor inventories: How much substance how much method variance?," *Humor: International Journal of Humor Research*, 9 (3-4), 363-397, 1996.
- [11] Luckner, J.L. and Yarger, C.C., "What's so funny?: A comparison of students who are deaf or hard of hearing and hearing student's

- appreciation of cartoons," *American Annals of the Deaf*, 142 (5), 373-378, 1997.
- [12] Martin, R.A., "The Situational Humor Response Questionnaire (SHRQ) and Coping Humor Scale (CHS): A decade of research findings," *Humor: International Journal of Humor Research*, 9 (3-4), 251-272, 1996.
- [13] Martin, R.A., "Sense of humor and physical health: Theoretical issues, recent findings, and future directions," *Humor: International Journal of Humor Research*, 17 (1-2), 1-19, 2004.
- [14] Martin, R.A. and Lefcourt, H.M., "Sense of humor as a moderator of the relation between stressors and moods," *Journal of Personality and Social Psychology*, 45 (6), 1313-1324, 1983.
- [15] Martin, R.A., Kuiper, N.A., Olinger, L.J. and Dance, K.A., "Humor, coping with stress, self-concept, and psychological well-being," *Humor: International Journal of Humor Research*, 6(1), 89-104, 1993.
- [16] Martin, R.A., Puhlik-Doris, P., Larsen, G., Gray, J. and Weir, K., "Individual differences in uses of humor and their relation to psychological well-being: Development of the Humor Styles Questionnaire," *Journal of Research in Personality*, 37, 48-75, 2003.
- [17] McGhee, P.E., *Health, healing and the amuse system: Humor as survival training* (2nd ed.), Kendall/Hunt, Dubuque, IA, 1996.
- [18] McGhee, P.E., *Health, healing and the amuse system: Humor as survival training* (3rd ed.), Kendall/Hunt, Dubuque, IA, 1999.
- [19] Miner, I., "Psychosocial implications of Usher syndrome, type I, throughout the life cycle," *Journal of Visual Impairment and Blindness*, 89 (3), 287-296, 1995.
- [20] Miner, I., "People with usher syndrome, type II: Issues and adaptations," *Journal of Visual Impairment & Blindness*, 91 (6), 579-589, 1997.
- [21] Möller, C., 2007. "Deafblindness." In: A. Martini, D. Stephens & A.P. Read (Eds.), *Genes, Hearing and Deafness. From Molecular Biology to Clinical Practice* (pp. 55-61).
- [22] Proyer, R.T., Ruch, W. and Müller, L., "Sense of humor among the elderly: Findings with the German version of the SHS," *Zeitschrift für Gerontologie und Geriatrie*, 43, 19-24, 2010.
- [23] Rohrschneider, K., "Das Usher-Syndrom (Schwerpunkt visuelles System)," in Horsch, U. and Wanka, A (Eds.), *Das Usher-Syndrom – eine erworbene Hörsehbehinderung. Grundlagen – Ursachen – Hilfen*, Reinhardt, München, 2012, 14-26.
- [24] Ruch, W., "Humor," in M.A. Wirtz, *Dorsch – Lexikon der Psychologie*, Hans Huber, Bern, 2014.
- [25] Ruch, W. and Carrell, A., "Trait cheerfulness and the sense of humour," *Personality and Individual Differences*, 24 (4), 551-558, 1998.
- [26] Ruch, W. and Beermann, U (unpublished data), *CHS – Fragebogen zur Selbsterfahrung begleitend zum Seminar "Humor und Lachen: Theorie, Forschung und Anwendungen"*.
- [27] Ruch, W (unpublished data), *SHS – Fragebogen zur Selbsterfahrung begleitend zur Veranstaltung "Humor & Lachen: Theorie, Forschung und Anwendung"*.
- [28] Saihan, Z., Webster, A.R., Luxon, L. and Bitner-Glindzicz, M., "Update on usher syndrome," *Current Opinion in Neurology*, 22(1), 19-27, 2009.
- [29] Samson, A.C. and Gross, J.J., "Humour as emotion regulation: The differential consequences of negative versus positive humour," *Cognition and Emotion*, 26(2), 375-384, 2012.
- [30] Seeliger, M.W., Fischer, M.D. and Pfister, M., "Klinik, Diagnostik und Behandlungsoptionen des Usher-Syndroms [Clinical manifestations, diagnosis and treatment options of Usher syndrome]," *Der Ophthalmologe*, 106 (6), 505-511, 2009.
- [31] Spandau, U.H.M. and Rohrschneider, K., "Prevalence and geographical distribution of Usher syndrome in Germany," *Graefe's Archive for Clinical and Experimental Ophthalmology*, 240 (6), 495-498, 2002.
- [32] Wahlqvist, M., Möller, C., Möller, K. and Danermark, B., "Physical and psychological health in persons with deafblindness that is due to Usher syndrome Type II," *Journal of Visual Impairment & Blindness*, 107 (3), 207-220, 2013.