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The Association Between Sense of Humour and Trauma-Related Mental Health Outcomes: Two Exploratory Studies

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Two studies (n = 73, n = 132) explored the association between sense of humour and trauma related well-being outcomes. It was found that sense of humour was not associated with reports of posttraumatic growth as measured by the Posttraumatic Growth Inventory (PTGI). Self-enhancing humour was positively associated with positive changes as measured by the CiOQ-P. Benign humour styles were associated negatively with emotion regulation difficulties and negative changes (CiOQ-N). Self-defeating humour was associated positively with negative changes, avoidant states and emotion regulation difficulties. The results suggest that self-enhancing humour could be helpful in order to cope with trauma.

Keywords: Humor, Posttraumatic growth, Trauma, Posttraumatic stress, well-being

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Trauma may lead people to develop psychological problems such as posttraumatic stress and to experience difficulties in regulating emotions (e.g. Horowitz, Markman, Stinson, Fridhandler & Grannam, 1995, Janoff-Bulman, 1992; Joseph, Murphy & Regel, 2012; Rachman, 2001; van der Kolk & McFarlane, 2007; van der Kolk, 2007). At the same time, many trauma survivors report that they have changed positively as a result of their struggle with the consequences of a traumatic experience (e.g. Janoff-Bulman, 2009; Joseph & Butler, 2010; Tedeschi & Calhoun, 2004). Thus, the report of positive change does not exclude the possibility that the same people are often highly challenged by the event (Joseph, 2011; Tedeschi &Calhoun, 2004). This phenomenon is widely acknowledged under the term posttraumatic growth (Tedeschi & Calhoun, 2004).

According to Calhoun & Tedeschi (2009), posttraumatic growth, may be experienced in three areas: how one sees oneself, how one relates to others, and how one sees the world. Knowing about the risk of trauma and the salutogenic potential of people, psychiatrists and mental health professionals, among others, have attempted to identify factors that could buffer the potential negative impact of trauma and that could be helpful to facilitate well-being. Humour could be such a factor. Freud (2009) suggested that humour allows us to look at a painful reality with a defiant attitude, such that we are able to transcend and transform pain and stress, perhaps into something even pleasurable. Lazarus & Folkman (1984) suggested that cognitive primary appraisal might be an important factor for considering a situation as either threating, challenging or benign. Martin, Kuiper, Olinger & Dance (1993) suggested that humour may facilitate rather benign appraisals of a situation.

Within the last decades, empirical research has started to investigate humour and its potential to buffer the effects of stress. Although some studies have supported the assumption that a sense of humour (trait humour) could have a protective value (e.g. Sliter, Kale & Yuan, 2013; Vaillant, 1995), in general the results are somewhat mixed and no clear conclusion can be drawn about the benefits of humour. The mixed results may perhaps be explained by the multidimensionality of sense of humour (Cann, Stilwell & Taku, 2010).

Martin (2003) pointed out, that not all forms of humour could have the potential to protect against stress. Sense of humour may include also injurious components. Martin (2003) suggested four components of humour or humour styles. An affiliative humour style and a self-enhancing humour style are both considered to be benign (Martin, 2003). In contrast, aggressive humour and self-defeating humour are both considered to be injurious (Martin, Puhlik-Doris, Larsen, Gray & Weir, 2003). Previous research has so far mainly supported these four humour styles. The benign humour styles were in various studies correlated negatively with psychological difficulties such as depression (e.g. Besser, Weinberg, Zeigler-Hill, Ataria & Neria, 2015; Edwards & Martin, 2010; Erickson & Feldstein, 2007; Martin et al., 2003), PTSD (e.g. Besser et al., 2015), anxiety (e.g. Besser et al., 2015; Edwards & Martin, 2010; Martin et al., 2003) and stress (e.g. Edwards & Martin, 2010). Furthermore, several studies found a positive correlation between self-enhancing humour and satisfaction with life (e.g. Edwards & Martin, 2010; Jovanovic, 2011), self-esteem (e.g. Edwards & Martin, 2010; Martin et al., 2003), optimism (e.g. Edwards & Martin, 2010; Martin et al., 2003), happiness (e.g. Jovanovic, 2011; Paez, Mendiburo Seguel & Martínez-Sánchez, 2013) and psychological well-being (e.g. Erickson & Feldstein, 2007; Martin et al., 2003; Paez et al., 2013). In a similar vein, affiliative humour was found to be correlated positively with life satisfaction (e.g. Jovanovic, 2011), self-esteem (e.g. Martin et al., 2003), happiness (e.g. Jovanovic, 2011; Paez, Mendiburo Seguel & Martínez-Sánchez,

2013) and psychological well-being (e.g. Erickson & Feldstein, 2007; Martin et al., 2003; Paez et al., 2013).

In contrast, injurious humour styles were in some studies associated positively with psychological difficulties (e.g. Erickson & Feldstein, 2007; Edwards & Martin, 2010). However, Besser and colleagues (2015) did not find such an association. Furthermore, injurious humour styles were in various studies either not correlated significantly or correlated negatively with well-being outcomes. For example, Edwards and Martin (2010) and Jovanovic (2011) found no significant association between injurious humour styles and satisfaction with life. Several studies found a negative correlation between self-defeating humour, self-esteem (e.g. Edwards & Martin, 2010; Martin et al., 2003) and psychological well-being (e.g. Erickson & Feldstein, 2007; Martin et al., 2003; Paez et al., 2013). Edwards and Martin (2010) found a negative association between self-defeating humour and optimism while Martin and colleagues did not observe such an association. Aggressive humour was found to be correlated negatively with happiness (e.g. Jovanovic, 2011; Martin et al., 2003) and not to be correlated with psychological well-being (e.g. Erickson & Feldstein, 2007; Martin et al., 2003; Paez et al., 2013.

Although humour and its correlates have been increasingly studied it is still not entirely clear whether a sense of humour could be a protective factor against the negative psychological impact of trauma. It is, furthermore, not well-known whether sense of humour is associated with posttraumatic growth. Several studies investigated the association between humour and posttraumatic growth (Cofini, Cecilia, Petrarca, Bernardi, Mazza & Orio, 2014; Park, Cohen & Murch, 1996; Peterson, Park, Pole, Andrea & Seligman, 2008; Schroevers & Teo, 2008; Scrignaro, Barni & Magrin, 2010). However, the results are somewhat mixed and none of the authors have used a standardised measure of humour, all assessing humour as part of a higher construct such as cognitive coping in “Coping Orientation to Problems

Experienced" (COPE) and character strength in the "Values in Action-Inventory of Strength" (VIA-IS). To the best of our knowledge, the association between posttraumatic growth and sense of humour has never been investigated with a measurement that is only constructed to measure humour. The following studies will investigate the association between humour styles, posttraumatic growth, negative change following adversity, posttraumatic stress and problems to regulate emotions.

Study One

Our first study examined the association between four humour styles, posttraumatic growth and negative change following adversity. We hypothesised that benign humour is associated positively with posttraumatic growth and that injurious humour is associated negatively with posttraumatic growth. Two posttraumatic growth measurements were used. Although the Posttraumatic Growth Inventory (PTGI) is widely used and acknowledged, it could be prone for positive bias since it only measures positive change following adversity (Park & Lechner, 2009). Therefore, a second questionnaire that also accounts for negative change following trauma has been used. Furthermore, we expected a negative relationship between benign humour styles and negative changes following adversity. We assumed the reverse relationship for injurious humour.

Method

Procedures and participants. Participants were recruited via a closed internet survey. An internet link was posted to six departments at a large English University. To increase the number of respondents, flyers were distributed and the survey link was sent to students who received feedback for another study conducted earlier. In total, around 2900 students and members of the University received the survey invitation. Of those, 73 participants were included into the data analysis. Given the sample size and an alpha of 0.05,

the power to find a medium effect (r = 0.30 and rho = 0.30; see Cohen, 1992) was 0.74 and 0.73 respectively. The response rate was around 2.51%. The study got ethical approval by the Ethics Board at the University.

Measures. *Trauma*. The study used an adapted form of the Traumatic Events Questionnaire by Vrana and Lauterbach (1994). The nature of the traumatic event was assessed by 12 items instead of 11 items. One item was included in order to enable the participants to negate the experience of a trauma. By adding this item, it was attempted to reduce a positive bias. Moreover, the added item served as a kind of filter to include only participants who had experienced a trauma. Three questions of the TEQ were used to evaluate on a 7-point Likert scale how traumatic the event has been (trauma severity). The average of all items was used o gain a total score. One item measured on a 7-point Likert scale how the trauma still affects the respective person (current distress). One variable measured how much time has been elapsed since the traumatic event.

Humour. The Humor Style Questionnaire (HSQ) by Martin and colleagues (2003) was used to measure sense of humour. The HSQ is a 32 item self-report measurement assessing sense of humour as a personality trait by a 7-point Likert Scale. The HSQ consists of four dimensions. Two factors are considered as rather psychologically benign while two factors are considered as rather psychologically injurious. The two adaptive factors are affiliative humour and self-enhancing humour. Affiliative humour is a social form of humour used in order to delight everyone (Martin, 2003). Self-enhancing humour does not necessarily fulfil a social function but may be better described as an internal process (Martin, 2003). This form of humour is based on the ability to change perspective and to gain pleasure out of absurdities when under stress (Martin, 2003). The two rather psychologically injurious humour styles are aggressive humour and self-defeating humour. Aggressive humour is directed towards the social environment in order to put other people down and to

show one's own superiority (Martin et al., 2003). Self-defeating humour, in contrast, aims against oneself in order to gain acceptance from others or to avoid unpleasant feelings (Martin et al., 2003). Each humour style scale consists of 8 items. The range of each factor lies between 8 and 56.

Posttraumatic Growth. Two measurements were used to measure posttraumatic growth. The first measurement used was the Posttraumatic Growth Inventory (PTGI) developed by Tedeschi and Calhoun (1996). The PTGI consists of 21 items, each of which is answered on a 6-point Likert Scale. The PTGI can be used to assess five dimensions: new possibilities, personal strength, spiritual change, relating to others, and appreciation of life. In the current study, as we had no specific predictions regarding these subscales, only the total scale of the PTGI was be used. The second measurement used to measure posttraumatic growth was the positive scale of the "Changes in Outlook Questionnaire" (CiOQ-P) developed by Joseph, Williams and Yule (1993). The CiOQ-P consists of 11 positive change items, each of which is answered on a 6-point Likert Scale. The range of the positive change scale lies between 11 and 66 (Linley, Joseph, Cooper, Harris & Meyer, 2003).

Negative Change following adversity or trauma. The negative scale (CiOQ-N) of the CiOQ was used to measure negative change following adversity. The CiOQ-N consists of fifteen negative change items, each of which is answered on a 6-point Likert Scale. The range of the scale lies between 15 and 90 (Linley et al., 2003). The negative change scale and the positive change scale as well cover questions about future perspectives, finding meaning, acceptance of what has happened, valuing of life /relationships and changes in attitudes.

Results and discussion

The sample consisted of 73 participants; the most frequently reported trauma was receiving news about the death or injury of a friend or relative (See Table 1). Except for the

aggressive humour subscale, all scales were found to possess at least satisfactory internal consistency reliability (See Table 2).

Insert Table 1 and 2 here

All variables used were z-transformed. The variable negative change following adversity was not normal distributed. Hence, a non-parametric test was used for this variable. The correlations are shown in Table 3. Because the nature of the trauma varied to a significant degree, it could not be excluded that the results were influenced by the impact of the trauma. Therefore, we conducted partial correlations controlling for trauma severity and current distress. Generally, both variables did not affect the observed associations and they influenced no significant correlations.

Insert Table 3 here

Humour was not associated with posttraumatic growth measured by the PTGI. With the CiOQ, self-enhancing humour was associated positively with positive changes. Self-enhancing humour was correlated negatively with negative changes, while self-defeating humour was positively associated with negative changes.

The results show that self-enhancing humour was associated with higher scores on positive changes, and lower scores on negative changes as measured by the CiOQ, but not with the PTGI. It may be that these different measurement tools assess different aspects of posttraumatic growth (Joseph & Linley, 2008; Park & Lechner, 2009). In summary, the results indicate that especially intra-psychic forms of humour may be associated with well-

being outcomes (Cann et al., 2010). Whether this could also be the case for other trauma-related well-being outcomes will be tested within the next study.

Study Two

We extended the perspective to other negative well-being measurements, namely, posttraumatic stress and problems to regulate emotions. The latter outcome is not necessarily trauma-related. However, the regulation of emotions may often be problematic following a traumatic event (Wild & Paivio, 2003). Including such a measurement was thought to be helpful in order to account for such problems. We hypothesised that benign humour is associated positively with posttraumatic growth and that injurious humour is associated negatively with posttraumatic growth. We expected a negative relationship between benign humour styles, posttraumatic stress and problems to regulate emotions. We assumed the reverse relationship for injurious humour.

Method

Procedures and participants. Participants were recruited conveniently via a pen-paper survey and through snowball sampling in the internet. Around 482 subjects were approached. Of those, 132 participants experienced a trauma, were willing to fill in the survey and gave their informed consent. Hence, the response rate was around 27%. The study got ethical approval by the Ethics Board at the University.

Measures. The questionnaires assessing humour, posttraumatic growth and trauma were essentially the same as in study 1. However, because this study was part of a wider research project on reports of posttraumatic growth the CiOQ has not been used. In addition, the trauma questionnaire allowed participants to indicate more than one trauma.

Posttraumatic Stress. The Impact of Event Scale (IES) (Horowitz, Wilner & Alvarez, 1979) measured posttraumatic stress. This self-report measurement consists of 15 items,

each of which are answered on a 4-point Likert scale (0 = not at all, 1 = rarely, 3 = sometimes, and 5 = often). The IES consists of two subscales: intrusion and avoidance. The intrusion subscale consists of seven items and scores can range from 0 to 35. The avoidance subscale consists of eight items and scores can range from 0 to 40.

Emotion regulation difficulties. The Difficulties in Emotion Regulation Scale (DERS: Gratz and Roemer, 2004) was used to assess problems in regulating emotions. This 36-item scale was used as it builds on the theory that emotional regulation requires the awareness of emotions (Gratz & Roemer, 2004; Neumann, 2010; Wild & Pavio, 2003). The DERS can be used to assess six dimensions, however in the current study only the total scale of emotion regulation difficulties was used. The score of the total scale of emotion regulating difficulties ranges from 36 to 180.

Results and discussion

The sample consisted of 132 participants; the most frequently reported trauma was receiving news about the death or injury of a friend or relative (See Table 4). Except for the aggressive humour subscale, all scales were found to possess at least satisfactory internal consistency reliability (See Table 5).

Insert Table 4 and 5 here

All variables used were z-transformed. The correlations between variables are shown in Table 6. Given the sample size of the analyses (n = 109) and an alpha of 0.05, the power to find a medium effect (r = 0.30; see Cohen, 1992) was 0.89. We conducted partial correlations controlling for number of traumas, trauma severity and current distress. Number of traumas and trauma severity did not significantly affect the observed associations.

Some potential spurious effects were discovered for the association between affiliative humour, self-enhancing humour, intrusion and avoidance when controlling for current distress.

Insert Table 6 here

Humour was not associated with posttraumatic growth as measured by the PTGI. However, benign humour was associated negatively with problems to regulate emotions. Self-defeating humour was correlated positively with the avoidance subscale of the IES and problems to regulate emotions.

General discussion

The primary aim of the paper was to test how sense of humour relates to several trauma-related well-being outcomes. Contrary to our hypotheses, the results of study 1 and study 2 found no significant association between any humour style and posttraumatic growth as measured by the PTGI. However, self-enhancing humour was associated positively with positive changes when measured by the CiOQ-P. These results support the assumption that different measurement tools may assess different aspects of posttraumatic growth (Joseph & Linley, 2008; Park & Lechner, 2009). Self-enhancing humour may be linked to those dimensions of posttraumatic growth that are measured by the CiOQ-P, which may be tapping into more existential concerns than those of the PTGI.

The findings of the studies support our initial expectation that benign humour styles are correlated negatively with psychological difficulties. These results are in line with previous research that suggest a negative association between sense of humour and psychological problems (e.g. Besser et al., 2015; Edwards & Martin, 2010; Erickson &

Feldstein, 2007; Sliter et al., 2013). Therefore, benign humour could potentially be an important factor that facilitates coping. However, it could also be the case that people who are less troubled by their traumatic experience are more likely to use humour. In our studies, especially self-enhancing humour was negatively associated with psychological problems. In line with Cann and colleagues (2010) this result could indicate that self-enhancing humour in particular could be useful in order to cope with adversity. While affiliative humour improves social interactions, self-enhancing humour may be an internal resource to approach and process adversity (Martin, 2003). However, a prospective study design would be needed to investigate this possibility in more detail.

As expected, self-defeating humour was correlated positively with negative changes in outlook following adversity, avoidant states and problems to regulate emotions. These results are in line with research conducted by Edwards & Martin (2010) and Erickson & Feldstein (2007) who found a positive association between self-defeating humour and depressive symptoms. In contrast to self-defeating humour that may be a way to escape or deny uncomfortable feelings, aggressive humour may be rather an instrument to gain power within a social context (Martin et al., 2003). Hence, aggressive humour may not be directly associated with well-being outcomes. In line with this theoretical assumption, aggressive humour was not significantly associated with any trauma-related well-being outcome.

The studies have several limitations. First, the sample size of study 1 was rather low. Therefore, associations below a value of $r = .23$ could not become statistically significant. Second, it was not possible to indicate multiple traumas. Within study 2, participants were initially asked to state only the most traumatic event they have experienced. However, several participants stated more than one event and were unable to decide which of those was most traumatic. These circumstances lead to the decision to allow for multiple answers. Because of this procedure, it is likely that the true number of experienced traumas has been

underestimated. However, the number of traumas had no significant influence on the observed associations. The sample was not representative for both studies. Moreover, both studies could have been prone for sampling bias. This may be especially the case for study 2 where two different survey modes were used. However, correlations are less prone for selection bias (Heiervang & Goodman, 2011; Loewenthal, 1996). In addition, both studies were correlational and, therefore, causal inferences cannot be drawn. Finally, the response rate for both studies was low.

In conclusion, the results suggest that especially intra-psychic forms of humour may be related to negative as well as positive well-being outcomes. Therefore, these results indicate the need for prospective studies investigating the potential buffering role of humour following trauma. This may especially hold true for intra-psychic forms of humour.

References

Besser, A., Weinberg, M., Zeigler-Hill, V., Ataria, Y., & Neria, Y. (2015). Humor and trauma-related psychopathology among survivors of terror attacks and their spouses. *Psychiatry* 78(4). 341-353.

Cann, A., Stilwell, K., & Taku, K. (2010). Humor styles, positive personality and health. *Europe's Journal of Psychology* 6(3). 213-235.

Calhoun, L.G., & Tedeschi, R.G. (2009). The foundation of posttraumatic growth: An expanded framework. In L.G. Calhoun, & R.G. Tedeschi (Eds.), *Handbook of posttraumatic growth: Research and practice* (pp. 3-23). New Jersey: Psychology Press.

Cofini, V., Cecilia, M. R., Petrarca, F., Bernardi, R., Mazza, M., & Di Orio, F. (2014). Factors associated with post-traumatic growth after the loss of a loved one. *Minerva Psichiatrica* 55(4). 207-214.

Cohen, J. (1992). A power primer. *Psychological Bulletin* 112 (1). 155-159.

Edwards, K. R., & Martin R. A. (2010). Humor creation ability and mental health: Are funny people more psychologically healthy? *Europe's Journal of Psychology* 6(4). 196-212.

Erickson, S. J., & Feldstein, S.W. (2007). Adolescent Humor and its relationship to coping, defense strategies, psychological distress, and well-being. *Child Psychiatry & Human Development* 37(3). 255-271.

Freud, S. (2009). *Der Witz und seine Beziehung zum Unbewußten, Der Humor*. Frankfurt am Main: Fischer Taschenbuch Verlag.

Gratz, K. L., & Roemer, L. 2004. Multidimensional assessment of emotional regulation and dysregulation: Development, factor structure, and initial validation of the difficulties in Emotional Regulation Scale. *Journal of Psychopathology and Behavioural Assessment* 26 (1). 41-54.

Heiervang, E., & Goodman, R. (2011). Advantages and limitations of web-based surveys: evidence from a child mental health survey. *Social Psychiatry and Psychiatric Epidemiology* 46 (1). 69-76.

Horowitz, M. J., Markman, H. C., Stinson, C. H., Fridhandler, B., & Grannan, J.H. (1995). A classification theory of defense. In J.L. Singer (Ed.), *Repression and dissociation: Implication for personality theory, psychopathology, and health* (pp. 61-84). Chicago: The University of Chicago Press.

Horowitz, M., Wilner, N., & Alvarez, W. (1979). Impact of Event Scale: A measure of subjective stress. *Psychosomatic Medicine* 4(3). 209-218.

Janoff-Bulman, R. (2009). Schema-change perspectives on posttraumatic growth. In L. G. Calhoun, & R. G. Tedeschi (Eds), *Handbook of posttraumatic growth: Research and practice* (pp. 81-99). New Jersey: Psychology Press.

Janoff-Bulman, R. (1992). *Shattered assumptions: Towards a new psychology of trauma*. New York: The Free Press.

Joseph, S, Murphy, D., & Regel, S. (2012). An affective-cognitive processing model of post-traumatic growth. *Clinical Psychology and Psychotherapy*. doi: 10.1002/cpp.1798.

Joseph, S. (2011). *What doesn't kill us: The new psychology of posttraumatic growth*. London: Piatkus.

Joseph, S., & Butler, L. D. (2010). Positive changes following adversity. *PTSD Research Quarterly* 21(3). 1-8. Retrieved from http://www.psychologytoday.com/files/attachments/75676/positive-changes-following-adversity.pdf.

Joseph, S., & Linley, A.P. (2008). Psychological assessment of growth following adversity: A review. In S., Joseph, & A. P. Linley (Eds.), *Trauma, recovery, and growth: Positive psychological perspectives on posttraumatic stress* (pp. 21-36). New Jersey: John Wiley & Sons.

Joseph, S., Linley, A. P., Andrews, L., Harris, G., Howle, B., Woodward, C., & Shevlin, M. (2005). Assessing positive and negative changes in the aftermath of adversity: Psychometric evaluation of the changes in Outlook Questionnaire. *Psychological Assessment* 17(1), 70-80.

Joseph, S., Williams, R., & Yule, W. (1993). Changes in outlook following disaster: The preliminary development of a measure to assess positive and negative responses. *Journal of Traumatic Stress* 6(2). 271-279.

Jovanovic, V. (2011). Do humor styles matter in the relationship between personality and subjective well-being? *Scandinavian Journal of Psychology* 52(5). 502-507.

Lazarus, R.S., & Folkman, S. (1984). *Stress, appraisal, and coping*. New York: Springer.

Linley, A., Joseph, S., Cooper, R., Harris, S., & Meyer, C. (2003). Positive and negative changes following vicarious exposure to the September 11 terrorist attacks. *Journal of Traumatic Stress* 16(5). 481-485.

Loewenthal, K. M. (1996). *An introduction to psychological tests and scales*. London: UCL Press.

Martin, R. A., Puhlik-Doris, P., Larsen, G., Gray, J., & Weir, K. (2003). Individual differences in the uses of humor and their relation to psychological well-being: Development of the Humor Styles Questionnaire. *Journal of Research in Personality* 37(1). 48-75.

Martin, R. A. (2003). Sense of Humor. In S. J. Lopez, & C. R. Snyder (Eds.), *Positive Psychological Assessment: A handbook of models and measures* (pp. 313-328). Washington: American Psychological Association.

Martin, R. A., Kuiper, N. A., Olinger, J., & Dance; K.A. (1993). Humor, Coping with Stress, Self-Concept, and Psychological Well-Being. *HUMOR: International Journal of Humor Research* 6 (1). 89-104.

Neumann, A., van Lier, P. A.C., Gratz, K. L., & Koot, H.M. (2010). Multidimensional assessment of emotion regulation difficulties in adolescents using the Difficulties in Emotion Regulation Scale. *Assessment* 17(1). 138-149.

Páez, D., Segual, M.A., & Martínez-Sánchez, F. (2013). Incremental validity of alexithymia, emotional coping and humor style on happiness and psychological well-being. *Journal of Happiness Studies* 14(5). 1621-1637.

Park, C.L., & Lechner, S.C. (2009). Measurement issues in assessing growth following stressful life experiences. In L.G. Calhoun, & R.G. Tedeschi (Eds.), *Handbook of posttraumatic growth: Research and practice* (pp. 47-67). New Jersey: Pychology Press.

Park, C. L., Cohen, L. H., & Murch, R. (1996). Assessment and prediction of stress-related growth. Journal of Personality 64(1). 71-105.

Peterson, C., Park, N., Pole, N., Andrea, W. D., & Seligman, M.E.P. (2008). Strengths of character and posttraumatic growth. *Journal of Traumatic Stress* 21(2). 214-217.

Rachman, S. (2001). Emotional processing, with special reference to post-traumatic stress disorder. *International Review of Psychiatry* 13(3). 164-171.

Schroevers, M. J., & Teo, I. (2008). The report of posttraumatic growth in Malaysian cancer patients: Relationships with psychological distress and coping strategies. *Psycho-Oncology* 17(12). 1239-1246.

Scrignaro, M., Barni, S., & Magrin, M.E. (2010). The combined contribution of social support and coping strategies in predicting post-traumatic growth: A longitudinal study on cancer patients. *Psycho-Oncology* 20(8). 823-831. DOI: 10.1002/pon.1782.

Sliter, M., Kale, A., & Yuan, Z. (2013). Is humor the best medicine? The buffering effect of coping humor on traumatic stressors in firefighters. *Journal of Organizational Behavior* 35(2). 257-272.

Tedeschi, R. G., & Calhoun, L.G. 2004. Posttraumatic growth: Conceptual foundations and empirical evidence. *Psychological Inquiry* 15(1). 1-18. Retrieved from http://data.psych.udel.edu/abelcher/Shared%20Documents/3%20Psychopathology%20(27)/Tedeschi,%20Calhoun,%202004.pdf.

Tedeschi, R. G., & Calhoun, L.G. (1996). The posttraumatic growth inventory: Measuring the positive legacy of trauma. *Journal of Traumatic Stress* 9(3), 455-471.

Vaillant, G. E. (1995). *The wisdom of the ego*. United States of America: Harvard University Press.

van der Kolk, B. A. (2007). The complexity of adaption to trauma: Self-Regulation, stimulus discrimination, and characterological development. In B. A., van der Kolk, A. C. McFarlane, & L. Weisaeth (Eds), *Traumatic stress: The effects of overwhelming experience on mind, body, and society* (pp. 182-213). New York: Guilford Press.

Van der Kolk, B. A., & McFarlane, A.C. (2007). The black hole of trauma. In . In B. A., van der Kolk, A. C. McFarlane, & L. Weisaeth (Eds) *Traumatic stress: The effects of overwhelming experience on mind, body, and society* (pp. 3-23). New York: Guilford Press.

Vrana, S., & Lauterbach, D. (1994). Prevalence of traumatic events and post-traumatic psychological symptoms in a nonclinical sample of College Students. *Journal of Traumatic Stress* 7(2). 289-302.

Wild, N. D., & Paivio, S.C. (2003). Psychological adjustment, coping, and emotion regulation as predictors of posttraumatic growth. *Journal of Aggression, Maltreatment & Trauma* 8(4). 97-122.

Table. 1. Description of the sample

	N	%	Mean (SD)	Range
Participants	73			
Age	73		31.93 (11.89)	18-62
Female	58	79.5		
Male	15	20.5		
Nature of Trauma	73			
News of serious injury or death of someone close	20	27.4		
Other Event	10	13.7		
Physical or sexual abuse in Childhood	9	12.3		
Serious Injury or danger to lose life	8	11		
In abusive relationship as an Adult	7	9.6		
Serious accident, large Fire or Explosion	6	8.2		
Experience of a Trauma they cannot tell about	4	5.5		
Experience of Crime	4	5.5		
Other (below the 5% hurdle)	5	6.8		
Years elapsed since trauma	72	98.63	8.76 (8.32)	0-35

Table. 2. Means, standard deviations and inter-item consistencies for all scales

Variable	Alpha (α)	Mean (SD)	Range
CiOQ (Positive Change Scale)	.83	44.12 (8.62)	13-61
CiOQ (Negative Change Scale)	.89	33.17 (12.60)	15-66
PTGI (Total Scale)	.93	51.64 (24.01)	1-100
HSQ (Affiliative Humor)	.78	46.80 (6.39)	22-56
HSQ (Self-Enhancing Humor)	.82	38.27 (8.62)	15-55
HSQ (Aggressive Humor)	.67	26.49 (7.28)	12-45
HSQ (Self-Defeating Humor)	.80	29.93 (9.32)	9-49

NOTES. CiOQ= Changes in Outlook Questionnaire; PTGI= Posttraumatic Growth Inventory; HSQ= Humor Style Questionnaire.

Table. 3. Correlates between humour styles, PTGI and the CiOQ

Scale	1	2	3	4	5	6	7
PTGI							
1. PTGI_Total	-						
CiOQ							
2. CiOQ-P	.61**	-					
3. CiOQ-N	**-.17**	**-.25***	-				
HSQ							
4. Affiliative	.08	.14	**-.17**	-			
5. Self-Enhancing	.17	.38**	**-.40****	.39**	-		
6. Aggressive	-.18	-.17	**-.15**	-.03	-.03	-	
7. Self-Defeating	-.02	.03	**.23***	.07	-.05	.26*	-

NOTES. N= 73. Correlations in bold are Spearman's rho. All other correlations are Pearson's r coefficients. PTGI= Posttraumatic Growth Inventory; CiOQ-P= Changes in Outlook Questionnaire Positive Scale; CIOQ-N= Changes in Outlook Questionnaire Negative Scale; HSQ= Humor Style Questionnaire; *p<.05; **p>.01 (two-tailed, list-wise).

Table. 4. Description of the sample

	N	%	Mean (SD)	Range
Participants	132			

Age	132		24.69 (6.87)	18-56
Female	79	59.8		
Male	53	40.2		
Number of Traumas	132	100	1.91 (1.11)	1-5
Nature of Trauma				
News of serious injury or death of someone close	62	47		
Witnessing or involvement in an accident	43	32.6		
Serious Injury or danger to lose life	30	22.7		
Witnessing of mutilation, serious injury, violent death	28	21.2		
Crime	17	12.9		
Natural Disaster	16	12.1		
Other Event	15	11.4		
Not able to talk about it	15	11.4		
Abusive Relationship (Adult)	14	10.6		
Child Abuse	9	6.8		
Unwanted sexual contact (Adult)	4	3		
Years elapsed since trauma	112	84.84	6.63 (6.89)	0-33

Table. 5. Means, standard deviations and inter-item consistencies for all scales

Variable	Alpha (α)	Mean (SD)	Range
Intrusion Scale (IES)	.88	10.52 (9.51)	0-35

Avoidance Scale (IES)	.86	11.23 (10.08)	0-40
DERS	.91	83.00 (20.21)	42-143
PTGI (Total Scale)	.95	45.54 (25.64)	0-102
HSQ (Affiliative Humor)	.78	40.91 (8.75)	15-56
HSQ (Self-Enhancing Humor)	.75	37.58 (7.82)	14-53
HSQ (Aggressive Humor)	.54	29.72 (6.94)	9-46
HSQ (Self-Defeating Humor)	.77	30.35 (8.65)	11-50

NOTES. IES= Impact of Event Scale; DERS= Difficulties in Emotion Regulation Scale; PTGI= Posttraumatic Growth Inventory; HSQ= Humor Style Questionnaire.

Table. 6. Correlates between humour styles, PTGI, IES and DERS

Scale	1	2	3	4	5	6	7	8
HSQ								
1. Affiliative	-							
2. Self-Enhancing	.39**	-						
3. Aggressive	.09	.03	-					
4. Self-Defeating	.14	-.04	.40**	-				
5. PTGI	-.04	.04	-.12	-.06	-			
IES								
6. Intrusive	-.12	-.13	.01	.12	.23*	-		
7. Avoidance	-.14	-.14	.01	.19*	.26**	.79**	-	
8. DERS	-.27**	-.32**	.11	.20*	.01	.30**	.33**	-

NOTES. N= 109. PTGI= Posttraumatic Growth Inventory; HSQ= Humor Style Questionnaire; IES= Impact of Event Scale; DERS= Difficulties in Emotion Regulation Strategies; *p<.05; **p>.01 (two-tailed, list-wise).