



This dissertation deals with the question how to assess a sense of humor in relation to health. Also, associations between a sense of humor and the frequency of upper respiratory tract infections (URTI) like the common cold and influenza have

been investigated, as well as associations between a sense of humor and burnout. The findings suggest that occupational humorous coping as well as state humor may be assessed in a valid and reliable way. Humorous coping was shown to be weakly associated with URTI frequency, although some types of humorous coping appeared 'healthier' than others. Also, burnout subjects used positive humor styles and passive humorous behaviors less than their healthy counterparts.

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Sibe Doosje

Sense of humor at work

Assessment and associations with health

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voor mijn ouders

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Sense of humor at work

Assessment and associations with health

Gevoel voor humor op het werk

Het meten en verbanden met gezondheid

(met een samenvatting in het Nederlands)

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Chapter 1

General introduction

A sense of humor and health

A sense of humor is a highly valued and somewhat miraculous human characteristic. The idea that ‘humours’ are related to bodily and psychological processes was already described in the writings of Hippocrates of Kos, a Greek doctor who lived in the fifth and fourth century before Christ (Hippocrates, 1931, 1969):

‘The body of man has in itself blood, phlegm, yellow bile and black bile; these make up the nature of his body, and through these he feels pain or enjoys health (Nature of Man, IV, 11)’.

Disturbances in the balance of these four bodily fluids or humours were at the time supposed to be related to physical and psychological health problems. The idea that a sense of humor is health-promoting, suggests that Hippocrates’ idea is still influential in lay and scientific thinking about the relationship of humor and health. However, nowadays humor has an altogether different meaning, Before any sensible research can be done on the health effects of a sense of humor a sound definition and conceptualization is required.

Definition and conceptualization of humorous coping

Defining humor, Martin (2007) distinguishes four components: a cognitive-perceptual process, a social context, an emotional response and the vocal-behavioral expression of laughter. The cognitive-perceptual process involves stimuli characterized by ‘non-serious social incongruity’ (Gervais & Wilson, 2005), meaning that unlikely or unexpected combinations of cognitive elements (expectations, ideas, actions) are presented at the same time, for example in jokes, funny remarks or puns. The presentation part of this process renders this a distinctly social process: humor is usually delivered and enjoyed in a social context. The primary aim of these stimuli is a positive emotional response (including laughter), which Martin (2007) refers to as mirth. However, it is also possible to deliver more serious, critical or even aggressive meanings in a humorous form, as in sarcastic or cynical humor, or to try to help someone else by means of humorous responses.

The definition presented above does not bring us much further when we try to relate humor to health. In our opinion this requires a coupling with stress-coping theory (Lazarus, 2001). The basic idea is that humor boosts adequate coping with stress and in this way may buffer the effects of stress on health. In other words: reduction of psychological stress may be accomplished by the individual using humorous coping. Humorous coping may thus be defined as the active use of non-serious incongruities, aimed at the evocation of a mirthful response and at the prevention or reduction of a stress response. The mirthful response may be covered or remain unexpressed. The addition of 'active use' to our definition of humorous coping has been made, because coping responses are considered relatively conscious acts of adaptation.

Traditionally, humorous coping has been considered a generic, overall strategy aimed at preventing or relieving stress (e.g. Martin & Lefcourt, 1983; Thorson & Powell, 1993). Although there is empirical evidence that generic humorous coping may have some health effects (e.g. Dillon & Totton, 1989; Newman & Stone, 1996), this view of humorous coping may be too limited to link it successfully to physical and psychological health. This thesis attempts to extend this view by including specific emotion regulation responses, put forward by Gross (2001). He states that there are two basic emotion regulation strategies, which vary depending on the phase the stress process is in. Antecedent-focused emotion regulation is aimed at an alternative understanding of the antecedent (also called stressor or external demand) or, in other words, cognitive reappraisal, thus preventing negative emotions. Response-focused emotion regulation, on the other hand, is aimed at stress reduction involving a negative emotional state which is already present. Gross' hypothesis is that antecedent-focused emotion regulation is healthier than response-focused emotion regulation. Empirical research conducted by John and Gross (2004) and Austenfeld and Stanton (2004) has offered some support for this hypothesis, although they have been using non-humorous coping instruments.

Applying Gross' (2001) concepts of health-related emotion regulation to humorous coping, led us to develop and test a new Questionnaire of Occupational Humorous Coping (QOHC). This questionnaire should measure four humorous coping styles: antecedent-focused and response-focused humorous coping styles as well as two socially oriented humorous coping styles. The idea behind the latter two styles is that humorous coping may not only influence one's own emotions (as in antecedent-focused and response-focused humorous coping), but that they can also be used to regulate emotions in others, as in affiliative and aggressive styles of humorous coping. Extending

Gross' hypothesis to humorous coping, antecedent-focused and response-focused humorous coping styles are expected to have different health effects. The QOHC should be focused on antecedents in an occupational setting, which is considered an important domain of functioning for many adults.

Humorous coping measurement and its fit to stress-coping theory

After having established the psychometric properties of the QOHC, the question is how the new questionnaire, developed from an extended theoretical framework, relates to the six other humorous coping questionnaires in the field. To make a comparison possible, a theory-based qualitative measurement model should be developed to see to what extent these humorous coping measures comply with it. A suitable method to develop such a measurement model is facet analysis, which was introduced by Guttman (1954). Because humorous coping is our focus, stress-coping theory (Lazarus & Folkman, 1984) offers a good starting point for such an extended measurement model. Stress-coping theory allows the extraction of three key features of humorous coping items: a demand requiring a coping response, the coping response itself, and the aim of such a coping response. Facet analysis is then used to construe a so-called mapping sentence (see Landsheer & Boeije, 2010), containing facets that define essential parts of humorous coping items. Currently, three generic and four specific humorous coping questionnaires (including the QOHC) are available. These questionnaires may then be analyzed with regard to their fit to the mapping sentence, as derived from stress-coping theory. This analysis allows a critical evaluation of current measurement strategies in the field and may provide suggestions for their improvement.

Measuring variable humorous behaviors

So far, a sense of humor has been considered as a relatively stable trait which may influence health. However, humorous behaviors may vary over time and they may also depend on psychological and health states. It would therefore be useful to develop a questionnaire measuring several types of humor use. This questionnaire, the Humor Check List (HCL) should primarily be based on humor concepts forwarded by Thorson and Powell (1993): humor appreciation, humor production and humorous coping. This triad should then be extended with three additional humorous behaviors: humor

reproduction, mirth and positive humor climate at work. Some of the six subscales should have a positive-negative dimension because of the current acknowledgement that a sense of humor is not an altogether positive characteristic (e.g. Martin et al., 2003). The aim of the HCL is to enable behaviorally oriented, valid and reliable measurement of humor use over different time frames, in different domains.

Occupational humorous coping and upper respiratory tract infection

Having addressed these measurement issues, the following step is to relate occupational humorous coping to physical health dimensions, more specifically the risk to catch upper respiratory tract infection (URTI) like the common cold or influenza. The rationale behind this idea comes from stress-coping theory (Lazarus & Folkman, 1984), which predicts that certain demands (including job demands) may lead to negative affective states, which in turn may increase the risk to catch a URTI. There is empirical evidence supporting the argument that both (job) demands and affective states are associated with the risk to catch a URTI (e.g. Cohen, Tyrrell, & Smith, 1991, 1993; Cohen & Herbert, 1996; Biondi & Zannino, 1997; Pressman & Cohen, 2005; Mohren, Swaen, Borm, Bast, & Galama, 2001). However, this is not an automatic process, because both job demands and affective states may be moderated by certain job resources that workers have at their disposal. Two job resources are of importance here: job control and humorous coping. Job control may reduce the adverse effects that job demands may have (Karasek, 1979). A similar line of reasoning can be followed for humorous coping, which is known to have stress-reducing and mirth-enhancing properties (e.g. Porterfield, 1987; Egger, 1997; Celso, Ebener, & Burkhead, 2003 and Kazarian & Martin, 2006). Like job control, humorous coping may also buffer the adverse effect of job demands on affective states and, eventually, the frequency of URTI. It is hypothesized that antecedent-focused humorous coping is a 'healthier' humorous coping style than generic and response-focused humorous coping, mainly because of differential associations with affective parameters (which are supposed to be related to URTI frequency). Setting up the study in this way may increase the likelihood to find relationships between humorous coping and health. Also, these forms of humorous coping may bear stronger relationships to health than other forms of coping in past research (for a review, see Penley, Tomaka, & Wiebe, 2002). Also, the relative importance of humorous coping styles compared to job control may be assessed in a study of this kind.

Burnout, humorous traits and humor use

Burnout and its dimensions have been shown to be related to several sense of humor traits: generic humorous coping and humor styles. Although the basic idea is that generic humorous coping may prevent emotional exhaustion, depersonalization and personal incompetence (burnout dimensions described in Schaufeli and Van Dierendonck, 2000), findings with respect to these associations have been mixed (Talbot, 2000; Talbot & Lumden, 2000; Dorz, Novara, Sica, & Sanavio, 2003) . Burnout dimensions have also been associated with another sense of humor trait: humor styles. Four humor styles may be defined, varying along the dimensions individual versus social and positive versus negative. Two individual humor styles exist (self-enhancing and self-defeating), as well as two social humor styles: affiliative and aggressive. Self-enhancing humor is aimed at the use of humor to elevate oneself, whereas self-defeating humor is aimed at the use of humor to put oneself down. The social humor styles, affiliative and aggressive humor, are aimed at the use of humor to bond with others, or to distance oneself from others, respectively. It may be hypothesized that negative humor styles would be positively associated with burnout and its dimensions, whereas positive humor styles are negatively associated with it. A study by Tmkaya (2007) has indeed shown that this is the case for most burnout dimensions.

Previous studies typically included participants with moderate burnout and a focus on a sense of humor as a trait. Maybe more straightforward results will be obtained when a group high in burnout will be investigated. Moreover, it would be interesting to study the association between humor use as a state variable depending on the psychological status of the individual (i.e. burnout). Because of the serious consequences of burnout, it may be expected that humor use in burnouts is compromised as a result of their condition.

The present dissertation

The line of reasoning presented above leads to two main questions revolving around adequate measurement of health-related sense of humor concepts and two questions relating these concepts to the frequency of upper respiratory tract infection and burnout. More specifically, our research questions are:

1. What should a reliable and valid measure for health-related humorous coping look like, and how well do current humorous coping measures fit a stress-coping model?
2. What should a reliable and valid measure of time and state dependent humorous behaviors look like?
3. How do different humorous coping styles placed in a job demands-resources model relate to affective parameters and the frequency of upper respiratory tract infections?
4. How do burnout and its dimensions relate to humorous traits like generic humorous coping and humor styles, and how do they relate to state-like humorous behaviors?

These questions will be addressed in four empirical chapters (2-5) and a general discussion chapter (6). All chapters of this dissertation may be read independently, although a slight overlap between the chapters may occur.

Overview of chapters

Chapter 2 is dedicated to the development and validation of the Questionnaire of Occupational Humorous Coping (QOHC). A large-N sample has been used to assess construct validity and reliability of four humorous coping factors: antecedent-focused, response-focused, affiliative and aggressive/manipulative humorous coping. Also, divergent and convergent validity of these factors with other sense of humor questionnaires will be investigated.

Chapter 3 is a qualitative and quantitative empirical study on the fit of seven humorous coping questionnaires (including the QOHC developed in chapter 1) with a stress-coping model. Facet analysis has been used to assess and compare their theoretical fit. Improvements in the field of humorous coping measurement are suggested.

Chapter 4 addresses the relevance of humorous coping as a predictor of the frequency of upper respiratory tract infection (URTI) in a job demands-resources (JDR) model. The model also includes positive and negative job-related affective parameters, because of their supposed relationship to URTI frequency.

Chapter 5 is about burnout and its relationships to humorous traits and states. For this study, the Humor Check List (HCL) was developed and its psychometric properties were investigated. The HCL enables the measurement of several types of humor use like humor appreciation and reproduction, negative humor production, positive humorous coping, mirth and positive humor climate at work. Furthermore, this study describes the differences in generic humorous coping, humor styles and humor use between a burnout group and a healthy control group. Also, associations between humorous traits and states and burnout dimensions have been assessed. Two specific hypotheses were tested, one that burnouts are higher in negative humor styles than healthy controls, the other that burnouts are lower in positive humor styles than healthy controls.

Chapter 6 concludes this thesis with a critical evaluation of the outcomes and design of the studies in this dissertation. This chapter also contains suggestions for future research.

Chapter 7 contains an English summary. A Dutch summary and a summary for young children are also given.

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Chapter 2

Measurement of occupational humorous coping

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Abstract

The aim of this study was to develop and evaluate a Questionnaire of Occupational Humorous Coping (QOHC), partly based on the model of emotion regulation by Gross (2001). Items intended to measure antecedent-focused, response-focused, and affiliative and aggressive-manipulative humorous coping methods were generated. Preliminary studies led to improvements in the questionnaire and to the removal of items controlling for acquiescence bias. Principal axis factoring with oblique rotation on a large sample yielded four stable and reliable factors: an antecedent-focused, a response-focused, an aggressive-manipulative and an affiliative instrumental humorous coping factor. Convergent and discriminant validity with existing humorous coping and other sense of humor measures (the CHS, the MSHS and the HSQ) was satisfactory, but not always in the expected direction. Antecedent-focused and generic humorous coping (CHS) were weakly associated with job-related positive affect and well-being; for the self-enhancing humor style these associations were moderate. Aggressive-manipulative, response-focused and generic humorous coping showed weak associations with negative job-related affect. The findings are explained in terms of assessment issues and possible moderating effects of humorous coping.

1. Introduction

Popular and scientific debate shows a persisting interest in the link between humor and health. In a recent review it was concluded that such a link has been difficult to establish because of theoretical, conceptual and measurement issues (Martin, 2001). Since the purpose of this study is to develop a questionnaire that enables sound measurement of humorous coping, several of these issues need to be addressed. There is the theoretical issue of the mechanisms involved in the humor-health relationship, the conceptual issue of finding a humor construct that suits this mechanism and the development of a questionnaire adequately measuring this construct.

Stress theory seems a good starting point to describe the mechanism linking a sense of humor and health. The mechanism described in this theory is that certain demands elicit a coping response in the individual that is aimed at the adaptation to these demands, to prevent possible ill consequences for the individual in the form of the possibility or reality of stress, an internal state of unpleasant emotional arousal. Not all demands necessarily lead to stress, which is the reason that they are sometimes referred to as potential stressors (Thomas, 2000). After all, when coping is successful, a stressor no longer elicits stress. Lazarus (2001) has defined coping as 'the effort to manage psychological stress'. Since most coping responses are aimed at the neutralization of an unpleasant emotional state, humorous coping might be an interesting candidate in the humor-health association, adding an extra dimension to coping in the sense that it is not only aimed at neutralization of the negative state, but also aims to transform it into a positive emotional state. Humorous coping can be described by what it is not (problem-focused coping) and by what it may be (antecedent-focused, response-focused, affiliative or aggressive coping). In problem-focused coping rational thinking and sensible action aim to remove or manage the demand by focusing on solutions for the problem that it poses and on the resources available to the individual. Humorous coping is not usually necessary as a response to these kinds of demands, and it may even be inappropriate: why joke around when a problem can be solved by rational thought and action?

Other demands, especially those that cannot be solved straight away, require emotion-regulating coping, aiming at the prevention or transformation of the emotions involved (Gross, 2001) and humorous coping may be one of the options in these cases. Gross (2001) has distinguished two kinds of emotion-regulating coping: antecedent-focused and response-focused emotion regulation. Several studies have shown that

response-focused emotion regulation is associated with compromised health and well-being, whereas antecedent-focused coping is not (for a review, see John & Gross, 2004 and Austenfeld & Stanton, 2004). Applying these concepts to humorous coping responses, antecedent-focused humorous coping is aimed at humorous cognitive reappraisal of the demand at hand, resulting in the prevention of stress. Several studies have shown that cognitive reappraisal is a key mechanism in humorous coping (Kuiper, Martin, & Olinger, 1992; Francis, Monahan, & Berger, 1999; Thomas, 2000). Antecedent-focused humorous coping consists of humorous responses with a preventive function towards stress: changing the meaning of a demand could make it no longer stressful, and even enjoyable. Response-focused humorous coping, on the other hand, is aimed at the suppression or avoidance of ongoing negative emotional responses, and is by definition not aimed at the prevention of a stress response. The stress that is already present is avoided or suppressed, not cognitions possibly leading to stress. Response-focused humorous coping will therefore be defined as humorous responses aimed at the suppression or avoidance of negative emotions due to certain demands. Instrumental humorous coping differs from its antecedent-focused and response-focused cousins in the sense that it is aimed at the adaptation to certain demands in social interaction that may cause stress. It is not primarily aimed at the emotions in the individual, but at those in others. Following Martin, Puhlik-Doris, Larsen, Gray, & Weir (2003) in their distinction of socially oriented humor styles, two kinds of instrumental humorous coping are worth mentioning here: affiliative and aggressive. Affiliative humorous coping may be defined as humorous coping responses aimed at the reduction of negative emotions in others, responding to certain demands in social interaction. Its counterpart, aggressive humorous coping, consists of humorous coping responses eliciting negative emotion in others, but reducing negative emotion in the self, like in the use of sarcastic or cynical humor. Aggressive humor has drawn attention in the studies of Martin et al. (2003) and Thomas (2000).

What about the possible stress reduction and health effects of these styles? Antecedent-focused humorous coping tries to create new meanings from existing demands, thus preventing the occurrence of stress within the individual. We assume that it operates in between unconscious and conscious levels of functioning and since it is aimed at the prevention of stress, its beneficial effects on health and well-being may be the highest of all humorous coping methods. Response-focused humorous coping may be considered the most primitive and perhaps most unconscious one: one feels stress

and is inclined to replace this stress by cheerful emotions. Because stress is already present, humorous coping is 'too late' and it may be expected that it is the least effective humorous coping style when it comes to stress reduction and health effects. Instrumental humorous coping is probably the most deliberate form of coping since there is a conscious effort to change emotions of others, sometimes in a negative (sarcastic) way and sometimes in a positive (affiliative) way. Health and stress reduction effects of these humorous coping styles could at first sight be expected to be less clear, since they are primarily aimed at the emotions of others. This is definitely the case for affiliative humorous coping (although one may feel better as a result of others feeling better). For aggressive humorous coping the balance is somewhat different: there are costs for others, but short-term benefits for the self. Some negative associations between aggressive or self-destructive humor and well-being have indeed been reported by Martin et al. (2003). Distinguishing these four types of humorous coping leads to the following definition of humorous coping: humorous behavior in response to certain demands, with the aim to manage one's own cognitions or negative emotions as well as those of others. With regard to the dimensionality of the construct (Ruch, 1996), this definition implies that humorous coping is multidimensional, not unidimensional or generic.

Besides the conceptual issues touched upon in the previous paragraphs, five measurement issues need to be addressed, too: demand specificity, humorous coping response specificity, reliability, validity and acquiescence bias control. A first issue in the generation of humorous coping items is demand specificity: when phrased specifically, the researcher has control over the type of demands the respondent has in mind (they are researcher-selected), and when phrased broadly, they are called self-selected, in which case the respondent has more freedom to decide what types of antecedents the item refers to. A main disadvantage of the latter approach is that self-selected demands refer to a wide range of stimuli that are out of control for the researcher (Penley, Tomaka, & Wiebe, 2002). A second issue in item construction for coping questionnaires is its response specificity: is it phrased as behavior, as an action tendency, or as an attitude? Third, reliability of a questionnaire is important in the form of internal consistency of its scales (Cronbach's alpha) and its stability over time. Interpretation criteria for these parameters have been developed by Nunnally and Bernstein (1994). Fourth, validity is a complex construct, and many types of validity have been distinguished in psychological assessment. For our purposes, construct, convergent and predictive validity (Ter Laak & De Goede, 2003) are of importance. A fifth important issue is acquiescence bias, the

tendency of respondents to automatically choose the same alternative, for example, to circle 3s and 4s only, to avoid having to read (and think about) every item separately. Acquiescence bias control opposes this tendency by the alternation of positively and negatively phrased items.

Seven existing humorous coping instruments will now be analyzed with regard to the theoretical, conceptual and measurement issues presented above. Four unidimensional instruments were published before 2000 and three multidimensional ones after the start of the millennium. The first unidimensional humorous coping questionnaire to see the light of day was the 7-item Coping Humor Scale (CHS, e.g. 'It has been my experience that humor is often a very effective way of coping with problems') and it aims to measure humorous coping as a stress moderator (Martin & Lefcourt, 1983). Demands in this questionnaire are problems or tense situations, implying self-selection of demands. The humorous responses in the CHS are also self-selected, since they do not refer to specific humorous responses (different and broad terms like laughing, joking, humor or sense of humor are used). Its internal consistency ranges from unacceptable (Thorson & Powell, 1991) to undesirable (Martin & Lefcourt, 1983; Martin, 1996), minimally acceptable (Martin, 1996, Koehler & Ruch, 1996) and respectable (Koehler & Ruch, 1996; Eggli, 1997). It has respectable stability over a period of 12 weeks (Overholser, 1992). Six out of seven items showed adequate construct validity in a confirmatory factor analysis in a study by Nezlek and Derks (2001). Reasonable convergent validity with peer ratings was assessed by Martin and Lefcourt (1983), and positive associations were established with several other coping styles such as minimization (Rim, 1988), confrontive coping, distancing and positive challenge in cognitive appraisals and reappraisals of an exam (Kuiper et al., 1992). Also, there were positive associations with extraversion (Thomas, 2000) and empathic concern (Hampes, 2001). With regard to discriminant validity, no associations were found with planned problem-solving, escape-avoidance coping and seeking social support (Healy & McKay, 2000), and negative associations with neuroticism (Thomas, 2000), suppression and dysfunctional attitudes have been established (Kuiper et al., 1992). A strong negative association of humorous coping and peer questioning about how seriously the subject took him or her self, was reported by Martin (1996). Thomas (2000) also found several associations between her WUHI (the Waterloo Uses of Humor Inventory) and the CHS (see the description of the WUHI below). Acquiescence bias control is applied in the CHS in the form of five positively and two negatively phrased items. In a review Martin

(1996) concluded that the CHS is predictive for reduced stress according to several cross-sectional studies, which adds to its predictive validity.

In 1990, a 15-item anonymous questionnaire measuring humorous and other coping responses to 'awkward social situations at work' was developed by Cox, Read, & Van Auken (1990). Because the authors did not give their questionnaire a name, we will refer to this instrument here as the Threefold Occupational Coping Questionnaire (TOCQ, e.g. 'A colleague's briefcase flies open, spilling papers all over the hallway'). Several forms of coping are measured by asking the respondent to indicate the likelihood of showing specific ignoring, helpful or humorous behavior in response to each of the fifteen demands. No specific theoretical background is indicated in the descriptions of the TOCQ, but implicitly it can be placed in stress theory. Its demands are very specific situations, indicating a researcher-selected format. In the example above, the humorous response is 'I would tease him about being a master paper shuffler'. Where most questionnaires let the respondent decide what humorous responses are, in the TOCQ the researchers have selected humorous (and other) specific responses to the fifteen incidents, implying that the researchers have a pretty good idea of what is and what is not funny in the situation. No data with regard to reliability or construct validity are known and also no factor analysis has been reported. It does seem that men use humorous coping assessed in this way more than women (Cox et al., 1990). No acquiescence bias control is used in this questionnaire.

The Multidimensional Sense of Humor Scale (MSHS, Thorson & Powell, 1993a) was developed to provide adequate measurement of four sense of humor dimensions: attitudes towards humor and humorous persons, humor production, humor appreciation and humorous coping. The authors have always considered these dimensions as part of a generic sense of humor construct, and they have quite consistently defended the view that the scales of the questionnaire cannot be considered as separate constructs (Thorson & Powell, 1993a; Thorson, Powell, Sarmany-Schuller, & Hampes, 1997). Nevertheless, the items from the coping scale (MSHS-C, e.g. 'Coping by using humor is an elegant way of adapting'), can be placed in stress theory. The self-selected demands applied in the MSHS-C usually describe (difficult) situations and the use of humor in these types of situations, and humorous responses (wit, humor) are self-selected as well. So far, no reliability data are available for the MSHS-C. The construct validity of the scale varies with the number of items extracted in factor analysis (seven in Thorson & Powell, 1993a, 1993b, five in a 17-21 year old group, four in a 65-92 year old group in Thorson et al.,

1997, and four in Boyle & Joss-Reid, 2004). The principal components factor analysis with varimax rotation used in their study has been criticized by Boyle and Joss-Reid (2004), because of the risk of inflated factor loadings and supposed independence of the factors. Nevertheless, their outcomes are comparable to those in the previous studies. Convergent validity with intraception (Thorson & Powell, 1993b), and discriminant validity with aggression (Thorson & Powell, 1993b and - only for females - in Thorson et al., 1997) have been established. With regard to its predictive validity, males have been found to score somewhat higher on the MSHS-C than females in two studies by Thorson and Powell (1993b, 1993c), although the reverse effect was reported in another study (Thorson & Powell, 1996). Furthermore, the MSHS-C is weakly and positively associated with age (Thorson & Powell, 1993b, Thorson & Powell 1993c and Thorson & Powell, 1996) and weakly and negatively with negative mood (Moran & Massam, 1999), worry (Kelly, 2002), and death anxiety (Thorson & Powell, 1993c; Thorson et al., 1997). Acquiescence bias control has been applied by phrasing two out of the seven items in a negative form. Studying the construction of the MSHS, we found that the majority of the items in the factor the authors call 'attitudes towards humorous people' (Thorson et al., 1997) are in fact negatively phrased.

The BCOPE is a shortened version of the COPE coping questionnaire (Carver, Scheier, & Weintraub, 1989) and it was developed by Carver (1997). One of its scales is a unidimensional 2-item humorous coping scale (BCOPE-H, e.g. 'I've been making fun of the situation'). Its theoretical roots lie in stress theory. In one of its items, the demand was self-selected, in the other no demand was formulated. Humor was self-selected in both items. Its internal consistency was shown to be respectable in a study by Fillion, Kovacs, Gagnon, & Endler (2002) and very good in the original study by Carver (1997). Test-retest reliability over a two-week period was satisfactory (Fillion et al., 2002). Exploratory factor analysis of the overall BCOPE showed adequate construct validity of the humorous coping scale (Carver, 1997). Convergent validity with several factors of the WUHI (Thomas, 2000) was shown and will be described in more detail in the next paragraph. Adding to its convergent validity were the findings that weak and positive associations of the BCOPE-H with distractive and palliative coping scales were reported by Fillion et al. (2002), along with positive associations with the liking of sick humor (Saroglou & Anciaux, 2004). With regard to its predictive validity, associations with a reduced risk of developing posttraumatic stress disorder in women with breast cancer

(Buonocore, 2005) and with decreased occupational stress (Williams, 2002) have been reported. No acquiescence bias control was applied in this shortest questionnaire of all.

In the new millennium the unidimensional approach was followed by a more functional orientation towards the measurement of different humorous coping methods, which resulted in three questionnaires: the WUHI, the RHI and the HSQ-SE. The Waterloo Uses of Humor Inventory (WUHI; Thomas, 2000) is a 21-item multi-dimensional humorous coping questionnaire, measuring perspective-taking (9 items), avoidant (6 items) and aggressive (6 items) humorous coping, based on stress theory. Perspective-taking humorous coping (e.g. 'It makes me feel better when I share stories about my past embarrassments') refers to humorous behavior that offers an alternative cognitive perspective and it comes close to antecedent-focused humorous coping, whereas avoidant humorous coping (e.g. 'I try to find something to laugh at when I feel myself becoming upset') seems to measure response-focused forms of humorous coping. Aggressive humorous coping (e.g. 'I make fun of the irritating people in my life when I'm with my friends') covers a humorous coping method aimed at increasing negative emotions in others. Its demands are researcher-selected, they sometimes refer to negatively colored situations and sometimes to negative emotions that the respondent may cope with. The humorous responses are self-selected but quite varied in their descriptions. The three scales of the WUHI have respectable to very good internal consistency (Thomas, 2000). Confirmatory factor analysis resulted in good construct validity of the factors. Perspective-taking humorous coping had moderate convergent validity with the CHS and the BCOPE-H. Its discriminant validity was shown by moderate positive associations with extraversion (but not for men) and negative and weak associations for agreeableness (only for men). Aggressive humorous coping had low convergent validity with the CHS and the BCOPE-H. Evidence for discriminant validity was found by way of moderate negative associations between this scale and agreeableness. Moderate convergent validity of avoidant humorous coping with the CHS and the BCOPE-H was established. Discriminant validity was shown by weak and positive associations with neuroticism (only for males), extraversion (only for females and the overall population) and openness to experience for females (Thomas, 2000). Not all of these associations seem to make sense, which is partly due to our lack of knowledge about the expected relationship between humorous coping and personality. No acquiescence bias control has been applied in the WUHI.

De Koning and Weiss' (2002) 42-item Relational Humor Inventory (RHI), focuses on humorous behavior in intimate relationships, taking stress theory as its starting point. One of the scales in their questionnaire is an 8-item self instrumental humorous coping scale (RHI-SI, e.g. 'Whenever I can, I prefer to use humor to avoid conflict between us') and a 4-item partner instrumental humorous coping scale (RHI-PI, e.g. 'My partner uses humor to ease the tension when we fight'); therefore it may be considered two-dimensional. The authors of the RHI believe their instrument may contribute to the measurement of relationship quality, but also intend to measure cognitive and emotional processes involved in humorous coping (De Koning & Weiss, 2002). Items of the RHI-SI have researcher-selected demands, like conflicts, fights and sometimes feelings of the partner (the items of the RHI-PI are mainly about tension and feelings of the partner, in which case the scales may be considered affiliative humorous coping scales). The responses in both scales are self-selected. Although internal consistency for the two separate scales is not specified, they are in between respectable and very good. Construct validity of the scales is good. Positive correlations with humor appreciation and propensity to laugh (both only for wives) and humor creation (husbands and wives) contributed to an impression of adequate convergent validity. No association with marital satisfaction could be established, leaving doubt about the predictive validity with regard to affect or satisfaction. None of the instrumental scales contains items to control for acquiescence bias (De Koning & Weiss, 2002).

The Humor Styles Questionnaire was developed by Martin et al. (2003), measuring four humor styles along the dimensions of self and other, on the one hand, and positive and negative forms of humor, on the other. Three of them do not measure humorous coping responses, but the self-enhancing humor style does, (HSQ-SE, e.g. 'My humorous outlook on life keeps me from getting overly upset or depressed about things'), covering antecedent-focused and response-focused humorous coping items. The demands in the HSQ-SE are mainly intraindividual phenomena, and may therefore be called neither self-selected nor researcher-selected. The humorous responses are varied (thoughts, sense of humor, amusement), and they are self-selected. Its internal consistency is very good. Construct validity is satisfactory, whereas convergent validity with peer ratings of humor, the BCOPE-H and CHS is good, as well as with other sense of humor constructs such as the MSHS, the SHQ-6, and propensity to laugh (Martin et al., 2003). Furthermore, it is positively correlated with extraversion, agreeableness and openness to experience (Saroglou & Scariot, 2002). With regard to its predictive validity,

negative correlations with anxiety (Martin et al., 2003) and loneliness (Hampes, 2001), and positive correlations with self-esteem and optimism (Martin et al., 2003) and well-being (Martin et al., 2003; Kazarian & Martin, 2006) have been reported, as well as with school-related self-esteem (Saroglou & Scariot, 2002). Negative correlations with depression were reported in the original study (Martin et al. 2003), but a recent study showed no such association (Kazarian & Martin, 2006). One of its eight items is negatively phrased and is meant to control for acquiescence bias.

Overall, the theoretical rationale behind humorous coping questionnaires has not been very explicit. The earlier unidimensional questionnaires do not seem to reflect humorous coping reality well, which explains the recent development of multidimensional humorous coping questionnaires with antecedent-focused and response-focused coping dimensions. This development expresses the need to measure negative humorous coping as well, which may differ from positive humorous coping in its adaptive value and in its influence on health parameters. With regard to the demands chosen, most questionnaires have used the self-selected format, with broadly-formulated demands like problems and difficult situations, with the disadvantage that this makes generalization to real-life situations difficult. How specific should these demands be formulated? Broad formulations make generalization to real life difficult (Penley et al. 2002), and constricted formulations like in the TOCQ (Cox et al., 1990) restrict the type of respondents, because of the limited number of occupational settings it can be applied to. In the RHI (De Koning & Weiss, 2002) items are formulated specifically for intimate relationships, but within this domain respondents are allowed to select the types of demands themselves. The humorous responses in all questionnaires use the self-selected format, with the exception of the TOCQ (Cox et al., 1990), which uses researcher-selected humorous responses. None of the instruments presented in the previous paragraph measures occupational humorous coping, with the exception of the TOCQ. Although the researcher-selected approach applied in the TOCQ guarantees researcher control over the type of humorous responses in this questionnaire, respondents may question the funniness and appropriateness of the humorous response, and this judgment may influence their choice of humorous coping alternatives, and not the actual frequency with which they tend to use these specific humorous coping behaviors. This is especially relevant, since we know that humor appreciation is under the control of personal and demographic factors like gender, age, and social class (Kuipers, 2006). Internal consistency of the measures has overall been satisfactory, with the exception of

the CHS and the MSHS-C, where they have sometimes been low or absent, respectively. Recent studies have shown reasonable construct validity of humorous coping measures, but the rationale behind the choice of type of factor analysis and rotation has not always been explicit in the studies reviewed here. Also, the theoretical rationale of correlating these constructs with all kinds of other personality and well-being measures is not always clear from these studies. There seem to be some gender differences in humorous coping, which may make it an interesting dimension to look at. The question is whether it is useful to apply acquiescence bias control. Although this may seem a reasonable measure to counter automatic response behavior by the participant, it does pose a new problem. Factor analysis of questionnaires with acquiescence control bias sometimes results in factors consisting of negatively phrased items only, a phenomenon described by Maassen (1991) and Schriesheim and Hill (1981). This seems to have happened in the case of the MSHS.

The conclusions above should guide the development of the Questionnaire of Occupational Humorous Coping (QOHC). Stress theory should be its starting point, especially Gross' work on antecedent-focused and response-focused coping. These two dimensions should be part of a new humorous coping questionnaire. Also, the social dimension of humorous coping should be covered, including aggressive forms of humor. The choice for work-related demands is governed by the realization that work (like relationships) is an important domain of human functioning for many people, with a possibly strong impact on their well-being and health. When one has a full-time job one may spend 40 hours a week or more with one's colleagues, experiencing situations with sometimes high demands and varying levels of control. Another consideration with regard to the demands chosen is that they should not refer to traumatic or otherwise extremely stressful situations, in which humorous behavior is usually expected to be an inappropriate response. The demands should be broad enough to be recognized by many employees filling it out, and specific enough to make generalization to real life possible. No specific humorous responses should be included in the new questionnaire, but all humorous responses should be in a behavioral form, to mark the distinction between attitudes and behavior. Of course, any new questionnaire should have adequate reliability and validity. Acquiescence bias control will be applied in our study, but when undesirable effects occur, it will be removed from the questionnaire.

2. Item generation

Four dimensions of humorous coping were incorporated in the Questionnaire of Occupational Humorous Coping (QOHC): an 11-item antecedent-focused, a 7-item response-focused, a 4-item affiliative and a 3-item aggressive-manipulative humor dimension. For three reasons we have opted for a majority of antecedent-focused items. First, our focus was on active humorous coping capabilities, and response-focused humorous coping is a less active form, driven more by circumstance than by will. Second, the instrumental and aggressive dimensions are primarily aimed at the emotions of others and are therefore less interesting with regard to individual health and well-being. Third, we expected that standardization of all scales would result in valid and reliable measurement. All job demands had to be potentially stressful, with the possibility of humorous responses. Therefore, traumatic demands were avoided. Behavioral descriptions for the coping responses and a Likert response format were used (1=never, 2=rarely, 3=sometimes, 4=often, 5=very often). The item content is presented in Table 1. The Dutch items were translated into English by two native speakers to make the questionnaire accessible for the scientific community at large. These translations were translated back into Dutch and compared with the original questionnaire. Differences between these versions could be traced back to slight grammatical differences between the two languages. Because of the dynamic nature of the development process, the item pool in the preliminary studies (see next section) differed somewhat from the one in our main study. Items used in the preliminary studies are depicted in italics in Table 1.

Table 1. Scales and items of the Questionnaire of Occupational Humorous Coping (QOHC)

Scales (▶)and items	
▶	Antecedent-focused humorous coping (AF)
1	When technical problems interfere with my work, I concentrate on the funniness of the situation
7	I use humor as a way to lighten my perspective on emotional situations at work
8	When my superior criticizes me, I can see the joke of it later on <i>(PS: When my superior criticizes me, I use humor to try to lighten up the atmosphere of the conversation, I)</i>
10	I am able to find something funny about tense or demanding situations <i>(PS: I am unable to find something funny about tense or taxing situations)</i>
11	When my work becomes too demanding, I use humor to take a different perspective
13	When in conflict with a colleague, I use humor to try to make light of the situation <i>(PS: I try to restore a disturbed working relationship with humor, I)</i>
14	When I have to put more effort into finishing something I am able to see the humor in the situation <i>(PS: When I have to put more effort into finishing something I am unable to see the humor in the situation)</i>
15	I use humor to make light of mistakes I make at work <i>(PS: When I am held liable for my work I make fun to be able to get over my thoughts, R)</i>
22	When I make a mistake at work I am able to laugh about it <i>(PS: When I make a mistake at work I am unable to laugh about it)</i>
23	A humorous perspective on things helps me to deal with pressure due to demands at work
24	In conflicts at work, I use humor to approach the problem from another angle
▶	Response-focused humorous coping (RF)
3	Humor helps me to take a verbal confrontation with a colleague less seriously
5	When my work makes me feel tense, I make jokes to avoid that feeling
6	When I encounter problems at work, I try to laugh away my worries
12	In uncomfortable situations I try to suppress my feelings by being witty
18	When I feel tense giving a presentation, I try to avoid this feeling by being funny
20	After an unpleasant conversation, being silly with my colleagues distracts me
26	When my work proves to be of no use, I joke with my colleagues to avoid thinking about it
▶	Instrumental humorous coping, affiliative type (IAF)
2	When a colleague's behavior bothers me, I let him or her know by making an appropriate joke
4	I use humor to prevent stressful situations at work from occurring <i>(PS: If one of my co-workers irritates me by making remarks about how and how fast I work, I use humor to put him or her in proper place)</i>
16	When a colleague is mad at me, I try to change his or her mood by making him or her laugh
19	If possible, I use humor to end a conflict
▶	Instrumental humorous coping, aggressive-manipulative type (IAG)
9	When a colleague gets on my nerves, I use humor to get back at him or her
17	When I encounter problems in teamwork, I convey my frustration using sarcastic remarks
21	If I need a colleague to do something extra for me, I use humor to make him or her do it

Note: PS=item content in preliminary studies.

3. Preliminary studies

Our first question is whether the existence of four reliable and valid humorous coping factors representing an antecedent-focused, a response-focused, an affiliative and an aggressive humorous coping factor will be confirmed in a large sample. Our second question is of an evaluative nature: how sensible and comprehensible was the item content of the questionnaire and would it be necessary to make changes in it? Our third question is about the stability over time of occupational humorous coping.

Methods. Two samples (1 and 2) were used to answer the questions stated above (for an overview of samples used in the preliminary and main studies, see Table 2, page 33). Sample 1 was used to answer questions about construct validity of the QOHC and consisted of 1428 healthy Dutch employees (mean age 38.8 years, SD=12.7) with jobs in a broad range of work settings. 357 second-year bachelor students of psychology selected four employees in their own social network and asked them to fill out the questionnaires. Several criteria had to be met in the quota sample that students collected: half of them had to be male, and half female. Also, half of them had to be recruited in the age group of 18-41 years, the other half in the age group of 42-64 years. This criterion was also met, since bimodal distributions could be observed with two modes centered in between 18 and 41 and 42 and 64 years, respectively. All participants were required to have a paid job of 50% working time or more (mean score was 88.0%, SD=17.0). Participants were required to be healthy, having no diseases at the time of the survey. The sample was not entirely representative of the Dutch working population, due to an overrepresentation of highly educated participants (28.9 % in the Dutch working population, Statistics Netherlands, 2002, versus 47.6 % in our sample). Construct validity was assessed with factor analysis using principal axis factoring. Whereas principal components analysis shows somewhat exaggerated factor loadings because of a failure to take error term into account, principal axis factoring does not (Gorsuch, 1997). Oblique rotation was used because we expected the factors to be distinct, but interrelated.

Sample 2 consisted of ten males and ten females with a mean age of 40.1 (SD=6.1). All of the mainly highly educated participants had a paid job of 50% working time or more (mean score was 79.4 %, SD=17.8). In this sample participants were asked about their opinions and thoughts when filling out the QOHC, and test-retest reliability for total humorous coping over a period of four to five months was established.

Results. Forced four-factor principal axis factoring of sample 1 was possible since all four Eigenvalues were larger than 1, explaining 50.7 % of the variance, with only item 23 falling below the .30 criterion. Visual inspection and statistical analyses of the distributions of the item scores showed no skewness or kurtosis. Of the first 13-item factor, eight belonged to the affiliative and aggressive humorous coping category (including items 9 and 17 as aggressive-manipulative humorous coping items), three to the response-focused dimension, and two to the antecedent-focused dimension. The content of this factor was labeled “humorous coping in social situations at work”. The second factor consisted of three antecedent-focused items referring to social as well as other incidents at work. However, there seemed an artifact operating here, since these items were also the ones that were phrased negatively. The third factor contained four instrumental items, two of which (4 and 9) refer to negative forms of humorous coping. Therefore, this factor was labeled “aggressive-manipulative”. The fourth 5-item factor consisted of two response-focused and three antecedent-focused items. Although we expected items 9, 17 and 21 (reflecting sarcastic forms of humorous coping) to be clustered into a separate factor, the data showed otherwise.

Respondents in sample 2 reported confusion with regard to the negatively phrased items 10, 14 and 22 because of the combination with negatively phrased Likert-scale answers like “never” and “almost never”. Other shortcomings were the cumbersome phrasing of item 4 and the demand in item 8, which was not considered to be representative for work settings. The demands in items 13 and 15 were considered too stressful for humorous responses. Also, a retrospective and a prospective humorous coping item were missed. A further evaluation by the authors showed that perspective-taking humor was not mentioned explicitly. Sample 2 yielded a test-retest reliability for the total humorous coping scale of 0.71 ($p < .001$).

Discussion. The outcome of the factor analysis was not satisfactory. The main reason for this was the emergence of a negative phrasing factor. Test-retest reliability of the total humorous coping scale was satisfactory, and the outcomes of the questionnaire evaluation resulted in several recommendations for the improvement of the QOHC. Items with negative phrasing had to be positively rephrased to avoid the effect described by Maassen (1991) and Schriesheim and Hill (1981). The cumbersome phrasing of item 4 should be replaced by an item reflecting humorous coping as a stress prevention strategy, and the demand in item 8 should be replaced by a demand that may be considered to be representative for work, rephrasing it in the direction of retrospective humorous coping.

Items 13 and 15 should be rephrased to represent less stressful demands, and both should reflect the perspective-taking function humorous coping may have.

Table 2. *Research samples and variables (preliminary and main studies)*

Sam- ples	N	Gender		Age		Variables					
		M	F	Mean	SD	QOHC	CHS	MSHS	HSQ	Job- related affect	Job sat.
1	1428	718	710	38.8	12.7	P	+	-	-	+	+
2	20	10	10	40.1	6.1	P	-	-	-	-	-
3	2094	1055	1039	39.2	12.5	M	-	+	-	+	+
4	109	67	42	39.4	11.8	M	-	-	+	+	-
Total	3651	1850	1801	39.05	12.5	4	1	1	1	3	2

Note: Item content of the QOHC differed for preliminary studies (P) and main studies (M)

4. Main studies

Critical evaluation of the item content and the results of the factor analysis in the preliminary studies led to a revised version of the QOHC, which was tested in the main studies. Our first question is similar to the one in the preliminary studies: can a four-factor structure with an antecedent-focused, a response-focused, an affiliative and an aggressive-manipulative factor be confirmed? Also, associations of the factors and their internal consistency are assessed, and the results of the factor analyses in the preliminary and main studies are compared. Convergent validity with existing humorous coping instruments and with several humor styles are determined, as well as its predictive validity with job-related affect and satisfaction. Also, age and gender differences with regard to the humorous coping factors are explored. Table 2 summarizes the questionnaires used to answer these questions, in a variety of samples.

Our expectations are as follows. A four-factor solution is expected, with adequate factor loadings and factor reliability, with moderate associations between the new factors because, theoretically, complete independence of the factors is not very likely (e.g., antecedent-focused humorous coping becomes response-focused humorous coping when it is applied later on in the process). Moderate convergent validity between occupational humorous coping and generic humorous coping is expected, because they all measure humorous coping but in different ways and in different domains. Since humorous coping may be considered to be a special case of humor production

(producing humor in demanding situations), some convergent validity of the humor production scale with occupational humorous coping is expected. Convergent validity of occupational humorous coping and humor appreciation is expected to be low. Although humor appreciation may be hypothesized as a necessary condition for humor production and humorous coping (if one does not appreciate humor, humor production as such and in situations requiring adaptation seems unlikely), humor appreciation and humorous coping seem to be theoretically distinct concepts. Since affiliative, aggressive and self-defeating humor styles cannot be considered humorous coping styles, they are presumed to be only weakly associated with occupational humorous coping. For humor styles, low or insignificant convergent validity is expected between affiliative, aggressive, and self-defeating humor styles, on the one hand, and occupational humorous coping factors, on the other. The reason for this is that these humor styles are not intended to measure humorous coping. However, the self-enhancing humor style (which may be considered as a form of humorous coping) is expected to show moderate convergent validity with occupational humorous coping styles. Finally, our review indicates that low to moderate predictive validity of the QOHC factors for job-related affect and job-related satisfaction is to be expected. Positive associations are expected for positive humorous coping factors, and negative associations for negative humorous coping factors. Because of the mixed findings in the existing literature with regard to age and gender, no explicit expectations are derived for their effect on occupational humorous coping factors.

4.1. Methods

Participants. Two additional samples were used in the main studies: sample 3 (N= 2094) and 4 (N=109). For some analyses samples could be combined because of overlapping variables (see table 2 for an overview). Sample 3 was formed by asking 524 first-year bachelor students of psychology to select four participants from their own social network, resulting in a quota sample of 2094 Dutch employees in a broad range of work settings; about half of them were males, the other half were females. The same inclusion criteria with regard to working time, health, gender and age, already used in sample 1 of the preliminary study, had to be met. Actual working time had a mean score of 88.4% a week (SD=17.2). Again, there was an overrepresentation of highly educated participants (47.6%), although students were explicitly encouraged to recruit participants of varying educational level (28.9 % in the general Dutch working population, according to Statistics Netherlands, 2002). Sample 4 (N=109) was formed according to similar

inclusion criteria as sample 1 and 3. Four students doing their bachelor's thesis recruited 109 Dutch employees (67 males and 42 females) in a variety of work settings. Actual working time was 99.6 % a week (SD=31.6). Again, highly educated participants were a majority (62.4 %).

Questionnaires. Participants completed a battery of questionnaires concerning demographic variables (i.e. gender and age), three questionnaires measuring humorous coping (the CHS, the MSHS-C and the QOHC) and the HSQ (including the self-enhancing humor style assessing a form of humorous coping, the HSQ-SE), and two questionnaires establishing job-related affect and job-related satisfaction.

The Coping Humor Scale (CHS) by Martin and Lefcourt (1983) is a generic humorous coping scale, which consists of seven items ($\alpha=0.62$, e.g. 'I usually look for something comical to say when I am in tense situations').

The coping scale of the Multidimensional Sense of Humor Scale (MSHS-C) was originally developed by Thorson and Powell (1993a) and contains three factors relevant to our study: humor appreciation ($\alpha=0.62$, e.g. 'I like a good joke'), humor production ($\alpha=0.62$, e.g. 'My clever sayings amuse others'), and humorous coping ($\alpha=0.79$, e.g. 'Coping by using humor is an elegant way of adapting'). All of these contribute to an overall sense of humor construct. The MSHS was used in sample 3 only.

The Questionnaire of Occupational Humorous Coping (QOHC) was revised, following the recommendations from the preliminary studies. Translation of the new items was done in a similar way as described in the preliminary studies.

The Humor Styles Questionnaire, originally developed by Martin et al. (2003), consists of 32 items, divided into four scales measuring positive and negative humor styles aimed at others or the self. Only one of these subscales is aimed at measuring humorous coping: the self-enhancing humor scale ($\alpha=0.83$, e.g. 'If I am feeling depressed, I can usually cheer myself up with humor'). The three other subscales are the self-defeating humor scale ($\alpha=0.74$, e.g. 'I let people laugh at me or make fun at my expense more than I should') and two socially oriented scales, the affiliative humor scale ($\alpha=0.79$, e.g. 'I laugh and joke a lot with my closest friends') and the aggressive humor scale ($\alpha=0.66$, e.g. 'If someone makes a mistake, I will often tease them about it'). The HSQ was used in sample 4 only.

Job-related affect was measured with the 30-item Job-related Affective Well-Being Scale (JAWS, e.g. 'My job made me feel angry'), developed by Van Katwyk, Fox, Spector, and Kelloway (2000). It asks participants how they felt through their work in the previous month. Three scales were derived from the items: a positive job-related affect scale

($\alpha=.91$) consisting of the positive emotion items, a negative job-related affect scale ($\alpha=.89$) with the negative emotion items, and a job well-being scale ($\alpha=.89$) containing the two other scales, after reverse-coding the negative job-related affect scale. Job-related satisfaction was measured by a work satisfaction ('I am content with the work I do') and a job-related satisfaction item ('Altogether I am very satisfied with my job'). The job-related affect and job-related satisfaction scales were filled out by participants in samples 1, 3 and 4 and it was possible to relate them to several humorous coping methods and humor styles (see Table 2 for an overview of variables included in several samples).

Analyses. For the factor analysis we used principal axis factoring with oblique rotation, extracting four factors. The resulting factors were analyzed with regard to their reliability. Correlations and analysis of variance (for gender differences) were used for the validity analyses. For the interpretation of all correlational analyses we used Cohen's (1977) criteria for small ($r=0.10$), moderate ($r=0.30$) and large ($r=0.50$) effect size. For the analyses of variance we used the effect size criteria parameter partial eta squared, which is derived from Cohen (1977): .01=small, .06=moderate, .14=large.

4.2. Results

Construct validity of the QOHC is summarized in Table 3 (see page 37). The factor analysis shows that almost all items (with the exception of items 20 and 25) load above .30 or below -.30 on the four factors, with alphas ranging from 0.73 to 0.82. Factors 1 and 3 appear to cover two kinds of instrumental humorous coping: a 7-item aggressive-manipulative one, incorporating sarcastic humor (items 9 and 17) and the aggressive-manipulative items 16 and 21, as well as a 3-item affiliative one including the benevolent item 2, and items 3 and 4 referring to a more subtle style of humorous response. Factor 2, consisting of nine items, reflects antecedent-focused humorous coping responses. Factor 4 mainly represents response-focused responses, although two items are antecedent-focused and instrumental affiliative, respectively. It is the latter item that also loads high on instrumental and affiliative factor 3. Although these factors are not completely according to expectation, construct validity and reliability of the factors seem adequate. Comparing the factor analyses of samples 1 ($N=1428$) and 3 ($N=2094$), seven items were changed. Three were positively rephrased, and four underwent more radical changes. Leaving these four (item numbers 4, 8, 13, and 15) out of the comparison, the factor structures of sample 1 and 3 show considerable similarities.

Table 3. *Factor analysis of the Questionnaire of Occupational Humorous Coping (QOHC)*

Factors (▶)	Item	Loading	Eigen- value	Variance (%)	Alpha
▶ Aggressive-manipulative humorous coping (IAG, 7 items)			9.07	36.30	0.80
Teamwork problems (IAG)	17	.52			
Unnerving colleague (IAG)	9	.42			
Giving a presentation (RF)	18	.42			
Colleague doing something extra (IAG)	21	.41			
Conflict (IAF)	19	.39			
Angry colleague (IAF)	16	.37			
Conflict with colleague (AF)	13	.34			
▶ Antecedent-focused humorous coping (AF, 9 items)			1.53	6.12	0.82
Mistake at work (AF)	22	.65			
More effort to finish work (AF)	14	.61			
Work demands (AF)	23	.60			
Tense or demanding situations (AF)	10	.53			
Mistakes at work (AF)	15	.49			
Conflicts at work (AF)	24	.48			
Technical problems (AF)	1	.45			
Criticism by superior (AF)	8	.42			
Overly demanding work (AF)	11	.41			
▶ Affiliative humorous coping (IAF, 3 items)			1.31	5.25	0.73
Verbal confrontation (RF)	3	-.63			
Behavior colleague (IAF)	2	-.53			
Stressful situations (IAF; loads -.40 on factor 4)	4	-.45			
▶ Response-focused humorous coping (RF, 4 items)			1.13	4.25	0.80
Stressful situations (IAF; loads -.45 on factor 3)	4	-.40			
Worries through problems at work (RF)	6	-.79			
Feeling tense through work (RF)	5	-.74			
Emotional situations (AF)	7	-.54			
Uncomfortable situations (RF)	12	-.49			
▶ Items loading below .30					
Unpleasant conversation (RF)	20				
Work of no use (RF)	25				
T All items (20 and 25 excluded)				51.92	0.92

NOTE: Principle axis factoring converged in 8 iterations, oblique rotation converged in 20 iterations; only factor loadings above .30 or below -.30 are shown. Item 4 was included in the reliability analysis of factor 3, and excluded in the reliability analysis of factor 4.

Of course, the previously negatively-phrased items form no separate factor in sample 3 any more, but there is some evidence of a response-focused humorous coping factor and two instrumental humorous coping factors, an affiliative and an aggressive-manipulative one. The antecedent-focused factor was not differentiated well in sample 1.

Moderate intercorrelations were expected and Table 4 shows that this expectation is confirmed, finding a shared variance of 29.1 % (for the antecedent-focused and the affiliative factor) to 37.2 % (for the response-focused and aggressive-manipulative factors). This implies an overlap in the factors, but the existence of separate factors may still be assumed. The range of 54.7 to 77.4 % shared variance for factor-total correlations also indicates interdependence of the factors, but does not seem to point in the direction of a single factor underlying the factor structure. Surprisingly, the aggressive-manipulative humorous coping factor correlates positively and not negatively with more positive humorous coping scales.

Table 4. *QOHC factor intercorrelations*

QOHC factors	Antecedent-focused	Response-focused	Aggressive-manipulative	Affiliative	Total
Antecedent-focused	(1)				
Response-focused	0.60	(1)			
Instrumental, aggressive-manipulative	0.60	0.61	(1)		
Instrumental, affiliative	0.54	0.57	0.56	(1)	
Total	0.88	0.81	0.84	0.74	(1)

NOTE: All correlations significant at $p \leq .000$

As Table 5 shows, the expected associations between the occupational humorous coping factors and the generic humorous coping scales have been found. Also, the associations of the QOHC factors with humor production and humor appreciation are in the expected direction and of the expected magnitude, humor appreciation showing low but significant correlations, and humor production set in between the correlations with humorous coping and humor appreciation scales. The self-enhancing humor style correlates moderately with all QOHC factors. However, the other humor styles do too, to varying degrees, which was unexpected since they are not intended to assess humorous coping responses.

Table 5. *Convergent validity of QOHC factors with the CHS, MSHS and HSQ*

Questionnaire of Occupational Humorous Coping					
	Antecedent- focused	Response- focused	Instrumental, Aggressive- manipulative	Instrumental, Affiliative	Total
Multidimensional Sense of Humor Scale (MSHS) 2					
❖ Humor appreciation	0.19 ***	0.11 ***	0.16 ***	0.15 ***	0.19 ***
❖ Humor production	0.44 ***	0.39 ***	0.47 ***	0.44 ***	0.53 ***
❖ Humorous coping	0.51 ***	0.54 ***	0.51 ***	0.43 ***	0.59 ***
Coping Humor Scale (CHS) ¹	-	0.50 ***	0.48 ***	-	-
Humor Styles Questionnaire (HSQ) ³					
❖ Self-enhancing	0.58 ***	0.45 ***	0.30 ***	0.37 **	0.52 ***
❖ Self-defeating	0.24 ***	0.44 ***	0.45 ***	0.30 ***	0.45 ***
❖ Affiliative	0.21 *	0.14 n.s.	0.22 *	0.30 **	0.28 **
❖ Aggressive	0.24 *	0.33 ***	0.40 ***	0.37 **	0.43 ***

NOTES: * = $p \leq .05$; ** = $p \leq .01$; *** = $p \leq .001$; n.s.= non-significant ; ¹ Data from sample 1 (N=1428); ² Data from sample 3 (N=2094); ³ Data from sample 4 (N=109)

Predictive validity of the QOHC factors for job-related satisfaction (see Table 6) is generally low. For job-related affect the picture is somewhat different, with low correlations between aggressive/manipulative humorous coping and negative affect, and somewhat higher ones between antecedent-focused humorous coping and positive job-related affect as well as job well-being. The sign of the correlations is in the expected direction, aggressive-manipulative humorous coping associating with negative job-related affect and antecedent-focused humorous coping with positive job-related affect and job well-being. The sign of the correlations is in the expected direction, aggressive-manipulative humorous coping associating with negative job-related affect and antecedent-focused humorous coping with positive job-related affect and job well-being. The generic humorous coping scales differ with regard to their predictive validity. The coping scale of the MSHS does not do well on all affect and satisfaction parameters, whereas the CHS is a stronger predictor for positive as well as negative job-related affect, with the signs in the predicted directions. Self-enhancing humorous coping does better than the QOHC factors and the generic humorous coping scales, but only for positive job-related affect and job well-being, not for negative job-related affect.

Table 6. *Correlations of factors of several coping scales and humor styles with job-related affect and satisfaction*

	Job-related affect		Job-related satisfaction		
	Positive	Negative	Job well-being	Work satisfaction	Job satisfaction
Occupational humorous coping					
Antecedent-focused ²	.16 ***	-.06 **	.16 ***	.09 ***	.08 ***
Response-focused ⁴	.02 n.s.	.08 ***	.00 n.s.	-.00 n.s.	-.01 n.s.
Instrumental, Aggressive-manipulative ⁴	-.00 n.s.	.11 ***	-.04 **	-.01 n.s.	-.02 n.s.
Instrumental, Affiliative ²	.09 ***	-.02 n.s.	.09 ***	.07 ***	.07 ***
Total ²	.07 ***	.02 n.s.	.07 ***	.05 *	.04 *
Generic humorous coping, humor styles					
Coping humor scale (CHS) ¹	.21 ***	-.10 ***	.18 ***	.07 **	.08 ***
Coping scale of the MSHS ²	.05 *	.02 n.s.	.05 *	.04 *	.04 *
Humor styles (HSQ) ³					
Self-enhancing humor	.33 **	-.14 n.s.	.26 *	-	-
Self-defeating humor	-.06 n.s.	.24 *	-.17 n.s.	-	-
Aggressive humor	.10 n.s.	-.07 n.s.	.10 n.s.	-	-
Affiliative humor	.30 **	-.10 n.s.	.22 *	-	-

NOTES: * = $p \leq .05$; ** = $p \leq .01$; *** = $p \leq .001$; n.s.= non-significant ;¹ Data from sample 1 (N=1428); ² Data from sample 3 (N=2094); ³ Data from sample 4 (N=109); ⁴ Combined data from sample 1, 3 and 4 (N=3631)

Small and significant gender differences are found for all coping scales with the exception of the antecedent-focused and response-focused humorous coping factors, the generic humorous coping scale of the MSHS and the self-enhancing humor style (see Table 7).

Table 7. *Gender differences in occupational and other humorous coping styles*

	Male		Female		Total ¹		t-test		
	M	SD	M	SD	M	SD	t-value	df	Sign.
Occupational humorous coping									
Antecedent-focused ²	2.73	0.63	2.70	0.60	2.72	0.61	-0.94	1,2063	n.s.
Response-focused ⁴	2.58	0.74	2.58	0.72	2.58	0.73	0.34	1,3607	n.s.
Instrumental, Aggressive-manipulative ⁴	2.62	0.65	2.45	0.65	2.54	0.65	-7.50	1,3599	***
Instrumental, Affiliative ²	3.12	0.76	2.96	0.73	3.04	0.75	-4.87	1,2082	***
Total ²	2.72	0.57	2.65	0.54	2.68	0.56	-2.94	1,2051	**
Other humorous coping scales									
Coping Humor Scale (CHS) ¹	3.44	0.62	3.28	0.59	3.36	0.61	-4.82	1,1414	***
Coping scale (MSHS) ²	3.45	0.57	3.45	0.55	3.45	0.56	0.24	1,2077	n.s.
Self-enhancing humor style ³	4.26	0.87	4.20	1.21	4.24	1.01	0.24	1,91	n.s.

NOTES: * = $p < .05$; ** = $p < .01$; *** = $p < .001$; n.s.= non-significant ; ¹ Data from sample 1 (N=1428); ² Data from sample 3 (N=2094); ³ Data from sample 4 (N=109); ⁴ Data from sample 1, 3 and 4 (N=3631)

With regard to age differences only aggressive-manipulative humorous coping shows a decrease with increasing age (see Table 8), although explained variance is very small. The other humorous coping factors show weaker and non-significant associations with age.

Table 8. *Associations between age, occupational and other humorous coping styles*

	Occupational humorous coping				Other humorous coping scales			
	Antecedent-focused ²	Response-focused ⁴	Affiliative ²	Aggressive-manipulative ⁴	Total ²	CHS ¹	MSHS-C ²	HSQ-SE ³
Age	-.06 **	-.03 n.s.	-.02 n.s.	-.12 ***	-.08 ***	-.08 ***	.00 n.s.	-.15 n.s.

NOTES: * = $p \leq .05$; ** = $p \leq .01$; *** = $p \leq .001$; n.s.= non-significant ; ¹ Data from sample 1 (N=1428); ² Data from sample 3 (N=2094); ³ Data from sample 4 (N=109); ⁴ Data from sample 1, 3 and 4 (N=3631)

5. Discussion

The Questionnaire of Occupational Humorous Coping contains researcher-selected demands that are neither broad, nor specific, enabling generalization to real-life working situations for a wide range of professional settings. Its humorous coping responses are phrased in a behavioral form, excluding attitudes, emphasizing the active character of humorous coping. In its final version no negative phrasing is used, because of confounding effects on the factor solution. The QOHC has shown adequate construct validity, with the extraction of four factors: antecedent-focused, response-focused, aggressive-manipulative and affiliative humorous coping. Internal consistency is respectable to very good, and a preliminary test-retest reliability analysis in a small sample seems promising. Factor analyses of our preliminary and main studies seem to yield comparable results, with the exception of the antecedent-focused factor that was confirmed in the main study analyses only. Convergent validity with traditional humorous coping measures is adequate, indicating that this measurement approach adds a new dimension to traditional generic humorous coping measurement. Comparison with a modern humorous coping measure, the self-enhancing humor style (Martin et al., 2003), shows that the measurement approaches of the QOHC and the HSQ cover common ground. Convergent validity is quite good, although the lack of negative correlations between occupational humorous coping scales and humor styles is a puzzling result. Predictive validity was low for job-related affect and absent for job-related satisfaction. The antecedent-focused humorous coping scale, the positive humor styles and the Coping Humor Scale (CHS, Martin & Lefcourt, 1983) seem the best predictors for positive job-related affect, whereas aggressive-manipulative humorous coping, the CHS and the self-defeating humor style seem the best predictors for negative job-related affect. Job-related affect was not predicted particularly well by the three non-

humorous coping humor styles either, although the sign of the correlations was in the expected direction. Some minor gender and age differences were found, but they do not seem strong predictors for humorous coping dimensions. Table 9 summarizes the self-evaluation of the QOHC.

Table 9. *Self-evaluation of the QOHC*

Main dimension	Subdivision	Evaluation
Context	Primary aim	++
	Justification	++
Theory	Theoretical frame	++
Product	Instrument itself	+
	Item pooling	+
	Description of sample used for testing	+
	Quality of test material	+/-
	Quality of instruction material	+/-
Psychometric characteristics	Quality of norms	?
	Reliability statistics	+
	Construct validity statistics	+
	Convergent validity statistics	+
	Discriminant validity statistics	+
	Predictive validity statistics	+
Usefulness	Scientifically	+
	Professionally	+/-

Note: ++=very good, +=good, +/-=reasonable, ?=unknown.

Our point of departure was the construction of an instrument for the measurement of occupational humorous coping that was led by theoretical insights. Gross' theory of response-focused and antecedent-focused coping was incorporated, as well as the insight that negative as well as positive forms of instrumental humor exist. The differences in antecedent-focused and response-focused humorous coping styles as introduced in the model of Gross (2001) were not as extreme as we expected, but trends in differential effects of these humorous coping styles on job-related affect have certainly been established in our study. Although construct validity of our instrument is adequate, the question remains whether the phrasing of our items is ecologically valid and not too abstract, a problem that this questionnaire shares with the Humor Styles Questionnaire

by Martin et al. (2003). As far as we know, the psychological literature lacks detailed descriptions of humorous coping responses and the aims that they fulfill for the individual. The findings with regard to the aggressive-manipulative humorous coping factor strengthen the position that positive and negative forms of humorous coping should be measured separately, and that they differ with regard to their effect on positive and negative affect, findings that are consistent with those reported by Martin et al. (2003).

However, the relationships between the QOHC factors, as well as their associations with humor styles, were puzzling. One would expect that positive humorous coping and humor styles correlate negatively with negative humorous coping and humor styles. In the original article by Martin et al. (2003) the intercorrelations between the humor styles are also positive or non-significant. Although predictive validity findings indicate that there might be differential predictive power with regard to job-related affect for the aggressive-manipulative versus antecedent-focused humorous coping factors, coefficients are generally too low to draw the conclusion that the difference between positive and negative humor forms are a sound predictor for differences in positive and negative job-related affect. Although the differential predictive power of several humor styles in the HSQ for well-being was quite strong in the original study by Martin et al. (2003), our findings with regard to the HSQ in sample 4 are not very encouraging for this instrument either. Although the magnitude of correlation coefficients is greater than in the case of the QOHC factors, and although positive and negative humor styles do show differences with regard to positive and negative job-related affect, the number of significant correlations is generally low, and none of the humor styles is a significant predictor of both positive and negative job-related affect. This is consistent with the findings with regard to the factors of the QOHC and with recent findings reported elsewhere (Kazarian & Martin, 2006). The only humorous coping instrument that differentially predicts positive and negative job-related affect somewhat successfully is the Coping Humor Scale. Overall, this warrants the conclusion that contrasting humorous coping and humor styles can co-exist, but that their effect on job-related affect may differ, and is generally quite small.

The findings with regard to the prediction of affect parameters by humorous coping methods are not strange for two reasons. First, there is some theoretical justification to emphasize the stress buffering effect of humorous coping in the stressor-affect relationship (shown in studies by Martin & Lefcourt, 1983, Kuiper et al., 1992, and

Eggli, 1997), and not its main effects on affective parameters. Another study in this dissertation (see chapter 4) will test the buffering hypothesis with the QOHC, using Karasek's (1979) job demand control model and considering humorous coping as a moderator in the job demand-job-related affect relationship. The second reason for a lack of association between humorous coping styles and affective parameters concerns a drawback shared by all coping measures. When people score high on (humorous) coping responses, there is a greater likelihood that they will score high on the demands in the questionnaire as well: large amounts of coping responses suggest large amounts of demands. Therefore, when seen apart from their stressful context, coping responses may be beneficial. However, in the item formulations they are two sides of the coin and beneficial effects of humorous coping responses may be neutralized by the ill effects of the demands people are coping with.

The finding that the aggressive-manipulative humorous coping style declines with age (although the association found is weak), is consistent with Kuipers' (2006) report of decreases in 'black humor' with age. Overall, the results with regard to the association of age and gender with humorous coping do not contribute to the need for explicit norms for gender or age groups. Two additional methodological points remain to be clarified. First, our preliminary studies have shown that the avoidance of acquiescence bias is possible. However, the costs are high in the form of a loss of quality or clarity of the factor structure, due to a methodological bias (Maassen, 1991; Schriesheim & Hill, 1981), that may be caused by the 'double negative' in item and Likert response, as reported by the respondents in the small-N sample 2. Second, because of the large number of participants in our studies (overall 3651 employees filled out the questionnaires) there is little doubt that the findings in our study are quite representative for the Dutch labor force, and may be replicated in studies in other countries. Its bias is in the large number of highly educated people in our samples, and in the high health and well-being scores this sample has shown. Compared to traditional humorous coping measures, the QOHC does pretty well. However, as a predictor of job-related affect, it is second to the CHS and the HSQ, and does better than the MSHS. Overall, the MSHS was a poor predictor of almost all variables in our sample.

What, then, is the scientific and professional usefulness (Ter Laak & De Goede, 2003) of the QOHC? Four stable and reliable humorous coping factors emerged from our analyses, with mixed findings with regard to its predictive properties for job-related affect. However, the proof of the pudding for the QOHC lies in a test of its buffering

function in the stressor-affect and the stressor-health relationship. Future research should focus on less highly educated samples as well, and test-retest reliability should be tested in a larger sample. Also, the QOHC could be used in clinical studies, to see whether the level of humorous coping varies with clinical diagnoses, or could be associated with work-related disturbances like burnout (e.g. Talbot & Lumden, 2000). When conducting further research on humorous coping measurement, we would suggest that items should be positively phrased only. Furthermore, we strongly recommend the use of principal axis factoring with oblique rotation as the statistical technique of choice. It gives more realistic factor loadings, since it takes measurement error into account. When using the QOHC in future studies, we recommend the removal of the items loading too low on the final factor analysis (20 and 25), resulting in a 23-item occupational humorous coping instrument. Finally, we would like to suggest a return to the basics of humorous coping behavior. What does it look like in everyday circumstances, what intentions do people have with it (is it amusement, is it stress reduction, are there social motives or combinations of all of these?) and what are its effects on the individual and on the interactions in which it is used? Examination of these questions might strengthen the ecological validity of all of our humorous coping questionnaires.

Professionally, the QOHC may be used to assess, develop and improve on humorous coping abilities of employees that are important to the fulfillment of certain jobs. Primitive versus sophisticated forms of humorous coping as well as aggressive and manipulative versus affiliative tendencies in employees could be assessed. A case can be made that it might be beneficial to use certain humorous coping styles, and detrimental to use others. Future research could answer questions about the relationship of occupational humorous coping with other qualities employees need in their jobs, like creativity and intelligence.

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Chapter 3

Humorous coping scales and their fit to a stress and coping framework

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Abstract

The focus of this study is on the fit between the item content of scales measuring humorous coping and basic concepts of stress and coping theory. To investigate it, 81 items from seven currently available humorous coping scales have been subjected to a facet analysis, using the tool of a mapping sentence. Three facets derived from stress and coping theory were part of this mapping sentence: external demands, humorous responses and coping aims. Because of the claim that humorous coping may be related to physical health dimensions, special attention has been paid to two health-related coping aims: cognitive reappraisal and response-focused coping responses. Five raters categorized the facets and their respective categories. Some humorous coping scales showed an underrepresentation of “external demands” and “humorous responses” and only a few scales covered the “aims” facet adequately. Reliability and agreement parameters varied considerably among scales, both on facet level and on category level. The Waterloo Uses of Humor Inventory (WUHI) was a positive exception to this pattern. Findings are discussed in the light of specific characteristics of the scales included. Possible improvements of humorous coping measurement in health-related research are proposed, as well as adaptations to the rating procedures.

1. Introduction

Although popular belief often claims that a sense of humor leads to good physical health, Martin (2001) has shown that it is a hard job to support this claim. In his review he addresses conceptual (what is a sense of humor?) and assessment issues (how should this sense of humor be measured?) explaining this state of affairs. Assuming that part of the beneficial effect of a sense of humor on physical health lies in its supposed stress buffering effect, Martin (2001) considers stress and coping theory (including the concept of humorous coping) as a major theoretical framework to investigate these effects. Coping has been described by Lazarus and Folkman (1984) as ‘constantly changing cognitive and behavioral efforts to manage specific external and/or internal demands that are appraised as taxing or exceeding the resources of the person’. This definition allows the specification of three key features of the stress process that may form necessary ingredients of items in humorous coping scales. The first key feature is the coping response, which may occur in the form of cognitive or behavioral processes. A second key feature is a certain demand which precedes and gives rise to the coping response. This demand may be a situation outside the individual that possibly causes stress (external) or may originate inside the individual (internal). The coping response is not automatic, it is an effort aimed at the management of the demand itself, its negative emotional consequences, or both. This aim is the third key feature. Applying these key features derived from stress and coping theory to humorous coping assessment, items in humorous coping scales should ideally contain the following key features: (1) an internal or external demand, (2) giving rise to a cognitive or behavioral humorous coping response, (3) aimed at the management of the demand (possibly) causing stress.

Two specific types of coping responses have additional relevance in the context of humorous coping measurement: cognitive reappraisal and response-focused coping responses. In an early stage of emotion processing, the individual may employ cognitive reappraisal. This function is aimed at a change in meaning of a specific demand that might cause stress. Negative emotional impact of this demand is prevented by replacing threatening cognitions by humorous ones. Cognitive humorous reappraisal is by definition employed in an early phase of the coping process, whereas response-focused humorous coping occurs in a later phase. In this phase negative emotional responses (stress) are already present, and suppression or avoidance of stressful feelings is the primary aim. Of interest with respect to the relationship between humorous coping and

physical health is that cognitive reappraisal has been hypothesized to be healthier than response-focused coping (Gross, 2001), a hypothesis that has received some support in the empirical literature (John & Gross, 2004; Austenfeld & Stanton, 2004).

Ideally, scale construction should be guided by the three key features and specific coping aims mentioned in the paragraphs above, all of which should be derived from a stress and coping theoretical perspective. However, the item construction process of humorous coping scales has usually not been described in sufficient detail to be able to assess the theoretical point of view of the authors of these scales. The most common approach is to construe scales based on face validity considerations (e.g. Martin & Lefcourt, 1983). Another approach is to start off with an item pool and to proceed with data reduction methods like factor analysis to obtain scales with adequate construct validity (e.g. Thorson & Powell, 1993). Neither of these approaches includes systematic item variation based on stress and coping theory. Facet analysis, developed by Guttman (1954, reviewed in Hox, 1997), does take this as a starting point. An important tool in this approach is the so-called mapping sentence (see Landsheer & Boeije, 2010, for a description and application of this method), which may guide the construction as well as the evaluation of psychometric scales, based on a theoretical point of view and allowing systematic variation of key features. For humorous coping scales the mapping sentence follows from the key features (from now on called facets) derived in the previous paragraphs. It may be formulated as follows (facets between brackets): [Demand] is coped with by [humorous response], [aimed at outcome]. We will outline this approach in more detail later.

The main question of this study is to what extent current humorous coping scales fit this mapping sentence, which in turn is derived from stress and coping theory. Because humorous cognitive reappraisal and response-focused humorous coping seem to bear a relationship to physical health, our special interest is the representation of these coping aims in current humorous coping questionnaires. This analysis will result in an evaluation of strengths and weaknesses in current humorous coping assessment.

2. Method

Facet analysis (more specifically the mapping sentence) guides the item construction process from theory to item content. The general idea is that items with similar content will elicit similar answers, whereas items with contrasting content will elicit different

answers. A basic question in this respect is how to define the core content of items. Guttman's (1954) facet analysis method provides a systematic way to do this (for introductions on its application, see Shye, Elizur, & Hoffman, 1994 and Borg & Shye, 1995). In this study, facet analysis is not used to construe a new instrument, but to evaluate the content of several existing scales aimed at the measurement of humorous coping. Three facets of humorous coping items have already been distinguished: a demand, a humorous response and an outcome it is aimed at. Based on the selection of facets a general prototype for the content of a humorous coping item has been created (see Table 1). In Guttman's terminology, this prototype is called a 'mapping sentence'.

Table 1. *Mapping sentence: Facets and categories for humorous coping scales*

Mapping sentence						
[External demand]	... is coped with	... [humorous response]	... [aimed at outcome]	... occurring with	...	[Frequency]
Specific (e1)		Private (h1)	Reappraisal of external demand (a1)			Attitude frequency (f1)
General (e2)		Public (h2)	Stress reduction (a2)			Response frequency (f2)
Unspecified (e3)		Other (h3)	Other (a3)			
		Unspecified (h4)	Unspecified (a4)			

This mapping sentence consists of three facets which may be categorized further. Because it is expected that not all facets can be categorized consistently, a facet element 'unspecified' has been added to all three facets. For the humorous response and aim facet a category 'other' is added, because it is expected that the proposed categories will not be exhaustive for these facets, in contrast to the external demand facet. It is expected that humorous coping scales will differ with respect to the facets and their categories. The mapping sentence presented in Table 1 enables the evaluation of the content of each item of the humorous coping scales and a comparison of its content in a systematic way.

2.1. Humorous coping scales

Seven humorous coping scales containing 81 items were included in this study. Three of them were generic and four were specific. Some of these scales contain subscales measuring specific humorous coping dimensions and sometimes they are a part of measures assessing other forms of coping or humorous conduct.

2.1.1. Generic humorous coping scales

These scales assess a general tendency to cope humorously with certain demanding situations. The following three generic humorous coping scales were used.

1. *Coping Humor Scale (CHS)*. This questionnaire consists of seven items (presented in Table 2) measuring generic humorous coping and was originally developed by Martin and Lefcourt (1983). Its internal consistency varies from unacceptable in some studies (Thorson & Powell, 1991) to acceptable in others (Eggli, 1997). Its test-retest reliability over twelve weeks is acceptable (Overholser, 1992), as well as its construct validity (Nezlek & Derks, 2001). There is some evidence for acceptable discriminant and convergent validity with other measures (Doosje, De Goede, Van Doornen, & Goldstein, 2010).

2. *The coping scale of the Multidimensional Sense of Humor Scale (MSHS-C)*. This eight-item scale (see Table 2) is part of a questionnaire measuring several dimensions of a sense of humor. It was originally developed by Thorson and Powell (1993) and aims to measure generic humorous coping. Its internal consistency varies and there is some evidence of discriminant and convergent validity (Doosje et al., 2010).

3. *The Brief COPE, humorous coping scale (BCOPE-H)*. This two-item humorous coping scale (also shown in Table 2) was developed by Carver (1997) and is part of a questionnaire measuring other coping styles. Its internal consistency was respectable (Fillion, Kovacs, Gagnon, & Endler, 2002) to very good (Carver, 1997) and test-retest reliability over a two-week period was satisfactory (Fillion et al., 2002).

Table 2. *Three generic humorous coping scales*

Item nr.	Scales (▶)and items
▶	Coping Humor Scale (CHS)
1	I often lose my sense of humor when I'm having problems
2	I have often found that my problems have been greatly reduced when I tried to find something funny in them
3	I usually look for something comical to say when I am in tense situations
4	I must admit my life would probably be easier if I had more of a sense of humor
5	I have often felt that if I am in a situation where I have to cry or laugh, it's better to laugh
6	I can usually find something to laugh or joke about even in trying situations
7	It has been my experience that humor is often a very effective way of coping with problems
Likert scale	1=strongly disagree to 5=strongly agree
▶	Coping scale of the MSHS (MSHS-C)
1	Humor helps me cope
2	Humor is a lousy coping mechanism
3	Uses of humor help to put me at ease
4	I can use wit to help adapt to many situations
5	Coping by using humor is an elegant way of adapting
6	Uses of wit or humor help me master difficult situations
7	I can ease a tense situation by saying something funny
8	Trying to master situations through uses of humor is really dumb
Likert scale	1=completely disagree to 5=completely agree
▶	Humorous coping scale of the BCOPE (BCOPE-H)
1	I've been making jokes about it
2	I've been making fun of the situation
Likert scale	0=I haven't been doing this at all to 3=I've been doing this a lot

2.1.2. *Specific humorous coping measures*

Besides three generic humorous coping measures, four measures assessing specific humorous coping were analyzed, usually involving humorous coping efforts aimed at specific social, cognitive or affective outcomes.

Table 3. *Waterloo Uses of Humor Inventory (WUHI)*

Item nr.	Scales (▶)and items
▶	Aggressive humorous coping (WUHI-AG)
1	I tell funny stories about situations that have made me angry in the past
2	I share stories about my more embarrassing moments to make people laugh
3	I feel better when people laugh at stories about my more embarrassing moments
4	I laugh to myself about my past mistakes, even though I didn't think they were amusing at the time they happened
5	I am able to see humor in events that I had once experienced as being quite distressing
6	It makes me feel better when I share stories about my past embarrassments
7	I laugh to myself when I think of embarrassing things I have done in the past
8	When others laugh in response to stories I tell about embarrassing experiences, I realize how silly it was to be upset about them in the first place
9	I privately make fun of myself when I make mistakes or do something embarrassing
▶	Aggressive humorous coping (WUHI-AG)
10	I privately make fun of people when I feel they are mistreating me
11	I privately make fun of people when I feel they are bothering me
12	When someone is angry with me, I don't laugh out loud, but I privately make fun of their behaviour
13	When someone makes fun of my shortcomings, I will reply by poking fun at them
14	I respond to people who are insulting or rude to me by making fun of them in front of others
15	I make fun of the irritating people in my life when I'm with my friends
▶	Avoidant humorous coping (WUHI-AV)
16	I tell jokes to make others laugh when I feel that a situation is too tense
17	I try to think of something amusing to distract myself from my own fears or worries
18	I change my moods at times of crisis by imagining funny things
19	I deal with people who are angry or upset with me by trying to make them laugh
20	I try to find something to laugh at when I feel myself becoming upset
21	I try to make myself think of funny things when I find that my mind is filled with worrisome thoughts
Likert scale	1=never to 5=always

1. *The Waterloo Uses of Humor Inventory (WUHI)*. This 21-item multidimensional humorous coping scale was developed by Thomas (2000). Its items (shown in Table 3) form three subscales, measuring perspective-taking (WUHI-P, 9 items), aggressive (WUHI-AG, 6 items) and avoidant (WUHI-AV, 6 items) humorous coping, respectively. Perspective-taking humorous coping is comparable to cognitive reappraisal and avoidant humorous coping to response-focused humorous coping. All scales have respectable to very good

internal reliability and some convergent validity with other humorous coping measures (Thomas, 2000).

Table 4. *Humor Styles Questionnaire, self-enhancing humor style (HSQ-SE)*

Item nr.	Items
1	If I am feeling depressed, I can usually cheer myself up with humor
2	Even when I'm by myself, I'm often amused by the absurdities of life
3	If I am feeling upset or unhappy I usually try to think of something funny about the situation to make myself feel better
4	My humorous outlook on life keeps me from getting overly upset or depressed about things
5	If I'm by myself and I'm feeling unhappy, I make an effort to think of something funny to cheer myself up
6	If I am feeling sad or upset, I usually lose my sense of humor
7	It is my experience that thinking about some amusing aspect of a situation is often a very effective way of coping with problems
8	I don't need to be with other people to feel amused - I can usually find things to laugh about even when I'm by myself
Likert scale	1=totally disagree to 7=totally agree

2. *Humor Styles Questionnaire, Self-enhancing humor scale (HSQ-SE)*. This 8-item scale is one of the four subscales of the Humor Styles Questionnaire by Martin, Puhlik-Doris, Larsen, Gray, & Weir (2003), measuring self-enhancing humorous coping, the use of humor to cheer oneself up. The scale (presented in Table 4) has respectable internal consistency and convergent validity with other humorous coping measures (Martin et al., 2003).

3. *The Relational Humor Inventory, self and partner instrumental humor scales (RHI-SI and RHI-PI)*. The items of these scales (presented in Table 5) were developed by De Koning and Weiss (2002) and were part of a questionnaire measuring several dimensions of humor in intimate relationships. Two of its subscales refer to humorous coping in intimate relationships: an 8-item self instrumental humor scale (RHI-SI) and the 4-item partner instrumental humor scale (RHI-PI). Both scales have respectable internal consistency and have shown convergent validity with several other humor scales (De Koning & Weiss, 2002).

Table 5. *Relational Humor Inventory (RHI)*

Item nr.	Scales (▶)and items
▶	Self instrumental humorous coping (RHI-SI)
1	Whenever I can, I prefer to use humor to avoid conflict between us
2	I use humor to get out of a fight with my partner
3	When my partner is angry with me, I can usually change his/her mood by making him/her laugh
4	When something about my partner is bothering me, I make a joke about it
5	When I am mad at my partner I use humor to hint at it first
6	I sometimes try to change the subject with a joke
7	When my partner feels sad or upset, I try to make him/her see the funny side of the story
8	I sometimes defend myself when my partner feels hurt by telling him/her that I was 'just kidding'
▶	Partner instrumental humorous coping (RHI-PI)
9	My partner uses humor to ease the tension when we fight
10	Whenever I am upset, my partner is likely to try to smooth over my feelings with humor
11	When I am angry, my partner can get me out of it by making me laugh
12	My partner can persuade me to do something by making me laugh
Likert scale	1=not accurate at all to 7=highly accurate

4. *Questionnaire of Occupational Humorous Coping (QOHC)*. This 25-item scale, measuring occupational humorous coping styles, was originally developed and tested by Doosje et al. (2010). Its four subscales, shown in Table 6, are antecedent-focused (QOHC-AF, nine items), response-focused (QOHC-RF, four items), aggressive (QOHC-IAG, seven items) and affiliative (QOHC-IAF, three items) humorous coping. Antecedent-focused humorous coping is similar to cognitive reappraisal and response-focused humorous coping covers the type of coping responses also mentioned in the Introduction. All scales have respectable to good reliability and respectable convergent validity (Doosje et al., 2010).

Table 6. *Questionnaire of Occupational Humorous Coping (QOHC)*

Item nr.	Scales (▶)and items
▶	Antecedent-focused subscale (QOHC-AF)
1	When technical problems interfere with my work, I concentrate on the funniness of the situation
2	I use humor as a way to lighten my perspective on emotional situations at work
3	When my superior criticizes me, I can see the joke of it later on
4	I am able to find something funny about tense or demanding situations
5	When my work becomes too demanding, I use humor to take a different perspective
6	When I have to put more effort into finishing something I am able to see the humor in the situation
7	I use humor to make light of mistakes I make at work
8	When I make a mistake at work I am able to laugh about it
9	A humorous perspective on things helps me to deal with pressure due to demands at work
▶	Response-focused (QOHC-RF)
10	When my work makes me feel tense, I make jokes to avoid that feeling
11	When I encounter problems at work, I try to laugh away my worries
12	I use humor as a way to lighten my perspective on emotional situations at work
13	In uncomfortable situations I try to suppress my feelings by being witty
▶	Aggressive (QOHC-IAG)
14	When a colleague gets on my nerves, I use humor to get back at him or her
15	When in conflict with a colleague, I use humor to try to make light of the situation
16	When a colleague is mad at me, I try to change his or her mood by making him or her laugh
17	When I encounter problems in teamwork, I convey my frustration using sarcastic remarks
18	When I feel tense giving a presentation, I try to avoid this feeling by being funny
19	If possible, I use humor to end a conflict
20	If I need a colleague to do something extra for me, I use humor to make him or her do it
▶	Affiliative (QOHC-IAF)
21	When a colleague's behaviour bothers me, I let him or her know by making an appropriate joke
22	Humor helps me to take a verbal confrontation with a colleague less seriously
23	I use humor to prevent stressful situations at work from occurring
Likert Scale	1=never to 5=very often

2.2. Procedure

Seven humorous coping scales were rated by one male and four female raters with a research background in health psychology. Their mean age was 25.4 years (SD=3.2). They participated in two workshop sessions. In the first session they received a short training explaining Guttman's (1954) facet analysis and stress and humorous coping

theory. Subsequently, the application of the mapping sentence to several items with categorization problems was demonstrated and practiced by rating several humorous coping items that were constructed for this specific purpose. In the second workshop session the five raters were asked to evaluate the seven humorous coping scales. To this end, they received an Excel spreadsheet with 81 humorous coping items in a different random order for every rater. The spreadsheet enabled easy cut and paste operations for categorization. Following a brief instruction, the raters were asked to identify four types of phrases in these items (external demand, humorous response, aim, and other phrases). They then categorized each facet of the mapping sentence (external demands, humorous response and aim) on the presence of specific categories. For external demands they determined whether the categories could be labelled as unspecified (0), specific (1), or general (2) ¹. These responses may also be interpreted as an internal demand. For humorous responses the raters determined whether they were unspecified (0), private (1), public (2), or other (3). Finally, for the aim of the coping responses they were asked to categorize them as unspecified (0), cognitive reappraisal (1), response-focused coping (2), or other (3), respectively.

2.3 Analyses

The analyses are aimed at a test of the fit to the stress model, which from now on will be called the rating model. Both Fleiss' kappa (a reliability coefficient for n raters on categorical data, see Fleiss, 1971) and other agreement parameters have been computed. As Feinstein and Cichetti (1990) have indicated, there is a paradox here: high agreement sometimes leads to low kappas, which may be due to a lack of variance in the test scores. A Monte Carlo method (MacKay, 1998) has been used to calculate the agreement when the observations of five observers would be derived at random from the same marginal distributions as the observers have used. In this way it can be determined whether the agreement is better than would be expected when the observations would be completely random. When actual agreement is higher than the upper bound, agreement can be said to differ significantly from a random model. Of note: when the marginal distributions are highly unbalanced, and especially when the observations are limited to a single category, the expected random agreement is high. In other words, when observations are obvious,

¹ Although internal demands may precede coping responses as well, our primary interest was in situational demands in the scales. Furthermore, including internal demands in our analysis might have led to confusion for the raters with respect to the 'aim' category, which sometimes included emotional responses to cope with.

a lay observer would guess the same category as an observer who observes most carefully. Both Fleiss' Kappa's and the agreement parameters were interpreted according to criteria put forward by Landis and Koch (1975), varying between poor (below 0.00) and almost perfect (between 0.81 and 1.00). For all analyses the computer program R (see Dalgaard, 2002, for a description) and the Tinn-R interface (version 1.17.2.4, Tinn-R, 2006) were used.

3. Results

The purpose of this study was to test the correspondence of humorous coping scales and certain facets derived from stress theory. In the following section this will be done for all humorous coping scales taken together (see Table 7) and in the subsequent section for separate humorous coping scales (see Table 8). In both cases, interrater reliability and agreement will be presented. The final section contains the results regarding the completeness of the model and some evaluative remarks made by the raters.

Table 7 depicts the results with regard to interrater reliability and agreement of several facets and their respective categories for the aggregated humorous coping scales. There was considerable variation in the proportions of choices for the categories belonging to 'external demands' and 'humorous responses', whereas for the 'aims' facet the majority of choices was made for the 'unspecified' category. This indicates that it was either difficult for raters to categorize the humorous coping items into specific categories, or that the items of the scales did not quite fit these categories. Fleiss' kappa's for the facets vary between slight and substantial and significant agreement was reached on all categories. Interrater reliability was especially low for the 'cognitive reappraisal' and the 'other' aim category. Overall, the rating model seems to have produced an even distribution of choices over the facet categories and considerable interrater reliability and agreement for all scales except for certain categories of the 'aims' facet.

Table 7. *Reliability and agreement for aggregated humorous coping scales*

Facet ->		External demand ¹				Humorous response ²					Aim ³				
Categories ->		0	1	2	Total	0	1	2	3	Total	0	1	2	3	Total
Overall	Proportions	.38	.35	.27	1.00	.23	.28	.29	.20	1.00	.57	.18	.17	.08	1.00
(81 items)	Fleiss' kappa	.46	.57	.31	.45	.36	.72	.60	.20	.49	.48	.26	.62	.16	.42
	Agreement *	.25*	.26*	.13*	.64*	.12*	.22*	.21*	.07*	.62*	.44*	.07*	.12*	.02*	.65*

NOTES: ¹ External demand categories: 0=unspecified, 1=specific, 2=general; ² Humorous response categories: 0=unspecified, 1=private, 2=public, 3=other; ³ Aim categories: 0=unspecified, 1=cognitive reappraisal, 2=response-focused, 3=other; * Agreement ratings on or above the 95 % upper bound

In Table 8 the findings for separate humorous coping scales are presented. The division of proportions for external demands categories is quite even for the CHS, the WUHI and the QOHC, whereas considerable proportions of ‘unspecified’ external demands have been chosen in the case of the other humorous coping questionnaires. Overall interrater reliability for the ‘external demand’ facet varies between poor and moderate and overall agreement is between moderate to almost perfect for all humorous coping scales. However, the ‘external demand’ facet was only significantly agreed upon for the WUHI and QOHC scales.

For humorous responses the proportions of the categories are quite evenly distributed for almost all scales, some of which (CHS, MSHS-C and RHI) show quite a large number of unspecified humorous responses. The raters have been able to rate the humorous responses reliably for the WUHI and the CHS. In the WUHI this is the case for both private and public humorous responses, suggesting that this questionnaire is quite complete in this respect. Interrater agreement for the ‘humorous response’ facet is moderate to almost perfect, deviating significantly from a random model for all scales except for the BCOPE-H, the HSQ-SE and the RHI. Agreement on a small number of separate categories of this facet deviates significantly from a random model for the CHS, the MSHS-C, the WUHI and the QOHC. The raters seem to have had difficulty in rating the ‘aim’ facet, because of a high proportion of ‘unspecified’ for the majority of humorous coping scales, which may also be interpreted as a bad fit of this facet category. Even in the QOHC, which has been developed with the specific purpose to include aims of humorous coping, the proportion of ‘unspecified’ is quite high. Overall reliability of the ‘aim’ categories varies between poor and moderate and its agreement between moderate and substantial, although only four scales reach significant agreement.

The overall rating model seems quite complete for the humorous response and aim facets because of the relatively low percentage of choices for the category ‘other’. Raters told us that they had considerable difficulty distinguishing between response-focused coping responses and cognitive reappraisal. The external demand facet cannot be assessed with regard to model completeness, because there was no ‘other’ category here. However, raters did reveal that they had difficulty making a choice between general and specific external demands. They also found some of the RHI items difficult to categorize, because they were not aimed at the individual’s coping process, but at the coping process of their partner.

Table 8. Reliability and agreement for separate humorous coping scales

Facet ►		External demand ¹				Humorous response ²				Aim ³					
	Categories ►	0	1	2	Total	0	1	2	3	Total	0	1	2	3	Total
Proportions	CHS	.31	.06	.63	1.00	.34	.20	.20	.26	1.00	.77	.14	.00	.09	1.00
	MSHS-C	.75	.00	.25	1.00	.42	.03	.13	.42	1.00	.25	.25	.20	.30	1.00
	BCOPE-H	.90	.00	.10	1.00	.10	.00	.30	.60	1.00	1.00	.00	.00	.00	1.00
	WUHI	.30	.33	.37	1.00	.04	.49	.45	.02	1.00	.70	.09	.20	.01	1.00
	HSQ-SE	.80	.03	.17	1.00	.27	.65	-	.08	1.00	.35	.15	.35	.15	1.00
	RHI	.50	.37	.13	1.00	.48	.02	.37	.13	1.00	.80	.12	.03	.05	1.00
	QOHC	.08	.72	.20	1.00	.17	.23	.28	.32	1.00	.42	.30	.21	.07	1.00
Fleiss' kappa	CHS	.40	-.06	.33	.32	.68	.29	.73	.25	.50	.43	.18	-	.45	.36
	MSHS-C	.33	-	.33	.33	.03	-.03	.31	-.13	.02	.20	.07	.61	.11	.23
	BCOPE-H	-.11	-	-.11	-.11	-.11	-	-.02	-.04	-.11	-	-	-	-	-
	WUHI	.15	.36	.08	.20	.09	.83	.85	-.02	.76	.43	-.03	.61	-.01	.41
	HSQ-SE	.22	-.03	.31	.24	.37	.51	-	-.08	.37	.62	.12	.29	-.08	.30
	RHI	.20	.39	-.08	.22	.37	-.02	.14	.14	.23	-.04	-.05	-.03	-.05	-.05
	QOHC	.34	.44	.46	.43	.06	.60	.57	.08	.33	.41	.43	.79	.06	.47
Agreement	CHS	.19	.00	.47	.66	.27*	.09*	.16*	.11	.63*	.67	.04*	-	.04*	.75
	MSHS-C	.63	-	.12	.75	.27*	.09*	.15*	.11	.62*	.10	.07	.14*	.11	.42*
	BCOPE-H	.80	-	.00*	.80	.00	-	.05	.35	.40	1.00	-	-	-	-
	WUHI	.12	.19*	.16	.47*	.01*	.45*	.41*	.00*	.87*	.59	.01*	.13*	.00*	.73*
	HSQ-SE	.67	.00*	.08*	.75	.15	.54	-	.00	.69	.26*	.04	.19	.01	.50*
	RHI	.30	.22*	.01	.53	.32	.00*	.17	.03	.52	.63	.01	.00	.00	.64
	QOHC	.03*	.61	.11*	.75*	.04	.16*	.19*	.12	.51*	.27*	.18*	.18*	.01*	.64*

NOTES: ¹ External demand categories: 0=unspecified, 1=specific, 2=general; ² Humorous response categories: 0=unspecified, 1=private, 2=public, 3=other; ³ Aim categories: 0=unspecified, 1=cognitive reappraisal, 2=response-focused, 3=other; * Agreement ratings on or above the 95 % upper bound

4. Discussion

In this study a rating model based on facet analysis was applied to existing humorous coping scales. It was shown that application of the rating model to all humorous coping scales taken together led to usually reliable ratings and high and significant agreement. There was considerable variation with regard to types of external demands and humorous responses used in this field of measurement. However, coping aims seem to be largely unspecified in humorous coping scales. Raters seemed to have difficulty to categorize cognitive reappraisal and other aims-related responses in a reliable way. Quite a number of separate humorous coping scales showed unspecified external demands, reducing the chance of aims characterized by cognitive reappraisal. Reliability of the external demand facet varied, but agreement on external demands was typically high and significant in the case of the WUHI and the QOHC. Humorous responses were unspecified in a number of items of humorous coping questionnaires and the WUHI is one of the few scales that seems to employ both private and public humorous responses. CHS and WUHI could be reliably distinguished on this facet. Agreement was significant and high for the majority of scales. The aim facet was typically categorized as unspecified. Reliability of and agreement on the aim facet varied. The rating model seems to have functioned quite well, the raters being able to distinguish reliably and with considerable agreement between a number of facets and their categories. The model seems reasonably complete because of low numbers of classifications in the 'other' category. We also found that agreement parameters tend to be higher than Fleiss' kappa, as predicted by Feinstein and Cichetti (1990). Overall, facet analysis seems a suitable method to evaluate the content of scales, as was shown before in the study by Landsheer and Boeije (2010).

Although all scales have their strengths and weaknesses, certain facets of the rating model are underrepresented in some scales. A number of humorous coping scales lacks specification of external demands. This is no problem as long as their aim is not the measurement of cognitive reappraisal, since this type of coping is closely tied to the existence of external demands. Of course they can still measure response-focused humorous coping, which especially the HSQ-SE (Martin et al., 2003) seems to do. Although the finding that a number of scales lacks specification of humorous responses may not influence their usefulness as a health-predicting instrument, humorous responses should probably be more explicit in humorous coping scales. For scales like the self-enhancing humor style an exception can be made for two reasons. First, the focus of this

scale is on internal dynamics, excluding antecedents in the environment. Second, the application of self-enhancing and other humor styles is not limited to health-related research. The same may be said about the Multidimensional Sense of Humor Scale, measuring several sense of humor dimensions, the Relational Humor Inventory which assesses the use of humor in partner relationships and the humorous coping scale of the Brief COPE, which is part of a larger questionnaire assessing a number of coping styles. Since the latter scale contains only two items, conclusions with regard to the fit of this specific scale to a stress and coping model are hard to draw. For quite another reason, the partner part of the Relational Humor Inventory is difficult to place in our analysis. Although this is definitely a humorous coping scale, it is humorous coping by the partner that is measured, not humorous coping by the individual itself. This makes it difficult to talk about an external demand (for whom?) and may also make this subscale less suitable for health-related research because its focus is on coping of the partner, not the individual. The Waterloo Uses of Humor Inventory (Thomas, 2000) and the Questionnaire of Occupational Humorous Coping (Doosje et al., 2010) catch the eye in our study, because they do quite well on several parameters. These questionnaires have been designed specifically to measure humorous cognitive reappraisal and response-focused humorous coping responses.

The rating model has made raters more sensitive for different facets and categories in the humorous coping items. Although interrater reliability and agreement for distinguishing facets was usually acceptable, there was not always significant agreement on facets or categories for specific scales. An explanation is that the number of selected items of specific scales is typically small. Such a small sample can more easily provide results that cannot be distinguished from random results. Since we have no reason to doubt the integrity and willingness of the raters, we propose some improvements in the rating model we employed. We think it would be useful to include the category 'other' for the external demand facet. This would probably clarify the usefulness of the distinction between specific and general external demands. Inclusion of a category 'internal demand' could also be considered, to include scales like the self-enhancing humor style. The 'aim' category has proven less relevant. One of the reasons for this finding is that the difference between response-focused coping aims and cognitive reappraisal has shown to be both difficult to grasp as well as to apply. This is an important conclusion, as it may be expected that respondents, too, may have difficulty to distinguish the different questions. Since the distinction seems relevant for health-related

research, it would be worthwhile to develop humorous coping scales based on this distinction (for steps in this direction, see Doosje et al., 2010). The mapping sentence provided in this paper could be a good starting point for the development or revision of humorous coping scales in which external demands, humorous responses and coping aims are more systematically varied.

The method of facet analysis has proven a fruitful one. The construction of a mapping sentence clarifies the concept one wants to measure, departing from a specific theoretical point of view. When applied to existing measures, the coverage of certain facets may be systematically reviewed. This can be done in a qualitative way, but it is also possible to quantify reliability and agreement, as was done in this study.

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Chapter 4

The associations of humorous coping styles, affective states, job demands and job resources with the frequency of upper respiratory tract infection

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Abstract

There is some evidence that job demands, job resources like job control and humorous coping may contribute to the risk of upper respiratory tract infections. The purpose of this study was to test a model including these variables as well as job-related affect, in order to explore their role in the explanation of the frequency of upper respiratory tract infection. A sample of 2094 employees filled out questionnaires assessing job demands, job control, generic (MSHS-C), antecedent-focused and response-focused humorous coping (QOHC), and job-related affect (JAWS). Job demands were indirectly related to the frequency of upper respiratory tract infections, mediated by their relationships with job control and negative job-related affect. Generic and response-focused humorous coping were less relevant for the explanation of the frequency of upper respiratory tract infections than the presumably 'healthy' antecedent-focused humorous coping style. The latter showed a negative association with negative job-related affect. The frequency of upper respiratory tract infections was predicted better by job control and negative job-related affect than by humorous coping, in the expected directions. These findings may have practical relevance for the improvement of stress management interventions in organizations.

1. Introduction

Upper respiratory tract infections (URTI) like the common cold and influenza are not only associated with procedures aimed at an increase of bodily hygiene – several studies have shown that psychological processes might also influence the risk to catch these common types of infection. However, these studies have not looked closely at job resources like job control and humorous coping styles and at affective states as predictors of URTI frequency, let alone that these variables have been incorporated into one model. Furthermore, previous studies have investigated generic humorous coping styles and have not looked at specific styles like antecedent-focused and response-focused humorous coping, which may theoretically differ in their effect on health, including URTI frequency. This study intends to fill these gaps, aiming to increase our understanding of the role of these occupational variables in their association to URTI frequency. A model incorporating job demands, job control, several styles of humorous coping and job-related affect as predictors of URTI frequency is tested, enabling investigation of the contribution of the separate variables as well as their interactions. The focus is on a test of the predictive value of generic and specific humorous coping styles for URTI frequency.

Psychosocial variables, affective states and URTI frequency

The frequency of upper respiratory tract infections (URTI) may be predicted by psychosocial variables in life and on the job: life demands increase the frequency of the common cold (Cohen, Tyrell, & Smith, 1991, 1993) and job demands do, too (Mohren, Swaen, Borm, Bast, & Galama, 2001; Hao, Duan, and Zhang, 2002). The adverse effects of these demands on URTI frequency may be due to their negative affective consequences. Several studies have indeed shown that negative affect is positively related to URTI frequency (e.g. Biondi & Zannino, 1997; Cohen & Williamson, 1991). Recently, support for a negative association between positive affect and URTI frequency has been added by Takkouche, Regueira, and Gestal-Ottero (2001). However, job resources like job control and humorous coping styles may also play a buffering role in this process and should be added to our model for conceptual and theoretical reasons. Although different

in nature and scope, both of these resources may play a significant role in adaptation to stress (Hobfoll, 2002).

Job control, humorous coping and affective states

Job control has been proposed as an important job resource which acts as a buffer for job demands in Karasek's (1979) job demand-control model, which was later extended to the job demands-resources model (Demerouti, Bakker, Nachreiner, & Schaufeli, 2001). Job control is a key variable in this model, because it enables employees to decide how and when they do certain tasks. In some job types high job demands may be buffered by high job control (Karasek calls this an active job type). Another job resource may be humorous coping, which is an interesting coping style because - unlike many other coping styles - it is not only aimed at preventing or moderating negative affective consequences resulting from stress, but also adding mirth to the coping equation (Doosje, De Goede, Van Doornen, & Goldstein, 2010). Several empirical studies have confirmed that generic humorous coping may serve this dual-purpose function because of its relationships with decreases in negative affect (e.g. Eggerli, 1997; Olson, Hugelshofer, Kwon, & Reff, 2005) and increases in positive affect (e.g. Anderson & Arnoult, 1989; Martin, Puhlik-Doris, Larsen, Gray, & Weir, 2003). This is consistent with relief theory, stating that humor relieves tension in the individual (Cooper, 2008). Also, several studies have shown that humorous coping may serve as a buffer between demands and affective states (Abel, 2002; Abel & Maxwell, 2002; Cann, Holt, & Calhoun, 1999). Since this study is dedicated to the associations of humorous coping with health dimensions, it should be mentioned that the traditional view of humorous coping as a generic concept has been challenged lately. Instead, response-focused and antecedent-focused forms of humorous coping have been proposed, with possibly differential health effects. Combining Gross' (2001) work on these two types of emotion regulation with the humorous coping concept, response-focused and antecedent-focused humorous coping styles have been introduced and operationalized by Doosje et al. (2010). Antecedent-focused humorous coping is a kind of cognitive reappraisal, aimed at changing the possibly stressful meaning of a stressor at hand into a humorous one, thus neutralizing it and preventing the development of a negative affective response. Response-focused humorous

coping is used in a later stage of the stress process, when stress-induced negative affect has already taken place. In this type of coping response, humor is used to avoid or deny feelings of stress already present. In short, antecedent-focused humorous coping is used for stress prevention, whereas response-focused humorous coping is used for 'damage control' due to stress. These two types of humorous coping styles may therefore differ in their associations with affective states as well as health status.

Job control, humorous coping and URTI frequency

How are job resources related to URTI frequency? Job control was negatively associated with URTI frequency in studies by Mohren et al. (2001) and Hao et al. (2002). An interaction between job demands and job control has also been shown: high job demands and low job control groups show higher common cold frequency than groups high in job control (Van de Schoot, Hoytink, & Doosje, 2009). The potential role of humorous coping in the association between demands and URTI frequency has been supported by studies that observed negative associations between humorous coping and common cold frequency for specific populations: mothers of newborns (Dillon & Totten, 1989) and young cancer patients (Dowling, 2000). These humorous coping studies did not include job demands and affective variables, whereas the job resource studies did not include affective variables. A pivotal role in the model may be attributed to affective states. They not only relate to job control and humorous coping, but also to URTI frequency. Although there is some evidence for differential health effects of response-focused and antecedent-focused coping styles (John & Gross, 2004; Austenfeld & Stanton, 2004), no studies to date have explored their effect on URTI frequency. Also, associations between antecedent-focused and response-focused humorous coping styles and physical health have not been investigated before.

Common method variance

Before a model can be presented, a possible bias in survey studies, common method bias, needs to be addressed first. This is a methodological problem described by several authors (e.g. Lindell & Whitney, 2001; Podsakoff, McKenzie, Lee, and Podsakoff, 2001). It is due to 'common method variance which is

attributable to the measurement method rather than to the constructs the measures represent' (Podsakoff et al., 2001). However, the magnitude and even existence of this problem have been subject to debate (see Spector, 2006).

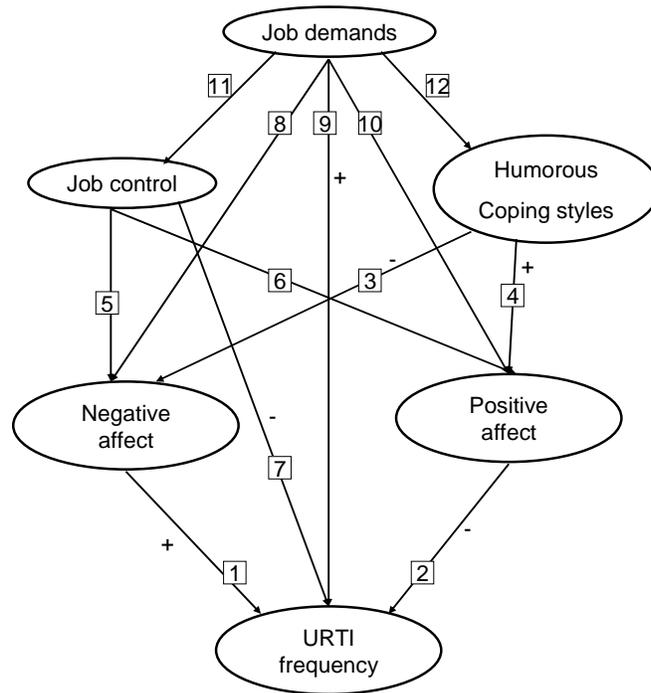


Figure 1. *Theoretical model for the prediction of URTI frequency by humorous coping styles, job demands, job control and job-related affect*

Research aims, questions and hypotheses

The main aim of the current study is to expand the job demand-resources model with humorous coping styles and affective states, assessing their separate and joint contribution to URTI frequency. Previous studies have shown that positive affect and negative affect are differentially related to URTI frequency (Figure 1, arrow 1 and 2). Turning to the right hand side of the model, humorous coping styles are probably not related directly to URTI frequency, but through their relationships with affect (arrows 1, 2, 3 and 4). There is also some evidence that humorous coping might buffer the relationship between job demands and

affective states (arrows 3, 4 and 8). An interesting outcome of this study may be the differences between generic, antecedent-focused and response-focused humorous coping with regard to their associations with affective states and URTI frequency. Based on previous studies, antecedent-focused humorous coping may prove the healthiest humorous coping style of the three. Turning to the left-hand side of the model, job control may have a similar role as humorous coping on the right-hand side, although no empirical evidence is available for its relationship with affect (arrows 5 and 6). There is, however, some support for a direct association between job control and URTI frequency (arrow 7). Job demands may be related to affective states (arrows 9 and 11), but previous research has not supported this. However, based on previous studies, job demands are supposed to associate positively with URTI frequency (arrow 10). Finally, there is no empirical evidence supporting a relationship between job demands and job control, so this relationship will be explored. One of the possibilities is that job control acts as a buffer in the job demands-affect relationship (arrows 5, 6 and 11). This leads us to the following six hypotheses:

1. Negative affect is positively related to URTI frequency (a, arrow 1 in figure 1), whereas the reverse association is expected for positive affect (b, arrow 2);
2. Humorous coping styles are negatively related to negative affect (a, arrow 3) and positively related to positive affect (b, arrow 4);
3. Job demands are positively related to URTI frequency (a, arrow 10) and job control is negatively related to URTI frequency (b, arrow 7);
4. Humorous coping styles are related to URTI frequency by their relationships to negative affect (a, arrows 1 and 3) and positive affect (b, arrows 2 and 4);
5. Humorous coping styles mediate the relationships between job demands and positive and negative affect (arrows 3, 4 and 12);
6. Antecedent-focused humorous coping shows stronger negative associations with URTI frequency by its relationships with affect (arrows 1, 2, 3 and 4, combining hypotheses 1, 2 and 3) than generic and response-focused humorous coping.

The other relationships (arrows 5 to 6, 8, 11 and 12) will be explored in this study. Also, the relative contributions of all variables to the explanation of URTI

frequency will be assessed. Common method bias will be addressed by testing the assumption that there is a basic underlying factor that will fit the model better than a model based on the theoretical variables alone.

2. Methods

Design

A cross-sectional survey research design was used. A quantitative approach was followed and primary empirical data were gathered, which were analyzed with correlational and structural equation modeling statistics.

Participants

524 first-year bachelor students of psychology at a Dutch university each selected four employees in their own social network, resulting in a quota sample of 2094 employees in a broad range of work settings in The Netherlands. Students gathered these data as part of an assignment for a methodology and statistics course on survey methods. They received grade points for the assignment. Inclusion criteria were employment for 50% of working time or more (actual mean working time was 62.6 %, SD=12.9), no present illnesses, an even division of males and females (1055 males and 1039 females participated) and a normal distribution of age (actual mean age was 40.1 years, SD=6.1). Although we aimed at a balance between participants with high and low education, there was an overrepresentation of highly educated participants (47.6 % in this study), compared to 28.9 % in the Dutch working population (Statistics Netherlands, 2002).

Measuring instruments

Job demands and job control. Job demands were measured using four items, based on Karaseks (1985) job content instrument (adapted for Dutch populations by Furda, 1995). Its items refer to having to work too much and too fast, e.g. 'How often do you have to put in extra effort to finish the job'. Answers were given in a Likert-scale format, varying between 1 and 5. Job control was measured using a three-item Likert-scale (1-5) job control scale (e.g. 'Can you decide yourself how to execute your work?'), referring to the amount of job control experienced. This

scale was originally developed by Karasek (1985, Dutch translation by Furda, 1995). A measurement model including both of these job characteristics showed satisfactory fit, $\chi^2(13)=85.5$, $p=.000$, NFI=.98, CFI=.98, RMSEA=.05.

Job-related affect. Job-related affect has been measured by the 30-item Job-related Affective Well-Being Scale (JAWS), developed by Van Katwyk, Fox, Spector, & Kelloway (2000), asking participants how they felt about their work in the previous month. Both arousal (high-low) and valence (positive-negative) dimensions have typically been included in the original scale, resulting in four subscales. Since this study is focused on the valence dimension, two subscales have been used, a 15-item positive job-related affect subscale (e.g., ‘My job made me feel at ease’) and a 15-item negative job-related affect subscale (e.g., ‘My job made me feel intimidated’). Although positive and negative affect scales are strongly related in this study ($r=-.85$, $p=.000$), there are good reasons to consider positive and negative affect as separate affective dimensions (see Tellegen, Watson, & Clark, 1999, for a discussion of the dimensionality of affect). To test the two-factor solution for the JAWS, a measurement model including the two scales was conducted, $\chi^2(404)=5785.5$, NFI=.81, CFI=.82, RMSEA=.08. Although the RMSEA parameter shows adequate model fit, NFI and CFI parameters are below .90, indicating a suboptimal fit. However, internal consistency of the positive and negative affect scales is very good (see Table 1 in the Results section for Cronbach's alpha's), adding to the conclusion that these two scales may be consistent ones. Additional evidence for this conclusion comes from the outcomes of a factor analysis based on the original four-factor solution as proposed by Van Katwyk et al. (2000). This analysis results in an unidentified path model.

Humorous coping styles. The coping scale of the Multidimensional Sense of Humor Scale (MSHS-C) is an eight-item Likert-scale generic humorous coping scale. It is part of a questionnaire also measuring other dimensions of a sense of humor (Thorson & Powell, 1993). An example of one of its items is ‘Uses of wit or humor help me master difficult situations’. Also, the Questionnaire of Occupational Humorous Coping (QOHC), a four-scale, 23-item questionnaire originally developed and tested by Doosje et al. (2010), was used. The incidents in the questionnaire are job-related, but are not specific to any occupational setting. The items are formulated in a way that leaves open to the participant what type of

humor is referred to. A Likert response format is used (1=never, 2=rarely, 3=sometimes, 4=often, 5=very often). Two possibly health-related scales have been used in this study, the antecedent-focused and response-focused humorous coping scale. Both scales had satisfactory convergent and discriminant validity, as assessed in a study by Doosje et al. (2010). The nine-item antecedent-focused humorous coping scale (e.g. 'When I have to work more to finish something I am able to see the humor in the situation') refers to attempts to use humorous behaviour to cognitively reappraise a situation. The response-focused humorous coping scale (e.g. 'When my work makes me feel tense, I make jokes to avoid that feeling') had five items, measuring the tendency to use humorous behaviour to ease, avoid or decrease stress or negative feelings that are already present.

Upper respiratory tract infection (URTI) frequency. Two types of URTI frequency were measured: common cold and influenza ('flu') frequency. A two-item Likert-scale questionnaire was used, asking how often (1=never, 2=rarely, 3=sometimes, 4=often, 5=very often) one had experienced these infections of the upper respiratory tract in the previous two months.

Statistical analysis

For the descriptive and correlational analyses, SPSS 16.0.2 software was used, whereas structural equation modeling analyses were conducted using AMOS 16.1.0 software. Because of the high correlation between the two job-related affect scales, a collinearity test was performed ahead of the main multivariate analyses. In structural equation modeling (SEM) the χ^2 parameter is usually employed as a goodness of fit parameter. However, since it is sensitive to sample size (Kline, 2005), additional fit indices have been used: the Bentler-Bonett Normed Fit Index (NFI, Bentler & Bonett, 1980), the Comparative Fit Index (CFI, Bentler, 1990) and the Root-Mean-Square Error of Approximation (RMSEA, Browne & Cudeck, 1993; Steiger, 1990). To allow model comparison the Bayesian Information Criterion (BIC; Schwarz, 1978) was included, which takes both model fit and model complexity into account. When there was a suspicion of mediation or partial mediation, these indirect effects were tested using the Sobel test (Sobel, 1986). Common method bias was investigated adding a common variance variable to the structural equation models.

3. Results

Descriptive and correlational analyses

These analyses, as well as internal consistency analyses, are shown in Table 1. Average values of job demands and job control fall in the third quartile, which is typical of an active job type (high job demands, high job control) population. At the same time, this seems a population high in average positive job-related affect and low in negative job-related affect (based on five-point scales for all variables). Some of our expectations regarding bivariate relationships are confirmed: positive job-related affect correlates negatively with URTI frequency, whereas negative job-related affect correlates positively with it (hypotheses 1a and 1b). There is a difference in the relationships of antecedent-focused humorous coping and URTI frequency (unrelated) and response-focused humorous coping (positively related). All humorous coping styles show very low or insignificant correlation coefficients with URTI frequency. They do seem to be differentially related to job-related affect, which is preliminary evidence for the hypothesis (2) that humorous coping styles relate to URTI frequency through their association with job-related affect. Contrary to expectation, job demands did not relate directly to URTI frequency (hypothesis 3a), forcing us to accept the null hypothesis in our study. The alternative hypothesis (3b) that job control relates to URTI is confirmed by these data.

Table 1. *Descriptive, correlational and reliability analyses of job characteristics, humorous coping styles, job-related affect and upper respiratory tract infection frequency*

	Mean	SD	1	2	3	4	5	6	7	8
Job characteristics										
1. Job demands	3.57	0.64	.73							
2. Job control	3.94	0.72	.23***	.79						
Humorous coping styles										
3. Generic humorous coping	3.45	0.56	.04*	.03	.79					
4. Antecedent-focused humorous coping	2.72	0.61	.02	.06**	.51***	.82				
5. Response-focused humorous coping	2.55	0.73	.07**	-.02	.52***	.60***	.82			
Job-related affect										
6. Positive	3.75	0.48	-.05*	.31***	.05*	.16***	-.01	.91		
7. Negative	1.88	0.54	.13***	-.20***	.02	-.06**	.09***	-.85***	.89	
Upper respiratory tract infection frequency										
8. Common cold + influenza frequency	1.88	0.72	-.01	-.12***	.04*	.02	.07***	-.14***	.16***	-

NOTES: N=2094, reliability coefficients on the diagonal; * $p \leq .05$, two tails; ** $p \leq .01$, two tails; *** $p \leq .001$, two tails

Demographic variables and collinearity

Before proceeding to the path analyses, we will address two additional issues: the role of demographic variables in the model and the possible collinearity of the job-related affect scales. With regard to the first issue, demographic variables like gender, age and educational level have been analyzed with regard to their contribution to URTI frequency. There are no gender differences in URTI frequency, $t(2084)=.29$, $p=.76$. Age is negatively and weakly associated with URTI frequency ($r=-.16$, $p=.000$). People with high educational levels (advanced professional and university level, $M=1.81$, $SD=.72$) have significantly lower URTI frequency than people with low education ($M=1.94$, $SD=.72$), $t(2088)=3.9$, $p=.000$. With regard to the second issue, collinearity, positive and negative job-related affect are highly correlated. This means that this relationship may inflate variance in our model. To test this assumption, collinearity diagnostics have been computed in a multiple regression model including key independent variables like job demands, job control, humorous coping styles, the two job-related affect scales and the URTI frequency variable, the dependent variable. The results are satisfactory, since the Variance Inflation Factor (VIF) is 4.0 for positive job-related affect and 3.7 for negative job-related affect. This is way below the value of 10 suggested as a maximum for this test.

Basic characteristics of the path analyses

Structural equation modeling enables the exploration of the contribution of several humorous coping styles to an explanatory theoretical model for URTI frequency. Table 2 shows model fit parameters for three different humorous coping styles and all humorous coping styles ('overall') combined. Although chi-square values are not significant for generic humorous coping (a formal requirement for interpretation), the large N enables comparison with fit indexes for the other two humorous coping styles. NFI, CFI and RMSEA parameters are all within the required boundaries, meaning that all models show excellent fit to the data. Comparing the models, the BIC parameter (which computes model fit correcting for model complexity) is lowest for generic humorous coping, so at first sight this would seem the most successful humorous coping predictor for URTI frequency.

Table 2. *Model fit and model comparison of several humorous coping styles as a predictor of upper respiratory tract infection frequency*

Model		Model fit			Model comparison				
		χ^2	df	χ^2/df	NFI	CFI	RMSEA	Beta's ¹	BIC
1	Response-focused (R)	11.1*	2	5.5	.99	.99	.04	.00/.05*	156.4
2	Antecedent-focused (A)	11.3*	3	5.6	.99	.99	.04	.11*/-.04*	156.6
3	Generic (G)	5.0	2	2.5	.99	.99	.02	.04*/.01	150.3
4	Overall (R+A+G)	112.2*	13	8.6	.97	.98	.06	.08*/.02	288.1

NOTES: * = $p \leq .05$; ¹ beta's for humorous coping-positive job-related affect and for humorous coping-negative job-related affect, respectively

Comparing generic and overall humorous coping

However, the path model in Figure 2 shows the nature and direction of the relationships of generic humorous coping and the other variables. There is a small but significant association between job demands and generic humorous coping, which is related to positive job-related affect. Because of the lack of a relationship between this humorous coping style and negative job-related affect and the lack of a relationship between positive job-related affect and URTI frequency, generic humorous coping seems to have no predictive value for URTI frequency. A similar pattern exists for overall humorous coping (see figure 3). Hypotheses 4a and 4b are disconfirmed for these two humorous coping styles, since only relationships with positive job-related affect are found. Was there mediation of these two humorous coping styles in the job demands-positive job-related affect relationship? This was tested using the Sobel test. There was no mediation for generic humorous coping ($z=1.58$, $p=0.11$, two-tailed) and partial mediation for overall humorous coping in the job demands-positive job-related affect relationship ($z=2.13$, $p=0.03$, two-tailed), which is a partial confirmation of hypothesis 5.

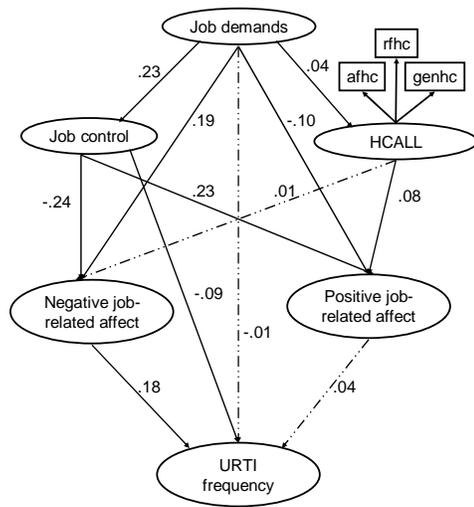


Figure 2. Path model for overall humorous coping (HCALL) and URTI frequency, standardized coefficients

NOTE1: dashed lines indicate a non-significant path, for all other paths $p \leq .05$

NOTE2: The correlation between both affect parameters has been included in the model, although the corresponding arrow has been removed for reasons of clarity

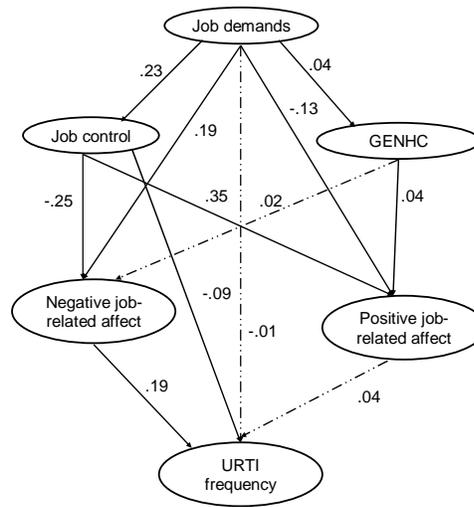


Figure 3. Path model for generic humorous coping (GENHC) and URTI frequency, standardized coefficients

NOTE1: dashed lines indicate a non-significant path, for all other paths $p \leq .05$

NOTE2: The correlation between both affect parameters has been included in the model, although the corresponding arrow has been removed for reasons of clarity

Comparing antecedent-focused and response-focused humorous coping

As we expected antecedent-focused humorous coping to be a ‘healthier’ style than response-focused humorous coping (hypothesis 6) the respective path models (see Figures 4 and 5) should show some interesting differences. Response-focused humorous coping (depicted in figure 4) is positively related to negative job-related affect and unrelated to positive job-related affect. Also, there is a direct but small positive association between response-focused humorous coping and URTI frequency, which improves model fit. Two mediation patterns were of interest here: one of response-focused humorous coping in the job demands-negative job-related affect relationship (1) and one of negative job-related affect in the response-focused humorous coping-URTII frequency relationship (2). The Sobel test for the first pattern showed that response-focused humorous coping partially mediates the job demands-negative job-related affect relationship ($z=2.84$, $p=0.004$, two-tailed). The second pattern showed that negative job-

related affect acts as a partial mediator in the relationship between response-focused humorous coping and URTI frequency ($z=3.36$, $p=0.000$, two-tailed).

Antecedent-focused humorous coping (Figure 3) shows quite a different associational pattern than response-focused humorous coping: it is unrelated to job demands and it is positively related to positive job-related affect. Also, this humorous coping style is negatively related to negative job-related affect (although regression coefficients are small). It is apparently related to URTI frequency by its association with negative job-related affect, but not by its association with positive job-related affect. Of all humorous coping styles, antecedent-focused humorous coping seems to bear the strongest relationship to URTI frequency, through its association with negative job-related affect, confirming hypothesis 6.

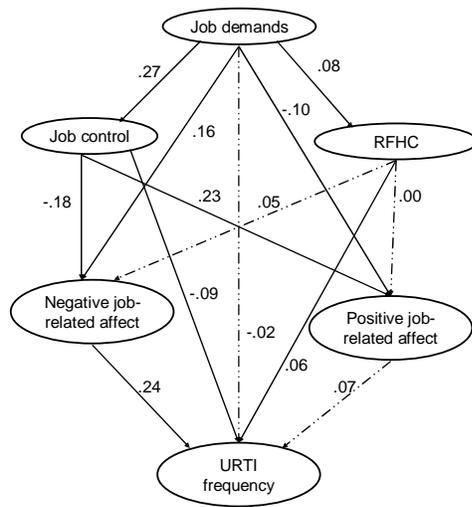


Figure 4. Path model for response-focused humorous coping (RFHC) and URTI frequency, standardized coefficients

NOTE1: dashed lines indicate a non-significant path, for all other paths $p \leq .05$

NOTE2: The correlation between both affect parameters has been included in the model, although the corresponding arrow has been removed for reasons of clarity

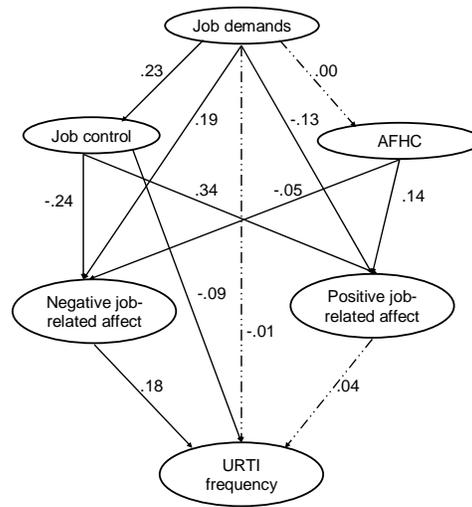


Figure 5. Path model for antecedent-focused humorous coping (AFHC) and URTI frequency, standardized coefficients

NOTE1: dashed lines indicate a non-significant path, for all other paths $p \leq .05$

NOTE2: The correlation between both affect parameters has been included in the model, although the corresponding arrow has been removed for reasons of clarity

Separate path analyses for positive and negative job-related affect

Because of the high correlations between positive and negative job-related affect, it seems to make sense to test models including only one of these affect parameters. Table 3 shows the fit indices for these analyses, which are comparable to those presented in Table 2. Because the models are less complex, BIC values are typically lower than those shown in these analyses. There is an additional advantage analyzing models including the separate job-related affect scales. Additional model improvements suggested by the statistical software can now be incorporated into the models.

Table 3. *Model fit and model comparison of several humorous coping styles as a predictor of upper respiratory tract infection frequency for negative and positive job-related affect, separately*

Models	Model fit			Model comparison					
	χ^2	df	χ^2/df	NFI	CFI	RMSEA	Beta's ¹	BIC	
Negative job-related affect models									
5	Response-focused (R)	3.2	1	3.2	.99	.99	.03	.05*	110.2
6 ²	Antecedent-focused (A)	12.8*	3	6.4	.96	.97	.04	-.04*	104.6
7	Generic (G)	0.9	1	0.9	.99	1.0	.02	-.02	107.9
8	Overall (R+A+G)	88.3*	8	11.0	.96	.96	.06	.02	241.2
Positive job-related affect models									
9	Response-focused (R)	3.2	1	3.2	.99	.99	.03	.00	110.2
10	Antecedent-focused (A)	9.9*	2	4.9	.98	.98	.04	.11*	109.3
11	Generic (G)	0.9	1	0.9	.99	1.0	.00	.04*	107.9
12	Overall (R+A+G)	105.5*	10	10.5	.95	.96	.06	.09*	243.2

NOTE: * = $p \leq .05$; ¹ beta's for humorous coping-job-related affect relationship; ² In model 6, no relationship between humorous coping styles and URTI frequency was included

In all models a positive relationship between humorous coping styles and URTI frequency has been added, generating fitting models with regression weights between .05 and .07 for these paths, except for model 6, where no such relationship was found. Also, for models including antecedent-focused humorous coping, job control was suggested as additionally related to antecedent-focused humorous coping. This operation also yields fitting models, with regression weights of .06 for the relationship between job control and antecedent-focused humorous coping.

Comparison of the relative contribution of model variables

Comparing the variables in the models, the right hand side of the models (including humorous coping styles and positive job-related affect), seem much less successful predictors of URTI frequency than variables in the left-hand side of the model. Job control and negative job-related affect are interrelated and both are also related to URTI frequency. It is also clear that negative job-related affect is a better predictor than positive job-related affect, and that job demands do show associations with URTI frequency, but through its relationships with job control and negative job-related affect.

Path analyses including demographic variables and common method bias

Age and gender do not seem to contribute to the model (with low and non-significant beta's). Educational level does: there is a small but significant relationship to URTI frequency in the AFHC model (beta=-.10, $p=.000$). However, it is left out of the analyses, because model parameters are much less favorable for this model, $\chi^2(8)=954.2$,

NFI=.25, CFI=.24, RMSEA=.23. No BIC parameter can be computed for this analysis. Finally, common method bias was counteracted by linking a new variable to all other variables in the models presented here. This operation results in an inability to produce identifiable models. This implies that we were unable to gather evidence for the assumption that there was common method bias in our data.

4. Discussion

Summary of findings

The main objective of this study was the test of a model explaining URTI frequency, including not only job demands and job control, but also humorous coping styles and job-related affect. It succeeded in building models fitting the data, combining relevant variables and their associations to URTI frequency which have not been combined before. We were unable to replicate a direct effect of job demands on URTI frequency. We did find associations of job demands with negative and positive job-related affect and job control, suggesting that there may have been an indirect effect. This study showed that the favorable effect of job control on URTI frequency existed by its association with negative job-related affect. Humorous coping styles were differentially related to URTI frequency. Although all humorous coping styles fitted well in models containing job characteristics and job-related affect, antecedent-focused humorous coping was more strongly related to parameters predicting URTI frequency than generic and response-focused humorous coping. Antecedent-focused humorous coping, the style considered 'healthiest' beforehand, was related to job-related affect in the expected directions, associating with URTI frequency through a relationship with negative job-related affect. Generic humorous coping was related to positive job-related affect only, whereas response-focused humorous coping was unrelated to positive job-related affect and positively related to negative job-related affect, which was positively related to URTI frequency itself. In this model we also found a direct positive association between this humorous coping style and URTI frequency. Overall, humorous coping styles seemed to be poorer predictors of URTI frequency than job control and negative job-related affect. Predictive power of humorous coping styles improved for models including only one of the job-related affect parameters. There was an additional positive association between all humorous coping styles and URTI frequency, except for antecedent-focused humorous

coping. Also, antecedent-focused humorous coping and job control were positively associated. No common variance factor could be detected.

Theoretical significance of the findings

There is evidence from our study that antecedent-focused humorous coping is a 'healthier' humorous coping style than response-focused and generic humorous coping, which lends some support to the findings presented by John and Gross (2004) and Austenfeld and Stanton (2004), predicting different health effects of antecedent-focused and response-focused coping styles. The (weak) association between antecedent-focused humorous coping and URTI frequency is no direct one. However, we were unable to demonstrate meditational effects. Compared to the other two humorous coping styles, antecedent-focused humorous coping seems to comply best with the two-fold aim of humorous coping: reduction in negative affect and promotion of positive affect. The associations between all humorous coping styles and job-related affect were generally small, and weaker than reported in previous studies (e.g. Anderson & Arnoult, 1989; Ward & Kennedy, 2001). Our findings confirmed the weak associations between coping styles and health reported before in the review study by Penley, Tomaka, and Wiebe (2002). We could not replicate earlier studies reporting a direct relationship between job demands and common cold frequency (Mohren et al., 2001; Hao et al., 2002). The associations of job demands and URTI frequency were indirect and seemed to follow the path of job control and negative job-related affect.

Alternative explanation of the findings

The generally weak associations that we found may be due to certain characteristics of the research population. Although Mohren et al.'s (2001) study is comparable with regard to the number of participants (5896 individuals in theirs, 2094 in ours), mean age (40.9 in theirs, 40.1 in ours), they used a 4-month period of time for common cold incidence, whereas this study used a 2-month period. In their study, 46.6 % of the population reported no common cold in that period; in our study this was 62.8 %. Psychological health in our study was also excellent, as indicated by the high positive job-related affect and low negative job-related affect scores. Despite this affective bias, it is remarkable that the expected relationships with URTI frequency could still be found. Our population was high in job demands but also in job control, this may best be described as an active job type population, which Karasek (1979) already predicted should be in good health, a

prediction which was confirmed in our study. The effect sizes in our study may be an underestimation. Increased variations in URTI frequency, affective states and educational level may increase them markedly. In fact, this was a healthy population from scratch, excluding less healthy employees with a higher risk of getting a common cold or influenza. Since low educational levels apparently increase health risks (e.g. Kunst et al., 2005), addressing the educational level bias could result in a research population with higher average URTI frequencies than in the population we studied.

Methodological issues

With regard to other methods and statistical procedures used in this study, the sampling method used in this study was not random. The advantage of quota sampling is that it may increase participants' willingness to cooperate in the study. However, the focus in this type of sampling is on the inclusion criteria (gender, age) and not on non-response bias. As we have seen, this has led to an overrepresentation of participants with high education. The possible consequences for other variables may be small, because many of the hypotheses we derived from previous research could be confirmed, indicating that sampling may have been valid. With regard to causality issues, no causal inferences can be made from our cross-sectional data – longitudinal studies will have to address this problem, although even they sometimes seem to show a causality bias, as concluded by Bakker and Demerouti (2007). With regard to common method variance, AMOS software was unable to detect it, confirming Spector's (2006) point of view on the issue. Of course this does not mean that it was not there.

Future studies

Although the incorporation of humorous coping styles into a job demands-resources (JDR) model has ended somewhat disappointing, it seems worthwhile to keep studying coping mechanisms as well as affective parameters in relation to occupational stress models (see Shimazu, Schaufeli, & Taris, in press, for a successful example). Although weakly correlated, job control and antecedent-focused humorous coping showed a positive association. A promising avenue for future research would be the interaction of this type of humorous coping under varying job control conditions. Therefore, the role of a sense of humor in occupational health should not be ruled out in the future, and may enrich more traditional work psychological models, like the JDR model. Especially Hobfoll's (2002) suggestion that proactive forms of coping (antecedent-focused

humorous coping being one of them) seem much more prevalent nowadays, is a plea to keep following this path. We think it is also useful to continue combining JDR models with psychoneuroimmunological models in the future. Since this study did assess several successful predictors of URTI frequency, this line of research could be extended, for example with the experimental approach to upper respiratory tract infection (see Cohen, 2005, for an overview). Also, because there is reason to believe that immunoglobulins in saliva (e.g. Ig-A) play a role in the chance to catch URTI (see Phillips et al., 2006), future studies may include this variable, preferably in a longitudinal design. An additional advantage of this type of design is that seasonal variations in URTI frequency may be included, which was not the case in our study. As a specific method, diary studies may be helpful, which may also learn us more about the frequency of humorous coping behaviors and their immediate and long-term effects. Since common infections like upper respiratory tract infections are so common and so hard to prevent, it seems worthwhile to continue examining the influence affective, job and humorous coping factors have on their occurrence. Another candidate for future research is cardiovascular functioning, which was one of the first physical health categories linked to the JDC model (see Rozanski et al., 2005, for a review). Therefore, it seems interesting to extend the model in this study to that research area.

Practical implications of the study

Although (especially antecedent-focused) humorous coping does seem to play a modest role in the frequency of upper respiratory tract infections, affecting both positive affect and negative affect variables, job control and negative affect seem more important predictors for URTI frequency. Practical implications of these outcomes may be relevant for the development of stress intervention programs, which in fact do seem to have some effect on infections of the upper respiratory tract (see Reid, Mackinnon, & Drummond, 2001, for an effect study). The focus of these interventions should preferably be on the management of negative affect and on increases in job control. The development or enhancement of humorous coping capabilities may also be part of these programs, with a focus on cognitive reappraisal of demanding situations before they get stressful, which is the aim of antecedent-focused humorous coping.

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Chapter 5

Humorous traits and humor use in burnout and healthy subjects

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Abstract

The purposes of this study were twofold: the development and validation of a Humor Check List (HCL) measuring humor use that may depend on time and psychological status (study 1) and the investigation of relationships between burnout and humorous traits and states (study 2). In study 1a 315 subjects working in special education and health care participated. Study 1b included 68 psychology undergraduates. Factor analysis of the daily life-version of the HCL resulted in a factor solution containing six types of humor use: mirth, humor appreciation, humor reproduction, negative humor production, positive humorous coping and positive humor climate at work (study 1a). In study 1b the one-week version of the HCL was tested. It had convergent validity with regard to humor styles and had low test-retest reliability. Study 2 was conducted in a sample of 42 burnout and 28 healthy control subjects. Burnout subjects had lower positive humor styles, lower generic humorous coping and lower passive humorous behaviors (i.e. humor appreciation and mirth) than healthy control subjects, whereas these groups did not differ with regard to their negative humor styles and active humor use. The associations between burnout dimensions and humor styles were as expected for most humor styles. distinction between positive and negative forms of a sense of humor is discussed.

1. Introduction

Maintaining a sense of humor was among the most frequently reported relaxation methods for burnout prevention (Rupert & Kent, 2007). Theoretically, the use of humor in stressful circumstances may contribute to resilience against burnout (e.g. Burr, 1996; Jackson, 1999, Strümpfer, 2003). Two humorous traits have been proposed as contributing to stress resilience: humorous coping and humor styles. Humorous coping is aimed at a decrease in negative affect and an increase in positive affect (e.g. Doosje, De Goede, Van Doornen, Goldstein, 2010) and may contribute to lower stress levels. Humor styles (Martin, Puhlik-Doris, Larsen, Gray, & Weir, 2003) are humorous traits with a possible stress resilience function. Positive humor styles - which are aimed at contributing to a positive humorous outlook on life - would protect individuals against stress, whereas negative humor styles would not (e.g. Tůmkaya, 2007). A sense of humor may not only be considered a trait influencing possibly lowering burnout risk, but humorous behaviors may also be influenced by the psychological states accompanying burnout. Humorous behaviors like humor production, humor appreciation and laughter may decrease as a result of burnout. In this study not only humorous traits (humorous coping and humor styles) are explored in their relationship to burnout, but also humorous behaviors, which have not been studied before.

Burnout is a work-related syndrome typically frequent in 'people professions' for example in health care and education (Maslach & Jackson, 1986). It is usually considered to have three dimensions: emotional exhaustion, depersonalization and feelings of incompetence. How then, do burnout and its dimensions potentially relate to humor? One of the first studies in the field was performed by Fry (1995). She found that women high in humor were less likely to suffer from burnout and had a higher ability to cognitively reappraise undesirable events. However, she did not investigate burnout dimensions separately and her samples were very small. Whenever a sense of humor is beneficial to burnout, one would expect negative associations between sense of humor traits and emotional exhaustion, depersonalization and personal incompetence. Although Tůmkaya (2007) observed a negative association between generic humorous coping and emotional exhaustion, other studies found no associations (Talbot, 2000; Talbot & Lumden, 2000) or even positive associations (Dorz, Novara, Sica, & Sanavio, 2003). With regard to humor styles, affiliative and self-enhancing humor were negatively associated

to emotional exhaustion and negative humor styles such as aggressive and self-defeating humor styles were positively associated with emotional exhaustion (Tůmkaya, 2007).

The expectation that depersonalization is negatively associated to humorous coping was confirmed in the study by Talbot and Lumden (2000), whereas other studies failed to confirm it (Talbot, 2000) or found opposite effects (Dorz et al., 2003; Tůmkaya, 2007). Depersonalization was negatively associated with positive humor styles like affiliative and self-enhancing humor, whereas aggressive and self-destructive humor styles were positively associated with depersonalization (Tůmkaya, 2007). Negative associations between personal incompetence and humorous coping were shown in several studies (Talbot, 2000, Talbot & Lumden, 2000). However, positive associations were found by Tůmkaya (2007) and no associations could be established in the study by Dorz et al. (2003). Regarding humor styles, a puzzling finding was reported by Tůmkaya (2007): positive humor styles were positively related to personal incompetence and for negative humor styles the reverse was the case.

To conclude, when it comes to humorous traits like humorous coping and humor styles, findings have been mixed. One of the reasons for this may be that the participants in these studies did not vary enough in their level of burnout. Another reason may be the view of a sense of humor as a stable trait. Little attention has been paid to a sense of humor as a state varying over time and with psychological status, e.g. burnout. So far, only one descriptive study has looked into humorous behaviors in two groups of nurses varying in degree of burnout. Those high in burnout reported using humor more than those low in burnout. Also, nurses low in stress tolerance reported using humor more than nurses high in stress tolerance (Elliott, Shewchuk, Hagglund, Rybarczyk, & Harkins, 1996). This is interesting because it adds a new perspective to the humor-burnout relationship: burnout is considered not only as a result of humorous traits, but it is also considered as a psychological state that may lead to changes in humor use. The disadvantage of the nursing study is that humor use remains unspecified. A questionnaire attempting to do that is the Multidimensional Sense of Humor Scale (MSHS, Thorson & Powell, 1993). It is aimed at the measurement of characteristics like humor appreciation, humor production and humorous coping. However, these are measured as a trait, not as a state. Furthermore, these humorous traits are measured by asking respondents for the amount of agreement with certain statements representing the main humorous traits. Although this seems a respectable way to measure these humorous traits, a more behaviorally oriented, state-like measure of humor use is lacking. A behavioral

orientation would have the advantage that the focus is less on what one thinks about one's humor use, and more on which humor-related behaviors one has performed. It is assumed that these behaviors will be remembered better and that the answers of respondents will therefore give a more valid impression of their humor use. Another advantage of this approach is that one can ask for the frequencies of these humorous behaviors over different time frames and in different domains (life, work, etc.). Therefore it seems worthwhile to develop such a measure. The measure we are aiming at takes three forms of humor use put forward by Thorson and Powell (1993) as a starting point: humor appreciation (the tendency to appreciate several sources of humor), humor production (the tendency to create new forms of humor oneself) and humorous coping (the tendency to use humor as a way to handle possibly stressful situations). Three additional forms of humor use are of interest in our study: humor reproduction (the tendency to pass on existing humorous sources to others), mirth (the tendency to laugh or smile) and a positive humor climate at work, which gives an indication of the humorousness of the environment employees have to work in. The behavioral orientation of the future instrument cannot be followed for the humor appreciation factor, which is evaluative in nature. Since negativity and positivity of a sense of humor may be interesting with regard to the burnout syndrome, an additional requirement of the future questionnaire is that its types of humor use have a positive-negative dimension as well. This is consistent with recent trends to consider a sense of humor not only as a positive characteristic, but also as a negative one. Examples of this trend are visible in the Humor Styles Questionnaire created by Martin et al. (2003) and the Questionnaire of Occupational Humorous Coping developed by Doosje et al. (2010). This could then lead to nine types of humor use: humor appreciation, positive and negative humor production, positive and negative humor reproduction and positive and negative humorous coping, mirth, and positive humor climate at work. For practical reasons, the number of items per type of humor use will be limited.

The purpose of this study is twofold: to develop a short-form, behaviorally oriented, reliable and valid questionnaire of humor use (the Humor Check List, HCL). The psychometric properties of the HCL will be investigated in a factor analytic study (study 1a) and in a longitudinal study (study 1b). The factor analytic study tests construct validity of the nine types of humor use. In the longitudinal study (1b) test-retest reliability and convergent validity of the HCL will be investigated. It is expected that humorous traits will show moderate associations with humor use along the positive-negative

dimensions of both humor constructs. Also, we expect that internal consistency of humor use over a limited time frame will be sufficient and that test-retest reliability will be low because of the variability of humor use over time. Study 2 is aimed at assessing relationships between burnout and humorous traits (humor styles and generic humorous coping) as well as humorous states as measured by the newly developed Humor Check List. Previous studies have used samples with low variance in burnout, whereas our study is aimed at the recruitment of a burnout group high in emotional exhaustion, depersonalization and feelings of personal incompetence as well as a healthy control group. It will be interesting to see whether this approach yields more clear-cut differences in humor styles and generic humorous coping than in previous studies. Consistent with the previous study by Tůmkaya (2007), we expect to find negative associations between positive humor styles on the one hand and emotional exhaustion and depersonalization on the other. Also, we expect to find positive associations between negative humor styles and these two burnout dimensions. Since the findings with regard to personal incompetence were mixed in Tůmkaya's study, no expectations are formulated with regard to the relationship between humor styles and personal incompetence. A similar argument goes for generic humorous coping, which was differentially related to the burnout dimensions in several studies. New in our study is also that differences in humor use between burnout and healthy subjects may be assessed.

Study 1: Psychometric characteristics of the Humor Check List (HCL)

Two studies will be presented here. Study 1a is concerned with construct validity and reliability of nine types of humor use. Study 1b is concerned with test-retest reliability and convergent validity of the HCL. First, participants, measures and analyses for both studies will be presented. Results will be presented for the two studies separately.

Participants in study 1a and 1b

For study 1a, 315 participants (mainly women) visiting a conference were invited to fill out the trait version of the Humor Check List (HCL), along with their age, gender and professional status. In study 1b students were asked to fill out the HCL (excluding humorous climate at work), as well as the humor styles questionnaire. They did this twice using web survey technology (Netquestionnaires Nederland, 2007), with one month in between measurements. Key characteristics of both samples are described in Table 1.

Table 1. *Participants in study 1a and 1b*

	Gender			Mean age (SD)	Professional status	
	M	F	N		Nursing	Other
► Study 1a (factor analytic study)						
					N (%)	N (%)
Special education conference (6.6 % were deaf)	82	233	315	41.8 (11.5)	-	315 (100)
Nursing conference 1	11	26	37	44.0 (12.0)	20 (54.0)	17 (46.0)
Nursing conference 2	7	49	56	39.1 (11.8)	44 (78.5)	12 (21.5)
Overall	100	308	408	41.6 (11.6)	64 (15.6)	344 (84.4)
► Study 1b (longitudinal study)	15	53	68	21.7 (2.2)	Psychology undergraduates	

Measures

Humor Check List (HCL). The items for the Humor Check List were developed following the facet analysis model by Guttman (1954), systematically varying positive and negative humorous behaviors and humor sources over the items. Each item could be rated on a five-point Likert scale, varying from 1 (never or almost never) to 5 (all the time or almost all the time). An overview of its 24 items is given in the Results section (see Table 3). In study 1a, participants were asked to assess these humorous behaviors in their daily life (items 1 to 20) and in their work (items 21 to 24). Since the HCL is a questionnaire that may be adapted with regard to domain and time frame, a choice had to be made with regard to these aspects. It was decided that it would be aimed at humor use in daily life (not work, apart from the items 21 to 24). The time frame we chose was very broad: in general. These choices implied that in study 1a, humor use is considered a trait, not as a state. Although this looks like a paradoxical step, the stability of the types of humor use was our main concern in the first step. In later studies the time frame was varied, to see what that did to internal consistency and stability of the humor use factors. In longitudinal study 1b, humorous behaviors over a one-week period of time were assessed

at two points in time, one month apart. Since this was a student population, items 21 to 24 about positive humor climate at work were not included.

Humor Styles Questionnaire. This 32-item scale has been developed by Martin et al. (2003) and has good psychometric properties. It consists of 32 items, divided into four scales measuring positive and negative humor styles aimed at others or the self. The four styles are the self-enhancing humor style (e.g. If I am feeling depressed, I can usually cheer myself up with humor, α in this study: .79), the self-defeating humor style (e.g. 'I let people laugh at me or make fun at my expense more than I should', $\alpha=.77$) and two socially oriented styles, the affiliative humor style (e.g. 'I laugh and joke a lot with my closest friends' $\alpha=.81$) and the aggressive humor scale (e.g. 'If someone makes a mistake, I will often tease them about it', $\alpha=.70$). This instrument has been used in study 1b only.

Analyses

In the factor analytic study (1a), we expected to find nine factors: humor appreciation, humor reproduction (positive and negative), humor production (positive and negative), humorous coping (positive and negative), mirth and humorous climate at work. The method of choice here was principal axis factoring with oblique rotation, extracting nine factors. If this did not result in a fitting factor solution, solutions with fewer factors were explored. Internal consistency of the resulting factors was then assessed.

In the longitudinal study (1b), the factors extracted from the factor analytic study were used to establish internal consistency of the one-week version of the HCL, its test-retest reliability and its concurrent validity with regard to the four scales of the Humor Styles Questionnaire.

Results of study 1a: Factor analytic study

Nine a priori factors were put into the Humor Check List: humor appreciation, positive and negative humor production, positive and negative humorous coping, mirth, and humorous climate at work. It was expected that principal axis factoring with oblique rotation would also yield nine factors. However, the nine-factor solution resulted in six factors with an Eigenvalue higher than 1, the other three factors scoring below this cut-off point. It was therefore considered likely that a six-factor solution would fit the data better. The results of this analysis are presented in table 2, along with the item phrasing and the scales associated with the nine-factor solution.

Table 2. *Pattern matrix for the Humor Check List, including factor internal consistency (study 1a)*

Factor number	1	2	3	4	5	6	α
Eigenvalue	6.55	2.30	2.15	1.66	1.40	1.24	
% explained variance	27.3	9.6	8.9	6.9	5.8	5.1	
► F1: 'Mirth'							.79
[In life, I have been ...]							
17 ... smiling	.54						
18 ... giggling	.72						
19 ... laughing out loud	.78						
20 ... roaring with laughter	.69						
► F2: 'Negative humor production'							.82
[In life, I have been ...]							
9 ... making a funny remark about someone I met [positive humor production]		-.56					
10 ... sharing a witty remark I made up with someone [positive humor production]		-.40					
11 ... making a sarcastic or cynical remark about someone [negative humor production]		-.83					
12 ... ridiculing someone by making a witty remark [negative humor production]		-.78					
15 ... making a sarcastic remark to ease a tense situation for myself [negative humorous coping]		-.45				-.32	
16 ... making a sarcastic joke to put someone else on the spot [negative humorous coping]		-.53					
► F3: 'Positive humor climate at work'							.83
At my workplace ...							
21 ... there is laughter			-.78				
22 ... humor is appreciated			-.76				
23 ... humor is created			-.88				
24... humor is used to cope with stress			-.51				
► F4: 'Humor reproduction'							.72
[In life, I have been ...]							
5 ... telling someone a joke [positive humor reproduction]				.43			
6 ... sending someone a funny movie or picture [positive humor reproduction]				.81			
7 ... passing on a sarcastic or cynical joke [negative humor reproduction]		-.35		.43			
8 ... sending someone a video or picture in which someone has been fooled [negative humor reproduction]				.62			
► F5: 'Humor appreciation'							.73
[In life, I have been ...]							
1 ... enjoying comic movies or television series					.70		
2 ... having fun reading comic books					.70		
3 ... enjoying a joke someone told me					.51		
4 ... having fun about a witty remark by someone else					.46		
► F6: 'Positive humorous coping'							.83
[In life, I have been ...]							
13 ... saying something funny to ease a tense situation for myself						-.81	
14 ... making a witty remark to change my perspective on a tense situation						-.82	

NOTES: original scales in between brackets; only factor loadings above .30 are shown

The six-factor solution (explaining 63.8 % of the variance) showed a clear pattern, which is partly consistent with the factors that were originally expected. Humor appreciation, positive humorous coping at work, mirth and humorous climate at work are reliable and powerful factors consistent with the factors that we expected. Not according to the intended structure were factors 2 and 6. The humor production factor includes positive as well as negative humor production items as well as the negative humorous coping items and was labeled Negative humor production, because negative humorous coping is also a form of humor production, although in stressful circumstances. Humor reproduction formed one factor instead of two (combining negative and positive humor reproduction). Overall, this six-factor solution seemed quite satisfactory, with adequate internal consistency and little item overlap for the factors. It was decided that no items needed to be removed in this six-scale version of the HCL.

Results of study 1b: Longitudinal study

In this study the one-week version of the HCL was used. Internal consistency of the six scales, their test-retest reliability over a period of one month and convergent validity with regard to humor styles were assessed. Table 3 shows the internal consistency and test-retest reliability parameters for five HCL scales at t1 and t2 (one month later).

Table 3. *Internal consistency and test-retest reliability of the one-week version of the Humor Check List (study 1b)*

	Internal consistency (α) at t1	Internal consistency (α) at t2	Test-retest reliability
Humor appreciation	.53	.55	.09 n.s.
Humor reproduction	.52	.51	.23 *
Negative humor production	.81	.81	-.10 n.s.
Positive humorous coping	.85	.82	.13 n.s.
Mirth	.84	.85	.19 n.s.

NOTES: *= $p \leq .05$; n.s.=non-significant

Remarkably, both humor appreciation and humor reproduction show low internal consistency, whereas negative humor production, positive humorous coping and mirth have adequate internal consistency at both times. Test-retest reliability is typically low, which is an indication that variation among these scales over time is considerable. An exception to this finding is the humor reproduction scale, which has a significant but low

test-retest reliability coefficient (however, internal consistency at t1 and t2 is too low to consider this a reliable outcome). Turning to validity, Table 4 presents the correlations of humor styles with the three subscales with adequate internal consistency (negative humor production, positive humorous coping and mirth).

Table 4. *Convergent validity of the Humor Check List (study 1b)*

	Negative humor production	Positive humorous coping	Mirth
Humor styles			
Self-enhancing	.33 **	.30 **	.27 *
Affiliative	-.15 n.s.	.12 n.s.	-.37 ***
Self-defeating	.18 n.s.	.35 ***	-.03 n.s.
Aggressive	-.01 n.s.	.00 n.s.	-.13 n.s.

NOTES: *=p≤.05, **=p≤.01, ***=p≤.001, n.s.=non-significant, one-tailed correlation

The self-enhancing humor style shows consistent positive associations with positive humorous coping and mirth, but also with negative humor production (where a negative correlation was expected). It is remarkable that the other positive humor style, affiliative humor style is negatively associated with mirth, but unrelated to the other two humorous behaviors. Negative humor styles seem unrelated to humorous behaviors, with the exception of a positive association between the (negative) self-defeating humor style and positive humorous coping, where a negative relationship was to be expected.

Discussion for study 1

The a priori nine-factor structure of the Humor Check List (HCL) received inadequate empirical support. Instead, a six-factor solution showed to be adequate. Therefore, the intended positive-negative distinction in humorous behaviors did not work out well, except for positive humorous coping. The one-week version of the HCL showed inadequate internal consistency for humor appreciation and humor reproduction and satisfactory internal consistency for negative humor production, positive humorous coping and mirth. Test-retest reliability of the humorous behaviors scales was generally low, which was to be expected. The self-enhancing humor styles showed sufficient validity with humorous behaviors. Affiliative and negative humor styles were, as a rule, unrelated to humorous behaviors.

Little evidence could be gathered for a positive-negative division in humorous behaviors in life. Neither humor reproduction nor humor production evidenced such a division. The exception is positive humorous coping. The relationships between self-enhancing humor and humorous behaviors is consistent with the view that self-enhancing humor is a healthy, positive personality style and one would expect that people using this style produce more humor and feel better (Martin et al., 2003). However, the lack of negative associations of this style with negative humor production indicates that our conception of positive and negative humor needs adjustment. The aggressive humor style was unrelated to humorous behaviors, which is consistent with earlier findings with regard to this humor style (Martin et al., 2003; Doosje et al., 2010). Since the affiliative humor style is a positive characteristic, one would expect positive relationships with humorous behaviors. People using their humor to please others should be quite low in negative humor production; otherwise they cannot help others with their humor. The finding that mirth is also negatively associated with affiliative humor seems to make more sense. It may very well be that the individual using affiliative humor is focused more on bringing about mirth in others than in oneself. In the overall discussion the phenomenon of positive and negative sense of humor constructs will be reviewed.

Internal consistency of the appreciation and reproduction scales in the one-week version of the HCL was typically low, compared to the version asking for these types of humor use in everyday life. Enjoying and sharing one source of humor in the previous week does not necessarily mean that one also enjoys and shares others. Therefore the time span of the HCL will be extended to two weeks in study 2, to see whether this results in an increase in internal consistency. Also, humor use seems to vary considerably over a one-month period, which is what we expected.

Study 2: Burnout, humorous traits and humorous states

The aim of this study is to establish relationships between burnout and its dimensions on the one hand, and humor styles, generic humorous coping and humor use on the other.

Method

Participants

All participants completed questionnaires using web survey technology (Netquestionnaires Nederland, 2007). No missing values were detected. Burnout participants were recruited using a burnout website (Otter, 2010). This resulted in 42 questionnaires. Also, 32 healthy participants were recruited using the personal network of the second author. Four of them were excluded from the research sample because they were on health insurance or because they were not completely able to fulfill their jobs, resulting in a sample of 28 control participants.

Table 5. *Participants in study 2*

	Burnout		Control		Overall	
	N	%	N	%	N	%
Gender						
Males	10	23.8	15	46.4	25	35.7
Females	32	76.2	13	53.6	45	64.3
Overall	42	100.0	28	100.0	70	100.0
Other	M	SD	M	SD	M	SD
Age	39.73	7.97	37.00	12.10	38.62	9.87
Emotional exhaustion	4.10	1.57	1.92	1.52	3.22	1.88
Depersonalization	3.27	1.56	1.62	1.60	2.61	1.76
Personal incompetence	2.87	1.10	1.53	0.90	2.33	1.21
Psychological complaints	2.06	0.53	0.97	0.41	1.63	0.72

Participant characteristics are shown in Table 5. Gender is unevenly divided over the burnout and the control group, $\chi^2(2) = 8.8$, $p = .012$, with an overrepresentation of females in the burnout group. Age was not significantly different between the groups. The burnout group had significantly higher emotional exhaustion, $t(68) = -5.734$, $p = .000$, depersonalization, $t(68) = -4.28$, $p = .000$ and personal incompetence, $t(64.8) = -5.53$, $p = .000$, than the control group. Finally, many burnout subjects were unable to work due to their burnout. Their passive periods varied between one and four hundred weeks. The latter score was due to one participant, who did not differ considerably for other key variables, but who did influence the average passive period. When this participant was

removed from the analysis, burnout subjects were out of work for an average number of 11.9 weeks (SD=21.2). Self-report of burnout has in this way been validated by additional data. Although combining the three burnout dimensions into one burnout index seems desirable, they should be considered as separate constructs (Schaufeli & Van Dierendonck, 2000). However, a classification procedure has been designed to assess the presence of the burnout syndrome. A 69 % correct classification with low Type 1 errors is present when subjects are above the 75th percentile on the emotional exhaustion scale. Also, they should be in the 75th percentile for depersonalization or in the 75th percentile on personal incompetence (Schaufeli & Van Dierendonck, 2000). Applying this classification procedure to our burnout population, a heavy burnout group (N=11) satisfied these criteria. The other 31 participants were included in a mild burnout group. Both of these groups kept differing significantly from the control group with regard to their burnout dimensions. It was therefore decided that they would be considered as one burnout group, including both mild and heavy burnout subjects.

Measures

Three sense of humor questionnaires have been used in the study: generic humorous coping, humor styles and humorous behaviors. Also, a burnout questionnaire was used.

Generic humorous coping was measured using the Coping Humor Scale (e.g. 'I have often found that my problems have been greatly reduced when I tried to find something funny in them') developed by Martin and Lefcourt (1983). Cronbach's alpha in this study was .75.

Humor styles were measured with a Dutch translation of the Humor Styles Questionnaire (Martin et al., 2003). Internal consistency coefficients for the four humor styles were as follows: self-enhancing humor (.78), self-defeating humor (.75), affiliative humor (.77), aggressive humor (.68). Internal consistency is satisfactory for most scales, although the aggressive humor style is below the .70 criterion usually applied.

Humor use in the past two weeks was measured with the Humor Check List (HCL). Five scales based on the factor analysis in study 1a were used: humor appreciation (Cronbach's alpha=.81 in this study) , humor reproduction (alpha=.80), negative humor production (alpha=.82), positive humorous coping (alpha=.83) and mirth (alpha=.90). Positive humor climate at work was excluded from this study, because many burnout subjects were currently not working.

Burnout was measured with the Utrecht Burnout Scale-A (UBOS-A), a Dutch version of this 12-item scale. It was developed by Schaufeli and Van Dierendonck (2000) for all kinds of professions. The psychometric properties of this scale are good (Schaufeli & Van Dierendonck, 2000). The scale has three subscales: exhaustion (e.g. I feel empty at the end of a working day', Cronbach's $\alpha=.91$ in this study), depersonalization (I have become more cynical about the effects of my work', $\alpha=.88$) and personal incompetence ('I think I do my work well', reverse-coded version, $\alpha=.83$). Instead of the commonly used personal competence scale the competence items were reverse-coded into a personal incompetence scale. We expected this operation to clarify the patterns that we might find in our data.

Results

First of all, the burnout and control group were compared with regard to their humor styles and humor use. The results of this comparison are given in table 6.

Table 6. *Comparison of the burnout and the control group on a sense of humor*

	Humor styles								Humor use											
	Self-enhancing*		Self-defeating, n.s.		Affiliative*		Aggressive, n.s.		Generic humorous coping*		Appreciation*		Reproduction, n.s.		Negative humor production, n.s.		Positive humorous coping, n.s.		Mirth*	
	M	SD	M	SD	M	SD	M	SD	M	SD	M	SD	M	SD	M	SD	M	SD	M	SD
Control (N=28)	4.5	0.8	2.9	0.7	5.0	1.0	3.0	0.8	3.4	0.8	2.5	0.8	1.5	0.7	1.9	0.7	1.9	0.7	2.9	1.1
Burnout (N=42)	3.5	0.9	3.2	1.0	4.4	1.0	3.1	0.9	3.0	0.6	1.9	0.7	1.2	0.4	1.6	0.5	2.0	0.8	1.9	0.6
Overall (N=70)	3.9	1.0	3.1	0.9	4.6	1.0	3.0	0.9	3.3	0.7	2.2	0.8	1.3	0.5	1.8	0.6	1.9	0.8	2.3	1.0

NOTES: *= $p \leq .05$, n.s.=non-significant

Overall values are slightly above or below the theoretical average for humor styles (which is 4 on a one to seven-point Likert scale). The control group shows higher use of positive humor styles than the burnout group. Self-enhancing humor is higher in controls than in burnt out subjects, $F(1, 69)=17.2$, $p=.000$, $\eta^2=.20$ and affiliative humor is also higher in controls, $F(1, 69)=5.9$, $p=.018$, $\eta^2=.10$. This is according to expectation. However, our expectations with regard to negative humor styles are not met: the burnout group does not score higher on negative humor styles than the control group. Generic humorous coping is somewhat higher in controls than in the burnout group, $F(1, 69)=7.7$, $p=.00$, $\eta^2=.10$. With regard to humorous behaviors, the active use of humor (humor reproduction, negative humor production and positive humorous coping) does not differ between the groups. The control group scores higher on humor appreciation than the burnout group, $F(1, 69)=9.7$, $p=.003$, $\eta^2=.12$ and also considerably higher on mirth, $F(1, 69)=21.4$, $p=.000$, $\eta^2=.24$.

Also, burnout dimensions have been correlated with the sense of humor variables for the whole sample ($N=70$). The results are given in Table 7. Positive humor styles are correlated with each other and negative humor styles as well, whereas there are no associations between these two types of humor styles, confirming their relative independence in this sample. Also, there is a correlation between positive humor styles and generic humorous coping, whereas correlations with negative humor styles are lacking. All humor use scales correlate positively with humor styles, with the exception of negative humor styles, which are unrelated to humor appreciation, humor production and mirth.

Emotional exhaustion is negatively related to positive humor styles (which is according to expectation). However, this burnout dimension is unrelated to negative humor styles. A similar pattern is found for personal incompetence. Depersonalization is negatively related to affiliative humor and positively related to negative humor styles, which is according to expectation. However, no negative association between depersonalization and self-enhancing humor was found. For humor use, humor appreciation and mirth are negatively related to all three burnout dimensions, whereas the other three humor use scales are unrelated to them.

Table 7. Zero-order correlations between trait humor, humor use and burnout dimensions, overall

	Humor styles				Gen. HC	Humor use				Burnout dimensions			
	1	2	3	4	5	6	7	8	9	10	11	12	13
Humor styles (1-4)													
Self-enhancing (1)	-												
Self-defeating (2)	.09 n.s.	-											
Affiliative (3)	.57 ***	.02 n.s.	-										
Aggressive (4)	.17 n.s.	.32 **	.15 n.s.	-									
Generic humorous coping (5)	.69 ***	.14 n.s.	.65 ***	.14 n.s.	-								
Humor use (6-10)													
Humor appreciation (6)	.40 ***	-.08 n.s.	.50 ***	.06 n.s.	.34 **	-							
Humor reproduction (7)	.25 *	.11 n.s.	.39 ***	.13 n.s.	.31 **	.44 ***	-						
Negative humor production (8)	.38 ***	.24 *	.38 ***	.50 ***	.37 ***	.45 ***	.59 ***	-					
Positive humorous coping (9)	.25 *	.28 *	.33 **	.25 *	.30 **	.28 *	.44 ***	.58 ***	-				
Mirth (10)	.48 ***	-.00 n.s.	.60 ***	.13 n.s.	.50 ***	.67 ***	.50 ***	.51 ***	.29 **	-			
Burnout dimensions(11-13)													
Emotional exhaustion (11) ¹	-.25 *	.17 n.s.	-.25 *	.12 n.s.	-.23 *	-.29 *	-.15 n.s.	-.15 n.s.	.05 n.s.	-.40 ***	-		
Depersonalization (12) ¹	-.17 n.s.	.22 *	-.23 *	.28 **	-.18 n.s.	-.36 ***	-.09 n.s.	-.03 n.s.	.12 n.s.	-.36 ***	.73 ***	-	
Personal incompetence (13)	-.33 **	.15 n.s.	-.28 *	.17 n.s.	-.18 n.s.	-.28 *	-.20 n.s.	-.10 n.s.	.04 n.s.	-.29 **	.51 ***	.65 ***	-

NOTES: *= $p \leq .05$, **= $p \leq .01$, ***= $p \leq .001$, n.s.=non-significant; ¹ Correlations for these burnout dimensions with humor styles were one-tailed

General discussion

The first purpose of this study was to develop and validate a measure for humorous behaviors which would vary with time and psychological state. The second purpose was to relate burnout and its dimensions to humorous traits (humor styles and generic humorous coping) and humor use in the last two weeks. The Humor Check List was shown to measure six types of humor use: humor appreciation, humor reproduction, negative humor production, positive humorous coping, mirth, and positive humor climate at work. The intended positive-negative dimension in some humor use subscales was not completely reflected by the empirical data, except for positive humorous coping. Compared to the control group, the burnout group showed a limited use of generic humorous coping, affiliative and self-enhancing humor. Contrary to expectation, there were no differences with regard to negative humor styles. Passive humorous behaviors like humor appreciation and mirth were lower in burnout subjects than in control subjects, whereas the groups did not differ with regard to their active use of humor. Emotional exhaustion and personal incompetence were negatively associated with positive humor styles, humor appreciation and mirth. Emotional exhaustion was also negatively related to generic humorous coping. Depersonalization was the only burnout dimension that was positively associated with negative humor styles. Also, a negative association with the other social humor style, affiliative humor was observed. Like emotional exhaustion and personal incompetence, depersonalization was negatively associated to humor appreciation and mirth.

The a priori model of nine factors in the Humor Check List (HCL) was not completely supported by the empirical evidence. Especially the distinction between positive and negative humor use could not be found in the data. The only exception is the positive humorous coping factor, which stood out as a two-item positive humorous behaviors factor, and possibly the negative humor production factor. This phenomenon is also visible when looking at the associations of the negative humor production scale with the other HCL scales, which are positive, not negative. Also, positive humor styles correlate and negative ones do, too, but they are unrelated to each other, where negative associations are to be expected. This is partly in line with findings reported in the original HSQ study by Martin et al. (2003), reporting correlations between self-defeating and aggressive humor, but no correlations with positive humor styles. They also found that the aggressive humor style did correlate positively - not negatively - with the positive

humor styles (Martin et al., 2003), a result which was also obtained by Tmkaya (2007) and Doosje et al. (2010). It would therefore be interesting to study the distinction between positive and negative sense of humor more closely, to explore these differences and their base in reality. A parallel may be drawn by the observations that positive and negative affect seem to be separate dimensions instead of variations on one dimension (see Tellegen, Watson, & Clark, 1999, for an overview of the discussion). Overall, we have developed a valid and reliable humor use questionnaire that may capture psychological processes operating in work stress dynamics. The Humor Check List may in the future be applied to other psychological states and environmental conditions than burnout, to see whether humorous behaviors are sensitive to them. Maybe it is possible to use the HCL as a first indication for burnout processes going out of control. Longitudinal diary studies incorporating humorous behaviors may be an option to investigate this research avenue.

Having discussed these measurement issues, burnout and its dimensions show a consistent relationship to humorous traits and states. Generic humorous coping was higher for control subjects than for burnout subjects, and it was negatively associated to emotional exhaustion, which confirms the outcomes of the study by Tmkaya (2007), but see Talbot (2000), Talbot & Lumden (2000) and Dorz et al., (2003). Generic humorous coping was unrelated to depersonalization in our study, confirming findings reported by Talbot (2000), but disconfirming findings reported by Talbot and Lumden (2000), Dorz et al. (2003) and Tmkaya (2007). Generic humorous coping being unrelated to personal incompetence in our study is a confirmation for the findings reported by Dorz et al. (2003), but fails to confirm the findings reported by Talbot (2000), Talbot and Lumden (2000) and Tmkaya (2007). Although we cannot explain the mixed findings in previous studies completely, one of the reasons for these mixed findings may lie in the fact that they studied working populations with low levels of burnout, especially depersonalization. In our study, subjects showed more variation in burnout dimensions.

Positive humor styles were used less by burnout subjects than by healthy controls, whereas negative humor styles were equally used in the two groups. As in the previous study by Tmkaya (2007), our study also found negative associations between self-enhancing humor on the one hand and emotional exhaustion and personal incompetence on the other. However, positive associations of negative humor styles with emotional exhaustion as reported by Tmkaya (2007) could not be confirmed by our

study, although we found a comparable association of self-defeating and aggressive humor with depersonalization. The puzzling finding by Tumkaya (2007) that personal incompetence was positively associated with positive humor styles and negatively associated with negative humor styles was not replicated in our study. Instead, positive humor styles were negatively related to personal incompetence, whereas negative humor styles were unrelated to personal incompetence. With regard to humorous behaviors, participants with burnout used passive forms of humor less than controls, but were equal in their employment of active forms. This associative pattern is also reflected in the negative associations of passive forms of humor and separate burnout dimensions. This finding may be explained by the work-related character of the burnout syndrome, which leaves other domains of functioning intact. But why would this affect only passive, not active dimensions of humorous behaviors? Possibly this is due to the internal processes active in burnout. Emotional exhaustion has been associated with large increases in fatigue and small decreases in activity (Schaufeli & Van Dierendonck, 2000). This process may explain low mirth, low humor appreciation and average active humor use in the burnout group. This finding is also consistent with the lack of association between burnout dimensions and mirth in the burnout group. Possibly mirth is so low in this group, that there is a floor effect of mirth, which is therefore also unrelated to the burnout dimensions in the burnout group. It is more difficult to assess the meaning of the lack of associations between depersonalization and self-defeating and affiliative humor in the burnout group. Explanation of these findings by a ceiling effect for depersonalization is less likely here, because values for this dimension are around the mean. Also, no differential correlations for the other two humor styles were found. This riddle may be resolved when the method of diary studies is employed, enabling close inspection of the burnout process and the supposed phases in it (see descriptions of these phases in Schaufeli & Van Dierendock, 2000), and also of the dynamics in humor styles and humorous behaviors associated with it.

Whether people low in positive humor styles are at risk for a burnout is difficult to say. It is possible that the burnout participants in this study had lowered self-enhancing and affiliative humor styles as a result of their burnout, not as a cause. These humor styles are considered stable sense of humor traits, but their items are also based on behaviors and cognitions that may change over time, state and circumstance. However, previous studies with subjects lower in burnout also found differences in positive humor styles, indicating that these styles are under pressure due to increases in

emotional exhaustion, depersonalization and feelings of personal incompetence present in burnout. One thing we should also not forget is that the social situation of people suffering from a burnout differs radically from people who are still working, lacking colleagues to enjoy humor with. This is consistent with the finding that humor appreciation and mirth are lower in burnout subjects.

Sample size in study 2 was limited. Only 42 burnout subjects and 28 healthy participants from the personal network of the second author joined in. Did this cause a bias in the results? For several reasons we think this was not the case. First of all, checks of normality showed normal distributions for both groups. Second, sound associations reported in previous studies (for example the differences in positive humor styles for burnout vs. control groups) were similar for our sample, indicating that the sample is comparable to others.

Practical implications of this study are that the sense of humor of burnout subjects seems drained, but not poisoned. This means that when it is possible to get people back into their professional setting, they will probably find the sense of humor resources they may be lacking. This suggests that it is a good thing that people with a burnout are best put back to work as quickly as possible, a trend that has been set in The Netherlands by legislative measures. What we have also seen is that active sources of humor remain intact in burnout subjects, implying that they should not be treated as pathetic individuals: they still possess humor resources.

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Chapter 6

General discussion

In this section we will elaborate further on several issues that were already touched upon in the discussion sections of the previous chapters. Measurement issues and health-relatedness of a sense of humor will be placed in a theoretical context. Finally, study limitations, its implications and future research options will be put forward.

Measurement of a sense of humor

In chapters 2, 3 and 5 two types of sense of humor questionnaires were investigated: the Questionnaire of Occupational Humorous Coping and the Humor Check List, both with their own aims. Their development and validation was guided by the view that they could be related to health.

The Questionnaire of Occupational Humorous Coping (QOHC).

This questionnaire aims to measure four kinds of occupational humorous coping styles: antecedent-focused, response-focused, aggressive/manipulative and affiliative. These scales have been derived from two theoretical points of view: stress-coping theory (Lazarus & Folkman, 1984) and emotion regulation theory (Gross, 2002). Stress-coping theory states that certain situations are demanding and require a coping response which is usually aimed at adaptation to the external demand and at a reduction or avoidance of negative affective consequences for oneself or others. Overall, humorous coping measurement was according to stress-coping theory and the four theoretical constructs put into the questionnaire showed construct validity. However, with regard to Gross' emotion regulation theory, antecedent-focused and response-focused humorous coping were not recognized well by independent raters (see chapter 3). One explanation for this may be that the raters may have been inexperienced in evaluating these two types of humorous emotion regulation. However, it is also possible that these two types of emotion regulation have not been distinguished well in the item construction process for the antecedent-focused and response-focused humorous coping scales. Possibly, like the raters, participants in our studies may have had a lack of understanding of the phenomena the items were indicating. The question remains whether the external demands, humorous coping responses and the aims of the response were ecologically valid. How did participants in our study think about and respond to an item like 'A humorous perspective on things helps me to deal with pressure due to demands at work'? What do they have in mind when it comes to the external demand pressure, how

do they understand the concept of humorous perspective, do they reflect about aims of their humorous coping responses anyway, do they have any aims with their coping behaviors? Descriptions of external demands and humor may have been too broad. The type of items exemplified here refers to cognitive processes which may be difficult to assess retrospectively. In conclusion, many things can go wrong between the final item wording made up by the researcher and the eventual meaning of the item as it is formed in the participants' mind.

Are the QOHC items too refined? External demands in the QOHC have in common that they are all work-related and - within this domain - formulated in a general way to avoid any professional specificity. This was done to enable broad application of this questionnaire and to avoid the phenomenon that situations would be too specific to be recognized by participants. However, this may have compromised ecological validity of these demands, blurring the possibility of items to distinguish between external demands. Humorous responses were unspecified by the authors of the questionnaire. Instead, participants were asked to imagine the type and nature of their humorous behaviors and thoughts. What we do not know is how participants pictured their own humorous cognitions and behaviors, and whether they were able to form an impression of them. Self-consciousness of one's own humorous behaviors and cognitions is a necessary condition to form these impressions, a condition which may or may not be met and which may vary with educational level.

The QOHC combines cognitive and behavioral manifestations of humorous coping. Especially in antecedent-focused humorous coping these manifestations are cognitive and it may be particularly difficult to remember one's humorous cognitions retrospectively. This problem is not exclusive for the QOHC, it also applies to some scales of the Humor Styles Questionnaire by Martin, Puhlik-Doris, Larsen, Gray, & Weir (2003). Especially the self-enhancing humor style (which may be considered a coping style) contains many items with a cognitive character, requiring adequate levels of introspection and self-consciousness. Although the measurement of cognitive reappraisal in humorous coping questionnaires (or antecedent-focused humorous coping) seems necessary to compare their health effects with response-focused humorous coping styles, it comes with certain difficulties. This takes us to another questionnaire we developed, which is intended to measure behaviors rather than cognitions, the Humor Check List.

The Humor Check List (HCL)

This questionnaire aims to measure state-like forms of a sense of humor, which might fluctuate over time and with psychological or health status. The items in the HCL showed good construct validity of the factors and adequate reliability, which may partly be due to its behaviorally oriented character. There was, however, a phenomenon which we also see in other sense of humor instruments: the distinction between positive and negative humor use did not come out as expected in the case of the HCL. In the QOHC (chapter 2) this phenomenon was also found. Negative humorous coping styles (aggressive/manipulative and response-focused humorous coping) were positively associated with positive humorous coping styles, but not negatively, as one would expect when these styles are orthogonally related. A similar phenomenon was demonstrated for humor styles in chapter 2, where small positive associations were found between positive and negative humorous coping styles, not negative ones, a finding which was also reported in the original study by Martin et al. (2003). This means that negative humor is not really negative, but different from positive humor. The explanation for this is not easy to give. One explanation is that positive and negative humor concepts have not been measured well. However, this explanation seems unlikely because of the consistency of these findings. Another, more likely explanation is that participants apparently do not seem to follow the theoretically proposed positive-negative distinction. Humor to them seems not specifically positive or negative, even in its function in everyday life. This may have something to do with the very nature of humor, which is expressed beautifully in the following quote, ascribed to Mark Twain: 'Humor is tragedy plus time'. Also, there usually is a victim in humor: Belgians in Belgians jokes, blondes in blondes jokes, oneself in self-defeating humor. Since misery seems an essential element of humor sources, an important question may be raised: what is positive and what is negative humor, and what do they really look like?

Health-relatedness of a sense of humor

The second main theme of this dissertation revolves around the relationship between a sense of humor on the one hand and upper respiratory tract infection (URTI) and burnout on the other. We found some marked differences between antecedent-focused and response-focused humorous coping with regard to the frequency of URTI and affective parameters, which is in line with predictions derived from John and Gross

(2004) and Austenfeld and Stanton (2004) for non-humorous antecedent-focused and response-focused humorous coping. However, the relationships we found were very weak, indicating that humorous coping is a relatively minor component of job resources. Job control is more important, with stronger relationships with URTI frequency and job-related affect. One reason for these findings may be that humorous coping measurement was not as successful as expected. Other reasons may also have contributed. When humorous coping is high, the level of demands accompanying it is also high. Suppose someone fills out 'very often' when confronted with the item 'When technical problems interfere with my work, I concentrate on the funniness of the situation' (item 1 of the QOHC). This does not only mean that this participant uses this coping behavior a lot, but also encounters technical problems a lot: coping responses and demands go hand in hand. The response of this participant does not tell us whether these repeated humorous coping behaviors were effective, only that they were used repeatedly when someone was confronted with this type of demands. Another finding which is remarkable is that most humorous coping styles do not seem to offer the supposed affective double-sword function, decreasing negative and increasing positive affect. The models showed that overall and generic humorous coping were not associated with negative affect, only with positive affect, which in itself was unrelated to URTI frequency. Only antecedent-focused humorous coping showed associations with both job-related affect measures, in the expected directions.

The phenomenon that subjects with burnout show decreases in positive humor styles but no increases in negative ones suggests that their humor resources are depleted, but this does not translate into more self-destructive or aggressive forms of humor. Combined with decreases in humor appreciation and mirth but unchanged active humor use, some resilience seems still available, which may come from other life domains than work (sports, family, or friends). We currently do not know how the burnout syndrome develops, how this affects social dynamics and how these processes affect a sense of humor.

Study limitations

Some characteristics of our studies set limitations on the ability to draw conclusions from our analyses: their cross-sectionality (1), a methodological bias with a focus on survey methods (2), sometimes biased samples (3) and problematic measurement issues (4). These limiting characteristics will now be described. Although cross-sectional research is

a necessary first step in the further development of the humor and occupational health field, causal inferences cannot be made from our studies, which is (or should be) an ideal of every occupational health psychologist. With the measures we developed in this dissertation it is possible that we can take the step towards experimental and longitudinal studies. This remains a difficult issue, because if there is one thing we should be worried about, it is the functional diversity of a sense of humor. Humor is used to deny, to assert, to mate and date (e.g. Li, Griskevicius, Durante, Jonason, Pasisz, & Aumer, 2009), to criticize, to make contact, to hit and to defend. It has its functions in society (Kuipers, 2006), in companies (e.g. Plester & Orams, 2008) and in individuals (this dissertation). A second type of limitation of our study is its bias towards survey research. Survey research is a handy way to collect a lot of information using large samples, especially when web survey technology is used. However, the question remains how this has biased our results. As has been asserted before, we do not know enough about how participants understand our items and questions. How much control should researchers exert in asking their questions, how much is left to the imagination of the respondent? In this process a lot of meaning may be lost, diffusing the conclusions that we might have drawn if we had used different methods. The amount of control in experimental methods is, of course, higher for the researcher and enables the test of specific hypotheses. However, when we are looking for a complicated trait like humorous coping, which is an actively chosen behavior under possibly stressful circumstances, the richness of these responses with creative, intelligent and affective sides to it may easily get lost in an experimental setting. It may even be sensible to consider more descriptive studies, trying to describe humorous coping behaviors in a thorough way, to find out about their functions in everyday life, for example by the use of detailed diary studies (e.g. Åstedt-Kurki & Isola, 2001). A third limitation lies in sample biases. The studies about the development of the QOHC and its relationships with the frequency of upper respiratory tract infection (chapters 2 and 4) had large sample sizes, which in itself is advantageous. However, what we saw here was that we found small correlations which also had low p-levels. This implied that correlations below .10 had to be regarded as irrelevant (Cohen, 1977) because of their limited effect size. Another bias in these studies was an overrepresentation of highly educated participants, limiting their ecological validity. The fourth limitation of our empirical studies, the issue of problematic sense of humor measurement, has been addressed quite thoroughly in the previous paragraphs. If we have learned something from this dissertation, it is probably that one should formulate

specific measurement aims for one's instruments. Because of the large number of functions humor may have, measurement orientation in this field may have been too broad, without careful thought about item construction, which is so elegantly described in facet analysis (Guttman, 1954 and Landsheer & Boeije, 2010).

Implications and future research

This dissertation tried to resolve some measurement issues around health-related sense of humor. Also, the actual health-relatedness of a sense of humor has been tested and some interesting associations between a sense of humor and certain dimensions of health have been found. What the scientific and practical implications of these findings are, and how they should be translated into future research, is the subject of this paragraph. Reflections on sense of humor measurement and theoretical issues with regard to health will now be presented.

Measurement issues

Regarding sense of humor measurement, the method of facet analysis has proven a fruitful approach, because it has shown to be a theoretically informed and systematic way to develop and evaluate current sense of humor instruments. The theoretical orientation required for the compilation of a mapping sentence forces the questionnaire maker to think about the aims of the measure and about the processes that are involved in sense of humor measurement. Application of this method in future questionnaire development and evaluation will probably significantly improve the state of the art of psychological assessment of a sense of humor (and other instruments, too, as was shown by Landsheer & Boeije, 2010). Although we have now created a sensible humorous coping instrument, the Questionnaire of Occupational Humorous Coping (QOHC), there is still some doubt whether it does measure antecedent-focused and response-focused humorous coping in its intended forms. It would therefore be useful when we scrutinized the instrument carefully and develop a 3.0 version, as well as a short-form version. Chapter 5 of this dissertation offers an example of the development of a short-form questionnaire, the Humor Check List (HCL). We expect that the future of sense of humor measurement lies in conceptually clear, short and powerful measures. This makes questionnaire measurement much more effective (to compare, for the studies in chapters 2 and 4, over one hundred questions were asked). An additional advantage is that these instruments will then already be tailored for use in diary research (a line of research which will be

explored later on). The behavioral orientation used in the Humor Check List seemed fruitful: although the factor structure did not match completely with a priori conceptualization, it was crystal clear with regard to the final six factors. This behavioral measurement approach may prove useful for existing and new sense of humor questionnaires. However, a sense of humor is essentially cognitive, at least with regard to the processes preceding humorous behaviors. Although questionnaire measurement is probably indispensable in the future, other approaches may render additional information about these cognitive processes.

An interesting approach has been developed in the field of fMRI measurement. Following up on his conceptual work with antecedent-focused and response-focused emotion regulation (Gross, 2002), the search has continued to link these processes to observable changes in certain brain areas. In one of these studies reappraisal and suppression of negative emotion were compared in an experimental design with four films in which several types of emotion regulation were manipulated. The reappraisal condition was characterized by early prefrontal cortex responses, decreased experience of negative emotion and decreased amygdala and insula responses. In the suppression condition, prefrontal cortex responses were late, negative emotion behavior and experience was decreased, but there was an increase in amygdala and insular responses (Goldin, McRae, Ramel, & Gross, 2008). Although humorous appraisal and suppression was not involved in this study, it is thinkable that this measurement paradigm may be applied to humorous emotion regulation as well, although this type of experiment shows little correspondence with the active, creative, social processes involved in occupational humorous coping. Nevertheless, this kind of research may provide valuable insights into the brain areas involved in humorous emotion regulation.

Another conclusion in our discussion was that we did not know exactly how respondents interpreted the demands, humorous coping responses and coping aims presented in the QOHC. This problem may also be tackled by using an experimental paradigm. Demanding situations of several kinds may be presented to participants in such an experiment, registering their (humorous) coping responses. Also, when demands are varied, we could learn more about the types of demands that initiate humorous responses, and the types of demands that do not. Taken a bit further, we could learn more about the place of humorous responses in the pecking order of coping responses. When confronted with certain demands, the subject makes a choice from a series of coping responses available to him or her (for a detailed description of this process, see

Gross, 2001). Since we currently do not know how demands and coping responses interact, and how people make a choice from the available coping options, it would be interesting to explore this phenomenon thoroughly. Quite another way to explore humorous coping responses in more detail is not in the manipulation of demands and coping responses, but in a detailed registration of everyday life, with its dynamics of demanding situations, (humorous) coping responses and effects of these responses. Diary studies may provide a more intimate knowledge of the interaction of antecedents, individual responses and outcomes of this process. This will also learn us about the frequency of humorous coping responses compared to other types of coping.

Health issues

Resolving the measurement issues presented above will be a necessary condition to improve the theories that we have about the role of humor in the stress and health process. At the same time, we need to rethink humor in a more fundamental, theoretical way. Although speculative, a beginning has been made to look at the evolutionary underpinnings of humor and laughter (Gervais & Wilson, 2005). Their theoretical account, although well-informed, focuses more on laughter than on a sense of humor. However, a basic idea underlying their thinking is that a sense of humor may have been developed in the distant past in a typically social context. In their opinion, laughter is a sign that there is a safe social situation. But what about a sense of humor and its possible health effects? Has evolution invented a sense of humor as a way to make one self and others healthier? Or does a sense of humor function as an engine for amusement only? It is understandable that certain stress responses have priority. Fight and flight (sometimes even fright) responses serve important survival purposes. But what is the role of 'fun' in this? A sense of humor may not be as important as fight and flight, but what is its place in the stress response pecking order? The experimental and diary studies proposed above may increase our insight into the role of humor in these stress processes. To be able to say more about health effects of a sense of humor, the outcomes of these processes should be monitored closely, including physiological (e.g. Newman & Stone, 1996) and immunological parameters.

The focus in this dissertation on self-report of upper respiratory tract infections (URTI) has begged the question whether this is the right way to assess the frequency of common cold and influenza. Also, this approach does not render much information on the immunological dynamics underlying URTI incidence. A promising immunological

parameter in this respect may be immunoglobulin-A (Ig-A), an agent involved in mucosal defense against this type of infections. It seems stress-related (Bosch, 2000) and possibly health-related and may therefore be a sound outcome measure to use in future research. The presence of Ig-A in human saliva is relatively easy to demonstrate and saliva samples are easy to obtain. Diary studies including these immunological assessments (e.g. Stone, Marco, Cruise, Cox, & Neale, 1996), stretching over longer periods of time and including situational, affective and sense of humor parameters, may lead to interesting insights in the adaptation of human beings to situational demands, the role of a sense of humor in it and the eventual outcomes with regard to their health, including the risks to catch a common cold or influenza.

Passive forms of humor use have been shown to be influenced by conditions of burnout. It would be interesting to see whether other forms of compromised health status have a comparable effect on humor use. Future studies could look at people confronted with diabetes, compromised heart functioning or other diseases and conditions. However, this should not be done to just satisfy our curiosity. Instead, a close look at stress and traumatic processes around these conditions is necessary to assess the effects they have on humor use. The Humor Check List could thus be developed further as a diagnostic indicator of health-related stress and its consequences. One of the explanations offered to explain the associations we found between a sense of humor and burnout, was the social environment of burnout subjects, which could differ from the environment healthy subjects live in. In this dissertation, we have not looked closely at social processes involved in the relationship between a sense of humor and health. Because of the important role these social processes play in well-being and health but also because the social context may prove an important condition to enable the use of humor, it could prove useful to incorporate social processes in future humor and health research.

Although we have asserted that humorous coping and some other forms of humor use are an active adaptation response, little has been said about the creative component of humorous coping responses. An example involving occupational misery may clarify this. Suppose an employee's computer breaks down. She is now temporarily out of work and she relates this incident to her colleague, calling her computer 'sick'. Most people would understand that this simple joke is not true. Computers cannot be sick. They would probably understand that this is a self-created metaphor as well as an attempt to capture - in a humorous form - the misery she is experiencing. That humor is

creative has been described beautifully by Koestler (1976). Since creativity may also have health-promoting properties (Schmid, 2005), it seems appropriate that the creative component of humor may be responsible for possible health effects. Future studies could take this creativity perspective into account.

Coming to a close about the future of humor and health research, we must acknowledge that a sense of humor does not seem to work wonders, but that it still is a wonderful thing which may very well be a necessary quality of human life.

Conclusion

This dissertation has left us with two health-related sense of humor measures: one measuring occupational humorous coping (QOHC) and one measuring humor use in life and at work (HCL). Both of these questionnaires have proven reliable and valid measures, although improvements could be made. Also, facet analysis proved a useful method of systematic and theoretically informed questionnaire construction. The humorous coping measure showed some weak associations with the frequency of upper respiratory tract infection (URTI). These associations differed for antecedent-focused humorous coping, which was more strongly associated with URTI frequency than response-focused humorous coping, because of its relationship with negative affect. Burnout subjects showed decreases in positive humor styles and passive humor use, compared to a healthy control group, whereas the groups did not differ with regard to their negative humor styles and active humor use. It is concluded that future research should focus more on experimental and diary studies, using fMRI and immunological methods in subjects differing in their health status. Stress should remain an important variable in these studies.

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Chapter 7

Summary

Two main themes have been the focus of this dissertation: health-related sense of humor measurement and possible associations between a sense of humor and health. The first theme has been worked out by developing and validating two sense of humor questionnaires with possible health associations: the Questionnaire of Occupational Humorous Coping (QOHC) and the Humor Check List (HCL).

Measurement of a sense of humor

Chapter 2 addresses the development and validation of the QOHC. This questionnaire is aimed at the measurement of four styles of humorous coping: antecedent-focused, response-focused, affiliative and aggressive/manipulative. Antecedent-focused humorous coping is aimed at the preventive use of humor to decrease negative affect and to increase positive affect, whereas response-focused humorous coping is aimed at the reduction of negative affect already present. Humor is used here to avoid or suppress this negative affective state and – hopefully – to replace it by positive affect. The difference between these humorous coping styles lies in the phase of the stress process they are used (proactive versus retroactive, respectively), and also in their possible health effects. It is expected that antecedent-focused humorous coping will be more favorable to health than response-focused humorous coping. Together with two additional more socially oriented styles (affiliative versus aggressive-manipulative humorous coping), the QOHC proved a reliable questionnaire with good construct, convergent and divergent validity. However, analyses also showed that the difference between positive and negative forms of humorous coping was not as clear-cut as we expected. Also unexpected were the overall weak associations with affective states.

Chapter 3 describes the next step in the investigation of the QOHC and contains a comparison between the QOHC and six other currently available humorous coping questionnaires. All humorous coping questionnaires were compared with regard to their fit with a stress-coping model. This model led to the construction of a so-called mapping sentence, using facet analysis techniques. Three facets formed the components of the mapping sentence: external demands, humorous coping responses and coping aims, the mapping sentence forming the basic structure of humorous coping items. Because of their supposed health-relatedness, antecedent-focused and response-focused humorous coping aims received special attention in this study. Using a qualitative rating procedure, five raters judged 81 humorous coping items from seven humorous coping

questionnaires, using the mapping sentence as a template. The results showed that in some humorous coping questionnaires external demands and humorous responses were underrepresented, whereas the coping aims facet was covered by only a few of them. This made it difficult to draw conclusions with regard to the fit of antecedent-focused and response-focused humorous coping aims in the items involved. Even in the case of the QOHC - which already underwent a systematic item construction process - raters had considerable difficulty to distinguish between these two humorous coping aims. Overall, the Waterloo Uses of Humor Inventory (Thomas, 2000) showed the best fit to the stress-coping mapping sentence.

The first part of *Chapter 5* addresses another measurement issue regarding health-related sense of humor measurement. Since no measure of state humor use was available, a measure called the Humor Check List (HCL) was developed and validated. The 24-item HCL departs from the assumption that psychological and health status may influence the use of several humorous behaviors, people with compromised health possibly showing decreases in certain types of humorous behaviors. Measurement of nine types of humorous behaviors was the aim of the new instrument: positive and negative scales for humor production, humor reproduction and humorous coping, and a humor appreciation, mirth and positive humor climate at work scale. However, assessing humor use in real life, results showed that a six-factor solution fitted the data best. Humor appreciation, positive humorous coping, mirth and positive humor climate at work came out as expected. However, a new negative humor production factor (including positive humor production and negative humor production and humorous coping items) emerged. Also, an overall humor reproduction factor was found, without the distinction between positive and negative humor reproduction items. Subsequent validation of the one-week version of the HCL (study 1) in an undergraduate sample revealed that two of the new scales, humor appreciation and humor reproduction, had low internal consistency. However, internal consistency for the two-week version of the HCL was adequate in an additional study. Adequate convergent validity with humor styles and low test-retest reliability of the HCL scales was also found.

Health-relatedness of a sense of humor

The second main theme of this dissertation is the relationship between occupational humorous coping styles (measured by the QOHC), humorous behaviors (measured by

the HCL) and certain dimensions of health. Two dimensions have been studied: upper respiratory tract infection and burnout.

Chapter 4 explores whether the frequency of upper respiratory tract infections (URTI) like the common cold and influenza could be predicted by job demands, job resources (like job control and humorous coping styles) as well as by job-related affect. An occupational health model was tested, including these variables. Generic as well as antecedent-focused and response-focused humorous coping styles were compared with regard to their relationships with the other predictive and outcome variables. It was expected that humorous coping styles would buffer the job demand-job-related affect relationship. Also, we expected that affective variables would buffer the humorous coping-URTI frequency relationship. Finally it was expected that, along these pathways, antecedent-focused humorous coping would be associated with lower URTI frequency than generic and response-focused humorous coping styles. The outcomes were that generic and overall humorous coping were positively related to positive job-related affect, which was itself unrelated to URTI frequency. Response-focused humorous coping was positively related to negative job-related affect, which was positively associated with URTI frequency and job demands. Also, a direct positive relationship was found between response-focused humorous coping and URTI frequency. The model including antecedent-focused humorous coping showed that this style was positively associated with positive job-related affect, negatively related to negative job-related affect and unrelated to job demands. Although humorous coping styles showed low correlations with almost all other variables, antecedent-focused and response-focused humorous coping do seem to differ in their associations with URTI frequency, along different pathways. However, job control and negative affect were more powerful predictors of URTI frequency than humorous coping styles.

In the second part of *chapter 5*, the burnout syndrome is related to trait and state sense of humor. The burnout syndrome is a combination of emotional exhaustion, depersonalization and personal incompetence. Previous research showed mixed findings with regard to its relationship with trait-like sense of humor characteristics such as generic humorous coping and humor styles. One of the reasons for these mixed findings may be that these studies used relatively healthy samples with a moderate level of burnout. In our study, subjects with higher levels of burnout were included. We also addressed a new question: would burnout and healthy controls differ with regard to their humor use, as assessed with the Humor Check List (HCL) described above? A burnout

group and a healthy control group were compared with regard to humorous traits (generic humorous coping and humor styles) and also with regard to their humorous behaviors during the past two weeks. Burnout dimensions were also included in the analyses. It was found that the burnout group had lower generic humorous coping and lower positive humor styles than the control group, but the groups did not differ with respect to negative humor styles. It was also remarkable that the burnout group reported lower mirth, humor appreciation and humor reproduction than the control group, but the groups showed no differences with regard to more active humor use like negative humor production and positive humorous coping. With regard to the burnout dimensions, both emotional exhaustion and personal incompetence were negatively related to positive humor styles and unrelated to negative humor styles, whereas depersonalization was negatively related to affiliative humor and positively related to the negative humor styles. All burnout dimensions were negatively related to two humor use scales, humor appreciation and mirth, whereas no relationships with active forms of humor use were observed.

Chapter 6 addresses some overall measurement and health issues regarding a sense of humor. Positivity and negativity of a sense of humor and the usually weak associations between humorous coping and health are discussed, as well as limitations and implications of the studies in this dissertation.

Nederlandse samenvatting

(Summary in Dutch)

In dit proefschrift staan twee thema's centraal: het meten van gezondheidsgerelateerd gevoel voor humor en de mogelijke verbanden tussen gevoel voor humor en gezondheid.

Het meten van gevoel voor humor

Hoofdstuk 2 gaat over de ontwikkeling en validering van de QOHC. Deze vragenlijst beoogt vier humoristische copingstijlen te meten: antecedentgerichte, responsgerichte, affiliatieve en agressief-manipulatieve humoristische coping. De antecedentgerichte humoristische copingstijl is gericht op het preventieve gebruik van humor om negatief affect te voorkomen en positief affect te verhogen door middel van cognitieve herwaardering. De responsgerichte humoristische copingstijl echter, beoogt al aanwezig negatief affect te verminderen. Bij deze laatste stijl wordt humor gebruikt om de negatieve affectieve toestand (die stressvol is voor het individu) te vermijden of onderdrukken en deze toestand – hopelijk – te vervangen door positief affect. Omdat deze stijl gebruikt wordt in een latere fase van het stressproces, zijn er minder mogelijkheden het cognitieve perspectief op de situatie nog te veranderen, in ieder geval niet om negatief affect te voorkomen. Het verschil tussen deze humoristische copingstijlen ligt dus in de fase van het stressproces waarin ze worden gebruikt (proactief resp. retroactief) en in de mate waarin er een humoristische perspectiefwisseling wordt gebruikt. Het onderscheid tussen antecedentgerichte en responsgerichte humoristische copingstijlen is belangrijk omdat het gebruik van deze stijlen waarschijnlijk gevolgen heeft voor de gezondheid. De verwachting is dat antecedentgerichte humoristische coping gunstiger zal zijn voor de gezondheid dan responsgerichte humoristische coping. Naast deze twee individuele humoristische copingstijlen meet de QOHC ook twee sociaal georiënteerde humoristische copingstijlen: affiliatieve en agressief-manipulatieve humoristische coping. De eerste stijl is erop gericht om stress bij de ander te verminderen door de ander met humor te helpen, terwijl de tweede stijl juist beoogt stress bij de ander te verhogen door middel van humoristische uitingen. Uit de studie in hoofdstuk 2 blijkt dat de QOHC een betrouwbaar meetinstrument is met goede construct-, convergente en divergente validiteit. De analyses lieten echter ook zien dat het verschil tussen positieve en negatieve humoristische copingstijlen niet zo duidelijk was als verwacht. Ook onverwacht waren de lage samenhangen tussen de humoristische copingstijlen en affectieve toestand.

Hoofdstuk 3 beschrijft de volgende stap in het onderzoek naar de QOHC: een vergelijking tussen de QOHC en zes andere momenteel beschikbare vragenlijsten voor humoristische coping. Deze humoristische copinginstrumenten werden vergeleken op hun passendheid met een stress-coping model. Door facetanalyse los te laten op dit model, werd een zogenaamde karteringszin (Engels: *mapping sentence*) geconstrueerd, die drie facetten omvatte: externe eisen, humoristische copingreacties en doelen die beoogd werden met deze reacties. De karteringszin staat model voor alle mogelijke humoristische copingitems in vragenlijsten voor humoristische coping. Vanwege hun veronderstelde relaties met gezondheid is er in deze studie bijzondere aandacht voor het verschil tussen antecedentgerichte en responsgerichte doelen van humoristische coping. De opzet van de studie was dat 81 humoristische copingitems uit zeven humoristische copingvragenlijsten werden voorgelegd aan vijf beoordelaars. Zij gebruikten de karteringszin om deze items te beoordelen op verschillende facetten. De resultaten lieten zien dat externe eisen en humoristische reacties ondervertegenwoordigd waren in sommige vragenlijsten die humoristische coping maten, terwijl slechts enkele vragenlijsten de doelen van humoristische coping omvatten. Dit maakte het ook moeilijk om conclusies te trekken over de passendheid van het stressmodel voor antecedentgerichte en responsgerichte doelen van humoristische coping. Zelfs voor de QOHC, die al een systematisch itemconstructieproces achter de rug had, bleek het lastig voor de beoordelaars deze twee humoristische copingdoelen van elkaar te onderscheiden. De Waterloo Uses of Humor Inventory (Thomas, 2000) bleek uiteindelijk het best te passen bij de stress-coping karteringszin.

Het eerste deel van *hoofdstuk 5* behandelt een ander meetprobleem met betrekking tot de meting van gezondheidsgerelateerd gevoel voor humor. Omdat er geen meetinstrument bestaat voor toestandshumor, is voor dat begrip eveneens een meetinstrument ontwikkeld en gevalideerd, de Humor Check List (HCL). Deze vragenlijst bestaat uit 24 items en gaat uit van de aanname dat de psychologische en gezondheidstoestand van invloed is op het gebruik van verschillende humoristische gedragingen. Uitgangspunt bij de ontwikkeling van het meetinstrument waren negen verschillende soorten van humoristische gedragingen: humorproductie, humorreproductie en humoristische coping (allemaal in een positieve en een negatieve vorm) en humorwaardering, vrolijkheid en positief humorklimaat op het werk. Gevraagd naar humoristische gedragingen in hun leven, werden vragenlijstgegevens onder werknemers uit de zorg en het onderwijs verzameld. Factoranalyse op die data liet zien dat een zesfactor oplossing beter bij de

verzamelde data paste dan de *a priori* negenfactor oplossing. Humorwaardering, positieve humoristische coping, vrolijkheid en positief humorklimaat op het werk kwamen uit deze analyse naar voren als schalen die overeenkwamen met de *a priori* begrippen. Er werden ook twee nieuwe factoren gevonden: negatieve humorproductie (bestaande uit de items over humorproductie en die over negatieve humoristische coping) en algehele humorreproductie (positieve en negatieve items clusterden bij elkaar). Validering van de wekelijkse versie van de HCL in een steekproef van bachelorstudenten psychologie liet zien dat twee van de nieuwe schalen (humorwaardering en humorreproductie) een lage interne consistentie hadden, terwijl alle schalen een voldoende interne consistentie hadden in een aanvullende studie naar de tweewekelijkse versie. De termijn waarnaar gevraagd werd, maakte dus uit voor de interne consistentie. De HCL (tweewekelijkse versie) bleek convergente validiteit te hebben met humorstijlen en een lage test-hertest betrouwbaarheid.

Verbanden tussen gevoel voor humor en gezondheid

Het tweede thema van deze dissertatie is de relatie tussen humoristische coping op het werk (gemeten m.b.v. de QOHC), humoristisch gedrag (gemeten met de HCL) en twee dimensies van gezondheid: infectie van de bovenste luchtwegen en burnout.

Hoofdstuk 4 exploreert de vraag of de frequentie van infecties van de bovenste luchtwegen (IBL), zoals verkoudheid en griep, voorspeld kan worden door eisen op het werk, bronnen op het werk (zoals de ervaren autonomie op het werk en humoristische copingstijlen), maar ook door werkgerelateerd affect. Deze variabelen zijn opgenomen in een werkgerelateerd gezondheidsmodel dat in deze studie getest is. Algemene, antecedentgerichte en responsgerichte humoristische copingstijlen werden vergeleken met betrekking tot hun relaties met andere voorspellende en uitkomstvariabelen. Verwacht werd dat humoristische copingstijlen een buffer zouden vormen in de relatie tussen eisen op het werk en werkgerelateerd affect. Ook werd verwacht dat humoristische coping een relatie met de frequentie van IBL zou hebben via werkgerelateerd affect. Ten slotte werd verwacht dat antecedentgerichte humoristische coping (wederom via affectieve variabelen) geassocieerd zou zijn met een lagere IBL frequentie dan algemene en responsgerichte humoristische coping (ergo: dat antecedentgerichte humoristische coping ‘gezonder’ zou zijn dan de andere twee soorten humoristische coping). De uitkomsten van deze studie lieten zien dat algemene en overall

humoristische coping (een combinatie van alle humoristische copingstijlen bij elkaar) een positieve relatie hadden met positief werkgerelateerd affect, dat op zichzelf weer niet samenhang met de IBL frequentie. Responsgerichte humoristische coping hing positief samen met negatief werkgerelateerd affect, dat zelf wel (positief) gerelateerd was aan IBL frequentie en eisen op het werk. Er werd ook een direct positief verband gevonden tussen deze humoristische copingstijl en IBL frequentie. Het model voor antecedentgerichte humoristische coping liet zien dat deze stijl niet gerelateerd was aan eisen op het werk, positief samenhang met positief werkgerelateerd affect en negatief met negatief werkgerelateerd affect. Hoewel humoristische copingstijlen lage of niet-significante verbanden met bijna alle andere variabelen lieten zien, bleken antecedentgerichte en responsgerichte humoristische copingstijlen te verschillen in hun verband met IBL frequentie, langs verschillende wegen. Dat neemt niet weg dat autonomie en negatief werkgerelateerd affect belangrijker voorspellers van IBL frequentie bleken dan humoristische copingstijlen.

In het tweede deel van *hoofdstuk 5* is het burnout syndroom gerelateerd aan humor als trek en als toestand. Het burnout syndroom is een combinatie van emotionele uitputting, depersonalisatie en persoonlijke incompetentie. Eerder onderzoek heeft laten zien dat dit syndroom soms wel en soms niet samenhangt met humoristische trekken zoals algemene humoristische coping en verschillende humorstijlen. Dit onderzoek maakte vaak gebruik van relatief gezonde deelnemers met hooguit gemiddelde niveaus van burnout, terwijl in onze studie ook deelnemers met hoge niveaus van burnout werden onderzocht. Behalve onderzoek naar humor als trek wordt in deze studie ook aandacht besteed aan tijdsafhankelijke en toestandsafhankelijke humoristische gedragingen, iets wat niet eerder gedaan is. Hiervoor is de in het eerste deel van hoofdstuk 5 beschreven Humor Check List gebruikt. Dit maakte het mogelijk vast te stellen of gezonde en opgebrande werknemers verschilden met betrekking tot humoristische trekken, maar ook of hun humoristische gedragingen zouden verschillen. De bevindingen waren dat de burnout groep lager scoorde dan een gezonde groep op de humoristische trekken algemene humoristische coping en een positieve humorstijl. Echter, de groepen verschilden niet met betrekking tot negatieve humorstijlen. Met betrekking tot humoristische gedragingen was het opvallend dat de burnout groep minder vrolijkheid, humorwaardering en humorreproductie liet zien dan de gezonde groep, maar dat de groepen niet van elkaar verschilden met betrekking tot meer actief humorgebruik in de vorm van negatieve humorproductie en positieve humoristische coping. Ten slotte werd gevonden dat de

burnoutdimensies emotionele uitputting en persoonlijke incompetentie negatief samenhangen met positieve humorstijlen maar geen verband vertoonden met negatieve humorstijlen. Voor depersonalisatie werd juist wel een positief verband met negatieve humorstijlen gevonden, en een negatieve samenhang met de affiliatieve humorstijl. Alle burnoutdimensies waren negatief gerelateerd aan humorwaardering en vrolijkheid, terwijl geen verbanden met meer actieve humoristische gedragingen konden worden vastgesteld. In *hoofdstuk 6* worden enkele globale kwesties over het meten van gevoel voor humor en zijn relaties met gezondheid besproken. Er wordt aandacht besteed aan het problematische onderscheid tussen positieve en negatieve humor en aan de gewoonlijk zwakke relaties tussen humoristische coping en gezondheid. Ook beperkingen en implicaties van onze studies komen in dit hoofdstuk aan bod.

Uittreksel voor Léan (9) en

Noah (6)

(Summary for my children)

Ja, daar wordt je vader zomaar doctor! Daarvoor moest hij dit boekje schrijven. In dit boekje wordt een vraag beantwoord. Op sommige vragen is het antwoord makkelijk te geven. Op mijn vragen niet. Daar moest ik onderzoek naar doen. Ik heb twee vragen onderzocht. De eerste vraag is wat humor is. De tweede vraag is of humor goed voor je is. Het antwoord op die vragen staat in dit boekje. In meer dan 44.000 woorden, dat is natuurlijk knap veel. Maar wat zijn nou de antwoorden op die twee vragen? Het antwoord op de eerste vraag is dat je humor op heel veel manieren kunt gebruiken. Je kunt bijvoorbeeld kijken naar grappige films, gewoon omdat je het leuk vindt. Maar je kunt ook grapjes maken om je beter te voelen. Dat heb ik onderzocht. Ik geef een



voorbeeld (zie het plaatje). Dit meisje ligt in het ziekenhuis en krijgt veel cadeautjes. Dus laten we zeggen dat je een keer naar het ziekenhuis moet. Dat is natuurlijk niet zo leuk. Je kunt het dan voor jezelf leuker maken door tegen je vader of moeder te zeggen:

geweldig, ik ga naar het ziekenhuis, dan krijg ik veel cadeautjes van jullie! Je gebruikt het grapje natuurlijk om je ouders te plagen. Maar je vergeet ook even dat het in het ziekenhuis vaak helemaal niet zo leuk is. Dan voel je je dus beter door die humor. Uit mijn onderzoek blijkt dat ook. Alleen je moet niet denken dat je met humor beter kunt worden als je ziek wordt. Je kunt je er wel beter door voelen. Andersom is het ook zo. Als je je niet zo lekker voelt (bijvoorbeeld omdat je op school te hard moet werken) dan hou je ook minder van grapjes en lachen

Dankwoord

(Acknowledgements)

Wanneer er een hemel bestaat, zal opa Doosje met tevredenheid op mij neerkijken. Hij zei altijd: 'Sibe die wordt professor'. Nou, een volgende stap op die weg is met dit proefschrift gezet. Ook mijn anderhalf jaar geleden overleden moeder heeft mijn promotie helaas niet meer mogen meemaken. Zij vond het belangrijk dat we een goede opleiding genoten. Zelf kreeg ze daar in dit leven de kans niet toe, terwijl ze wel vele talenten bezat. Ik ben haar en mijn dappere vader zeer dankbaar voor hun inzet daarvoor. Ik weet nog goed dat ze erop aandrongen dat ik mijn kandidaats psychologie zou gaan halen: 'dan heb je in ieder geval wat'. Nou, het is iets meer geworden. En mijn lieve broers en zus: bedankt Nynke, Jelle en Wardy, dat jullie me zo hebben ondersteund, in de tijd dat 'ûs mem' overleed, maar ook daarbuiten. Soms werd ik jullie eeuwige vraag: 'hoe ver ben je?', behoorlijk zat. Maar ik voelde ook dat het pure belangstelling was, geen uitgeoefende druk. En nu hoeven jullie die vraag voorlopig even niet te stellen.

Mijn kinderen Noah en Léan zijn het feestje in mijn leven. Jullie zorgden ervoor dat ik - na al dat geploeter op die artikelen en dat proefschrift - thuis in een andere wereld viel. Een wereld waarin gezorgd en gespeeld werd, waarin wij het belangrijkste waren en al dat geschrijf en gepriegel dat onderzoek heet heel, heel relatief werd. Gelukkig zijn jullie humoristische kinderen en dat is een van de grootste geschenken die je als ouder kan krijgen. Marieke, helaas werden de laatste jaren van mijn promotietraject overschaduwed door onze scheiding. Fijn dat we het desondanks nog steeds goed kunnen vinden. Het was een verdrietige periode, maar het heeft me niet verhinderd om te promoveren en jij hebt me daarbij altijd ondersteund. Ook je ouders Fenny en Egge Groenewold wil ik graag bedanken. Zo nu en dan pasten zij op de kinderen, zodat ik weer onderzoeksmeters kon maken. Ook mijn goede vrienden Jan-Willem Vos en Jur Furda wil ik hartelijk bedanken voor hun ondersteuning in moeilijke tijden.

Mijn collega's van Gezondheidspsychologie hebben een enorm belangrijke rol gespeeld bij mijn promotie. Niet alleen hebben ze mij ondersteund in mijn ontwikkeling als onderzoeker, ze hebben mij ook een warm en humoristisch nest geboden om dit proefschrift in uit te broeden. Meer in het bijzonder wil ik Marieke Adriaanse bedanken, die me in de fase dat mijn proefschrift voltooid werd, met raad en daad terzijde heeft gestaan. Je was immers net zelf gepromoveerd. Lettertype en drukker van jouw en mijn proefschrift zijn gelijk (de rest niet, denk ik). Bedankt, doctor Adriaanse! Niet alleen medewerkers zijn van belang geweest bij de totstandkoming van dit proefschrift. Ruim 3500 mensen hebben de vragenlijsten voor hoofdstuk 2 en 4 ingevuld en ruim 900 bachelorstudenten hebben ervoor gezorgd dat zij dat ook deden. Geweldig! Maar er zijn

ook veel masterstudenten geweest die hebben meegewerkt aan dit proefschrift. Mijn speciale erkentelijkheid betreft Lydia van Wersch, die de dataverzameling en analyses voor hoofdstuk 5 voor haar rekening heeft genomen. Ook René Knip, Anouk Kuijer, Anouk Kuipers en Peter Langelaar hebben data verzameld voor dit onderzoek. Hartelijk dank voor jullie voorwerk!

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Ernstig blijven over humor heb ik mede geleerd van mijn persoonlijke humornetwerk in Nederland, dat zich ten doel stelt de zegeningen van de humor naar de mensen te brengen. Peewee, Els, Monique, Dhyan, Marleen, Nanne, Martha, bedankt voor jullie interesse en ondersteuning. We hebben veel gelachen. En natuurlijk wil ik iedereen die ik niet genoemd heb bedanken voor het in stand houden van deze tragikomische kosmos, die het raadselachtige verschijnsel humor heeft voortgebracht.

Curriculum Vitae

In English

Sibe Doosje (1956), father of two young children, graduated in 1975 from secondary school (Atheneum, R.S.G. Schoonoord in Zeist). The same year he started combining work and a study of psychology. He graduated at Utrecht University in clinical and health psychology in 1989. In 1990, he started working as a teacher of psychology for nurses and as a lecturer at the department of Clinical and Health Psychology. Here, he developed a passion for teaching and developing research skills courses. Around the turn of the century he felt a strong need to specialize. After a subject tour he decided to study a characteristic that was important in his life and that challenged him hugely: humor. In 2001 he wrote a research proposal, which he carried out under the supervision of professor Lorenz van Doornen, holder of a chair in Health Psychology. In 2003, Sibe co-founded the Dutch Humor Academy, which is aimed at the development and spread of knowledge and skills regarding humor. He has given many presentations and workshops on humor for companies, hospitals and schools.

In het Nederlands (in Dutch)

Sibe Doosje (1956), vader van twee jonge kinderen, behaalde in 1975 zijn diploma Atheneum aan de R.S.G. Schoonoord in Zeist. Hetzelfde jaar begon hij werk en een psychologiestudie te combineren, wat in 1989 resulteerde in een doctoraal diploma in de klinische en gezondheidspsychologie. In 1990 ging hij psychologie doceren aan verpleegkundigen maar ook aan studenten in de Klinische en Gezondheidspsychologie. Hier ontwikkelde hij een passie voor het doceren en ontwikkelen van cursussen in onderzoeksvaardigheden. Rond de eeuwwisseling voelde hij een sterke behoefte zich te specialiseren. Na een rondgang langs verschillende onderwerpen besloot hij een verschijnsel te bestuderen dat belangrijk was in zijn leven en dat hem geweldig uitdaagde: humor. In 2001 schreef hij een onderzoeksvoorstel om te promoveren, dat werd uitgevoerd onder supervisie van prof. dr. Lorentz van Doornen, leerstoelhouder Gezondheidspsychologie. In 2003 richtte Sibe samen met anderen de Humoracademie op, met de doelstelling kennis en vaardigheden over humor te verspreiden. Hij heeft vele presentaties en workshops over humor verzorgd in bedrijven, ziekenhuizen en scholen.