

Humor Styles Questionnaire: Personality and Educational Correlates in Belgian High School and College Students

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Abstract

Studies often treat sense of humour as a unidimensional construct. Recently, however, four different humour styles have been hypothesized and validated by the Humor Styles Questionnaire (HSQ). In the present two studies, first, the HSQ received cross-cultural validation among French-speaking Belgian students (94 high school and 87 college students). Second, apart from some similarities (Extraversion, low need for closure), the four humour styles were found to be differently related to personality. Social and self-enhancing humour styles were positively related to Agreeableness, Openness, and self-esteem, whereas hostile humour was negatively related to Agreeableness and Conscientiousness. Self-defeating humour was negatively related to Emotional Stability, Conscientiousness, security in attachment, and self-esteem. Finally, students' humour styles were neither direct nor indirect predictors of school performance, but self-defeating and hostile humour styles were typical of students with low school motivation. Copyright © 2002 John Wiley & Sons, Ltd.

INTRODUCTION

The measurement of humour using self-report questionnaires has been restricted, to a large extent, to scales where sense of humour is considered as a unique construct. In these scales, participants evaluate themselves on either overall sense-use of humour (e.g. the Situational Humor Response Questionnaire [1984] and Coping Humor Scale [1983] of Martin and Lefcourt) or on different components of the humour process (e.g. Svebak's [1974] Sense of Humor Scale) or different humour behaviors such as humour creation and humour appreciation (e.g. the Multidimensional Sense of Humor Scale of Thorson and Powell [1993a]).

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Little attention however has been paid to different humour *styles*. A notable exception is the Humorous Behavior Q-Sort Deck of Craik, Lampert and Nelson (1996), which measures five bipolar humour styles ('humorous conduct', according to the authors of this questionnaire): socially warm versus cold, reflective versus boorish, competent versus inept, earthy versus repressed, and benign versus mean-spirited humour. These dimensions have been found to relate differently to personality and to humour-related constructs (Craik *et al.*, 1996, Craik and Ware, 1998). However, this five-dimension classification does not seem to emerge from, or to suggest integration into, a theoretical framework from mainstream psychology or psychology of humour.

Recently, Martin and associates (Puhlik-Doris and Martin, 1999) created a new scale measuring four humour styles. Martin and colleagues based their conceptualization on two kinds of source. The first one is theory and research from psychology of humour (e.g. 'superiority' theory, use of humour as coping, perspective taking humour, humour as a defense mechanism). Second, personality and clinical psychology distinguishes between two orthogonal dimensions, 'agency' (focus on the individual) and 'communion' (focus on connection with others), as well as between mitigated (non-extreme, adjusted, versions) and unmitigated, maladjusted, forms of both agency (focus on the self to the exclusion of others) and communion (focus on others to the exclusion of self) (Hegelson, 1994; Hegelson and Fritz, 1999). Martin and colleagues hypothesized that in humour, too, we can distinguish between adjusted and maladjusted forms, and that these forms may somehow imply the two dimensions, agency and communion (although, according to these authors, there is not necessarily a one-to-one relationship between their humour styles and the above dimensions).

Inspired by the above sources, Martin and colleagues (Puhlik-Doris and Martin, 1999) conceived four humour styles. The first, *social* humour, reflects the tendency to share humour with others, tell jokes and amuse others, and use humour to put others at ease, cheer others up, and facilitate relationships. This is a sort of humour affirming of self and others and presumably enhances interpersonal cohesiveness. The second style, *self-enhancing* humour, expresses the tendency to maintain a humorous outlook on life even when not with others, use humour in coping with stress, cheer oneself up with humour. The third, *self-defeating* humour, is defined by the tendency to amuse others at one's own expense, by a self-disparaging humour, by the tendency to laugh along with others when being ridiculed or put down, and by using humour to hide one's true feelings from self and others. It probably involves the use of humour as a form of defensive denial. *Hostile* humour, finally, is mainly the tendency to use humour to disparage, put down, or manipulate others, the use of ridicule, offensive humour, sexist or racist humour, and the compulsive expression of humour even when inappropriate; it can be understood in the light of the 'superiority' theory of humour.

A 60-item Likert-type format questionnaire has been developed and validated by Puhlik-Doris and Martin (1999) in a large Canadian sample: this Humor Styles Questionnaire (HSQ) demonstrated the necessary psychometric qualities, a clear factor structure corresponding to the four humour styles above, as well as external validity and predictability of constructs related to coping and health. In addition, using a shorter form of the scale (32 items), Martin, Puhlik-Doris, Gray and Weir (manuscript submitted for publication) found that social humour is associated with both agency and communion; self-enhancing humour is associated with agency but not with communion, whereas the two-maladaptive humour styles (hostile and self-defeating) are negatively related to communion and positively related to unmitigated agency.

Distinguishing between different humour styles may be promising for research in several ways. For example, an exploration into how different humour styles may relate differently to personality could allow research to go further than simply concluding (see Köhler and Ruch, 1996; Martin, 1998) that self-report measures of humour reflect only one or two dimensions related to general cheerfulness and extraversion. Moreover, the way humour as a personality characteristic interacts with social situations may be proved to depend on the style of humour. Similarly, differentiation between humour styles can enhance our way of studying humour in applied domains such as health, education, and work.

The purpose of the present studies was, *first*, to investigate whether the HSQ may be cross-validated in a culture other than the original Canadian one, i.e. among French-speaking Belgians (factor structure, psychometric qualities, mean comparisons, gender differences). A *second* aim of the present studies was to investigate different personality correlates of these humour styles. Finally, participants in the second study were high school students, and their school performance was taken into consideration as a dependent variable. Interestingly, some theoretical and empirical evidence suggests that humour is often related to efficiency of education and learning (see e.g. McMorris, Boothroyd and Pietrangelo, 1997; Wanzer and Frymier, 1999). We consequently explored, *third*, whether different styles of students' humour may have a direct or indirect (moderating personality) impact on school performance.

Regarding the personality correlates of the four humour styles, more precisely, we first focused on the *Five-Factor Model* (FFM) of personality. The FFM has been proved to broaden our understanding of sense of humour as a personality characteristic especially when research goes beyond unidimensional sense of humour. For example, different associations have been found between the five personality factors and specific humour behaviours such as humour appreciation and preference of humour types (see e.g. Ruch and Hehl, 1998), humour creativity (Ruch and Köhler, 1998), spontaneous humour creation (Saroglou and Jaspard, 2001) and types of humorous conduct (Craik *et al.*, 1996; Craik and Ware, 1998). We then investigated how the four humour styles relate to the five factors of personality. For example, apart from an overall association between humour and Extraversion, we might expect hostile humour to be negatively related to Agreeableness, and self-defeating humour to reflect low Emotional Stability.

In addition to stable personality dimensions such as the five factors, we were interested in investigating whether different humour styles may also be understood as reflecting affective-relational history of people; mainly whether self-defeating and hostile versus social and perhaps self-enhancing humour may be related to insecure versus secure *attachment styles*. This hypothesis is based on the assumption that security in general is a necessary condition for the playful perception of incongruity in humour (Suls, 1983). In addition, a recent study indicated that attachment styles mainly reflect two dimensions: anxiety (or lack of it) about relationships, based on the negative or positive representation of self, and comfort (or lack of it) with closeness and intimacy, based on the positive or negative representation of others (Brennan, Clark and Shaver, 1998). It may, then, be assumed that humour styles such as self-defeating, social, self-enhancing, and hostile may also reflect different mental models of self and others.

Moreover, in a recent study (Mikulincer, 1997), secure versus insecure attachment styles were found to predict low need for cognitive closure and low preference for order. This study used experimental measures as well as the Need for Closure Scale (Webster and Kruglanski, 1994). Interestingly, humour is assumed to transgress conventions and to reflect playfulness with order and meaning: in fact, it is related to low Conscientiousness

(Ruch and Köhler, 1998), low order (Thorson and Powell, 1993b) and high need for play (Ruch and Hehl, 1993). Consequently, we hypothesized that humour in general will be negatively associated with need for closure and investigated whether this association would involve all humour styles.

Finally, *self-esteem* is known to strongly or moderately relate to sense of humour and use of humour as coping (Kuiper and Martin, 1993, 1998). We investigated whether this association is different for the four humour styles. We hypothesized that, in contrast to social and self-enhancing humour, self-defeating humour (as defined above) may reflect low self-esteem. This may be expected if we assume that self-defeating humour reflects unmitigated communion: according to Hegelson (1994), individuals high on unmitigated communion have low self-esteem and are engaged in a struggle to increase self-esteem through relationships. Regarding hostile humour, no prediction was made, because, on the one hand, traditionally, it is assumed that hostility and aggression reflect low self-esteem, whereas, on the other hand, recent theoretical considerations and empirical studies suggest the opposite, or at least that hostility is predicted by threatened egotism rather than by low self-esteem (Baumeister, Smart and Boden, 1996; Bushman and Baumeister, 1998).

METHOD

Study 1

Participants

Eighty-seven (72 women and 15 men) undergraduate psychology students from a Belgian university (French speaking) chose to participate in the study for credit to their introductory psychology course. Participants were administered the HSQ, the attachment styles descriptions, the Need for Closure Scale, and a Five-Factor Model based measure of personality.

Measures

Humor Styles Questionnaire. (HSQ; Puhlik-Doris and Martin, 1999.) This 60-item balanced scale measures four styles of humour: social, self-enhancing, hostile, and self-defeating. Participants disclose their agreement in a Likert-type format scale ranging from one (totally disagree) to seven (totally agree). Examples of the statements are (for each humour style, two items with the highest loading in our data): 'I enjoy making people laugh'; 'I don't often joke around with my friends (R)' (social); 'If I am feeling upset or unhappy, I usually try to think of something funny about the situation to make myself feel better'; 'If I'm by myself and I'm feeling unhappy, I make an effort to think of something funny to cheer myself up' (self-enhancing); 'If I don't like someone, I often use humour or teasing to put them down'; 'People are never offended or hurt by my sense of humour (R)' (hostile); 'I will often get carried away in putting myself down if it makes my family or friends laugh'; 'I often try to make people like or accept me more by saying something funny about my own weaknesses, blunders, or faults' (self-defeating). As noticed earlier, the scale has demonstrated appropriate factor structure and psychometric qualities and has been proved to be predictive of constructs related to coping and health, especially when a shorter (32 items), more recent, version of the scale is used (Martin *et al.*, manuscript submitted for publication).

Attachment styles. Attachment styles were assessed by asking participants to read the descriptions by Bartholomew and Horowitz (1991) of four adult attachment styles and,

twice over, the retrospective descriptions by Hazan and Shaver (unpublished questionnaire; cited by Collins and Read, 1990) of three attachment styles (secure, anxious-ambivalent, and avoidant), once regarding the relationship with the father, and the second time regarding the relationship with the mother. Each time, the participants had to endorse the description that best described their feelings regarding each of the three relationships (adult, father, mother). Bartholomew's four-category classification distinguishes between two kinds of avoidant style: fearful, in which intimacy is avoided out of fear of being hurt, and dismissing, in which intimacy is avoided out of a sense of self-sufficiency. In addition, the four categories represent a 2×2 structure defined by positive (secure + dismissing) versus negative (anxious/ambivalent + fearful) mental models of self crossed with positive (secure + preoccupied) versus negative (fearful + dismissing) mental models of others. In our study, because of the low size of the dismissing-avoidant group ($n = 6$), of the avoidant to the father group ($n = 6$), and of the avoidant to the mother group ($n = 2$), we combined the different insecure groups into one unique insecure group.

Need for Closure Scale. (NFCS; Webster and Kruglanski, 1994.) This 42-item seven-point (totally disagree/totally agree) Likert-type format scale measures need for closure as defined by five different facets: preference for order, preference for predictability, decisiveness, discomfort with ambiguity, and closed-mindedness. The five-factor structure of the NFCS has received confirmation and cross-cultural validation in a series of studies, and the scale, either as a total or through its facets, has demonstrated satisfactory reliability and convergent and discriminant validity, and has been predictive of a series of related constructs and experimentally measured behaviours (Kruglanski, Atash, De Grada, Mannetti, Pierro and Webster, 1997).

Bipolar rating scales based on the Five-Factor Model of personality. (Roskam, de Maere-Gaudissart and Vandenplas-Holper, 2000). This French scale, a short measure of the five factors of personality, is based on 25 bipolar adjectives. Subjects rate themselves in scales of a nine-point Likert-type format. In a series of studies the five-factor structure of this measure has been confirmed in peer and self-evaluations among more than 2000 people.

Study 2

Participants

Ninety-four (51 girls and 39 boys, four without mention of sex) high school students (age range = 16–18) were administered the HSQ, the Big Five bipolar scale, the Coopersmith Self-Esteem Inventory, and the School Motivation Questionnaire. Their school performance (final grade point average at the end of the term, two months later) was also registered as an additional variable.

Measures

Humor Styles Questionnaire. (see above)

Big Five bipolar scale. (see above)

Self-Esteem Inventory. (Coopersmith, 1981.) In this 50-item school form of the Self-Esteem Inventory, participants chose the description ('like me' or 'unlike me') that corresponded to what they usually feel. Four scores were computed per subject by summing up the scores on items representing general self-esteem, social self-esteem, self-esteem related to family, and self-esteem related to school. As usual, a total score was also computed by summing up the scores on the four facets.

School Motivation Questionnaire. (Forner, 1987). This 51-item (the first three items are used for ‘warming-up’ and are not scored) Likert-type French scale measures intrinsic school motivation. This motivation is assumed to be expressed through three components: motivation as regards success, self-control (high versus low internal self-control), and elaboration of a perspective for the future. Agreement with the self-descriptive statements of the scale may range from one (describes me very badly) to four (describes me very well). Three scores are computed by summing up answers to the (16) items corresponding to each facet as well as a total score, given that the facets are intercorrelated (Forner, 1987). Reliability of the total scale in our study was satisfactory ($\alpha = 0.82$). Given that we were interested in how humour styles possibly interact with personality variables in predicting school performance, the aim of the administration of this questionnaire was to obtain a more complete profile of students’ dispositional characteristics (Big Five, self-esteem, and school motivation).

Together with the HSQ, the Big Five measure was also used in both studies. For the convenience of the presentation and for a better balance between men and women (the former being under-represented in the first sample) we present here the results of both studies in one section, collapsing the two samples into one for the measures used in both studies.

RESULTS

Humor Styles Questionnaire: cross-cultural validation

Principal component analysis of the 32 items (short version) of the HSQ replicated the four-factor structure in a clearer way than principal component analysis of the extended version (60 items) of the scale. When asked for extraction of four factors, and after a varimax rotation, the visual inspection of the loadings indicated that all the 32 items (with only one exception) had their first loading to their corresponding factor as in the English original scale and that almost all second loadings to the other three factors (only four exceptions) were lower than 0.30. The factors were extracted in the following order: social humour (loadings 0.74–0.43), self-enhancing humour (0.68–0.22), hostile humour (0.71–0.31), and self-defeating humour (0.70–0.53). Corresponding eigenvalues of the rotated four factors were 3.41, 3.26, 3.06, and 2.91, explaining 39.49% of the total amount of variance. Four scores were obtained by summing up the scores of the eight items corresponding to each factor as in the English original version (validated in a sample of 1195 participants). Reliabilities of the subscales (see Table 1) were satisfactory. Intercorrelations between them, as may be seen in Table 1, were low. All the subsequent results are based on this 32-item scale.

Table 1. Descriptive statistics and intercorrelations between styles of humour

	<i>M</i>	<i>SD</i>	Self-enhancing	Self-defeating	Hostile	Alphas
Social	46.81	5.84	0.27***	0.06	0.09	0.75
Self-enhancing	33.76	7.93		0.21**	0.07	0.73
Self-defeating	25.16	7.84			0.21**	0.72
Hostile	31.46	7.58				0.70

Note. $N = 181$.

** $p < 0.01$. *** $p < 0.001$. (Two-tailed.)

Men tended to score higher than women in self-enhancing ($M=35.24$, 32.89 , $SD=6.12$, 8.41 ; $t'[175]=2.07$, $p<0.05$), hostile ($M=35.53$, 29.58 , $SD=8.71$, 6.32 ; $t'[175]=4.48$, $p<0.001$), and self-defeating humour ($M=27.96$, 23.86 , $SD=8.79$, 7.07 ; $t'[175]=3.00$, $p<0.01$). The same gender differences were observed in the Canadian sample of the original normative data (in addition, in that sample, men reported higher social humour, Martin *et al.*, manuscript submitted for publication). Discrepancies between the mean scores on the four humour styles were similar in Belgian and in Canadian participants. However, when cross-cultural comparisons were conducted, Belgians turned out to report less self-enhancing, $t'(1374)=5.36$, $p<0.001$, and more hostile humour, $t'(1374)=4.29$, $p<0.001$, than Canadians.

Personality and educational correlates of humour styles

As detailed in Table 2, social and self-enhancing humour styles seemed to be very similar regarding their respective personality correlates in terms of the *Five-Factor Model*. Both of them were positively correlated with Extraversion, Agreeableness, and Openness. (Multiple regressions of the five factors on these two humour styles indicated that the above associations were significant beyond the intercorrelations between the personality factors.) Hostile humour shared with the two previous styles the positive association with Extraversion, but it was negatively correlated with Agreeableness. (The important,

Table 2. Personality and educational correlates of humour styles

	Social humour	Self-enhancing humour	Self-defeating humour	Hostile humour
Big Five ^a				
Extraversion	0.43***	0.19*	-0.03	0.29***
Agreeableness	0.34***	0.22**	-0.09	-0.19*
Conscientiousness	-0.04	-0.03	-0.40***	-0.25**
Emot. Stability	0.09	0.07	-0.20**	-0.09
Openness	0.40***	0.25**	-0.11	-0.05
Need for closure ^b				
Pref. for order	-0.24*	-0.02	-0.23*	-0.09
Pref. for predictability	-0.25*	-0.28**	-0.22*	-0.09
Decisiveness	-0.08	0.04	-0.19+	0.16
Discomf. w/ ambiguity	-0.10	-0.05	-0.03	-0.03
Close-mindedness	-0.28**	-0.30**	-0.33**	0.11
Total NFCS	-0.32**	-0.19+	-0.34***	0.01
Self-esteem ^c				
General	0.20+	0.03	-0.38***	0.03
Family related	0.00	-0.01	-0.25*	0.00
Social	0.58***	0.11	-0.18+	0.26*
School related	0.18+	0.23*	-0.21*	-0.08
Total self-esteem	0.24*	0.07	-0.40***	0.04
School motivation ^c				
Motivation to success	-0.07	0.16	-0.22*	-0.41***
Self-control	0.10	0.20+	-0.35***	-0.17+
Perspect. for the future	-0.12	-0.02	-0.19+	-0.17+
Total	-0.06	0.13	-0.40***	-0.35***
School performance ^c				
	-0.08	0.00	-0.07	-0.05

^a $N=181$. ^b $N=87$. ^c $N=94$.

* $p<0.05$. ** $p<0.01$. *** $p<0.001$. + $p<0.10$. (Two-tailed.)

theoretically, correlation between hostile humour and Agreeableness increased when Extraversion was partialled out; $r_s = -0.35$, $p < 0.001$.) On the other hand, hostile humour shared with the self-defeating style a negative association with Conscientiousness. Moreover, people who deprecate themselves through humour seemed to be low in Emotional Stability. Finally, when correlations between the Big Five and the humour styles were performed separately for men and women, in most cases the significant associations found in the total sample were replicated in both men and women.

As Table 2 also details, overall, humour (with the exception of hostile humour) tended to be negatively associated with *need for closure* in general, and in most cases with preference for order and predictability, and closed-mindedness, in particular. Interestingly, self-defeating humour was the only humour style that tended to be negatively related to the decisiveness facet. Discomfort with ambiguity was unrelated to humour styles.

Attachment styles seemed to have a certain impact on humour styles, although this impact was limited. People with an insecure adult attachment as well as people with an insecure attachment to their mother tended to report more self-defeating humour than did people with secure attachment, $t = 2.54, 2.26$, $p < 0.05$. (Between-adult attachment group comparisons showed that this may be true of fearful-avoidant and anxious-ambivalent persons as compared to secure ones, but no differences existed between the two former groups). Using the 2×2 classification, too, it was found that people with a negative model of self (fearful-avoidant and anxious-ambivalent) reported higher use of self-defeating humour in comparison with those with a positive model of self, $t(84) = 2.39$, $p < 0.05$.

Moderate associations were found between humour and *self-esteem*. Social humour was strongly correlated positively with social self-esteem, but also with total self-esteem. Self-enhancing humour was associated with high self-esteem related to school, and hostile humour was related to high social self-esteem. Not surprisingly, self-defeating humour was negatively correlated with all the components of self-esteem.

School motivation turned out to be associated with two humour styles. All three facets of this construct (motivation to success, internal self-control, and perspective for the future) were negatively correlated with self-defeating and hostile humour (Table 2). In order to assess the personality correlates of these constructs, we computed their correlations with the Big Five and self-esteem. Total school motivation was highly correlated with Conscientiousness ($r = 0.54$, $p < 0.001$), total self-esteem (0.48 , $p < 0.001$; significant correlations with all facets except social self-esteem), and Openness (0.27 , $p < 0.01$); in addition, self-control was positively correlated with Emotional Stability (0.27 , $p < 0.01$).

Predicting school performance

Zero-order correlations between the grade point average obtained at the end of the semester and all the measures included in the second study (Big Five, self-esteem, motivation, and humour styles) revealed a few interesting significant correlates (predictors?) of school performance. School-related self-esteem was positively correlated with school performance ($r = 0.42$, $p < 0.001$), but this association may be considered as less informative or not informative at all, because of the almost recursive character of the relation between this type of self-esteem and school performance. More importantly, school performance was predicted by Conscientiousness ($r = 0.20$, $p = 0.05$) and Extraversion (-0.25 , $p < 0.05$).

In order to address the question as to whether humour styles, although unrelated to school performance, may have an indirect effect on this performance by interacting with personality, four multiple regressions were then performed, including Conscientiousness and Extraversion as predictors of school performance, as well as, each time, one of the four humour styles. A fifth multiple regression included all four styles together with the two personality factors as predictors. These analyses failed to indicate any moderating effect of humour styles on the personality–school performance relation.

DISCUSSION

Cross-cultural validation of the HSQ

The four-factor structure of the original English HSQ was replicated in a sample of French-speaking Belgian adolescent and adult students. The four factors corresponded to the four humour styles, conceptualized by Puhlik-Doris and Martin (1999; see also Martin *et al.*, manuscript submitted for publication) as social, self-enhancing, self-defeating, and hostile humour. Intercorrelations between factors were low or near to zero. Discrepancies between mean scores on the four humour styles were similar among our Belgian participants and Canadian subjects from the normative data. No differences were observed between Belgians and Canadians regarding social and self-defeating humour. However, Belgians, in comparison with Canadians, tended to report less self-enhancing and more hostile humour. Regarding self-enhancing humour, this could be—at least partially—explained as reflecting differences in reported sense of humour in general: Belgians (Saroglou, unpublished doctoral dissertation), but also Germans (Deckers and Ruch, 1992), report a lower sense of humour (SHRQ) than Canadians or Americans. Regarding hostile humour, it could be interesting for further research to investigate whether some cultures stigmatize hostile humour more than other cultures. Gender differences were similar to those in the Canadian sample. In line with literature on gender differences in aggression–hostility–tendermindedness (e.g. Feingold, 1994), women tended to report less hostile humour than men. However, women also reported self-defeating humour less than men (similarly to Canadians), a finding that is surprising because of the links of this humour style with neuroticism and low self-esteem, both being more prominent in women (Feingold, 1994). Finally, the personality correlates of the four humour styles, as found in the present study and discussed below, may be considered as somehow offering an external validation of this four-style classification.

Personality correlates of the four humour styles

First, all humour styles (except hostile humour) seemed to be negatively related to need for closure. When focused on the facet level of the NFCS, this turned out to be true, in almost all cases, of preference for order and predictability and of closed-mindedness, but not of the other two NFCS facets. This negative association of humour with need for cognitive closure seems to correspond to the theoretical assumption that humour, in general, is based on playfulness, transgression of rules and conventions, surprise, and play with meaning. A second conclusion is that Extraversion, a personality dimension that seems to be the major personality factor associated with almost all humour constructs (see Martin, 1998, for a review) was positively related to all humour styles except self-defeating humour.

Third, social and self-enhancing humour styles seemed to share several personality correlates. Both these styles were positively associated with Agreeableness, Openness, and, to a certain extent, self-esteem. In addition, these two humour styles were (moderately) intercorrelated. It seems then possible that the traditional personality correlates of (reported) sense of humour (Extraversion, Openness, as well as positivity and self-esteem; Kuiper and Martin, 1998; Martin, 1998) concern mainly the social and the self-enhancing humour styles. (Recall also that, using the Humorous Behavior Q-Sort Deck, Craik *et al.* [1996] found that socially warm versus cold humourous style was the style mainly related to overall sense of humour).

Fourth, while social and self-enhancing humour seems to be typical of Agreeableness and Openness, showing a hostile and self-defeating humour, in contrast, seems to be negatively related to Conscientiousness and to school motivation. As far as the latter constructs are concerned, one possible interpretation could be based on the fact that, as was the case in our study, Conscientiousness also predicted school performance and that school motivation was substantially intercorrelated (negatively) with Conscientiousness (although it did not predict school performance). It is then possible that people who allow themselves to be the humourous target of a group in order to be accepted within the group or people who are hostile in their humour have as a common characteristic a certain maladjustment to the challenges of the environment (e.g. school).

Fifth, apart from the above similarities between self-defeating and hostile humour, when comparing these styles with each other, they seem very differently related to personality. People using self-defeating humour presented unique personality characteristics in comparison with people displaying the other humour styles. They seemed to be neurotic and not necessarily extraverted; they did not take decisions easily and quickly, had low self-esteem, and seemed to experience insecure rather than secure attachment in their present relationships and in their relationships with their mothers. None of these negative dimensions was reflected by hostile humour. People who reported hostile humour tended to be extraverted and high in social self-esteem (see also results from the study by Bushman and Baumeister [1998] challenging the traditional idea of hostility as expressing low self-esteem) but they tended to not be interested in others or to not be warm with them (Agreeableness).

To summarize, while humour in general seems to be positively related to extraversion and negatively related to need for cognitive closure, social and self-enhancing forms of humour (possibly two adjusted forms?) tend to reflect, in addition, warmth–altruism and Openness, as well as, to a certain extent, high self-esteem. Hostile humour seems to be characteristic of an extraverted person with high social self-esteem, but who is neither agreeable nor conscientious. Self-defeating humour seems to clearly emerge from a problematic pattern of low self-esteem, insecurity in relationships, low Emotional Stability, and low Conscientiousness. Finally, both the latter styles (possibly two maladjusted forms?) are negatively related to school motivation.

Impact of humour styles on school performance

High school grades were predicted by Conscientiousness and low Extraversion. The first association is in line with evidence of importance of Conscientiousness in school performance (Digman, 1989; Goff and Ackerman, 1992; John, Caspi, Robins, Moffitt and Stouthamer-Loeber, 1994) and job performance (Barrick and Mount, 1991). However, no clear empirical evidence exists regarding the second association between Extraversion and

school performance. For example, Extraversion was once found to be positively correlated with in-classroom performance (Goff and Ackerman, 1992), while unrelated (negative non-significant correlations) to performance in written work (Goff and Ackerman, 1992) and to the teacher's reports of school performances (John *et al.*, 1994). Beyond personality, humour styles had no direct or indirect impact on school performance. It is very likely that it is the teacher's humour, as well as interaction between the teacher's humour and the students' humour, rather than students' humour *per se* that may have a certain impact on school performance and efficiency of education and learning (see e.g. Wanzer and Frymier, 1999).

In conclusion, it appears that different humour styles correspond to different personality patterns. This operationalization of four humour styles seems finer than previous unidimensional sense of humour measures. Once the distinction between these styles has been heavily validated empirically, research could profit from it and investigate not again whether humour is good or not for health, education, and work, but rather whether different humour styles corresponding to different personalities may predict, directly or indirectly, different outcomes related to health, education, and work.

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