NEED FOR HUMOR SCALE: VALIDATION WITH FRENCH CHILDREN

DELPHINE PICARD
Aix Marseille Université

NATHALIE BLANC
Université Montpellier 3

Summary.—The Need For Humor (NFH) scale measures the tendency to produce and seek out humor. This personality trait affects the processing and recall of humorous material. This study is a transcultural adaptation and validation of the NFH scale with French participants, including 100 university students (Study 1a) and 160 school-aged children (Study 1b). Results from iterative exploratory analyses and confirmatory analyses revealed a bi-dimensional structure with satisfactory factor loadings. Internal consistency and test-retest reliability were also found to be adequate (Cronbach’s alphas = .79 and .68; test-retest rs = .87 and .82). Children were tested on a preference task for humorous vs non-humorous print advertisements, and found that children with high NFH scores responded more positively to humorous advertisements (Study 2). The French NFH scale can be used as a valid and reliable tool for assessing need for humor in children and its effects on responses to print advertisements.

Not everyone has the same sense of humor or the same cognitive and emotional ability to “get the joke.” Although there is little consensus about how to define sense of humor in current psychological research, notably because the concept is broad and multi-faceted, humor is mostly viewed as a desirable personality trait in Western cultures (Martin, 2000; Ruch, 1998). This personality trait can be assessed through a variety of self-report measures of sense of humor, among which the most commonly used are the Sense of Humor Questionnaire (Svebak, 1974, 1996), the Coping Humor Scale (Martin & Lefcourt, 1983), the Situational Humor Response Questionnaire (Martin & Lefcourt, 1984), the Multidimensional Sense of Humor Scale (Thorson & Powell, 1993), the Humorous Behavior Q-sort Deck (Craik, Lampert, & Nelson, 1993, 1996), the Sense of Humor Scale (McGhee, 1996), the Humor Styles Questionnaire (Martin et al., 2003), and the Need for Humor Scale (NFH scale; Cline, Altsch, & Kellaris, 2003; Cline & Kellaris, 2007).

1 Address correspondence to Delphine Picard, Aix Marseille Université & Institut Universitaire de France, Centre PsyCLÉ, 29 Av. Schuman, 13621 Aix-en-Provence, France or e-mail (delphine.picard@univ-amu.fr).
Svebak (1974) suggested that humor was a three-dimensional construct, encompassing meta-message sensitivity, liking of humorous situations, and expressiveness. His original 21-item Sense of Humor Questionnaire was revised in 1996 and reduced to six items (three meta-message and three liking items) to make up the Sense of Humor Questionnaire-6 (Svebak, 1996); scores were shown to be inversely related to scores on measures of depression and anxiety ($r = -.42$). Adopting a similar clinical perspective, Martin and Lefcourt (1983) developed the Coping Humor Scale to assess the extent to which individuals report using humor to cope with stress. Using their seven-item scale, the authors provided evidence for the stress-buffering role of humor, with individuals displaying a greater sense of humor being better able to cope with stress: subjects with high humor scores obtained lower correlations between negative life events and mood disturbance ($r = .32$) than did those with low humor scores ($r = .63$). The 21-item Situational Humor Response Questionnaire was also developed by Martin and Lefcourt (1984), to assess sense of humor in terms of individuals’ tendency to smile and laugh in a variety of daily life situations. Questionnaire scores were correlated with peer ratings of the participants’ sense of humor and a measure of positive mood ($r = .30$). Thorson and Powell (1993) developed a broad measure of sense of humor through a 24-item scale featuring six dimensions. Scores on the Multidimensional Sense of Humor Scale were associated with a variety of factors associated with psychological health and well being (e.g., Levy’s optimism-pessimism scale, $r = -.40$; Negative Self-Esteem Scale, $r = -.57$; Radloff’s Center for Epidemiological Studies Depression Scale, $r = -.18$). Martin, et al. (2003) developed a 32-item scale divided into four categories to measure different humor styles (affiliative, self-enhancing, aggressive, and self-defeating). These positive and negative styles of humor were shown to correlate with measures of self-esteem (Rosenberg Self-Esteem Inventory, $r = .49$; Index of Self Esteem, $r = .51$), psychological well being (Ryff Well-being, $r = .61$), and hostility (Cook-Medley Hostility Scale, $r = .43$). Using Thorson and Powell’s Multidimensional Sense of Humor Scale as a baseline for their work, Cline et al. (2003) developed a 12-item scale to measure individuals’ need for humor. The resulting Need For Humor scale consisted of six items assessing “internal humor” or the need to generate humor, and six items assessing “external humor” or the need to experience humor from external sources. Applying the data they obtained to the domain of advertising research, Cline and colleagues found that individuals with high NFH scores responded more positively ($w^2 = .052$) to humorous advertisements than individuals with low scores (Cline, Altsech, & Kellaris, 2003; Cline & Kellaris, 2007).

This brief review of currently used humor scales suggests consideration of the sense of humor as a multidimensional personality trait is justified, since it may support
individuals’ health and well being (see e.g., Martin, et al., 2003), as well as processing of humorous social stimuli, such as those involved in advertising (see Cline & Kellaris, 2007). Most of the above-mentioned scales have been used in clinical settings. The NFH scale (Cline, et al., 2003), in contrast, has been used to demonstrate how specific dimensions of humor, namely the tendency to produce and to seek out humor, influence responses to humorous advertisements. The NFH scale is a unique and promising tool for research in the domain of advertising and the scale has demonstrated suitable psychometric properties. However, its application is currently limited due to a lack of systematic transcultural validation outside the United States.

Advertising frequently uses humorous appeals (Weinberger & Spotts, 1989). There is a growing body of research examining the effectiveness of humor in advertising, the processes by which humorous advertisements are effective with people from different countries, and the role of personality factors, such as need for humor, on response to humorous appeals (see Gulas & Weinberger, 2006; Weinberger & Gulas, 1992, for reviews). Therefore, validation of the NFH scale outside the United States is important for research investigating individual differences in need for humor and their effect on responses to advertising in a variety of cultural contexts. To our knowledge, only one study (Crawford & Gregory, 2008) has been conducted so far along these lines.

Crawford and Gregory (2008) administered Cline, et al.’s (2003) 12-item NFH scale to a sample of 192 Australian university students. Following Cline, et al. (2003), these authors conducted exploratory factor analysis using principal component analysis with Varimax rotation, item purification, and confirmatory factor analysis. They found that the 12 items loaded on the two latent factors (eigenvalues 4.98 and 1.84) with good total scale reliability (Cronbach α = .86), but four items had to be removed from the scale due to loadings below standards (Items 6a, 4b, and 5b) or loading on the non-expected latent factor (Item 1b). Results from the confirmatory factor analysis for the 8-item scale indicated that the two-factor model had acceptable fit on a range of goodness-of-fit measures (GFI = .95; AGFI = .90; CFI = .96; RMSEA = .075; Cronbach’s α = .82). The authors also reported that the correlation between the internal- (Items 1a, 2a, 3a, 4a, 5a) and external-humor dimensions (Items 2b, 3b, 6b) was positive and

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2Cline, et al. (2003) administered their 12-item NFH scale to a sample of 100 American university students (M age = 22.9 yr.). The authors indicated “confirmatory factor analysis demonstrates excellent fit. The two-factor model exceeds the minimum threshold on a wide range of goodness-of-fit measures (e.g., GFI = .91, AGFI = .85). The correlation between the internal- and external-humor dimensions is positive and significant (ϕ₁₂ = .30, t = 2.78, p < .01)” (Cline, et al., 2003, p. 34).
significant ($\phi = .35$, $t = 19.71$, $p < .001$). Thus, the overall structure of the NFH scale was supported by their sample of Australian university students, using a 8-item solution. Crawford and Gregory (2003) concluded that “opportunities abound for further research using this individual variable to explore responses to advertising in Australia”.

In France, no attempt has been made yet to validate the NFH scale, thus limiting the possibility to explore the effect of need for humor on the processing of advertising in this country, despite obvious interest of French researchers for the psychological investigation of humor efficacy in advertising (see Blanc & Daudon, 2009, for a review). Following the work done by Crawford and Gregory (2008), the present study was designed to attempt a transcultural validation of the NFH scale with French participants, to assess differences in need for humor amongst a population of French young adults, but also within a population of French children.

The motivation for validating the scale also to the children was that exposure to advertising does not solely concern adults: school-aged children are similarly confronted with commercial and health advertisements, most of them using humorous appeals as a means of persuasive communication. Childhood is undoubtedly a sensitive period during which attitudes towards advertising may have important consequences for future behaviors. Yet, research devoted to children’s response to humor in advertising would benefit from such a scale as it is important to know whether children’s need for humor modulates their responses to these advertisements. Moreover, a valid scale might be important to test developmental perspectives. Whereas researchers agree that humor plays an important role in children’s development (see, for example, McGhee & Chapman, 1980), and is intimately associated with cognitive development (Bariaud, 1989; Bergen, 2008; Guo, Zhang, Wang & Xeromeritou, 2011; McGhee, 1979), little is known about need for humor as a personality trait in children. Namely, whether need for humor is actually measurable via a self-report scale, and whether it is a stable personality trait in children, is not known. It may be that need for humor increases with age, concurrently with humor appreciation, during childhood. Thus, showing that the NFH scale can also be used with school-aged children would benefit future psychological research by making it possible to use this individual (and possibly age-related) variable to explore young individuals’ responses to advertising in France.

The present study used a three-step procedure. Firstly, a transcultural validation of the original NFH scale was performed with a sample of university students (Study 1a), to ensure that the French version of the questionnaire was accurate and valid. Secondly, the French version of the NFH scale was assessed as to whether it could be used with school-aged children (Study 1b). Thirdly, a preference task was used, featuring pairs of humorous and non-humorous advertisements with a smaller sample
of French children to see whether differences in NFH scores reflected preferences for humorous advertisements (Study 2).

**STUDY 1A**

This study attempted a French validation of Cline, et al.’s NFH scale with a sample of young adults. To that end, the recommendations and methods described in Hambelton, Merenda, and Spielberger (2005), and in Vallerand (1989) were followed.

**Method**

*Translation*

The NFH scale developed by Cline, et al. (2003) was translated into French by two bilingual researchers whose first language was French; to ensure consistency of content, it was back-translated by a bilingual researcher whose first language was English; see Vallerand, 1989 for a detailed procedure. The NFH scale included 12 items (see Table 1 for the full list of items) and participants rated each item on a 7-point Likert-type scale (1: Strongly disagree and 7: Strongly agree), with a possible total score ranging from 12 (low need for humor) to 84 (high need for humor).

*Sample*

French university students (N=100, 40 men; M age = 21 yr., SD = 4) completed the French version of the scale on a voluntarily and anonymous basis, at the university during a break in a lecture. Completion of the scale required no more than 10 minutes. Following the procedure described by Haccoun (1989), an additional (new) sample of 21 bilingual adults completed both the original (English) and the French versions of the scale. They were asked to circle any item or word that seemed ambiguous to them, and to add written notes directly on the questionnaire that explain why they found the item or word ambiguous. Completion of both scales was performed twice with a one-month interval.

*Results*

The data were checked for skew (S = -.14) and kurtosis (K = .09), which were within the normal range, and a Bartlett’s test was run ($\chi^2_{11} = 15.27$, $p = .17$), showing suitability for factor analysis.

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3 Following the procedure described by Vallerand and Halliwell (1983), the 21 bilingual adults (mean age = 34 yrs, $SD = 10$ yrs; 6 men, 15 women) had obtained minimum scores of 12 points when rating on 4 point scales ($1 = very little; 4 = perfectly$) their ability to a) read, b) write, c) speak, and d) understand a conversation in each of the French and English languages.
Table 1
Item Wordings and French Translations

<table>
<thead>
<tr>
<th>Section</th>
<th>Wordings</th>
<th>French Translations</th>
</tr>
</thead>
<tbody>
<tr>
<td>a. Internal / Section a. Interne</td>
<td>1a. People expect me to say amusing things</td>
<td>Les gens s’attendent à ce que je dise des choses amusantes</td>
</tr>
<tr>
<td></td>
<td>2a. I can crack people up with the things I say</td>
<td>Je peux provoquer des éclats de rire avec ce que je raconte</td>
</tr>
<tr>
<td></td>
<td>3a. I often come-up with witty comments</td>
<td>Je fais souvent des commentaires amusants</td>
</tr>
<tr>
<td></td>
<td>4a. I am good at thinking-up jokes or funny stories</td>
<td>Je suis doué pour faire des plaisanteries ou inventer des histoires drôles</td>
</tr>
<tr>
<td></td>
<td>5a. People tell me that I am quick-witted</td>
<td>Les gens disent que j’ai l’esprit vif</td>
</tr>
<tr>
<td></td>
<td>6a. I often feel the need to make other people laugh</td>
<td>J’ai souvent besoin de faire rire les autres</td>
</tr>
<tr>
<td>b. External / Section b. Externe</td>
<td>1b. I am a connoisseur of humor</td>
<td>Je suis un connaisseur en matière d’humour</td>
</tr>
<tr>
<td></td>
<td>2b. I prefer situations where people are free to express their senses of humor</td>
<td>Je préfère les situations où les gens peuvent laisser libre court à leur sens de l’humour</td>
</tr>
<tr>
<td></td>
<td>3b. I enjoy being with people who tell jokes or funny stories</td>
<td>J’aime être avec des gens qui racontent des blagues ou des histoires drôles</td>
</tr>
<tr>
<td></td>
<td>4b. I often read jokes and funny stories</td>
<td>Je lis souvent des blagues ou des histoires drôles</td>
</tr>
<tr>
<td></td>
<td>5b. I enjoy being around quick-witted people</td>
<td>J’aime être en compagnie de personnes qui ont l’esprit vif</td>
</tr>
<tr>
<td></td>
<td>6b. I need to be with people who have a sense of humor</td>
<td>J’ai besoin d’être avec des gens qui ont le sens de l’humour</td>
</tr>
</tbody>
</table>

Iterative Exploratory Factor Analysis and Item Purification

Following Cline, et al. (2003), and Crawford and Gregory (2008), principal component analysis with Varimax rotation was used to conduct exploratory factor analysis of the structure of the 12-item scale. The number of optimal factors was determined using a combination of Kaiser’s criterion (Kaiser, 1960) and the scree test (Cattell, 1966). Inspection of the scree plot indicated that extracting two factors was appropriate. The first factor had an eigenvalue of 4.46 and explained 37.15% of the variance; the second factor had an eigenvalue of 1.69, and explained 14.09% of the variance. The other factors had eigenvalues close to or below 1. The two-factor model thus explained 51.24% of the variance. Inspection of factor loadings indicated that most
items loaded strongly on the expected latent factors, but some items were nevertheless problematic: Item 4b, Item 5b, and Item 6a had loadings below .50 and Item 1b loaded on the unexpected factor (.72 on Factor 1). Note that these observations are fully congruent with those reported by Crawford and Gregory (2008). Tests of internal consistency showed that item-total correlations were positive and statistically significant ($r_s = .32$ to .77, all $p < .01$), with Items 4b and 5b showing the lowest correlation coefficients ($r = .32$ and .34, respectively). The Spearman-Brown split-half coefficient (even/odd items) was large and statistically significant ($r_{sb} = .87$, $p < .01$), as was the Cronbach’s alpha ($a = .82$, $p < .01$; Cronbach, 1951). Inspection of the comments added by the sample of bilingual adults to point out any ambiguities in items of the French version of the scale revealed that the terms “connoisseur” (connaisseur, Item 1b) and “quick-witted” (esprit vif, Items 5a and 5b) were not easily understood by one participant. Besides this, no other comments were made, suggesting that the French version of the scale was easy to understand. It was decided to remove the four problematic items (6a, 1b, 4b, 5b) from the scale and the analysis was repeated with the 8 remaining items.

Inspection of the scree plot indicated that extracting two factors was appropriate. The first factor had an eigenvalue of 3.30 and explained 41.29% of the variance; the second factor had an eigenvalue of 1.50, and explained 18.78% of the variance. The two factors model thus explained a large proportion of the variance (60.07%). Inspection of factor loadings of the matrix structure indicated that all items loaded strongly (> .70) on the expected latent factors (see Table 2). Tests of internal consistency showed that each item correlated with the total score ($r_s = .41$ to .76, all $p < .01$). The Spearman-Brown split-half coefficient (even/odd items) was large and statistically significant ($r_{sb} = .86$, $p < .01$), as was Cronbach’s alpha ($a = .79$, $p < .01$). These findings encouraged a confirmatory factor analysis with the 8-item scale.

Confirmatory Factor Analysis

A confirmatory factor analysis was conducted to test the two-factor model’s fit to the 8-item scale, using the maximum likelihood method with Lisrel 9.10 (Jöreskog & Sörbom, 2012). A two-factor model was tested in which Items 1a, 2a, 3a, 4a, and 5a loaded on a first latent factor (Internal) and Items 2b, 3b, and 6b loaded on a second latent factor (External). The analysis showed acceptable fit indices: GFI = .952, AGFI = .909, CFI = .974, RMSEA = .072. The correlation between the Internal and External humor dimensions was positive and statistically significant ($\phi_8 = .30$, $p < .01$, 95%CI= .11-.47 ), and internal consistency of the scale was satisfactory (Cronbach’s $a = .79$). In addition, the total scores obtained on the final 8-item scale ($M = 41.62$; $SD = 6.18$) did not vary according to sex (Student $t_{98} = -0.26$, $p = .79$). Finally, the test-retest reliability
obtained over a one-month period was satisfactory \((r = .87, p < .01, N = 21\) bilingual adults), and total scores on the 8-item scale correlated strongly for both the original English and the French versions \((r = .77, \text{ and } .88, p < .01, \text{ at Times 1 and 2, respectively})\). Thus the 8-item scale can be considered as a reliable and valid measure of internal and external dimensions of self-reported need for humor in the young adults.

**Table 2**  
Study 1a: Descriptive Statistics and Factor Loadings from the Exploratory Factor Analysis (8-item solution)

<table>
<thead>
<tr>
<th>Items</th>
<th>M</th>
<th>SD</th>
<th>Factor 1</th>
<th>Factor 2</th>
<th>(h^2)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Section a. Internal</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1a. People expect me to say amusing things</td>
<td>4.43</td>
<td>1.36</td>
<td>.72</td>
<td>.22</td>
<td>.48</td>
</tr>
<tr>
<td>2a. I can crack people up with the things I say</td>
<td>5.13</td>
<td>1.28</td>
<td>.74</td>
<td>.19</td>
<td>.46</td>
</tr>
<tr>
<td>3a. I often come-up with witty comments</td>
<td>5.20</td>
<td>1.17</td>
<td>.78</td>
<td>.20</td>
<td>.53</td>
</tr>
<tr>
<td>4a. I am good at thinking-up jokes or funny stories</td>
<td>4.00</td>
<td>1.36</td>
<td>.78</td>
<td>.16</td>
<td>.50</td>
</tr>
<tr>
<td>5a. People tell me that I am quick-witted</td>
<td>4.48</td>
<td>1.38</td>
<td>.75</td>
<td>.22</td>
<td>.34</td>
</tr>
<tr>
<td>Section b. External</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2b. I prefer situations where people are free to express their senses of humor</td>
<td>6.08</td>
<td>1.00</td>
<td>.17</td>
<td>.70</td>
<td>.27</td>
</tr>
<tr>
<td>3b. I enjoy being with people who tell jokes or funny stories</td>
<td>6.12</td>
<td>1.04</td>
<td>.00</td>
<td>.77</td>
<td>.24</td>
</tr>
<tr>
<td>6b. I need to be with people who have a sense of humor</td>
<td>6.18</td>
<td>1.05</td>
<td>.20</td>
<td>.73</td>
<td>.33</td>
</tr>
</tbody>
</table>

*Note.* – High means indicate a high need for humor. The criterion for loadings was >.50.

**Discussion**

Study 1a showed that Cline et al.’s NFH scale can be used outside the United States with French university students, with a 8-item model similar to that previously obtained by Crawford and Gregory (2008) with Australian university students. The results indicated adequate psychometric properties of the French version of the 8-item scale: factor analyses supported the two-factor structure of the scale, internal consistency and test-retest reliability were satisfactory, and the concomitant validity of
the French version of the questionnaire was supported by the correlations observed between scores on the English and the French versions of the scale. Having shown that the French version of the 8-item NFH scale was valid and accurate with a population of adults, the next step of the validation process was to demonstrate that the French version could also be used with school-aged children. This was the purpose of Study 1b.

STUDY 1B

Study 1b was a new validation procedure to test whether the French version of the NFH scale could be used with a sample of school-aged children. According to McGhee’s stages of humor development (McGhee, 1979), children from 6 or 7 years are assumed to enter the final and adult stage of humor appreciation, understanding riddles or jokes, double meanings.

Method

Sample

French school-aged children (N=160) responded to the questionnaire. The sample comprised 40 children in Grade 2 (age range 7 to 8 years; 19 girls, 21 boys), 40 children in Grade 3 (age range 8 to 9 years; 21 girls, 19 boys), 40 children in Grade 4 (age range 9 to 10 years; 20 girls, 20 boys), and 40 children in Grade 5 (age range 10 to 11 years; 21 girls, 19 boys). All the children attended public elementary schools in towns in southern France. None of them had skipped or repeated a grade. Both informed parental consent and children’s assent were obtained.

Procedure

The French version of the 12-item NFH scale was administered to children who rated each item on a 7-point Likert-type scale (1: Strongly disagree and 7: Strongly agree), with a possible total score ranging from 12 to 84, with high scores indicating high need for humor. The children, who were given detailed instructions about how to use this scale, were tested individually at their schools in a single session lasting approximately 10 min. An additional (new) sample of 20 children (M age = 10 yr. 6 mo., SD = 7 mo.; 10 girls, 10 boys) was involved in a test-retest procedure. They completed twice the French version of the scale, with a one-month delay. At test, they were asked to circle any item or word that seemed unclear or was unknown to them, and to explain the experimenter why they found the item or word unclear.

Results
The data were checked for skew (S = -.19) and kurtosis (K = .30), which were within the normal range, and a Bartlett’s test was run ($\chi^2_{11} = 12.14, p = .35$), showing suitability for factor analysis.

*Iterative Exploratory Factor Analysis and Item Purification*

Preliminary analyses of the structure of the 12-item scale indicated that a single factor was best suited to explain the structure of the scale, but this factor only explained 32.05% of the variance. Moreover, although the factor loadings of the 12 items revealed a positive weighting of all the items, the loadings were very low for the majority of the items (six items had loadings below .50, five had loadings between .50 and .61, and one has a loading above .70). We therefore decided to re-analyze the data using the shortened version (8-item) of the scale developed with the sample of French university students.

The structure of the 8-item scale was examined using principal component analysis with Varimax rotation to conduct exploratory factor analysis. Inspection of the scree plot indicated that extracting two factors was appropriate. The first factor had an eigenvalue of 2.82 and explained 35.27% of the variance; the second factor had an eigenvalue of 1.18, and explained 14.13% of the variance. The other factors had eigenvalues close to or below 1. The two-factor model thus explained 49.41% of the variance. Inspection of factor loadings indicated that most items loaded strongly on the expected latent factors, with the exception of Items 5a and 3b, which had loadings below .50. Tests of internal consistency showed that each item of the NFH scale correlated statistically significantly with the total score for these items ($r_s = .43$ to $.72$, all $p$'s < .01), with Item 5a showing the lowest correlation coefficient. The Spearman-Brown split-half coefficient was statistically significant ($r_{sb} = .71, p < .01$); Cronbach’s alpha was just acceptable ($\alpha = .70, p < .01$). Inspection of comments made by the additional sample of children regarding the clarity of the items suggested that the term “quick-witted” (*esprif vif*, Item 5a) was not easily understood by some of the children (20%). The two problematic items (5a, 3b) were removed from the scale and the analysis was repeated with the 6 items.

Inspection of the scree plot indicated that extracting two factors was appropriate. The first factor had an eigenvalue of 2.35 and explained 39.20% of the variance; the second factor had an eigenvalue of 1.12, and explained 18.76% of the variance. The two factors model thus explained 57.96% of the variance. Inspection of factor loadings indicated that all items loaded satisfactorily (> .61) on the expected latent factors (see Table 3). Item-total correlations ranged from .54 to .75 (all $p$ < .01). The Spearman-Brown split-half coefficient was $r_{sb} = .74 (p < .01)$, and Cronbach’s $\alpha$ was rather weak at
.68 (p < .01). These findings encouraged us to conduct a confirmatory factor analysis with the 6-item scale.

### Table 3
Study 1b: Descriptive Statistics and Factor Loadings From Exploratory Factor Analysis (6-item solution)

<table>
<thead>
<tr>
<th>Items</th>
<th>M</th>
<th>SD</th>
<th>Factor 1</th>
<th>Factor 2</th>
<th>h²</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Section a. Internal</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1a. People expect me to say amusing things</td>
<td>4.86</td>
<td>2.17</td>
<td>.61</td>
<td>.05</td>
<td>.14</td>
</tr>
<tr>
<td>2a. I can crack people up with the things I say</td>
<td>5.23</td>
<td>2.11</td>
<td>.64</td>
<td>.25</td>
<td>.24</td>
</tr>
<tr>
<td>3a. I often come-up with witty comments</td>
<td>4.37</td>
<td>2.20</td>
<td>.81</td>
<td>.05</td>
<td>.32</td>
</tr>
<tr>
<td>4a. I am good at thinking-up jokes or funny stories</td>
<td>4.85</td>
<td>2.19</td>
<td>.76</td>
<td>.28</td>
<td>.40</td>
</tr>
<tr>
<td><strong>Section b. External</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2b. I prefer situations where people are free to express their senses of humor</td>
<td>4.99</td>
<td>2.25</td>
<td>.04</td>
<td>.84</td>
<td>.16</td>
</tr>
<tr>
<td>6b. I need to be with people who have a sense of humor</td>
<td>5.26</td>
<td>2.18</td>
<td>.16</td>
<td>.76</td>
<td>.18</td>
</tr>
</tbody>
</table>

*Note.* — High means indicate a high need for humor. The criterion for loadings was >.50.

### Confirmatory Factor Analysis

A confirmatory factor analysis was conducted to test the bi-dimensionality of the 6-item scale, using the maximum likelihood method with Lisrel 9.10. We set up a two factor model in which Items 1a, 2a, 3a, and 4a loaded on a first latent factor (Internal) and Items 2b and 6b loaded on a second latent factor (External). The analysis showed acceptable fit indices: GFI = .981, AGFI = .949, CFI = .992, RMSEA = .037. The correlation between the Internal and External humor dimensions was positive and statistically significant (ϕ₆ = .30, p < .01, 95%CI=.15-.43), and internal consistency of the scale was weak (Cronbach α = .68). In addition, responses to each item ranged from 1 to 7. Total scores ranged from 6 to 42 (M = 29.58, SD = 8.12, Mdn = 32.28). There was no statistically significant sex effect (Student t test for independent samples, t₁₅₈ = -0.59, p = .55) or age group [one-way analysis of variance with Group (4) as a between-subjects factor, F₃,₁₅₆ = 0.79, p = .50]. The test-retest reliability obtained over a one-month period was satisfactory (r = .82, p < .01, N = 20 children). Thus the 6-item scale can be
considered as a reliable and valid measure of internal and external dimensions of self-reported need for humor in the school-aged children, although probably the scope of the item content should be checked because so many items have been deleted from the original version.

Discussion

Study 1b showed that a shortened French version of Cline, et al.’s NFH scale can be used with school-aged children. The 6-item scale showed adequate psychometric properties: factor analyses supported the two-factor structure of the scale, and internal consistency and test-retest reliability were satisfactory. Interestingly, there was no evidence that need for humor varied across age groups. Further studies are needed to test whether the need for humor personality trait remains stable in individuals across their life span. Since the a short French version of the NFH scale seems valid for school-aged children, the final step of the validation process was to demonstrate that children with high NFH scores would respond more positively to humorous stimuli than children with low NFH scores. This was the purpose of Study 2.

STUDY 2

The goal of Study 2 was to examine whether inter-individual differences in children’s NFH scores were associated with responses to humorous print advertisements. A preference task was used because previous studies have consistently demonstrated that humor has a stable, positive effect on attention (e.g., Gulas & Weinberger, 2006; Madden & Weinberger, 1982), whereas the evidence for the effect of humor on both comprehension and persuasion is more mixed (Hansen, Strick, van Baaren, Hooghuis, & Wigboldus, 2009; see Markiewicz, 1974; Weinberger & Gulas, 1992 for reviews). In line with previous studies with adult participants (Cline et al., 2003; Cline & Kellaris, 2007), it was predicted that preferences for humorous print advertisements would be stronger in children with high NFH scores.

Method

Participants

Fifty children from Study 1b took part in Study 2. They were drawn from Grades 4 ($n = 25$ children) and 5 ($n = 25$), corresponding to the last two years of primary school in France. Children aged 9 to 11 years were recruited because these children might be mature enough to understand humor and irony in public health advertising (see, e.g., Dews, et al., 1996; Glenwright & Pexman, 2010). The children were divided into three groups according to their scores on the NFH scale. The sample was split into three
groups: high NFH (score equal to or above $M+SD=37$; $n = 10$ children), medium NFH [scores between 23 ($M-SD+1$) and 36 ($M+SD-1$); $n = 30$ children], and low NFH [scores equal to or below 22 ($M-SD$); $n = 10$ children]. In each group, there was approximately the same number of boys and girls, as well as the same number of children from each grade.

**Material**

The stimuli consisted of six pairs of public health advertisements, each with one humorous and one non-humorous print version. These advertisements were selected on the basis of results from a pre-test in which a separate group of children had to sort a larger set of public health advertisements into humorous and non-humorous categories. The humorous (and non-humorous) advertisements used in Study 2 were categorized as such by at least 50% of the pre-test children (humorous ads: $M = 64\%$, $SD = 8$; non-humorous ads: $M = 68\%$, $SD = 6$). The advertisements dealt with two health topics: Obesity (three pairs) and smoking (three pairs). They all included a picture and a slogan, and the humorous print advertisements mostly used irony. For example, with respect to tobacco use, one (humorous) advertisements showed a family at lunch time with all the members, including a young child, smoking a cigarette. The slogan was: “Your cigarette: Other people smoke it too!” Another (non-humorous) advertisements showed a shark in a blue sea with the following slogan: “People have 1 chance in 650 million of being killed by a shark. Smokers have 1 chance in 2 of dying from smoking.”

The selected set of advertisements was further rated for humorous character by a small sample of 20 children who assessed the humorousness of each advertisement, using a 5-point scale (1: Not at all, 5: Very much). Results indicated that the mean ratings were statistically significantly higher for the humorous ($M = 3.03$, $SD = 1.12$) than non-humorous advertisements ($M = 1.91$, $SD = .90$) (Wilcoxon matched pairs test, $z = 3.82$, $p < .001$, $r = .85$). These children also rated whether each advertisement was easy to understand, using a 5-point scale (1: Not at all, 5: Very much). Results indicated that the mean ratings did not did not differ statistically significantly between the humorous ($M = 4.05$, $SD = 1.10$) and non-humorous advertisements ($M = 3.87$, $SD = .98$) (Wilcoxon matched pairs test, $z = 1.46$, $p = .14$). The mean number of words included in the slogans did not differ statistically significantly between the humorous ($M = 10$, $SD = 5.96$) and non-humorous advertisements ($M = 13$, $SD = 5.09$) (Wilcoxon matched pairs test, $z = 1.36$, $p = .17$). Thus, humorous and non-humorous advertisements did not differ in terms of length of slogan or processing demands.

**Procedure**

In the preference task, children were successively shown six pairs of print advertisements on a computer screen, each pair featuring a humorous and a non-
humorous advertisement on a given topic (obesity, smoking). For each pair, children indicated whether they preferred the right-hand or left-hand advertisement by putting a cross in the relevant box on a response sheet. Each pair remained on the screen for 15 sec. The order of presentation of the pairs was counterbalanced across the children, as was the spatial position of the advertisements within each pair. Instructions for the task were as follows: “You will be shown pairs of print advertisements. Look carefully at each pair, and choose the advertisement you prefer in each pair. Use the response sheet to record your responses.” Summed preference ratings for humorous advertisements were divided by the total number of pairs (N = 6) and converted to a percentage score by multiplying by 100. Preference scores for humorous advertisements varied from 0 to 100%, with 50% indicating a preference at chance level.

Results
Preliminary analyses revealed that preference scores did not vary statistically significantly according to topic, age group, or sex (Student t tests, all ps > .05). Data were therefore collapsed across these factors for further analyses. Mean preference scores from the Low, Medium and High NFH groups are displayed in Table 4. Results indicated that the preference scores of the Low NFH group were not statistically significantly different from chance (Student t9 = 1.46, p = .17). By contrast, the mean preference scores of the Medium and High NFH groups were statistically significantly above chance level (t29 = 3.44, p < .01, Cohen’s d = .80; t9 = 6.00, p < .01, Cohen’s d = 2.18, respectively). Student t tests also indicated that the Low NFH group had statistically significantly lower preference scores than the High NFH group (t18 = -2.54, p < .05, Cohen’s d = 1.14). A correlation analysis indicated that individual NFH scores were statistically significantly (but weakly) correlated with individual preference scores for humorous stimuli (r = .34, N = 50, p < .05, 95%CI= .07-.56). The correlation remained statistically significant whether Internal or External dimensions of NFH scores were considered.

Table 4
Study 2: Descriptive Statistics for Preference Scores for Humorous Stimuli in Children with Low, Medium and High Scores on the Need For Humor Scale

<table>
<thead>
<tr>
<th></th>
<th>Low</th>
<th>Medium</th>
<th>High</th>
</tr>
</thead>
<tbody>
<tr>
<td>n</td>
<td>10</td>
<td>30</td>
<td>10</td>
</tr>
<tr>
<td>M</td>
<td>58.33</td>
<td>63.33*</td>
<td>76.66*</td>
</tr>
<tr>
<td>SD</td>
<td>18.00</td>
<td>21.17</td>
<td>14.05</td>
</tr>
</tbody>
</table>

* Scores significantly different from chance (50%)
Discussion

In Study 2, a preference for humorous health advertisements was observed in the Medium and High NFH groups. By contrast, the Low NFH group had a chance-level mean preference score. The finding that the High NFH group had significantly higher preference scores for humorous health advertisements than the Low NFH group is consistent with our expectations and with previous studies (Cline, et al., 2003; Cline & Kellaris, 2007) that have reported similar effects with adults, using commercial advertisements. Note that the observed preference was quite strong, as indicated by the large effect sizes. Need for humor may be a motivator for children with high NFH scores to respond more favorably to humorous advertisements, at least in terms of declared preference. Further research will be needed to explore whether need for humor moderates the persuasiveness of humorous advertisements as perceived by children.

General Discussion

The purpose of this three-step study was to validate a French version of Cline, et al.’s NFH scale (2003), so that it can be used for research on humor effects in advertising in a non-English speaking context. The main goal was to show that need for humor could be measured in school-aged children and that this personality trait was worth being considered as it could affect children’s responses to humorous advertisements. Children are in a sensitive period of development and are a target for persuasive advertising using humorous appeals, for better or worse. Validating the NFH scale with this young population was thus important for future psychological research in France.

In Study 1a, a French version of a 8-item NFH scale was validated preliminarily with a sample of 100 university students. Interestingly, the 8-item, two-factor model was similar to that previously obtained by Crawford and Gregory (2008), who performed a transcultural validation of Cline, et al.’s NFH scale with Australian university students. In Study 1b, a shortened French version (6-item) of the NFH scale was validated with a sample of 160 school-aged children. This short version had adequate psychometric properties, in terms of factor structure and internal consistency and test-retest reliabilities. Finally, Study 2 provided evidence that need for humor affected responses to humorous advertisements in children aged 9 to 11 years: a High NFH group had a preference for humorous advertisements (over non-humorous ones), whereas a Low NFH group did not show any preference. Overall, the findings in Studies 1b and 2 provide preliminary support for the reliability and validity of the 6-item NFH scale for French children. Yet the availability of this short and easy-to-
administer questionnaire offers abundant opportunities for further research using need for humor to examine children’s responses to humorous advertisements in a French setting.

References


