Humor and Competence in School-aged Children

Ann S. Masten
University of Minnesota

MASTEN, ANN S. Humor and Competence in School-aged Children. CHILD DEVELOPMENT, 1986, 57, 461–473. Multiple aspects of humor were evaluated in children between the ages of 10 and 14 and related to several areas of competence manifested at school. Humor measures assessed appreciation (including mirth, subjective ratings, and response sets), comprehension, and production, while competence measures included teacher ratings of classroom behavior, peer reputation, and achievement. Humor was related to competence in several ways consistent with previous theory and research: (1) through the manifestation of intellectual ability both in humor behaviors and in competent functioning; (2) through the role of mastery motivation enhancing both types of functioning; and (3) through peer relations, resulting from the effects of humor on peer acceptance or the effects of peer relations on humor behaviors. Ideas for further research relating humor to social competence, social cognition, and mastery motivation are discussed.

The appreciation and creation of humor have been credited with many adaptive functions (Goldstein & McGhee, 1972; Ziv, 1984). Social functions include the enhancement of interpersonal relations and group cohesiveness as well as the expression of sexual or aggressive feelings. Physiological functions include arousal reduction or relaxation produced by laughter. Defensive functions include the avoidance or alleviation of fears and anxiety. Cognitive functions ascribed to humor center on the process of “pleasure in mastery,” referring to enjoyment derived from successfully meeting the intellectual challenge involved in understanding or creating humor (McGhee, 1974). This concept was based on White’s (1959) theory of competence (or mastery) motivation, although Freud and Piaget each observed the process (Keith-Spiegel, 1972). Humor is thought to satisfy the competence motive and thereby to encourage subsequent mastery efforts.

Given the multiple adaptive functions attributed to humor, it is not surprising that a good “sense of humor” is often theoretically associated with adjustment in terms of maturity, health, or effective coping (Martin & Lefcourt, 1983). These theoretical perspectives suggest that humor would be positively related to competence, a primary characteristic of adjustment referring to the capacity for effective functioning in the environment (White, 1959; Yarrow et al., 1983). Up to now, however, this relation rarely has been examined empirically, except with respect to intellectual ability as measured by IQ, a relatively narrow approach to competence (McClelland, 1973).

Research on children’s humor appreciation, comprehension, and production provides evidence of the cognitive, social, defensive, and concomitant physiological functions of humor (McGhee & Chapman, 1980). First, children prefer humor they can understand and appear to derive considerable enjoyment from figuring out jokes. It has also been demonstrated, although not consistently, that optimal cognitive challenges can enhance humor appreciation (McGhee, 1976; Zigler, Levine, & Gould, 1966, 1967). Second, studies of infants and older children illustrate the social and physiological functions of humor.
Both in infant-mother games and in the interactions of older children watching cartoon films, humorous laughter and smiling appear to facilitate arousal modulation, thereby enhancing the quality of the transactions (Chapman, Smith, & Foot, 1980; Pien & Rothbart, 1980; Sroufe & Waters, 1976). The shared positive affect appears to be reciprocally reinforcing, which would encourage further social engagement. Third, observers of preschoolers and older children have noted the use of humor for coping with fear, anxiety, and current concerns (Gesell, Ilg, & Ames, 1946; Murphy & Moriarty, 1976; Ransohoff, 1975; Wolfenstein, 1954).

Often these functions are intertwined. For example, sexual jokes in the group of adolescent girls observed by Ransohoff (1975) served both to relieve anxieties about current developmental concerns and to enhance group cohesion. Similarly, the sharing of jokes by elementary school peers provides the pleasure of getting the joke along with the fun of sharing it with friends. Humor appreciation and creation thus can be multiply reinforced and reinforcing in a social context and would be expected to enhance competence, particularly social competence.

In addition to the evidence that humor may serve multiple functions in children, developmental research also suggests another mechanism by which humor and adjustment become linked. Much of the recent research on children’s humor has focused on how it is mediated by cognitive development. Data clearly show that appreciation and creation of humor depend to some degree on the level of factual knowledge, the development of symbolic, logical, and abstract reasoning abilities, language development, and the linguistic knowledge of the child (McGhee & Chapman, 1980). Since competence is also mediated by cognitive development, some relation would be expected between humor abilities and competence as a function of the development of general cognitive abilities. Zigler et al. (1966) have suggested that humor is associated with adjustment because both are mediated to some extent by cognitive functioning: “The conceptual demands of a joke or a cartoon require a variety of cognitive functions not unlike those demanded by a multitude of life’s problems, the adequate solutions of which characterize the adjusted individual” (p. 509).

Thus, research on children’s humor as well as various theoretical perspectives suggest that humor should be positively related to social, emotional, and cognitive competence. A number of studies have considered the relation of humor to intellectual competence (Brodzinsky & Rightmyer, 1980). However, the results are inconsistent, quite possibly because humor behaviors have been measured inconsistently.

Studies relating children’s humor abilities to social competence are scarce. In his studies of humor, Ziv (1984) found that adolescent humorists were more popular than their less humorous peers and were also viewed by peers as leaders. Humor and intellectual ability were positively related, particularly for creative humor and for males. In another study of eighth-grade class clowns identified sociometrically by their peers, Damico and Purkey (1978) found that “clowns” were rated by their teachers as leaders who were more cheerful, attention seeking, and unruly than nonclowning classmates.

The purpose of this study was to examine the relation between humor and competence in children, more specifically between three types of humor behavior and several significant aspects of effective functioning in school-aged children. One index of competence, peer reputation, was assessed by means of a class play instrument. Behavioral competence in the classroom was assessed by teacher ratings, and academic competence was assessed by an individual achievement test. Intellectual competence was assessed by an IQ measure so that the broader measures of social and academic competence could be compared with this traditional index of intellectual ability.

Humor assessment included two measures of humor appreciation, the funniness ratings of cartoons by the children and the mirth visibly expressed by them. In addition, neutral cartoons (humor removed) were used to measure possible response sets in the ratings of cartoons by the children, an important but neglected technique introduced by Brodzinsky (1975, 1977). These neutral cartoons allowed both appreciation scores to be adjusted for indiscriminate responding. Comprehension was measured by judges’ ratings of the children’s explanations of the cartoon humor. Finally, creative humor ability was measured by the quality of humorous captions or ideas children were able to produce on demand.

Given the cognitive and motivational requirements of the humor comprehension task and the production of humor on demand, both these aspects of humor were expected to be positively related to general intellectual com-
petence as measured by IQ and to academic performance and effective classroom behavior. Appreciation was also expected to be related to IQ since appreciation (when corrected for baseline responsiveness) should depend to some degree on comprehension. In addition, the pervasive association in the literature between laughter or smiling and mastery suggested that appreciation might also be positively associated with academic competence, perhaps beyond the role of comprehension. Finally, since both humor appreciation and production appear to be socially facilitating and highly valued characteristics, they were expected to relate to social competence as assessed by peer reputation.

Given the expected relations among IQ, other forms of competence, and humor, the question arose as to whether humor would be related to social and academic competence beyond whatever variance was shared with IQ. It was important to address this question in order to determine whether humor and competence are related only because they are both cognitively mediated. On the premise that humor and competence—particularly social competence—involve motivational and social qualities that go beyond individual differences in intellectual ability, it was predicted that some unique relations would be found between humor and competence beyond the contributions of IQ.

Method

Subjects

Participants in this study included 93 children (51 girls and 42 boys, ages 10–14) in grades 5 (N = 32), 6 (N = 23), 7 (N = 22), and 8 (N = 16). Twenty-five percent of the children were of ethnic minority backgrounds, including black, American Indian, Hispanic, and Asian students. These children were part of a series of investigations dealing with competence and stress resistance in school-aged children (Garmezy, Masten, & Tellegen, 1984; Garmezy & Tellegen, 1984). Participants in these studies were originally drawn from all the third- to sixth-grade students of two centralized urban schools housed in the same building complex with a substantial proportion of lower- and middle-class families and single parents. At the time of this study, the participants had been involved in various Project Competence studies for approximately 2 years, during which time a number of children had gone on to secondary school or had moved to new school districts. A large proportion of these children and their families were participating in interview studies that provided information regarding socioeconomic status (SES). The Duncan Socioeconomic Index (Hauser & Featherman, 1977) was used to estimate SES levels. There was a considerable range of SES scores (11–92) on this 100-point scale. The mean SES level (43) falls among such occupations as craft workers, highly skilled labor, and clerical workers.

Measures

Humor stimuli.—Cartoons were chosen in order to include a broad range of nonverbal humor and on the assumption that humor with a visual element has great appeal for children. “Ziggy” cartoons created by Tom Wilson (Universal Press Syndicate) were selected for the pool of humor stimuli because they were available in abundance, because they varied widely in difficulty and content, and because they featured one central character of ambiguous age and occupation who often faced situations that would be familiar to children. Limiting the pool to one type of cartoon was intended to promote the formation of a humor set that might facilitate the difficult task of producing humor on demand, using cartoon drawings of the same type as stimuli.

Cartoons from a large collection (Wilson, 1977) were initially screened on the basis of wordiness (cartoons with more than a dozen words were eliminated), difficulty, appeal, and suitability for children. Adult judges (graduate students in psychology and three elementary school principals) were instructed to rate the cartoons on appropriateness as well as “humorousness, engagingness, and interest” for children ranging from age 8 to age 14, without regard to difficulty. The final pool of 96 cartoons was rated again by 163 fourth to eighth graders forfunniness and by five judges (graduate students) for difficulty level. The following humor measures were developed from these cartoons.

Humor appreciation.—Two sets of cartoons were selected for appreciation assessment. Set A, chosen to maximize the effects of individual differences not due to comprehension or group differences, consisted of 14 appealing, easy cartoons that had shown no sex or grade effects in the pilot results. Set B, chosen to maximize the likelihood of obtaining appreciation differences related to difficulty and comprehension, was selected on the basis of multiple criteria: high interjudge agreement on difficulty level, the absence of sex effects, significant grade effects in pilot results, and varied content. Four cartoons were selected from each of four difficulty levels. Finally, sex neutral (nonfunny) cartoons were
created by removing the intended humor. Three neutral cartoons were randomly added to both set A and set B.

The cartoons were presented individually in random order to each child to assess funniness on a five-point scale, ranging from 1 (not funny at all) to 5 (very, very funny). Five simple facial line drawings illustrated each scale point, ranging from a neutral, unsmiling face at level 1 to an open-mouth laughing face at level 5. Simultaneously and unknown to the child, the administrator rated the affect ("mirth") expressed by the child in response to the cartoon on a four-point scale: 1 = no or negative response; 2 = slight smile (silent, lips closed or almost closed); 3 = full smile (open mouth smile, usually silent or with one expiration of breath at the outset or one noise); and 4 = laughter (vocalized smile, with "haha" breathing pattern and vocalization). Previous reports of mirth scoring suggested that a simple behaviorally defined scale was the most reliable (e.g., Brodzinsky, 1975, 1977; Zigler et al., 1966). Pilot testing indicated interrater agreement for this scale of 77% for perfect agreement and 96% for agreement within one mirth level. The interrater reliability correlation for mirth scores summed over 30 cartoon items (15 subjects) was .97. In a pilot study with 33 elementary school children, test-retest reliability for alternate forms of a 48-item group-administered appreciation test given 2 weeks apart was .78.

Funniness ratings and mirth scores were summed for sets A and B and the neutral cartoons. Subsequently, the ratings and mirth scores were adjusted for baseline responses. When a single score was needed for analysis, a regressed difference score (Cohen & Cohen, 1975) was derived by the formula C = ZA - rABZB, where ZA is the standardized response to the regular cartoons, ZB is the standardized response to the neutral cartoons, and rAB is the correlation of the A and B scores. Otherwise, the baseline appreciation scores were used as covariates.

Humor comprehension.—After the appreciation and production tasks were given, each child was asked to explain the humor in the set B cartoons, and the explanations were noted verbatim. Subsequently, each response by each subject was judged independently by presenting them separately (on index cards) to each judge in random order. Judgments were based on comprehension criteria for each cartoon developed by Masten (1982). Comprehension was rated by two judges on a three-point scale: 3 = full comprehension; 2 = partial comprehension; 1 = no comprehension. Subsequent to independent ratings, the two judges discussed disagreements to reach a consensus. Scores were summed to obtain a global comprehension score. Interrater reliability was .96 for the global score.

Humor production.—Two tasks, Captions and Titles, were developed to assess the creative aspects of humor. Captions consisted of nine cartoons in which part of the humor, usually a verbal punch line, was removed. The child was instructed to add something to make the cartoon funnier. Titles included six unaltered, nonverbal cartoons previously rated by judges as easy to understand. The child was asked to make up a funny title for the cartoon. In both tasks the cartoons were selected to have a strong "pull" for humor, although the Captions task did not require a verbal "punch line" response; children could and did suggest nonverbal changes in the cartoon drawings. If unable to produce a response, the child was encouraged to return to an item later. For Captions only, if no attempt at an item was made, a single prompt was provided: for example, "What could the bird be saying to Ziggy that would be funny here?" (In the final scoring no penalty was deducted for cued responses since this produced a negligible effect on scores.)

Subsequently, each response was independently scored by two judges who first scored each response for appropriateness (inappropriate or bizarre responses were scored 0) and then scored all appropriate responses using a five-point scale with two anchor points: 1 (not at all funny) and 5 (exceptionally funny, witty). These independent judgments were averaged to obtain quality scores. Unknown to the judges, the original captions for the Captions task cartoons were randomly included in the deck of responses for each item. For eight of the nine items, a number of children scored as high or higher than the cartoonist. Interrater reliabilities were .63 for each task and .75 for a 15-item composite.

Intelligence.—General intellectual ability was estimated by two subtests of the Wechsler Intelligence Scale for Children—Revised (WISC-R), Vocabulary and Block Design. This two-test short form has shown the highest correlations (r = .88) with the Full Scale IQ score (Silverstein, 1975). The mean score for the two scale scores summed (N = 90) was 20.2 (SD = 5.3).

Competence.—Academic achievement was assessed by the Peabody Individual Achievement Test (PIAT) (Dunn & Markwardt, 1970). Behavioral competence in the
classroom was measured by teacher ratings on the Devereux Elementary School Behavior Rating Scale (DESB) (Spivack & Swift, 1967), which has shown evidence of reliability and validity for differentiating maladjusted and poorly achieving children in the classroom (Kendall, Pellegrini, & Urbain, 1981). Four scores were computed: Disruptive-Oppositional (based on 18 items), Poor Comprehension–Disattention (14 items), Cooperative-Initiating (eight items), and Performance Anxiety (four items). These scores had shown factorial validity, stability, and high internal consistency in a Project Competence study of 648 children (Finkelman & Ferrarese, 1981). Interpersonal competence was assessed with a peer assessment instrument, the Revised Class Play (Masten, Morison, & Pellegrini, 1985). The class play method has shown good evidence of concurrent and predictive validity regarding adjustment (e.g., Bower, 1969; Cowen, Pederson, Babigian, Izzo, & Trost, 1973; Lambert, Harstough, & Zimmerman, 1976). The Revised Class Play measures three reliable dimensions of peer reputation: sociability-leadership, aggressive-disruptive, sensitive-isolated.

Procedure

Humor session.—Children were tested individually at their schools. The humor battery was administered in one session of about 30-min duration by a female administrator (the investigator, who was uninformed about the status of the children on all SES, competence, and IQ variables). Every attempt was made to maintain a warm and pleasant context for all the tasks, without emphasizing time or evaluation, with the goal of fostering an atmosphere conducive to humor appreciation and particularly to creating humor on demand.

Appreciation tasks were administered first. After several examples, set A cartoons (including three neutral cartoons) were presented one at a time followed by set B cartoons (also including three neutral cartoons). Each set was presented in random order except that the first cartoon was not one of the difficult or neutral cartoons. The children were instructed that some cartoons would be funnier than others and that some would not be funny at all, and the rating scale was fully explained. Following the appreciation tasks, the two humor-production tasks (Captions and then Titles) were administered. Each task included a practice example. Comprehension was administered last since this task, by nature, seems more evaluative or academic and might have stifled appreciation or creativity if it had preceded the others. The children were asked to explain what was funny (or supposed to be funny) about each of the set B cartoons, which were presented in the same order as in the appreciation ratings.

Other measures.—Procedures for the competence and other measures have been described in detail elsewhere (Garmezy & Tellegen, 1984). The PIAT was individually administered, and standardized scores were computed according to the manual. The Revised Class Play was group administered to each classroom, and scores were standardized within classroom and sex (to adjust for unequal sex and classroom size distributions). Teachers completed the DESB on each member of their classes, and scores were standardized within class (to adjust for variations in teacher rating tendencies).

The humor tests were administered in the fall. The PIAT had been administered shortly before by another administrator. The peer and teacher assessments reported here were collected during the late spring of the same calendar year (but the previous school year) as the humor measures.

Results

Reliability

Internal consistencies (alpha) for the appreciation and comprehension measures were satisfactory,.91 for funniness ratings (30-item composite), .93 for mirth, and .71 for comprehension. Alpha was more moderate for humor-production scores: .55 for the Captions task, .51 for Titles, and .68 for a 15-item composite of the two. Recall that interrater reliability was also lower for judgments of creative humor quality. Both producing humor and judging its quality may be more difficult and less consistent than other aspects of humor behavior.

Since the neutral cartoons were altered with the goal of removing the joke, the mean responses to these cartoons should be lower than the means for the “funny” cartoons. All neutral versus “funny” cartoon mean comparisons for ratings and mirth indicated that the means for neutral cartoons were significantly lower (one-tailed t tests, all p < .001). For example, the mean funniness rating and mirth scores were 3.28 and 1.97, respectively, for funny cartoons and 1.63 and 1.23, respectively, for the neutral cartoons.

Intercorrelations among the Humor Scores

The correlations of the same appreciation scores across cartoon sets A and B were quite
Table 1

Intercorrelations Among Humor Scores

<table>
<thead>
<tr>
<th></th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
<th>6</th>
<th>7</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Production</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2. Comprehension</td>
<td></td>
<td>.53***</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>3. Adjusted</td>
<td>.09</td>
<td>.15</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>4. Unadjusted</td>
<td>-.13</td>
<td>-.03</td>
<td>.79***</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>5. Control</td>
<td>-.32***</td>
<td>-.24**</td>
<td>.00</td>
<td>.61***</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>6. Adjusted</td>
<td>.27**</td>
<td>.35***</td>
<td>.47***</td>
<td>.29**</td>
<td>-.13</td>
<td></td>
<td></td>
</tr>
<tr>
<td>7. Unadjusted</td>
<td>.27**</td>
<td>.40***</td>
<td>.48***</td>
<td>.33***</td>
<td>-.07</td>
<td>.90***</td>
<td></td>
</tr>
<tr>
<td>8. Control</td>
<td>.06</td>
<td>.20*</td>
<td>.13</td>
<td>.17*</td>
<td>.12</td>
<td>.00</td>
<td>.45***</td>
</tr>
</tbody>
</table>

NOTE.—N = 93. For humor appreciation (ratings and mirth), “adjusted” scores are corrected for response to neutral (control) cartoons.

* p < .05.
** p < .01.
*** p < .001.

high—.78 and .81 for funniness ratings and mirth, respectively. Given the better reliability of the composite scores, these scores were combined. The two humor-production tasks (Captions and Titles) were also combined to form a single, more reliable scale. A number of the items on each task had correlations with items on the other task as high or higher than intratask correlations.

Intercorrelations among the humor scores are shown in Table 1. Humor production was most strongly related to comprehension, and the two aspects of appreciation showed a similar but lower relation. Funniness ratings and mirth were more strongly related to each other after each was adjusted for responsiveness to control stimuli.

Relations of Humor to Sex, Age, SES, and IQ

To test for the importance of sex, age, SES, and IQ differences in humor-task performance, a series of hierarchical regression analyses (Cohen & Cohen, 1975) were conducted, each treating humor as the dependent variable. The four subject variables were treated as independent measures and entered in hierarchical fashion in the following order: (1) sex, (2) age, (3) SES, and (4) IQ. Sex and age were not affected by other variables; they were therefore entered first. Socioeconomic status preceded IQ in order better to separate the unique variance explained by IQ after shared SES factors were already accounted for. Two interaction effects of interest, sex × age and sex × IQ, were tested last since the component variables must first be partialed to determine if an interaction adds significant unique variance to the multiple R². The hierarchical analysis consisted of a series of simultaneous regression equations, beginning with one independent variable, sex. The next regression equation included sex and age, the next sex, age, and SES, and so on.

Results presented in Table 2 indicated that boys expressed more mirth than girls (X̄ = 2.15 for boys and 1.83 for girls). When the frequencies of each type of mirth response were analyzed by sex (one-way ANOVAs for sex differences), results indicated that girls produced more neutral or negative (score of 1) responses, F(1,91) = 5.60, p < .05, that boys expressed more laughter, F(1,91) = 5.53, p < .05, and that there were no sex differences in the other two scores (smiling).

Mirth was also positively associated with higher SES level and IQ. In order to explore the role of IQ and comprehension in these relations, several additional analyses were conducted. When results were considered for only set A (easy) cartoons (when comprehension as a factor should be reduced), SES and IQ still showed very similar relations to mirth. When IQ was treated as the dependent variable, IQ alone as a predictor accounted for 15% of the variance in this relation.
TABLE 2
HIERARCHICAL MULTIPLE REGRESSION ANALYSES OF INDIVIDUAL DIFFERENCES IN HUMOR RESPONSE:
$R^2$ CHANGE DUE TO SEX, AGE, IQ, AND INTERACTION EFFECTS

<table>
<thead>
<tr>
<th>INDEPENDENT VARIABLES</th>
<th>Funniness Ratings</th>
<th>Mirth</th>
<th>Comprehension</th>
<th>Production</th>
</tr>
</thead>
<tbody>
<tr>
<td>Control</td>
<td>.41***</td>
<td>.20***</td>
<td>...</td>
<td>...</td>
</tr>
<tr>
<td>Sex</td>
<td>.00</td>
<td>.08**-</td>
<td>.00</td>
<td>.01</td>
</tr>
<tr>
<td>Age</td>
<td>.03*-</td>
<td>.11**+</td>
<td>.02</td>
<td>.05*</td>
</tr>
<tr>
<td>SES</td>
<td>.00</td>
<td>.08**+</td>
<td>.27***</td>
<td>.25***</td>
</tr>
<tr>
<td>IQ</td>
<td>.00</td>
<td>.07**+</td>
<td>.27***</td>
<td>.25***</td>
</tr>
<tr>
<td>Sex x age</td>
<td>.00</td>
<td>.02</td>
<td>.00</td>
<td>.00</td>
</tr>
<tr>
<td>Sex x IQ</td>
<td>.00</td>
<td>.01</td>
<td>.00</td>
<td>.00</td>
</tr>
<tr>
<td>Overall $R^2$</td>
<td>.45***</td>
<td>.42***</td>
<td>.43***</td>
<td>.31***</td>
</tr>
</tbody>
</table>

NOTE.—Each column represents a separate regression analysis for the humor score heading the column. Each regression was carried out hierarchically with each of the six (or seven) steps added in sequence. The resulting increment in $R^2$ due to the addition of each step is indicated in the table along with the significance of the increment ($F$ test) and the direction of the effect. Sex was coded 0 = boy, 1 = girl; thus a negative effect indicates that boys scored higher. $N = 87$.

* $p < .05$.
** $p < .01$.
*** $p < .001$.

Funniness ratings declined slightly but significantly with age. Both humor comprehension and production were greater with increasing age and intellectual ability.

Relation of Humor to Competence
Before the humor measures were analyzed in relation to the competence measures, each humor score was standardized within grade level so the scores were more comparable to the competence scores, all of which were standardized by classroom or age (see Procedure above).

The correlations between the humor measures and the competence measures are presented in Table 3. Socioeconomic status and IQ scores are also included. Given the sex difference in the mirth scores, these correlations are presented separately by sex. It should also be noted that the sample size is smaller for the peer and teacher ratings. Comparable data were not available for children who had moved to different schools, including the oldest grade cohort, who had moved on to seventh grade at the time of these assessments.

Generally, humor showed a positive relation to competence, although it showed little relation to disruptiveness as judged by peers or teachers. Humor production and comprehension had somewhat stronger relations to the IQ and achievement measures than did humor appreciation.

In order to discover whether mirth was related to competence beyond the possible role of comprehension, eight regression analyses were conducted with each competence indicator as the criterion and two humor predictors. Comprehension was entered first as a control variable, followed by mirth. This hierarchical analysis revealed that, after comprehension was taken into account, mirth accounted for very little unique variance, except in the case of cooperative-initiating behavior, which was significantly related to mirth after comprehension was partialed out.

Overall, the results in Table 3 raised the question of how general intellectual ability as traditionally represented by the IQ score might be affecting the correlations between humor and competence. It was important to consider to what extent the various aspects of humor were uniquely associated with competence, above and beyond any relation shared with the individual differences in sex, SES, and, especially, IQ. Another question concerned the relative strength of association between different aspects of humor and competence, particularly when other individual differences were controlled.
<table>
<thead>
<tr>
<th></th>
<th>N</th>
<th>Funniness</th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td>Boys</td>
<td>Girls</td>
<td>Comprehension</td>
<td>Production</td>
</tr>
<tr>
<td>SES</td>
<td>90</td>
<td>.07</td>
<td>.35**</td>
<td>.33**</td>
<td>.17</td>
<td>.04</td>
</tr>
<tr>
<td>IQ</td>
<td>90</td>
<td>.17</td>
<td>.38**</td>
<td>.39**</td>
<td>.55***</td>
<td>.50***</td>
</tr>
<tr>
<td>Achievement (PIAT)</td>
<td>93</td>
<td>.16</td>
<td>.31*</td>
<td>.33**</td>
<td>.61***</td>
<td>.53***</td>
</tr>
<tr>
<td>Peer reputation:</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Sociability-leadership</td>
<td>66</td>
<td>.25*</td>
<td>.27</td>
<td>.16</td>
<td>.29**</td>
<td>.30**</td>
</tr>
<tr>
<td>Aggressive-disruptive</td>
<td>66</td>
<td>-.10</td>
<td>.12</td>
<td>.09</td>
<td>-.01</td>
<td>.06</td>
</tr>
<tr>
<td>Sensitive-isolated</td>
<td>66</td>
<td>-.31**</td>
<td>-.42*</td>
<td>-.30*</td>
<td>-.36**</td>
<td>-.48***</td>
</tr>
<tr>
<td>Teacher ratings:</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Disruptive-oppositional</td>
<td>64</td>
<td>-.09</td>
<td>-.03</td>
<td>-.26</td>
<td>-.02</td>
<td>-.03</td>
</tr>
<tr>
<td>Poor comprehension—disattention</td>
<td>63</td>
<td>-.20</td>
<td>-.35*</td>
<td>-.37*</td>
<td>-.32**</td>
<td>-.39***</td>
</tr>
<tr>
<td>Cooperative-initiating</td>
<td>64</td>
<td>.04</td>
<td>.52**</td>
<td>.23</td>
<td>.36**</td>
<td>.41***</td>
</tr>
<tr>
<td>Performance anxiety</td>
<td>55</td>
<td>.00</td>
<td>.18</td>
<td>-.09</td>
<td>-.20</td>
<td>-.25*</td>
</tr>
</tbody>
</table>

*p ≤ .05.

**p ≤ .01.

***p ≤ .001.
To address these questions, a series of regression analyses were carried out in which each competence measure served as a dependent variable. As a first test of the association between the eight “dependent” and seven “independent” measures, the first canonical correlation was calculated. The resulting correlation of .88 (p < .001) suggested that non-random relations existed between the two sets of variables. Next, hierarchical regression was conducted for each aspect of competence with the following steps (independent variables): (1) sex; (2) SES; (3) IQ; and (4–7) four humor scores, ordered by contribution to the multiple correlation. The four humor variables were entered in order of contribution because there was no compelling rationale for preselecting the order. Thus the “strongest” humor variable was allowed to take precedence. Results of these analyses are presented in Table 4. Then, in order to compare the predictive strength of humor versus IQ, a second set of regressions was conducted moving IQ to step 7 so that all humor variables were entered before IQ. Salient results from this set of analyses will be described below.

As expected, general intellectual ability, as measured by the IQ score, appeared to play a substantial role in the assessed areas of competence, whether teachers, peers, or objective tests were the source of measurement. In several instances, however, humor showed a unique relation to competence above its shared variance with IQ.

Humor production and appreciation ratings were significantly related to sensitive-isolated peer reputation even after IQ was accounted for. When, in the second set of analyses, humor preceded IQ in the analysis, humor production alone accounted for as much variance as IQ did at step 3, an increment in $R^2$ of .24 (p < .001). Thus IQ and humor production related quite strongly to this aspect of peer reputation, together accounting for about 32% of the variance in this score, about half of which is shared variance plus a significant unique contribution of each type of measure with respect to the other. Setting aside IQ, humor production and appreciation (ratings) accounted together for 33% of the variance in the isolated peer reputation score. For positive reputation, these two aspects of humor can account for 16% of the variance if they precede IQ, leaving IQ (as step 7) accounting for 5% unique variance.

Humor comprehension made a small contribution to the prediction of achievement even after the overwhelming effect of IQ was accounted for. When comprehension was entered before IQ (in step 3), it increased $R^2$ by .30 (p < .001), and IQ subsequently added .20. Thus the IQ score showed a stronger relation to achievement.

Affective expressiveness in response to humor, indexed by the mirth score, had a significant, positive relation to performance anxiety. Interestingly, this occurred only when IQ was controlled. Thus while simple correlations showed a positive relation between IQ and mirth, a negative relation between IQ and performance anxiety, and very little relation between mirth and performance anxiety, one would expect that, for children with the same level of intellectual ability, mirth would be positively related to performance anxiety.

As can be seen in Table 4, humor scores did not make a unique contribution to the prediction of the teacher ratings of cooperative-initiating behavior and poor comprehension-disattention when IQ was entered first in step 3. When humor preceded IQ, however, humor production, the strongest predictor of the humor scores, increased $R^2$ by .15 (p < .01) for cooperative-initiating behavior (a positive relation) and by .14 (p < .01) for poor comprehension-disattention (a negative relation). However, most of these effects were shared with IQ. When the humor variables preceded IQ in the second set of regressions, humor production was the strongest predictor of the humor variables in five of the eight analyses.

Discussion

Results from this study support the hypothesis, derived from the developmental literature as well as from theories of humor, that humor and competence are positively related. Better humor production, comprehension, and greater mirth were associated with academic and social competence. Children who expressed these humor abilities were viewed by their teachers as more effectively engaged in the classroom and more attentive, cooperative, responsive, and productive. Their peers viewed them as more popular, gregarious, and happy and as leaders with good ideas for things to do. Neither humor nor IQ was related to disruptive-aggressive behavior as judged by teachers or peers.

As expected, intellectual ability was moderately related to humor, except in the case of humor-appreciation ratings. Mirth, comprehension, and production were significantly related to IQ even when the effects of sex, age, and SES were controlled. The rela-
<table>
<thead>
<tr>
<th></th>
<th>Peer Reputation</th>
<th>Teacher Ratings</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>STEP AND INDEPENDENT VARIABLE</strong></td>
<td><strong>ACHIEVEMENT</strong></td>
<td><strong>SOCIABILITY-LEADERSHIP</strong></td>
</tr>
<tr>
<td>N = 87</td>
<td></td>
<td></td>
</tr>
<tr>
<td>1. Sex</td>
<td>.00</td>
<td>.01</td>
</tr>
<tr>
<td>2. SES</td>
<td>.10**+</td>
<td>.05</td>
</tr>
<tr>
<td>3. IQ</td>
<td>.49***+</td>
<td>.14**+</td>
</tr>
<tr>
<td>N = 63</td>
<td></td>
<td></td>
</tr>
<tr>
<td>N = 63</td>
<td></td>
<td></td>
</tr>
<tr>
<td>4-7: Humor:</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Production</td>
<td>.00</td>
<td>.02</td>
</tr>
<tr>
<td>Comprehension</td>
<td>.04**+</td>
<td>.01</td>
</tr>
<tr>
<td>Mirth</td>
<td>.01</td>
<td>.00</td>
</tr>
<tr>
<td>Funniness</td>
<td>.00</td>
<td>.03</td>
</tr>
<tr>
<td>ratings</td>
<td></td>
<td></td>
</tr>
<tr>
<td>N = 63</td>
<td></td>
<td></td>
</tr>
<tr>
<td>N = 60</td>
<td></td>
<td></td>
</tr>
<tr>
<td>N = 53</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Total R²</td>
<td>.64***</td>
<td>.27**</td>
</tr>
</tbody>
</table>

**NOTE.**—Each column headed by a competence measure represents a separate hierarchical regression analysis with seven steps. The increment in $R^2$ produced by adding the independent variable in that step is presented along with the significance of the increment. The direction of the relationship is indicated by + or -. Humor variables were entered in varying order; thus the entry step is indicated in parentheses.

* $p < .05$.
** $p < .01$.
*** $p < .001$. 
tively strong relation of these aspects of humor to IQ raised the question of whether humor was related to competence in this study primarily because both are cognitively mediated rather than because humor and competence influence each other. This question was addressed by regression analyses in which IQ variance could be statistically controlled.

Results suggest that humor is related to achievement and the teacher's view of effective classroom participation primarily because all these abilities are related to general intellectual abilities. However, humor was not expected to have a functional relationship with academic competence. Rather, it was assumed that common cognitive characteristics might underlie the development of humor as well as successful adaptation in the classroom. Humor comprehension may have had a small but unique relation to achievement (beyond IQ) because the task resembled a verbal achievement test.

Although humor is not likely to influence academic competence directly, in the case of peer relations humor may well influence or be affected by peer reputation. In the case of positive peer reputation, results do not support a functional relation between humor and peer reputation but suggest again that underlying general cognitive abilities account for the relation. In an academic setting, positive peer regard and leadership may be more related to cognitive abilities than would be the case in other peer groups outside the context of school.

Results for the sensitive-isolated dimension of peer reputation, on the other hand, are consistent with the possibility of a functional relation between a lack of humor behaviors and social isolation. Reputation as withdrawn, quiet, shy, or unhappy appears to be substantially related to humor production and appreciation judgments even when IQ is controlled, suggesting that these relations are not due entirely to cognitive mediation. Humor production and appreciation may reflect an "engaged" quality, involving the child's social awareness and responsiveness.

One cannot determine from these results whether humor may be subdued in such children because of their social isolation, whether their lack of humor contributes to their social reputations, or both. Peer rejection could affect a child's mood and outlook in a way that would dampen humor appreciation and creation. One way to address this issue would be the research strategy employed recently by Coie, Dodge, and their colleagues (Coie & Kupersmidt, 1983; Dodge, 1983) to study the development of peer status over time in newly formed groups. For example, one could ascertain whether humor measured before group formation is predictive of peer status or reputation that emerges over time and also observe humor behavior during group interaction. Greater understanding of the relation between humor and peer reputation might also be obtained from studies of the social facilitation of humor appreciation (e.g., Chapman et al., 1980). One would expect children of varying peer reputations to respond differently to experimental manipulations of the social context for humor.

Finally, it would be interesting to examine the relations between social cognition and humor. Pellegrini (1985) has shown that social problem-solving abilities and interpersonal awareness are related to peer reputation in middle childhood. His results, together with those of this study, suggest that humor may be related to peer reputation in part because of underlying social-cognitive abilities. The appreciation and creation of most humor requires social "know-how," in terms either of getting or creating the joke or of sharing the humor with others appropriately. Hence the level of social awareness, knowledge, and sensitivity would be expected to mediate humor behaviors as well as other social activities that contribute to peer reputation.

Mirth, interestingly, did not relate to social competence once IQ was controlled. The affective expression of appreciation appears to have more in common with general intellectual ability than does funniness as perceived and rated by the child. Mirth was associated with IQ even for easy cartoons or when comprehension as a factor was partialed out. More intelligent children may be more sensitive to subtle elements of cartoon humor not captured by simple ratings of difficulty or comprehension level. The humor of the cartoons could be enhanced for them by their greater social understanding, for example, or by an appreciation for irony or other subtle sources of humor. Another possibility is that brighter children tend to be more motivated and responsive, particularly in "performance" situations. They may have had more mastery experiences or more mastery motivation and consequently have come to express more pleasure in cognitive tasks.

Two other findings are consistent with the possibility that there is a motivational factor being tapped by mirth. First, with IQ controlled, mirth was substantially associated
with greater performance anxiety. Second, even after comprehension was partialed out, mirth continued to show a positive relation with cooperative-initiating behaviors in the classroom (such as offering to do things for the teacher and spontaneously contributing to classroom discussions).

Future studies might direct more attention to the exact nature of the relation between mastery motivation and humor. For example, one might compare patterns of affective response accompanying different tasks such as humor appreciation, humor production, and nonhumorous cognitive tasks (e.g., anagrams, as used by Harter, 1974). Careful observations might lead to the differentiation of cognitive mastery from other sources of smiling and laughter. Mastery responding could then be more clearly examined with respect to competence.

In conclusion, the results suggest that humor may be related to competence in three ways: (1) through the manifestation of intellectual ability both in competent functioning at school and in humor comprehension, appreciation, and production; (2) through the role of mastery motivation in enhancing humor responsiveness and skills as well as competence at school; and (3) through peer relations, either by humor behaviors influencing peer reputation or being influenced by peer relations or, most likely, by both.

In an academic context, many of the relations between humor and competence appear to be mediated by cognitive abilities rather than the result of reciprocal influences among humor behaviors and different aspects of competence. Nevertheless, the exceptions suggest important areas for further research, particularly in regard to peer relations and mastery motivation. Moreover, results for different humor behaviors (such as clowning or spontaneous joking) and for competencies exhibited and measured outside the school context may provide greater evidence of relations resulting from the hypothesized functions of humor or from social-emotional development.

There appear to be multiple pathways by which humor and competence become linked in the course of development: humor and competence may influence each other over time; they may both satisfy the competence motive; and both appear to be mediated by social, emotional, and cognitive development. These processes need to be examined more thoroughly across age. It will be important to consider the relations of humor to competence as manifested in diverse social activities, family relationships, or friendships and in terms of emotional adjustment or psychological well-being. Such research may provide insight into the development of social competence and mastery as well as humor itself. It would also provide an important foundation for the empirical investigation of the notion that humor is an adaptive coping strategy—a modifier of stress for both children and adults.

References


