

# Humour among Chinese and Greek preschool children in relation to cognitive development

**Juan GUO \***

*Northeast Normal University, Changchun, China*

**XiangKui ZHANG**

*Northeast Normal University, Changchun, China*

**Yong WANG**

*Jilin University, Changchun, China*

**Aphrodite XEROMERITOU**

*University of Patras, Patras, Greece*

---

## Abstract

The researchers studied humour among Chinese and Greek preschool children in relation to cognitive development. The sample included 55 Chinese children and 50 Greek children ages 4½ to 5½ years. Results showed that both Chinese and Greek children's humour recognition were significantly and positively correlated to their cognitive development, but there was a different correlation pattern between humour response levels and cognitive development. Chinese children's level of humour responses was negatively and moderately correlated to their level of cognitive development in contrast to the positive correlation between these two variables among the Greek children. It would appear that cultural factors play a strong role in determining the correlation between humour response and cognitive development among young children.

**Keywords:** humour, Chinese, Greek, preschool children, cognitive development

---

## Introduction

Humour is a “hardwired characteristic of the human species” (Darwin, 1872/1965, p. 102), which plays a major role in human life. It has been used in different areas, such as medicine, education, psychology, and advertising, among others, and analyzed within the context of different perspectives, such

---

\* Corresponding author : Department of Psychology, School of Education, Northeast Normal University, Renmin Street 5268, Changchun 130024, China. E-mail: [guoj374@nenu.edu.cn](mailto:guoj374@nenu.edu.cn). Phone: +86 431 85696860; Fax: +86 431 85696860.

as anthropological, superiority theory, and psychoanalytic and cognitive theory.

#### *What is Humour*

People generally think Humour is equal to a laughter or smile. However, not all laughter or smile indicates humour, it may derive from varied types of emotional experiences such as social games, mastery pleasure, facade of some feelings (e.g. embarrass). Similarly, there are many instances of humour that do not result in laughter due to the mood of the appreciator, the social context and so on (McGhee, 1989). Cognitive-based theorists generally agree that humour is a perception of incongruity in a playful context and that the usual response to it is a smile or laughter. Incongruity refers to an incompatible occurrence of expectations and what actually occurs, and is the basic element in the appreciation of humour. Laughter or smiles is the social indicator, recognition of incongruity (e. g. , the child could correctly relate or point to what was funny in the picture) is the cognitive indicator of humour (McGhee, 1971a, 1971b, 1979, 1984; Pien & Rothbart, 1980; Shultz, 1972).

#### *Developmental Stage of Humour*

McGhee (1984) proposed the following four stages in the development of humour, based on Piaget's theory of cognitive development: (a) incongruous actions towards objects, which appears at about 18 months of age; (b) incongruous labeling of objects or events, which appears at about ages 2 to 3 years; (c) violation of important characteristics of objects, which appears at about 3 years of age; and (d) linguistic ambiguity and jokes, which appears at about ages 7 to 8 years with the onset of concrete operational thought. This last stage is the beginning of adult humour.

Some decades later, McGhee (2002) proposed the following, specific stages of humour development:

*Stage 1: Laughter at the attachment figure (6 to 12 or 15 months):* Humour in the first year of life is reacted to, rather than created (McGhee, 2002). The earliest form of humour experienced by infants involves things parents do. By the age of six months, infants laugh at abnormal behaviours or sounds of parents, such as abnormal face expressions (e.g., rolling eyes), unusual ways of walking (e.g., walking like a duck), or unusual voices (e.g., barking, meowing). McGhee's position, as stated above, is consistent with research on laughter in the first year of life by Sroufe and Wunsch (1972).

*Stage 2: Treating an object as a different object (12 or 15 months to 3, 4, or 5 years):* In contrast to his stance in 1984, in 2002 McGhee reported that this stage first emerged appeared 6 months earlier. Here, with the advent of symbolic play, children start to experience the humour of treating one object as another (e.g., using a spoon as a mobile phone). For example, Johnson and Mervis (1997) found that an infant at 14 months pointed at a toy bear on his father's head and said "hat."

*Stage 3: Misnaming objects or actions (2 to 3 or 4 years):* At the second

year of life, the development of language skills create new opportunities for humour—misnaming objects or actions, when, for example, mummy is called daddy, dogs are called pigs, and so on.

*Stage 4: Playing with word sounds (not meaning), nonsense real-word combinations, and distortion of features of objects (3 to 5 years):* The development of humour is related to development of language (Bergen, 2008), so that children gain pleasure from manipulating the sounds of language. Thus, a new way of playing with words emerges at age 3 or sometimes a bit earlier. For example, the child says “tomato, potato” or “shoe, show.” Children also begin putting real words together in nonsensical combinations known to be incorrect. For example, the child laughs heartily when saying “I want to eat car, I want to eat chair, and I want to eat table.” Thus, Chaney (1993) observed children played with word sounds and nonsensical word combinations at 24 months (e.g., “Milk and milt”; “I want carrot ice cream, I want chicken ice cream, I want mud ice cream”). McGhee (1984) notes that, the violation of the concept of an object is another form of humour among 3 to 5 year olds, such as distortions of the object’s features (e.g., a cow with women shoes), exaggeration of objects (a boy with huge hat), and incongruous behaviours (a mouse mother pushing a carriage containing a baby cat inside).

*Stage 5: Pre-riddle, transition period (5 to 6 or 7 years):* By the age of 5, children become interested in the verbal humour of older children around them. They typically laugh when they repeat the older children’s riddles or jokes, but they don’t really understand their meaning.

*Stage 6: Riddles or jokes (from 6 or 7 years):* By the age of 6 or 7, children start understanding the concept of double meanings, and it is then that they start to really appreciate jokes and riddles. This stage is the beginning of adult humour.

#### *Children’s Humour in Relation to Cognitive Development*

Humour is an exclusive and complicated human phenomenon, which depends on many factors (Paulos, 1980). Researchers agree cognitive development is the basic element of apprecating and producing humour, a variety of cognitive functions including attention, memory, problem solving and social cognition are involved to it (Bergen, 2008; Johnson & Mervis, 1997; Lyons & Fitzgerald, 2004; McGhee, 1971a, 1971b, 1979, 1984; Pien & Rothbart, 1980; Shultz, 1972). McGhee’s stages of children’s development of humour give evidence that it is closely tied to their cognitive development. Children’s early humourous responses seem to parallel to children’s thinking. When children recognize incongruities, they are demonstrating what they already know about their world. For example, when children laugh at parents’ silly facial expression, exaggerated sounds, abnormal body movements, it indicates that they have ‘ve already known the normal forms of them. When children engage in teasing and clowning, it indicates that they have in mind some expectations of how others will react—in other words, they must predict how others will react to their clowning and teasing, which is related to the concept

of “theory of mind”.

*Theory of mind* is defined as the ability to understand that others have minds that may be thinking different things (see Mayes, Klin, & Cohen, 1994; Navarro, 2004; Wellman, Fang, Liu, Zhu, & Liu, 2006). Children’s humour, from a simple mode (e.g., clowning, teasing) to an increasingly sophisticated mode (e.g., appreciating cartoons, funny pictures, and funny stories, telling riddles and jokes) demonstrates their increasing knowledge about the world. For example, when children tell riddles or jokes and can explain why they are funny, it implies that they have concept of the funny things in their mind, evidence of their knowledge in the area.

#### *Literature Review of Children’s Humour in Relation to Cognitive Development*

Following the literature review, most of the work on humour in relation to cognitive development focused mainly on the individual's processing of incongruity and its resolution, a few on social cognition and cultural comparison.

#### *Humour Researches on Perception of Incongruity*

During the 1970s and 1980s indicates that most of the work on humour was conducted within the context of cognitive development and focused on children’s perception of humorous incongruities (Bariaud, 1989; McGhee, 1971a, 1971b, 1974, 1979, 1984; Pien & Rothbart, 1976, 1980; Shultz, 1972, 1976; Sroufe & Wunsch, 1972). A majority of the studies dealt with humour appreciation, comprehension, and cognitive development, and were conducted in experimental settings, using graphic stimuli as materials and smiling and laughter as indicators of humour. For example, Shultz (1972) used cartoons in an investigation of the role of incongruity and resolution in children’s appreciation of humour. From the 1990s, some researches focused on retesting cognitive-based humour theories (Chaney, 1993; Guo, 2008; Johnson & Mervis, 1997; Loizou, 2005, 2006; Reddy, 1991, 2001). Researchers, for the most part, investigated young children’s humour using observation in natural circumstances. For example, Loizou (2005) examined the humour of young children under the age of two by observing them in a group childcare setting via an open and flexible method.

#### *Humour Researches on Social Cognition*

The literature on humour and social cognition has appeared recently. Most of the work researched humour with theory of mind impairments, and proposed that individuals with deficits in theory of mind have difficulty in humour comprehension, especially in the resolution of humour (the ability to “make sense” of incongruity) (Baron-Cohen, 1997, 2001; Brownell & Stringfellow, 2000; Lyons & Fitzgerald, 2004; Marjoram, Job, Whalley, Gountouna, et al., 2006; Sermrud-Clikeman & Glass, 2008; Samson & Hegenoh, 2009). Some investigated theory of mind of normal individuals through humorous tasks (Galinkin & Beth, 1999; Jung & Alto, 2003; Mayes, Klin & Cohen, 1994; Samson, 2008). For example, Mayes et al. (1994) investigated the effect of

humour on children's developing theory of mind using humorous false belief tasks as materials and found that older children did more often identify the false belief in the humorous situation.

### *Humour researches on Cross culture*

Cross-cultural studies of humour mainly focused on uses of humour and sense of humour, most of them used multidimensional sense of humour scale as the measurement. (Caillat & Mueller, 1996; Carbelo-Baquero, Alonso-Rodriguez, Valero-Garces, & Thorson, 2006; Chen & Martin, 2007; Davies, 1990; Thorson, Powell, & Samuel, 2001; Thorson, Valero, & Carbelo Baquero, 2006). Researches, for the most of the part found that there are cultural differences on humour. For example, White women were found to have a higher sense of coping humour than Black women (Thorson et al., 2001). Americans were found to have a higher sense of humour in the area of creativity than their Spanish counterparts (Thorson et al., 2006). Chinese university students, as compared to Canadian norms, were reported to have significantly lower scores on humour styles and coping humour (Chen & Martin, 2007). In Western cultures, especially American culture, humour plays a main role in creativity and personality, unlike in the Chinese culture where it plays the least important role (Yue, 2008).

However, there has been little cross-cultural comparison of humour as it relates to cognitive development. Cultural psychologists view culture and mind as inseparable, and argue that there are no common rules pertaining to how the mind works (see Greenfield, Keller, Fuligni, & Maynard, 2003; Johnson & Mervis, 1997; Lillard, 1998; Wellman et al., 2006; Xeromeritou, 2004). Thus, what is found to be humorous in one culture may not be viewed as such in another culture. Humour is a fundamentally relational phenomenon, we can know a lot about socio-cognitive and cultural skills of young children through humour (Bergen, 2008; McGhee, 1989; Reddy, 2002).

The present investigators researched humour among Chinese and Greek preschoolers within the context of cognitive development. Specifically, they examined two questions:

1. Is children's humour correlated to their level of cognitive development, and
2. Is the correlation trend between humour and level of cognitive developmental consistent across the Chinese and Greek cultures.

## **Methods and Materials**

### *Participants*

The kindergartens. The Chinese kindergarten in the study that is affiliated with Northeast Normal University (NENU), was contacted with the permission of NENU and agreed to participate. This kindergarten has around 300 children.

Two Greek kindergartens were contacted with permission from the

Laboratory of Special Education and Psychology in the Early Childhood Education Department of the University of Patras. One kindergarten has 56 children in three classes—two morning classes and one whole-day class, the other has 40 children in two morning classes.

The Chinese kindergarten sample. Chinese data were collected for about one month in QuanYing Qu ShiYan Kindergarten. The researcher carried out the investigation for 8 hours daily. A total of 76 Chinese children, 39 boys, 37 girls, aged between 4½ and 5½ ( $M = 5.12$ ,  $SD = 0.39$ ), and eight teachers participated in the study.

The Greek kindergarten sample. Greek data were collected for about one month, with the researcher working in the schools daily during all school hours. A total of 50 Greek children, 23 boys and 27 girls, aged between 4½ and 5½ ( $M = 5.01$ ,  $SD = 0.45$ ), and six teachers participated in the study.

Given that this was a comparative cross-cultural study, because the Greek sample only included 50 preschoolers, 55 of the 76 preschoolers in the Chinese sample children were randomly selected for the final data analysis, 29 boys, 26 girls, aged between 4½ and 5½ ( $M = 5.06$ ,  $SD = 0.36$ ).

### *Instruments*

Tasks of cognitive development. The tasks of cognitive development were based on Linder's (2008) latest version of the Transdisciplinary Play-Based Assessment (TPBA2) (see also Linder, 1993), which was sent to the researcher by the author. This assessment tool has been used internationally and has well-established validity, reliability, and applicability. In addition, it makes it possible to use data from researcher's observations, interviews with teachers, and some simple tests to obtain the developmental level scales of children. The newer second edition is improved and more precise compared with traditional psychometric methods.

Tasks of humour. The tasks of humour were developed by the researcher based on Bariaud (1989) and McGhee (1984, 2002) and, initially, were drawn from preschool children's books, magazines and internet. Based on work by Johnson and Mervis (1997), Loizou (2006), and McGhee, as well as the current research requirements, four criteria were taken into account in choosing the tasks:

1. Level of difficulty of the incongruity;
2. Familiarity with the content of the joke;
3. Applicability across cultures;
4. Ethnic respect and influences on children.

The initial pool of tasks was finalized based on the results of the pilot study, described below. The final eight humour tasks were as follows:

*Transfer or substitution of features:* Picture 1 showed an orange with eyes, nose, and mouth, thus adding human features to a fruit. Picture 2 showed a cow wearing shoes, thus transferring a human object onto an

animal.

*Distortion of sizes (exaggeration):* Picture 3 showed a little boy wearing an enormous hat and very large shoes (McGhee, 1989), thus introducing the element of exaggeration. Picture 4 showed a girl sitting in a very tiny chair, introducing the element of a typical distortion of size.

*Anomalous behaviours or situations:* Picture 5 showed a pregnant mother doing exercises together with the baby inside her body (Navarro, 2004). Here, the first incongruity was the baby-mother relationship, which was presented from an unusual perspective, that is, from inside the mother's body. The second incongruity was the mother and the baby both exercising. Picture 6 showed two mice, one male and one female, pushing a stroller with a cat baby in it. This included two anomalous behaviours: (a) a mice couple pushing a stroller instead of a human couple, and (b) a baby cat in the stroller instead of a baby mouse. In the pilot study, this picture provoked a lot of laughter with some children explaining why they found it funny correctly, indicating that children are aware of cats eating mice

*Mishaps and pranks:* Picture 7 showed a fish throwing water into the eyes of a man who was not shown to be injured in any way. Picture 8 showed a cat taking its food out of its bowl and making it messy in order to be able to eat it. Both pictures were meant to indicate a funny mischievous prank (See appendix).

Translating the instruments into Chinese and Greek. The two types of tasks described above—cognitive development and humour—were first translated from English to Greek and Chinese by two translators, and then translated back to English by another set of two Greek and two Chinese English teachers to check for accuracy of translation.

Pilot study. A pilot study was conducted with 11 preschool children—6 Greek children, 3 of each sex, from Kindergarten Ioinias 47 in Patras; 5 Chinese children, 3 girls and 2 boys, from QuanYing Qu ShiYan Kindergarten of JiLin City of Jilin Province. All children in the pilot study were between 4½ and 6 years old.

According to Bariaud (1989) and McGhee (1984, 2002), there are essentially four types of pictorial humour in preschool children:

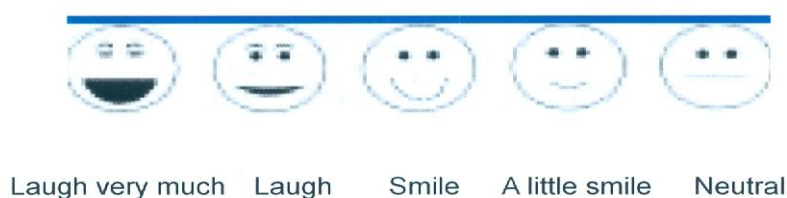
1. Transfer or substitution of features.
2. Distortion of sizes (exaggeration).
3. Anomalous behaviours or situations.
4. Mishaps and pranks.

A total of 8 pictorial items were chosen for the pilot study. Because these 8 pictorial representations made 10 of the 11 children in the pilot study smile, laugh, and find them to be funny, they were chosen for the formal study. The one child who did not match the others' reactions was a Greek boy of 5 who did not smile or laugh at all, and found nothing funny.

### *Procedures*

Phase 1. In the first phase, children's cognitive development was examined using tasks meant for children aged 5 to 6 years old, interviews with teachers, the researchers' observations, and simple tests based on Linder's (2008) TPBA2. There were a total of 51 tasks (5 attention, 6 memory, 4 problem solving, 8 social cognition, and 28 conceptual knowledge items). For example, items such "Can the child attend to stories read without pictures?" and "Can the child recite verses, short passages, songs?" were scored through teacher interviews. If the teacher was confident that the child could do these tasks, the item was scored "1"; if not, it was scored "0." Where teachers could not confidently respond to the items, such as "Can the child consider others' thoughts?" and "Can the child plan how to influence others' goal?" they were similarly scored via the researchers' observations of the children's activities (If the researchers could not agree, then the item would be re-scored following a discussion between the researchers and teachers). The items "Can the child count with one-to-one correspondence up to 20?" and "Can the child remember a sequence of 4 numbers?" were scored via simple tests.

Phase 2. In the second phase, the preschoolers were asked to participate in the humour tasks. Each child was invited to join the investigator in a comfortable and quiet area of the preschool during their period of free activity. The children were shown the 8 humorous pictures one by one and given enough time to look at it carefully. Children's expressions and reactions were recorded using Pexman, Glenwright, Krol, and James's (2005) rating scale (see Figure 1).



**Figure 1.** *Humour rating scale.*

A set of specific questions based on Brown (1993) and Loizou (2006) are asked of each child: (a) What can you see in the picture? (b) Do you think it's funny? (c) What is funny? The interviews were video-taped. Each interview lasted about 8 minutes.

The children's humour response (social indicator of humour) to the 8 humorous pictures were rated from 5 to 1, where "laughs very much" = 5 and "neutral" = 1. Not all laughter or smiles are manifestations of humour (McGhee, 1989), in the present study, only laughter accompanied by the



recognition of incongruity was evaluated as a humour response. The frequency of recognition of incongruity (cognitive indicator of humour) was also recorded.

## Results

### *Cognitive development*

Although the overall mean cognitive development score of the Chinese preschoolers was higher than that of their Greek children counterparts (see Table 1), a *t*-test indicated that this was not a significant difference ( $M = 38.20$  vs.  $34.92$  respectively,  $t(105) = 1.84$ ,  $p > .05$ ).

To explore this pattern further, children in the two groups were then separated into “high” or “low” cognitive levels. The average cognitive level scores for each group were used as the cut-off point so that children with cognitive scores higher than the group mean were categorized into the high level group and those with scores lower than or equal to the mean were categorized into the low level group. The numbers of low and high groups’ children of Chinese and Greek were 27, 28 and 24, 26, respectively. Mean cognitive score of the high level group were significantly higher than those of the low level group for both Chinese and Greek children, which confirms that the “high” and “low” cognitive levels were, in fact, divided in a valid manner (See table 1).

**Table 1.** Mean Scores of Cognitive Development for Chinese and Greek Preschoolers

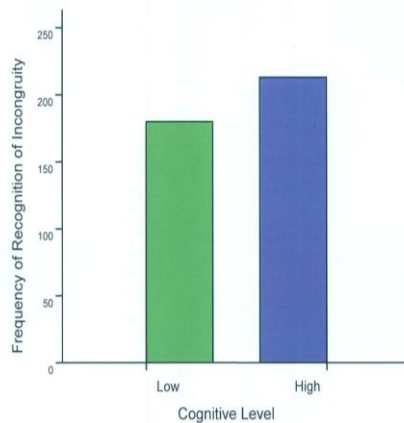
Cognitive development	Cognitive level	Chinese ( $n = 55$ )			Greek ( $n = 50$ )		
		<i>M</i>	<i>SD</i>	<i>t</i>	<i>M</i>	<i>SD</i>	<i>t</i>
Attention	Low	4.88	1.59		3.38	2.67	
	High	4.92	0.99	2.33***	4.73	1.87	9.03***
Memory	Low	4.32	1.13		3.26	0.88	
	High	5.96	1.30	1.91*	5.89	1.59	11.98***
Problem solving	Low	1.73	0.88		0.86	0.89	
	High	2.14	1.03	3.62	2.31	1.27	9.73
Conceptual knowledge	Low	18.93	3.11		15.59	5.84	
	High	24.03	4.48	13.43***	23.83	3.59	10.62***
Social cognition	Low	3.32	0.50		2.16	1.07	
	High	5.99	0.77	24.94***	7.09	1.21	23.18***
Total	Low	33.19	3.14		25.25	8.22	
	High	43.04	2.28	9.23***	43.85	4.59	9.98***

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

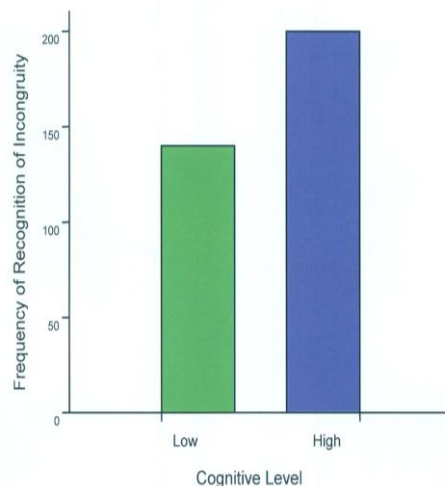
### *Humour Recognition of Incongruity*

A Chi Square analysis was respectively conducted to test the differences of the frequency of recognition of incongruity of low and high cognitive levels for

Chinese and Greek children, and revealed a significant difference of two cognitive levels for the two cultural groups,  $\chi^2 (1, N=55) = 392, P < 0.001$ ;  $\chi^2 (1, N=50) = 370, P < 0.001$ , respectively. Distributions of frequency of recognition of incongruity of two cognitive levels were presented in Figure 2 and Figure 3. As Figure 2 and Figure 3 indicate, the frequency of recognition of humour of high cognitive level group is significant greater than that of low cognitive level group for the two cultural groups. The Pearson product-moment correlation analysis revealed a similarly pattern (see Table 2).



**Figure 2.** *Chi-Square test of frequency of recognition of incongruity of Chinese Children with low and high cognitive level.*



**Figure 3.** *Chi-Square test of frequency of recognition of incongruity of Greek Children with low and high cognitive level.*

**Table 2.** *Correlationship of Cognitive Development and Humour for Chinese and Greek Preschoolers*

		Cognitive Development	
		Chinese ( $n = 55$ )	Greek ( $n = 50$ )
Humour	Laughter	-.295*	.398**
	Recognition of Incongruity	.485**	.634**

\* $p < .05$  \*\* $p < .01$

*Laughter.* The overall mean laughter score of the Greek preschoolers was significantly higher than that of their Chinese counterparts ( $M = 2.68$  vs.  $2.34$ , respectively,  $t(105) = 2.22$ ,  $p < .05$ ) (see Table 3).

**Table 3.** *Laughter Scores of Chinese and Greek Preschoolers*

		Laughter Scores		
		M	SD	$t$
Chinese ( $n = 55$ )	High	2.08	0.66	
	Low	2.61	0.68	-2.95**
Greek ( $n = 50$ )	High	2.93	0.80	
	Low	2.40	0.76	2.42*

\* $p < .05$  \*\* $p < .01$

As the data in Table 3 indicate, among the Chinese preschoolers, there was a significant inverse relationship between their cognitive development and laughter scores—children in the high cognitive development group scores had lower laughter scores whereas those in the low cognitive development group had higher laughter scores. For the Greek preschoolers, the pattern was the reverse—those in the high cognitive development group had significantly higher laughter scores and those in the low cognitive development group. The Pearson product-moment correlation analysis revealed a similarly different pattern in the relationship of children's laughter scores and their cognitive levels for the two cultural groups (see Table 2). Chinese children's laughter scores had a moderately low and significantly negative relationship to their cognitive developmental level, whereas the Greek children's humour scores had a moderately higher and significantly positive relationship to their cognitive developmental level.

## Discussion

Both Chinese and Greek preschoolers' humour recognition frequencies were significantly and positively correlated to their cognitive development. The cognitive development levels of the Chinese and Greek preschoolers were not significantly different, but there was a significant difference between the

humour response levels for these two groups. Chinese preschoolers' humour responses were significantly and negatively correlated to their cognitive development in contrast to the positive and significant correlation between these two variables among Greek preschoolers. This finding was confirmed when children in each of the two cultural group were classified into high and low cognitive level categories and their humour responses compared. Once again, there was a significant and inverse relationship between humour response and cognitive development among the Chinese preschoolers whereas there was a significant and positive relationship between these variables for the Greek preschoolers. Cultural practices and cognitive processes constitute one another, the social, political and economic worlds of different people are different, the content of human minds is indefinitely variable and suggest that the mind develops at a different pace in children raised in different cultures (Greenfield et al., 2003; Wellman et al., 2006).

In the present study, the findings that both Chinese and Greek children's humour recognition is positively correlated to their cognitive development, is consistent with the cognitive based humour theories and researches (Bergen, 2008; McGhee, 1979, et al. ) and is also supported by Piaget's cognitive development theory that the basic cognitive processes work in much the same way regardless of the content they operate. Recognition of incongruity is the basic cognitive processing and the ability of it is the prerequisite of humour, the child is able to appreciate humour when he can recognize the contradiction between what he encounters and his original expectations (Pien & Rothbart, 1980; Shultz, 1972), this ability develops better with the cognitive development of children, and the pattern of correlation between these two variables isn't affected by culture.

The findings that there is a significant difference of children's humour response levels between two culture groups, is supported by Martin's (2007) view that humour and laughter are universal in all cultures, but that cultural approaches may vary. Humour response is a social interaction, humour exists between people rather than somehow in the joke itself (Reddy, 2002), when the individuals recognize humour, their responding ways are generally affected by their knowledge about the social world, which is related to social cognition. Social cognition is the understanding of the social world, including other people's behavior, thoughts, and feelings, is a cultural concept and varies through cultures (Greenfield et al., 2003; Wellman et al., 2006). For example, There exist the cognitive differences between East Asian and Western culture. East Asians attend more to the relationship between the field and the object, Westerners explain the behavior of objects, including that of people, in terms of presumed properties of the object itself whereas Easterners tend to see behavior as due to the interaction of the object with the field (Nisbett & Norenzayn, 2002).

Chinese children's laughter is negatively correlated to their cognitive development, that is, children with a higher level of cognitive development gave fewer humorous responses, could have its source in the Chinese

culture. As table 1 indicated, Chinese children with a higher level of cognitive development also have a higher level of social-cognition, and, therefore, may be aware that laughing too much in front of teachers is not considered polite in the Chinese culture. Thus, even though they might have found something to be very funny, they did not express it in the present study. These findings are consistent with those of Chen, Cen, Li, and He (2005), Chen, Dong, and Zhou (1997), and Chen, Rubin, and Li (1995). Chen et al. (2005) suggested that in traditional Chinese culture, shy, sensitive, and restrained behaviour has traditionally been considered indicative of social accomplishment and maturity. Chen et al. (1995) and Chen et al. (1997) found that shy or wary behaviour is associated with high social competence. Even though Chinese culture is being increasingly westernized since the new policy of 1978, the traditional culture of many thousands of years continues to influence Chinese people's mind and behaviours. Thus, students laughing loudly or making exaggerated body movements in front of teachers is considered impolite.

The findings that Greek children's responses to the humour task were positively correlated to their cognitive development could be because, compared with the Chinese preschoolers, Greek children with a higher level of cognitive development felt freer to respond to the recognizable the humorous aspects of the pictures. Greek preschoolers do not seem to have a similar degree of cultural restraint when expressing their humour responses. They express their feelings and thoughts in more direct ways and are not hesitant to laugh if they find something funny even in the presence of their teachers.

These findings are consistent with those of Han and Shavitt (1994), and Rhee, Uleman, Lee and Roman (1996), they found that East Asians are more collectivistic in their socialization practices, values, and social behavior, than people of European culture, who are in turn more individualistic.

## **Conclusion**

In this study, the researchers compared humour (humour recognition and response) in relation to cognitive development among Chinese and Greek preschoolers. The results lead them to conclude that humour is correlated to cognitive development, children can recognize humour better as they develop cognitively, the pattern is applicable to different culture, but the pattern of correlation of humour response and cognitive development is affected by the children's cultural milieu. Given that cognitive development skills have been reported to be essential and basic to appreciating and producing humour (Bariaud, 1989; Bergen, 2008; McGhee, 1979; Pien & Rothbart, 1980; Shultz, 1972), the present results imply that children are able to appreciate humour better as they develop cognitively, but cultural factors play a strong role in determining the correlation between humour response and cognitive development. Further research might shed more light on this study's findings by including a measure of social-emotional development in addition to the

measures of cognitive and humour development used in this study.

### **Acknowledgements**

The researchers extend their heartfelt gratitude to Early Childhood Education Department in University of Patras for their grant and to the teachers of the participating kindergartens for their assistance and support. We also thank to Dr. Gita Brenner for her editorial services and feedback related to this research.



Received: 25 October 2010 / Revised: 5 May 2011 / Accepted: 13 May 2011

**Juan GUO.** Received the Ph.D. degree in Early Childhood Education Department from University of Patras in 2009. She is the lecture of the School of Education in Northeast Normal University since 2006. Her research interests include education, learning and humour

**XiangKui ZHANG.** Received the Ph.D. degree in School of Philosophy from Aristotle University of Thessaloniki in 2009. She is the professor of the School of Education since 2000 and the head of the Kindergarten since 2008 in Northeast Normal University. Her research interests include preschool education and children development.

**Yong WANG.** Received the M.Ed. in School of Physical Education from Northeast Normal University in 1999. He is the lecture of the School of Physical Education in Jilin University since 2002. His research interest is physical education across culture.

**Aphrodite XEROMERITOU.** Received the Ph.D. degree in Columbia University in the City of New York since 1978. She is the professor of Early Childhood Education Department in University of Patras. Her research interests include education and learning with disabilities and children development.

### **References**

- Bariaud, F. (1989). Age differences in children's humour. *Journal of Children in Contemporary Society* 20, 15–45.
- Baron-Cohen, S. (1997). Hey! It was just a joke! Understanding propositions and propositional attitudes by normally developing children and children with autism. *Israel Journal of Psychiatry*, 34, 174-178.
- Baron-Cohen, S. (2001). Theory of mind in normal development and autism. *Prisme*, 34, 174-183.
- Bergen, D. (2008). Humour. *Encyclopedia of Infant and Early Childhood Development*, 96–106.
- Brown, I. (1993). Young children's explanations of pictorial humour: A preliminary study. *Early Child Development and Care* 93, 35–40.
- Brownell, H., & Stringfellow, A. (2000). Cognitive perspectives on humour comprehension after brain injury. In L. K. Obler & L. T. Connor (Eds.), *Neurobehavior of language and cognition: Studies of aging and brain damage* (pp. 241-258). New York: Kluwer Academic Publishers

- Caillat, Z. and Mueller, B. (1996). Observations: The influence of culture on American and British advertising: An exploratory comparison of beer advertising. *Journal of Advertising Research*, 36, 79-88.
- Carbelo-Baquero, B., Alonso-Rodriguez, M.C., Valero-Garces, C., & Thorson J. A.(2006). A study of sense of humour in Spanish and American samples. *North American Journal of Psychology*. Retrieved from [http://findarticles.com/p/articles/mi\\_6894/is\\_3\\_8/ai\\_n28410569/](http://findarticles.com/p/articles/mi_6894/is_3_8/ai_n28410569/)
- Chaney, C. (1993, February 14). *Young children's jokes: A cognitive developmental perspective*. Paper presented at the Annual Meeting of the Western States Communication Association, Albuquerque, NM.
- Chen, G. H., & Martin, R. (2007). A comparison of humour styles, coping humour, and mental health between Chinese and Canadian University students. *International Journal of Humour Research*, 20(3), 215-234.
- Chen, S. R., Chen, X. Z. (2005). 幽默感的定义和测量：多向度幽默感量表之编制。应用心理研究。第2期 [The definition and measure of sense of humour: Developing a measurement of multi-humour sense]. *Applied Psychology Research of Taiwan*, 26,167-187.
- Chen, X., Cen, G., Li, D., & He, Y. (2005). Social functioning and adjustment in Chinese children: The imprint of historical time. *Child Development*, 76, 182-195.
- Chen, X., Dong, Q., & Zhou, H. (1997). Authoritative and authoritarian parenting practices and social and school performance in Chinese children. *International Journal of Behavioural Development*, 21, 995-873.
- Chen, X., Rubin, K.H., & Li, Z. (1995). Social functioning and adjustment in Chinese children: A longitudinal study. *Development Psychology*, 31, 531-539.
- Darwin, C. (1965). *The expression of emotions in man and animals*. Chicago: University of Chicago Press. (Original work published 1872)
- Davies, C. (1990). Ethnic humour around the world: A comparative analysis. *Indiana University Press*, 343-398.
- Galinkin, Beth, M.(1999). The spontaneous humour production of four intellectually precocious preschoolers: A window into the mind. Retrieved from <http://en.scientificcommons.org/48395350>.
- Greenfield, P. M., Keller, H., Fuligni, A., & Maynard, A. (2003). Cultural pathways through universal development. *Annual Review of Psychology*, 54, 461-490.
- Guo, J.( 2008). *Early Humour in Young Toddlers and Its Indicators*. Paper presented at the European Conference on Educational Research: From Teaching to Learning, September 8-12, in Gothenburg, Sweden.
- Han, S., & Shavitt, S. (1994). Persuasion and culture: Advertising appeals in individualistic and collectivistic societies. *Journal of Experimental Social Psychology*, 30, 326-350.
- Johnson, K. E., & Mervis, C. B. (1997). First steps in the emergence of verbal humour: A case study. *Infant Behaviour and Development*, 20(2), 187-196.
- Jung, W. E., Alto, P. (2003). The Inner Eye Theory of Laughter: Mindreader Signals Cooperator Value. *Evolutionary Psychology*, 1, 214-253.
- Lillard, A. S. (1998). Ethnopsychologies: Cultural variations in theories of mind. *Psychological Bulletin*, 123, 3-32.

- Linder, T. W. (1993). *Transdisciplinary play-based assessment: A functional approach to working with young children* (rev. ed.). Baltimore, MD: Paul H Brookes Publishing Co Inc.
- Linder, T. W. with invited contributors. (2008). *Transdisciplinary play-based assessment TPBA2* (2<sup>nd</sup> ed.). Baltimore, MD: Brookes Publishing.
- Loizou, E. (2005). Infant humour: The theory of the absurd and the empowerment. *International Journal of Early Years Education*, 13(1), 43–53.
- Loizou, E. (2006). Young children's explanation of pictorial humour. *Early Childhood Education Journal*, 33(6), 425–431.
- Lyons, V., & Fitzgerald, M. (2004). Humour in autism and Asperger syndrome. *Journal of Autism and Development Disorders*, 34(5), 521–531.
- Marjoram, D., Job, D. E., Walley, H. C., Gountouna, V. E., McIntosh, A. M., Simonotto, E., et al. (2006). A visual joke fMRI investigation into Theory of Mind and enhanced risk of schizophrenia. *NeuroImage*, 31(4), 1850–1858.
- Martin, R. (2007). *The psychology of humour: An integrative approach*. Burlington, MA: Elsevier Academic Press.
- Mayes, L. C., Klin, A., & Cohen, D. J. (1994). The effect of humour on children's developing theory of mind. *British Journal of Developmental Psychology*, 12, 555–561.
- McGhee, P. E. (1971a). Cognitive development and children's comprehension of humour. *Child Development*, 42, 123–138.
- McGhee, P. E. (1971b). Development of the humour response: A review of the literature. *Psychological Bulletin*, 76, 328–348.
- McGhee, P. E. (1974). Development of children's ability to create the joking relationship. *Child Development*, 45, 552–556.
- McGhee, P. E. (1979). *Humour: Its origin and development*. San Francisco: W. H. Freeman.
- McGhee, P. E. (1984). Play, incongruity, and humour. In T. D. Yawkey & A. D. Pellegrini (Eds.), *Child's play: Developmental and applied* (pp. 219–236). Mahwah, NJ: Lawrence Erlbaum Associates.
- McGhee, P. E. (Ed.). (1989). *Humour and children's development: A guide to practical applications*. Binghamton, NY: The Haworth Press.
- McGhee, P. E. (2002). *Head, shoulders, knees and ...peanut butter. What makes young children laugh*. Retrieved from [http://www.laughterremedy.com/articles/child\\_makes\\_laugh.html](http://www.laughterremedy.com/articles/child_makes_laugh.html)
- Navarro, P. (2004). Graphic jokes and children's mind: An unusual way to approach children's representational activity. *Scandinavian Journal of Psychology*, 45(4), 343–355.
- Nisbett, R. E. & Norenzayn, A. (2002). Culture and Cognition. Chapter for D. L. Medin (Ed.). Retrieved from [http://www.unifr.ch/psycho/site/assets/files/Allg/Publications/Samson\\_dissertation.pdf](http://www.unifr.ch/psycho/site/assets/files/Allg/Publications/Samson_dissertation.pdf)
- Paulos, J. A. (1980). *Mathematics and humour*. Chicago: University of Chicago Press.
- Pien, D., & Rothbart, M. K. (1976). Incongruity and resolution in children's humour. *Child Development*, 47, 966–971.
- Pien, D. & Rothbart, M. K. (1980). Incongruity humour, play, and self-regulation of arousal in young children. In P. E. McGhee & A. J. Chapman (Eds.), *Children's humour* (pp. 1–26). Chichester, England: Wiley.

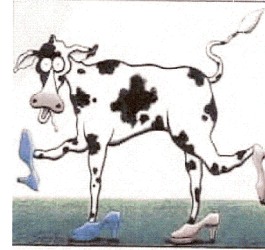


- Pexman, P. M., Glenwright, M., Krol, A., & James, T. (2005). An acquired taste: Children's perceptions of humour and teasing in verbal irony. *Discourse Processes, 40*(3), 259–288.
- Reddy, V. (1991). Playing with the other's expectations: Teasing and mucking about in the first year. In A. Whiten (Ed.), *Natural theories of mind* (pp. 143–158). Oxford, England: Blackwell.
- Reddy, V. (2001). Infant clowns: The interpersonal creation of humour in infancy. *Enfance, 53*(3), 247–256.
- Reddy, V., Williams, E., & Vaughan A. (2002). Sharing humour and laughter in autism and Down's syndrome. *British Journal of Psychology, 93*, 219–242.
- Rhee, E., Uleman, J. S., Lee, H. K., & Roman, R. J. (1996). Spontaneous self descriptions and ethnic identities in individualistic and collectivistic cultures. *Journal of Personality and Social Psychology, 69*, 142–152.
- Samson, A. (2008). *The Cognitive and Neural Humour Processing: The influence of structural stimulus properties and Theory of Mind*. Retrieved from [http://www.unifr.ch/psycho/site/assets/files/Allg/Publications/Samson\\_dissertation.pdf](http://www.unifr.ch/psycho/site/assets/files/Allg/Publications/Samson_dissertation.pdf).
- Samson, A. C., Hegenloh, M. (2009). Stimulus Characteristics Affect Humour Processing in Individuals with Asperger Syndrome. *Journal of Autism and Developmental Disorders, 40*(4), 438–447.
- Semrud-Clikeman, M., & Glass, K. (2008). Comprehension of Humour in Children with Nonverbal Learning Disabilities, Verbal Learning Disabilities and Without Learning Disabilities. *Annals of Dyslexia, 58*, 163–180.
- Shultz, T. R. (1972). The role of incongruity and resolution in children's appreciation of cartoon humour. *Journal of Experimental Child Psychology, 13*, 456–477.
- Shultz, T. R. (1976). A cognitive-development analysis of humour. In A. H. Chapman & H. C. Foot (Eds.), *Humour and laughter: Theory, research and applications* (pp. 11–36). New Brunswick, NJ: Transaction.
- Sroufe, L. A., & Wunsch, J. P. (1972). The development of laughter in the first year of life. *Child Development, 43*, 1326–1344.
- Thorson, J. A., Powell, F. C., & Samuel, V. T. (2001). Sense of humour in black and white. *North American Journal of Psychology, 3*(1), 1–12.
- Thorson, J. A., Valero, C., & Carbelo Baquero, C. (2006). A study of sense of humour in Spanish and American samples. *North American Journal of Psychology, 8*(3), 447–454.
- Wellman, H. M., Fang, F., Liu, D., Zhu, L., & Liu, G. (2006). Scaling of theory-of-mind understandings in Chinese children. *Psychological Science, 17*, 1075–1081.
- Xeromeritou, A. (2004, November/December). *Challenging orthodoxy of neuroscience: The debate behind learning disabilities*. Paper presented at the meeting of the Brain, Mind and Culture, A Neuroscience Forum, Limassol, Cyprus.
- Yue, X. D. (2008). Chinese attitudes to humour: Views for undergraduates in Hong Kong and China (Article written in Chinese). *Educational Research Journal, 23*(2), 299–326.

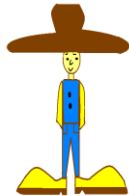
## APPENDIX



Picture1



Picture2



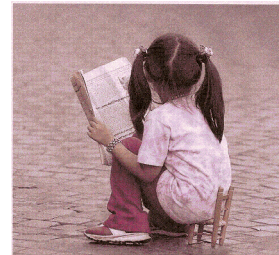
Picture3



Picture4



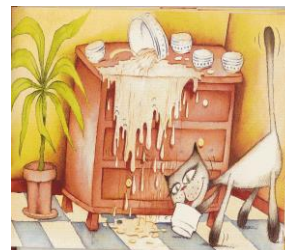
Picture5



Picture6



Picture7



Picture8