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EXPLICIT AND IMPLICIT TELEVISION COGNITION OF LEFT-BEHIND CHILDREN IN CHINA

LIUNA GENG, WENJUN ZHOU, AND QIAOXIN XU
Nanjing University

In this study we investigated the television cognition of 53 "left-behind" children. We examined explicit cognition using the Television Virtual and Real Life Questionnaire (Geng & Zhou, 2011) and used the Brief Implicit Association Test (BIAT; Sriram & Greenwald, 2009) to examine implicit cognition toward television virtual and real life. The results showed that the left-behind children in our study had weak explicit abilities to discriminate between television virtual and real life and had relatively strong implicit abilities to discriminate between television virtual and real life. In other words, their explicit and implicit discrimination abilities were different. Based on our findings, we give suggestions about education aimed at improving the television cognition of left-behind children.

Keywords: television cognition, left-behind children, virtual life, real life, implicit cognition, explicit cognition, China.

The rapid economic development in China, along with the country's policies of reform and opening up, has resulted in considerable rural-urban migration of people seeking better job opportunities. A commonly cited figure indicates that the number of rural migrants residing in cities was 149 million in 2009 (National Bureau of Statistics, 2010). Such migrants usually leave their children at home in the rural locations. The term "left-behind children" refers to children younger than 16 years who are in the care of a single parent, grandparents, or other relatives because one or both of their parents are migrant workers in urban

Liuna Geng, Wenjun Zhou, and Qiaoxin Xu, Department of Psychology, Nanjing University.
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Correspondence concerning this article should be addressed to: Liuna Geng, Department of Psychology, Nanjing University, Nanjing 210023, People's Republic of China. Email: **gengliuna@nju.edu.cn**

areas (Zhang & Chen, 2007). These children, because of parental absence, suffer many psychological problems, such as depression, anxiety, loneliness, antisocial behavior, and demoralization (Li & Liu, 2011). Thus, left-behind children have been attracting increasing attention from sociologists, economists, psychologists, and others interested in their welfare.

Taking this under consideration, a study of the impact of media on left-behind children was proposed. The types of difficulties left-behind children experience include low-level family education, inadequate school education, and fewer sources of information (Duan & Yang, 2008). All these conditions are, to some extent, responsible for why left-behind children may consider television as a useful tool from which to get outside information or as a "spirit nanny" in that it takes care of children when adults are absent (Liu & Chen, 2009; Zhang & Chen, 2007). Moreover, left-behind children mostly live in the remote, impoverished regions of China, including Chongqing, Sichuan, Anhui, and Jiangxi provinces. The Survey and Statistics Institution of China (SSI, 2010) found that the average rate of left-behind children in rural area is 26.1%, which the maximum value is 51.3%. However, the actual living conditions in these areas are often largely different from those in television programs. On the other hand, to some degree, today's media demonstrate a superficial and unhealthy social culture, in order to increase their ratings (Yang, Wang, & Wang, 2007). Thus, whether or not left-behind children can distinguish between positive and negative information and make effective use of television media resources has become a growing concern.

Many researchers have found that left-behind children have difficulty distinguishing between television virtual and real life (Hawkins, 1977; Huston et al., 1995). Most researchers tend to discuss the reason behind this under the heading of "modality judgment" (Chandler, 1997). For example, in a semiotic approach to studying children's understanding of television in Australia, Hodge and Tripp (1986) adopted the linguistic term "modality" to refer to the reality status attributed to television programs by viewers. Where there seems to be a great distance between a program and everyday reality, television has "weak modality"; where television seems like a "window on the world" it has "strong modality". The modality judgments of young children tend to be polarized, contradictory, and unstable. Wright et al. (1995) added that children get two different kinds of social information schemata from a television virtual scene and real life experience. Those children who believe television shows are real life will tend to integrate information from television into their reality-based schema. Moreover, children have a strong tendency to imitate the behaviors of characters in a television program and to then repeat them in the real world (Schmitt & Anderson, 2002; Strouse & Troseth, 2008). In addition, it has been proven that in cases of parental absence, children become overly dependent on television,

resulting in values dislocation and lack of familiarity with life in the real world (Henning & Vorderer, 2001; Liu, Liu, Zhang, & Yang, 2010). Therefore, if children cannot distinguish well between television virtual and real life, they may blindly imitate inappropriate behaviors they see on television, which may eventually have an impact on their physical and mental development.

To measure children's television cognition, researchers have long been using self-report scales, in which a respondent is asked to directly evaluate an object by checking a numeric response on single or multiple items (Himmelfarb, 1993). However, recent evidence from the social cognition literature illustrates that individuals also process information about themselves and their environment using implicit (i.e., automatic or unconscious) judgments (Fazio, 1990; Wilson, Lindsey, & Schooler, 2000). According to the dual-attitude model of Wilson et al., people had two different appraisements of an event. The implicit attitude is practiced and automatic. When people have neither enough psychological energy nor motivation to search for a similar attitude, the implicit attitude will be the default response. When people have enough psychological energy or motivation to search for a proximate attitude, the explicit attitude will appear and affect people's behavioral response. Furthermore, using self-report scales is not always reliable because people, including children, might try to hide their real thoughts and opinions in order to present themselves positively (Krosnick, Judd, & Wittenbrink, 2005). Also, children are generally more dependent than adults and have a more limited oral expression capacity, which may affect their ability to express themselves accurately. To overcome these problems, we added implicit cognition of television to our research investigation. We also wanted to see if there are two constructs in television cognition, one being explicit cognition from self-reports, and the other implicit cognition from automatic or unconscious processes.

Therefore, in this study we used not only the Television Virtual and Real-Life Questionnaire (Geng & Zhou, 2011), which we developed in a previous study, but also the Brief Implicit Association Test (BIAT; Sriram & Greenwald, 2009) to measure left-behind students' implicit cognition of television. The BIAT is a variant of the Implicit Association Test (IAT; Greenwald, McGhee, & Schwartz, 1998). In the IAT, participants repeatedly press left- or right-hand keys to sort stimuli (e.g., first names and adjectives) into dichotomous target categories (e.g., Coke–Pepsi) and evaluative categories (e.g., positive–negative). Importantly, in a first critical block, combinations of targets and evaluations share a single response key (e.g., left key = "Pepsi or positive"; right key = "Coke or negative"), and in a subsequent critical block, the target assignment is reversed (e.g., left key = "Coke or positive"; right key = "Pepsi or negative"). The response time difference between the two critical blocks is used as an indicator of automatic evaluation, that is, a person who responds faster to the first block in this example

would display a more positive implicit attitude toward Pepsi than toward Coke (Greenwald, Nosek, & Banaji, 2003).

The BIAT is a briefer version of the original IAT and may be more suitable for children with limited attention spans and oral expression. Although in numerous studies it has been shown that the IAT is appropriate for children because they rely on automatic, affective, and implicit cognition rather than on rational cognition when making decisions (Halpern-Felsher & Cauffman, 2001), in this study we adopted the BIAT, because it is more suitable for children with their limited attention spans and oral expression abilities.

Overall, based on the dual-process model, children's explicit and implicit discrimination ability toward television virtual and real life may differ. On the other hand, many researchers in the field of explicit discrimination now treat television cognition as multidimensional, although they have not launched relative experimental studies. For example, Hawkins (1977) stressed that "given multiple perceived reality dimensions, developmental changes may take place along some dimensions but not others, or changes may occur at different rates or times on different dimensions" (pp. 305-306). Consequently, we formulated the following hypotheses:

Hypothesis 1: Left-behind children will have difficulty distinguishing between the virtual television world and real life at the explicit level.

Hypothesis 2: Left-behind children will be able to distinguish between the virtual television world and real life at the implicit level.

Method

Participants

The study sample comprised 53 left-behind children (24 male and 29 female). Their ages ranged from 10 to 15 years, with an average age of 12.92 (SD = 1.27). They were randomly selected from a school in Anhui province of China and participated voluntarily.

Materials and Measures

Television Virtual and Real-Life Questionnaire. The Television Virtual and Real-Life Questionnaire (Geng & Zhou, 2011), is a 16-item self-report measure used to assess children's television cognition. The questionnaire consists of two 8-item subscales: cognition of television virtual and cognition of real life. The participants respond to items in each subscale on a 5-point Likert scale ranging from 1 = *I don't agree at all* to 5 = *I definitely agree*. "On television, rural people are not well educated" and "In real life, rural people are not well educated" are sample items for the first and second subscales, respectively. The internal consistency Cronbach's alpha reliability coefficients for the Television Virtual

and Real-Life Questionnaire, television virtual subscale, and real-life subscale were 0.86, 0.87, and 0.87, respectively. In addition, this questionnaire has been found to have good reliability over a two month period ($\alpha = .75$), and validity as demonstrated by a strong relationship ($r = .56$) with the Questionnaire of Television Reality (Nikken & Peeters, 1988).

Brief Implicit Association Test (BIAT; Sriram & Greenwald, 2009). In the BIAT, a television program was always one of the two focal categories, and virtual or reality – in counterbalanced alternating phases – was the other. Exemplars of real life were used as nonfocal items. Thus, when participants were instructed to focus on exemplars of television program and virtual, the other items included the designated reality as well as exemplars of real life; when the focus was on television program and reality, virtual along with real-life exemplars belonged in the other domain. Television virtual exemplars included four representative pictures of television programs. Real-life exemplars include four pictures representing real life. True exemplars were "real", "indeed", "reality", and "truthfully". False exemplars were "fictitious", "acting", "camouflage", and "deceptive". BIAT-D scores were calculated according to the recommendations of Greenwald et al. (2003) and Sriram and Greenwald (2009). The D score is an effect size measure for each participant that indexes the difference in average response speed across the two critical comparison conditions (television program paired with true versus real life paired with false), while accounting for the participant's overall response speed. A positive D score indicates the television program as relatively more false.

Procedures

First, participants completed the Television Virtual and Real-Life Questionnaire. Then, after a 10-minute break, they participated in the BIAT experiment. Data were collected automatically using Inquisit version 3.0.

Results

Explicit Cognition of Television

The Television Virtual and Real-Life Questionnaire scores showed the explicit cognition of television among the participants. The results of a paired samples t test showed that there was no significant difference between mean scores on the two subscales ($t = .09$, $p > .05$). In other words, the left-behind children had difficulty distinguishing between the television virtual and real life subscales.

Implicit Cognition of Television

The participants' implicit cognition of television was reflected by the D score of .35 in the BIAT experiment. According to the criterion of Sriram and Greenwald

(2009), a D score significantly greater than 0 indicates that the participants tend to agree with "real life–truth, television–false", which means, at the implicit level, that left-behind children are able to distinguish between television virtual and real life.

The Relationship Between the Explicit and Implicit Cognition of Television

We calculated the difference between the mean score on the cognition of television subscale and that on the cognition of real-life subscale and recorded it as E, to represent the distinguished cognition between television and real life. Then, we examined the relationship between participants' explicit and implicit cognition of television with a Pearson correlation to calculate the difference between E and D scores. Results showed that there was no significant correlation ($r = .03$, $p = .86$) between E and D scores, which indicates that left-behind children's explicit and implicit television cognitions are independent, showing a structural separation.

Discussion

In our study we found that left-behind children had difficulty distinguishing between television virtual and real life, which is in line with the findings of previous researchers (Parvanta et al., 2010; Rosenkoetter, Rosenkoetter, Ozretich, & Acock, 2004). Explicit cognition is a rational, thoughtful, and conscious process, being interrelated with reasonable logical thinking, which mainly depends on cognition resources obtained from the environment. Most modern children's cognitive development theories also have relative stresses (Bidell & Fischer, 1992; Bronfenbrenner, 1979; Davydov & Zinchenko, 1993; Siegel & White, 1975). Neo-Piagetian theorists believe the children's cognitive development is a process that constructs external information into the self-schemata. In sociocultural theory the impact of social and cultural context on cognitive development is emphasized. In the environment-oriented cognitive development theory it is indicated that the environment plays an important role in children's cognitive development. There is no doubt that children's cognitive development is a process of self-oriented interaction with the environment. In 1979, Bronfenbrenner divided the environment system into four parts: macrosystem (e.g., values, culture), external system (e.g., social environment), intermediate system (e.g., interactive activities), and microsystem (e.g., current environment). Most left-behind children in China live in remote areas with a struggling economy and lack of information resources. These children are more inclined to view television as an important information resource, and they become avid viewers of television programs. In addition, school-aged children are more easily influenced than are adults by risk factors in the environment, which may be caused by their immature cognitive development (Larson, Richards, &

Perry-Jenkins, 1994). As a result, school-aged children have a stronger inclination than do adults to remain consistent with the environment without good logical analysis, and they are more easily impacted by the environment. Moreover, lack of a close relationship with their parents, inadequate levels of school education, and family members with equally low education levels also cause left-behind children to have insufficient information regarding television literacy, which leads to their inability to distinguish the difference between television virtual and real life.

At the implicit level our results showed that left-behind children could distinguish between television virtual and real life. Implicit cognition is an automatic, unconscious, intuitive, schematic-model process, reflecting the deepest thought and emotion (Geng & Qian, 2011). Advertising in which products are linked with positive feelings can strongly influence judgment and behavior (Nairn & Fine, 2008). This means that the implicit cognition has stronger relationships with feelings than it does with logical thoughts. Although left-behind children in China consider television as their main information resource (Zhang & Chen, 2007), there is a big difference between television programs and real life. As a result, the left-behind children find it difficult to connect with the virtual context because it is so different from the reality of their own lives. Therefore, left-behind children tend to perceive television shows as false and the real life as true. On the other hand, this finding may also be interpreted from the viewpoint of the core knowledge system (Spelke & Kinzler, 2007) in which human cognition development is considered to be a process that, based on core knowledge reference, can be used to construct new skills or a theoretical system. The core knowledge system is the basic functional unit of human cognition, which preserves the "core character" of the real world. In line with this, the core character is more inclined towards use of the implicit cognitive process. Under the guide of core knowledge reference, when left-behind children are asked to respond as soon as possible, social consciousness has no time to take action, so the core knowledge system guides their reaction. The real-life character is more related to the core character of the real world, which makes the left-behind children inclined to choose the "real life–true" option, when "real life–false" or "television virtual–true" would take a longer reaction time. This choice may be automatic and implicit.

We found that left-behind children had difficulty distinguishing between television virtual and real life at the explicit level but had no difficulty distinguishing at the implicit level. The explicit and implicit cognitions were independent of each other, showing structural separation. Our results provide support for the dual-process theory. The distinction between implicit and explicit cognition lies in the processing mechanism behind them, wherein the automatic process running on the unconsciousness operates with much less information and takes less time than the rational process running on consciousness (Cunningham,

Zelazo, Packer, & Van Bavel, 2007). Left-behind children in this study may ostensibly have no idea of their own implicit attitude toward television virtual; in contrast, they directly adapt the television information to become their explicit attitude. Researchers have shown that from the age of about 11 or 12 upward, children begin to become aware of the process of stereotyping, both in real life and in the media. They begin to perceive the differences between styles of realism and develop an aesthetic appreciation of the various ways in which the illusion of reality is created by television (Buckingham & Allerton, 1996).

Meanwhile, as television genres change and evolve (e.g., reality television), new forms of literacy are clearly required. These new forms challenge children's ability to distinguish between fact and fiction and their awareness of the various forms of manipulation that such programs typically entail. However, we are glad to know that left-behind children have the potential ability to distinguish real life from television virtual at least at the implicit level, which creates the condition for further television literacy education. First, it is important to create more unrealistic genres (e.g., cartoons) for young children. As Dorr (1983) noted, children spontaneously refer to particular television genres and to specific programs within them as a way of judging the reality status of programs: news, sports, documentaries, and crime dramas were realistic but cartoons were not. Second, helping children to learn how to remind themselves of the virtual nature of a television program may help them to improve distinction ability. Third, in addition to educational programs, there is a need for more appropriate entertainment programs for left-behind children, because people who find television more like real life expose themselves to it with the aim of seeking information and instruction (Potter, 1988).

Limitations

Because we focused on left-behind children's static ability to distinguish between television virtual and real life, we might, therefore, have overlooked the developmental characteristic of those children for television cognition. With the growing knowledge of the influences of both the television medium and the everyday world, our understanding of left-behind children improves. Future researchers should track developmental patterns in the framing of television cognition, to discover when children might begin significant cognitive development at both the explicit and implicit level. The sample was drawn from one area in China and participants were all within a small age range, which may limit the generalizability of the results. Research should be conducted in different areas of China as well as different countries, using more heterogeneous samples. Further research is also needed to compare children's cognition ability toward different television genres, to find out the most appropriate genre for age-specific children.

References

Bidell, T. R., & Fischer, K. W. (1992). Beyond the stage debate: Action, structure, and variability in Piagetian theory and research. In R. Sternberg & C. Berg (Eds.), *Intellectual development* (pp. 100-140). New York: Cambridge University Press.

Bronfenbrenner, U. (1979). *The ecology of human development: Experiments by nature and design*. Cambridge, MA: Harvard University Press.

Buckingham, D., & Allerton, M. (1996). *Fear, fright and distress: A review of research on children's 'negative' emotional responses to television*. London, UK: Broadcasting Standards Council.

Chandler, D. (1997). Children's understanding of what is 'real' on television: A review of the literature. *Journal of Educational Media*, *23*, 65-80. **http://doi.org/b4qbj6**

Cunningham, W. A., Zelazo, P. D., Packer, D. J., & Van Bavel, J. J. (2007). The iterative reprocessing model: A multilevel framework for attitudes and evaluation. *Social Cognition*, *25*, 736-760. **http://doi.org/c42c33**

Davydov, V. V., & Zinchenko, V. P. (1993). Vygotsky's contribution to the development of psychology. In H. Daniels (Ed.), *Charting the agenda: Educational activity after Vygotsky* (pp. 93-106). London: Routledge.

Dorr, A. (1983). No shortcuts to judging reality. In P. E. Bryant & S. Anderson (Eds.), *Watching and understanding of television: Research on children's attention and comprehension* (pp. 199-210). New York: Academic Press.

Duan, C., & Yang, K. (2008). The left-behind children in rural China. *Population Research*, *32*, 15-25.

Fazio, R. H. (1990). Multiple processes by which attitudes guide behavior: The MODE model as an integrative framework. In M. P. Zanna (Ed.), *Advances in experimental social psychology* (Vol. 23, pp. 75-109). San Diego, CA: Academic Press.

Geng, L., & Qian, B. (2011). Implicit and explicit cognition of Chinese heroin abusers. *Social Behavior and Personality: An international journal*, *39*, 433-444. **http://doi.org/fj85f6**

Geng, L., & Zhou, W. (2011). IAT in the left-behind children's television cognitive research. *Journal of Southwest University for Nationalities (Humanities and Social Science)*, *10*, 150-154.

Greenwald, A. G., McGhee, D. E., & Schwartz, J. L. K. (1998). Measuring individual differences in implicit cognition: The Implicit Association Test. *Journal of Personality and Social Psychology*, *74*, 1464-1480. **http://doi.org/gmv**

Greenwald, A. G., Nosek, B. A., & Banaji, M. R. (2003). Understanding and using the Implicit Association Test: I. An improved scoring algorithm. *Journal of Personality and Social Psychology*, *85*, 197-216. **http://doi.org/g8s**

Hawkins, R. P. (1977). The dimensional structure of children's perceptions of television reality. *Communication Research*, *4*, 299-320. **http://doi.org/fq74q3**

Halpern-Felsher, B. L., & Cauffman, E. (2001). Costs and benefits of a decision: Decision-making competence in adolescents and adults. *Journal of Applied Developmental Psychology*, *22*, 257-273. **http://doi.org/g8v**

Henning, B., & Vorderer, P. (2001). Psychological escapism: Predicting the amount of television viewing by need for cognition. *Journal of Communication*, *51*, 100-120. **http://doi.org/b2gp9m**

Himmelfarb, S. (1993). The measurement of attitudes. In A. H. Eagly & S. Chaiken (Eds.), *The psychology of attitudes* (pp. 23-88). Fort Worth, TX: Harcourt Brace Jovanovich.

Hodge, B., & Tripp, D. (1986). *Children and television: A semiotic approach*. Cambridge, UK: Polity.

Huston, A., Wright, J., Alvarez, M., Truglio, R., Fitch, M., & Piemyat, S. (1995). Perceived television reality and children's emotional and cognitive responses to its social content. *Journal of Applied Developmental Psychology*, *16*, 231-251. **http://doi.org/dg3cgx**

Krosnick, J. A., Judd, C. M., & Wittenbrink, B. (2005). The measurement of attitudes. In D. Albarracin, B. T. Johnson, & M. P. Zanna (Eds.), *The handbook of attitudes* (pp. 21-76). Mahwah, NJ: Erlbaum.

Larson, R. W., Richards, M. H., & Perry-Jenkins, M. (1994). Divergent worlds: The daily emotional experience of mothers and fathers in the domestic and public spheres. *Journal of Personality and Social Psychology*, *67*, 1304-1046. **http://doi.org/d53wmp**

Li, Y., & Liu, X. (2011). In search of happiness: TV watching of "left-behind children" in rural Guangdong. *Journalism & Communication*, *18*, 70-78.

Liu, X., & Chen, Q. (2009). The comparative research of the mental health between the left-at-home children and the non-left-at-home children. *Journal of Changsha Normal College*, *5*, 30-34.

Liu, L., Liu, D., Zhang, J., & Yang, J. (2010). TV nanny: Vigilance "young convergence". The alienation of the children in real life. *Movie Review*, *20*, 74-75. **http://doi.org/jdb**

Nairn, A., & Fine, C. (2008).Who's messing with my mind? The implications of dual-process models for the ethics of advertising to children. *International Journal of Advertising*, *27*, 447-470.

National Bureau of Statistics. (2010). *Chinese migrant worker numbers reach 149 million*. Retrieved from **http://news.sina.com.cn/o/2010-01-21/152316970625s.shtml**

Nikken, P., & Peeters, A. L. (1988). Children's perceptions of television reality. *Journal of Broadcasting and Electronic Media*, *32*, 441-452. **http://doi.org/d4cwmp**

Parvanta, S., Brown, J., Du, S., Zimmer, C., Zhao, X., & Zhai, F. (2010). Television use and snacking behaviors among children and adolescents in China. *Journal of Adolescent Health*, *46*, 339-345. **http://doi.org/dm7jzc**

Potter, W. J. (1988). Perceived reality in television effects research. *Journal of Broadcasting & Electronic Media*, *32*, 23-41. **http://doi.org/d2rb2v**

Rosenkoetter, L., Rosenkoetter, S., Ozretich, R., & Acock, A. (2004). Mitigating the harmful effects of violent television. *Applied Developmental Psychology*, *25*, 25-27. **http://doi.org/dzsmw7**

Schmitt, K. L., & Anderson, D. R. (2002). Television and reality: Toddlers' use of visual information from video to guide behavior. *Media Psychology*, *4*, 51-76. **http://doi.org/bzw7jq**

Siegel, A. W., & White, S. H. (1975). The development of spatial representations of large-scale environments. In H. Reese (Ed.), *Advances in child development and behavior* (Vol. 10, pp. 10-55). New York: Academic Press.

Spelke, E. S., & Kinzler, K. D. (2007). Core knowledge. *Developmental Science*, *10*, 89-96. **http://doi.org/fhpxzt**

Sriram, N., & Greenwald, A. G. (2009). The Brief Implicit Association Test. *Experimental Psychology*, *56*, 283-294. **http://doi.org/g83**

Strouse, G. A., & Troseth, G. L. (2008). "Don't try this at home": Toddlers' imitation of new skills from people on video. *Journal of Experimental Child Psychology*, *101*, 262-280. **http://doi.org/bvgkmj**

Survey and Statistics Institute of China. (2010). *Left-behind children in areas in China with high levels of poverty*. Retrieved from **http://finance.people.com.cn/stock/GB/217390/220323/index.html**

Wilson, T. D., Lindsey, S., & Schooler, T. Y. (2000). A model of dual attitudes. *Psychological Review*, *107*, 101-126. **http://doi.org/bwbdqd**

Wright, J. C., Huston, A. C., Truglio, R., Fitch, M., Smith, E., & Piemyat, S. (1995). Occupational portrayals on television: Children's role schemata, career aspirations, and perceptions of reality. *Child Development*, *66*, 1706-1718. **http://doi.org/cwmzqw**

Yang, T., Wang, C., & Wang, Y. (2007). Research the media influence on teenagers. *Contemporary TV*, *1*, 88-89.

Zhang, Y., & Chen, R. (2007). Survey on left-behind children's media usage. *Rural Development and Information Dissemination*, *148*, 69-73.