SOCIO-CULTURAL CORRELATES OF COGNITIVE STYLE AMONG SCHOOL CHILDREN IN ENUGU STATE, NIGERIA

Jude O. Chukwu
Department of Social Sciences and Humanities
Institute of Management and Technology, Enugu

Isaac N. Aneke
Department of Social Sciences and Humanities
Institute of Management and Technology, Enugu

Abstract
Information processing pattern is an essential component in learning. The differences in cognitive style are a crucial determinant of performance and adjustment in the sociocultural world. Thus, the socio-cultural environment is a critical variable for individual differences relating to cognitive processes. The objective of this study was to investigate the influence of socio-cultural background on the adopted cognitive style (fielddependent/independent) of school children. The study utilized a sample of seventy-eight school-going children pooled from primary schools in rural and urban areas of the Enugu states of Nigeria. The Latent Test developed by Witkin et al. (1977) measured the participants' field-dependent/independent cognitive style. The t-test analysis performed on the data established a significant difference in cognitive styles between students from urban and rural settings. Thus, this indicates that the socio-cultural environment influences adopted the cognitive style.

Keywords: Cognitive Styles, Field dependent/independent, Socio-cultural, Students

Background

Over the years, individual's ability to perceive their environment in different ways and the processes that underpin the variations in information processing has been a focus of research. The discourse is based on the individual's cognitive disparities in perception. Cognitive style is a socio-psychological construct denoting perceived consistencies observed in individuals' cognitive processes relating to information processing patterns. Cognitive style is a term

used to describe how individuals perceive, think, and remember information (Sellah et al., 2018). Perhaps, the phenomenon represents an umbrella term reflecting diversity in perception, organization, and labelling of various environmental factors.

Extensive literature has been dedicated to examining cognitive patterns, especially in school children (Bendall et al., 2019; Chang et al., 2019; Chasanah et al., 2020; Cools & Van Den Broeck, 2007; Dagnall et al., 2015; Lewis et al., 2018; Mandel & Kapler, 2018; Margunayasa et al., 2019; Sadler-Smith, 2001; Surur et al., 2020; Viator et al., 2020). Cognitive styles represent individuals' heuristics to process information about their environment (Kozhevnikov, 2007). It is an essential aspect of early learning among children (Noroozi, 2003), primarily due to its role in information processing. Accordingly, Amazue (2007) noted that cognitive style features a perceptual approach consistent overtime; thus, describing an individual's mode of learning and intellectual activities (Farmaki et al, 2019). Cognitive style denotes an inherent mode of approaching tasks and conditions associated with specific styles in cognitive processes such as attention, decision making, problem solving, and perception (Bendall et al., 2016).

Earlier research (Witkin et al., 1977) proposed two distinct forms of cognitive style. The researchers contend that the existing perceptual environment strongly influences information processing. Hence, they referred to people who perceive things as part of the environment as field-dependent. Those who perceive things as separate from the surrounding environment are regarded as field-independent. Thus, field-dependence/independence cognitive style relates to individual differences in the processing and organization of social or cognitive information. Furthermore, insinuations suggest that field-dependent individuals are more dependent on existing cues

in information processing. At the same time, field-independent people are more autonomous and tend to impose their cognitive strategies in ambiguous social or learning situations.

Researches based on cognitive style have focused on these two different ways of processing information termed field-dependent and field-independent cognitive style (Fatemi et al., 2014; Hasbullah & Sajiman, 2020; Lü et al., 2019; Mefoh & Ezeh, 2016; Mutlu & Temiz, 2013; Muzaini et al., 2019; Ubuz &Aydınyer, 2019; Umah, 2020; Wu, 2018; Zhang & Tian, 2019). For instance, the different levels, field dependence (FD), expresses an individual's orientation to the environment, especially in a problem-solving situation. Conversely, field independence (FI) entails the ability to rely on one's knowledge and experience in solving problems (Volkova & Rusalov, 2016). Field independent are organized to solve issues and accommodate new information, while field dependents are characterized by unstructured and unorganized problem solving approaches (Pathuddin et al., 2019).

Cognitive style studies posit that the diversity in the social and cultural environment produces distinct cognitive patterns that characterize an individual's information processing and response to stimuli (Nisbett et al., 2001; Miyamoto et al., 2006). The way individuals perceive, organize, and respond to their socio-world is shaped mainly by cultural values and norms. The socio culturally shaped cognitive patterns are manifested as some children reason and solve a complex problem independently, while some depend on convention to achieve goals. The socio-cultural environment reflects behaviour and information processing styles that are influenced relatively by socio demographic variables, including race, gender, and nationality. The socio-cultural environment is conceptualized as those factors that describe a set of individuals and determine their behaviour, such as child-

rearing practice, cultural values and beliefs, education, and reference groups. Spagnolo and Di Paola (2010)reported an association between cognitive processes and socio-cultural contexts. Similarly, studies have provided support that different cultures produce diverse cognitive styles that influence how one processes environmental information and stimuli(Miyamoto et al., 2006; Nisbett et al., 2001). Additionally, Hill et al. (2010) contend that cognitive styles are learned through personal and cultural socialization processes. Thus, the primary purpose of the current study is to explore the influence of the socio-cultural environment on school-going children's cognitive patterns.

Hypothesis

The following hypothesis was formulated to guide the study:

There is a significant difference between urban and rural participants in the field-dependent/independent cognitive style.

Method

A total of 78 students drawn from urban and rural primary schools in Enugu state participated in the study. The students between the ages of 10 -12, comprising males and females from the primary 5 and 6 classes, were randomly selected from two schools in the states.

Measure

The cognitive style (Field Dependence and Field Independence) was measured using the Latent Test developed by Witkin et al. (1977). The instrument comprised 25 pictures that allow the respondents to locate and shade a geometric shape. The instrument is consisting of 3 parts ranging from the simple task to the most challenging task. The score ranges from 0-15, with a higher score indicating field-independent cognitive style.

ResultTable 1:

The table shows the Mean and Standard Deviation of participants' scores on the difference between urban and rural location and field-independent/dependent cognitive patterns.

Location	N	Mean	Standard Deviation
Rural	37	1.12	0.33
Urban	41	1.79	0.40

The above table shows the mean and standard deviation of the score on the difference between urban and rural locations and field-independent/dependent cognitive patterns. It indicates that participants from the urban location scored slightly high on the mean (M = 1.79, SD = 0.40) than those from rural setting (M = 1.12, SD = 0.33).

Table 2:

Table showing the t-test result comparing the difference between a participant's location on field-independent/dependent cognitive pattern.

Location	N	Mean	SD	t	df	Sig
Urban	41	1.79	0.41	12.508	76	.000
Rural	37	1.12	0.33			

The above table shows the t-test analysis results to compare the difference between urban and rural locations in the field-dependent/independent cognitive pattern. There was statistically significant difference in the score for urban location (M = 1,79, SD = 0.40) and rural location (M = 1.12, SD = 0.33) conditions; t (76) = 12.508, p = .000. The result showed that the urban

participants scored higher on field-independence cognitive patterns than their rural counterparts. Thus, the outcome confirmed the assumption of the study, which stated that there would be a significant difference between urban and rural participants in field-dependent/independent cognitive style.

Discussion

The current study examined the association between socio-cultural environment and field-dependent/independent cognitive patterns among school-going children. The findings indicate that the hypothesis that the sociocultural environment (urban/rural location) will significantly differ in fielddependent/independent cognitive patterns was supported. This means that the urban areas' participants are more field-independent than their rural counterparts with more field-dependent. The current finding corroborates Amazue (2007), which implicated the socio-cultural environment in the fielddependent/independent cognitive style. The research results prove that the socio-cultural environment is a positive determinant of the cognitive pattern among school-going children. Hence, the result is aligned with a similar study (Trybulec, 2020), which reported an association between cultural factors and cognition.

Conclusion

The study was conducted to examine the socio-cultural environment as a possible correlate of school children's cognitive style. It was expected that the participants would differ in cognitive style based on the socio-cultural environment (i.e., urban/rural location). Expectedly, the analysis conducted on the data affirmed the association between cognitive style and socio-cultural environment. Thus, the result contributes to the cognitive style literature by revealing the socio-cultural environment as a positive determinant of fielddependent/independent cognitive styles. The result provides valuable data to counsellors and teachers in assessing cognitive patterns among school children.

REFERENCES

Amazue, L.O. (2007). A confirmatory study of the socio-cultural determinant of the field-independent/dependent cognitive style. ESUT Journal of psychological studies. 32-40

Bendall, R. C. A., Galpin, A., Marrow, L. P., & Cassidy, S. (2016). Cognitive style: Time to experiment. In *Frontiers in Psychology* (Vol. 7, Issue NOV). https://doi.org/10.3389/fpsyg.2016.01786

Bendall, R. C. A., Lambert, S., Galpin, A., Marrow, L. P., & Cassidy, S. (2019). Psychophysiological indices of cognitive style: A triangulated study incorporating neuroimaging, eye-tracking, psychometric and behavioral measures. *Personality and Individual Differences*, *144*. https://doi.org/10.1016/j.paid.2019.02.034

Chang, J. J., Lin, W. S., & Chen, H. R. (2019). How attention level and cognitive style affect learning in a MOOC environment? Based on the perspective of brainwave analysis. *Computers in Human Behavior*, *100*. https://doi.org/10.1016/j.chb.2018.08.016

Chasanah, C., Riyadi, & Usodo, B. (2020). The effectiveness of learning models on written mathematical communication skills viewed from students' cognitive styles. *European Journal of Educational Research*, *9*(3). https://doi.org/10.12973/EU-JER.9.3.979

Cools, E., & Van Den Broeck, H. (2007). Development and validation of the cognitive style indicator. *Journal of Psychology: Interdisciplinary and Applied*, *141*(4). https://doi.org/10.3200/JRLP.141.4.359-388

Dagnall, N., Drinkwater, K., Parker, A., Denovan, A., & Parton, M. (2015). Conspiracy theory and cognitive style: A worldview. *Frontiers in Psychology*, *6*(FEB). https://doi.org/10.3389/fpsyg.2015.00206

Fatemi, A. H., Vahedi, V. S., & Seyyedrezaie, Z. S. (2014). The effects of topdown/bottom-up processing and field-dependent/field-independent cognitive style on Iranian EFL learners' reading comprehension. *Theory and Practice in Language Studies*, *4*(4). https://doi.org/10.4304/tpls.4.4.686-693

Hasbullah, H., & Sajiman, S. U. (2020). The differences of cognitive style fieldsindependent and dependent on students' mathematical problem-solving abilities. *AKSIOMA: Jurnal Program Studi Pendidikan Matematika*, *9*(2). https://doi.org/10.24127/ajpm.v9i2.2778

Hill, L., Williams, J. H. G., Aucott, L., Milne, J., Thomson, J., Greig, J., Munro, V., & Mon-Williams, M. (2010). Exercising attention within the classroom. *Developmental Medicine and Child Neurology*, *52*(10). https://doi.org/10.1111/j.1469-8749.2010.03661.x

Kozhevnikov, M. (2007). Cognitive Styles in the Context of Modern Psychology:

Toward an Integrated Framework of Cognitive Style. *Psychological Bulletin*, *133*(3). https://doi.org/10.1037/0033-2909.133.3.464

Lewis, G., Wen, S., Pearson, R. M., & Lewis, G. (2018). The association between paternal depressogenic cognitive styles during pregnancy and offspring depressogenic cognitive styles: an 18-year prospective cohort study. *Journal of Child Psychology and Psychiatry and Allied Disciplines*, *59*(5). https://doi.org/10.1111/jcpp.12847

Lü, X., Liu, J., Wei, L., & Zhang, X. (2019). The effects of field-dependentindependent cognitive style and abrupt rotation of the reference frame on multiple object tracking. *Acta Psychologica Sinica*, *51*(1). https://doi.org/10.3724/SP.J.1041.2019.00024

Mandel, D. R., & Kapler, I. V. (2018). Cognitive style and frame susceptibility in decision-making. *Frontiers in Psychology*, *9*(AUG). https://doi.org/10.3389/fpsyg.2018.01461

Margunayasa, I. G., Dantes, N., Marhaeni, A. A. I. N., & Suastra, I. W. (2019). The effect of guided inquiry learning and cognitive style on science learning achievement. *International Journal of Instruction*, *12*(1). https://doi.org/10.29333/iji.2019.12147a

Mefoh, P. C., & Ezeh, V. C. (2016). Effect of field-dependent versus fieldindependent cognitive styles on prospective and retrospective memory slips. *South African Journal of Psychology*, *46*(4). https://doi.org/10.1177/0081246316632969

Miyamoto, Y., Nisbett, R. E., & Masuda, T. (2006). Culture and the physical environment holistic versus analytic perceptual affordances. *Psychological Science*, *17*(2). https://doi.org/10.1111/j.1467-9280.2006.01673.x

Mutlu, M., & Temiz, B. K. (2013). Science Process Skills of Students Having Field Dependent and Field Independent Cognitive Styles. *Educational Research Review*, *8*(11). https://doi.org/10.5897/ERR2012.1104

Muzaini, M., Juniati, D., & Siswono, T. Y. E. (2019). Exploration of student's quantitative reasoning in solving a mathematical problem: A case study of field-dependent cognitive style. *Journal of Physics: Conference Series*, *1157*(3). https://doi.org/10.1088/1742-6596/1157/3/032093

Nisbett, R. E., Choi, I., Peng, K., & Norenzayan, A. (2001). Culture and systems of thought: Holistic versus analytic cognition. *Psychological Review*, *108*(2). https://doi.org/10.1037/0033-295X.108.2.291

Pathuddin, Ketut Budayasa, I., & Lukito, A. (2019). The metacognitive activity of male students: Difference field independent-dependent cognitive style. *Journal of Physics: Conference Series*, *1218*(1). https://doi.org/10.1088/17426596/1218/1/012025

Sadler-Smith, E. (2001). The relationship between learning style and cognitive style. *Personality and Individual Differences*, *30*(4). https://doi.org/10.1016/S0191-8869(00)00059-3

Sellah, L., Jacinta, K., & Helen, M. (2018). Predictive power of cognitive styles on academic performance of students in selected national secondary schools in Kenya. *Cogent Psychology*, *5*(1). https://doi.org/10.1080/23311908.2018.1444908

Spagnolo, F., & Di Paola, B. (2010). *European and Chinese cognitive styles and their impact on teaching mathematics*. Springer Verlag.

Surur, M., Degeng, I. N. S., Setyosari, P., & Kuswandi, D. (2020). The effect of problem-based learning strategies and cognitive styles on junior high school students' problem-solving abilities. *International Journal of Instruction*, *13*(4). https://doi.org/10.29333/iji.2020.1343a

Trybulec, M. (2020). Understanding the interface between society and cognition. *Avant*, *11*(2). https://doi.org/10.26913/AVANT.2020.02.17

Ubuz, B., & Aydınyer, Y. (2019). Project-based geometry learning: Knowledge and attitude of field-dependent/independent cognitive style students. *Journal of Educational Research*, *112*(3). https://doi.org/10.1080/00220671.2018.1502138

Umah, U. (2020). Comparison of Students' Covariational Reasoning Based on Differences in field-dependent and Field-Independent Cognitive Style. *NUMERICAL: Jurnal Matematika Dan Pendidikan Matematika*. https://doi.org/10.25217/numerical.v4i1.638

Viator, R. E., Harp, N. L., Rinaldo, S. B., & Marquardt, B. B. (2020). The mediating effect of reflective-analytic cognitive style on rational thought. *Thinking and Reasoning*, *26*(3). https://doi.org/10.1080/13546783.2019.1634151

Volkova, E. V., & Rusalov, V. M. (2016). Cognitive styles and personality. *Personality and Individual Differences*, *99*. https://doi.org/10.1016/j.paid.2016.04.097

Witkin, H. A., Moore, C. A., Goodenough, D., & Cox, P. W. (1977). FieldDependent and Field-Independent Cognitive Styles and Their Educational Implications. *Review of Educational Research*, *47*(1). https://doi.org/10.3102/00346543047001001

Wu, H. (2018). The Effects of Field Independent/Field Dependent Cognitive Styles on Incidental Vocabulary Acquisition under Reading Task. *Theory and Practice in Language Studies*, *8*(7). https://doi.org/10.17507/tpls.0807.12

Zhang, J., & Tian, Y. (2019). The influence of field independent-dependent cognitive styles on students' learning performance under different teaching modes. *ACM International Conference Proceeding Series*, *Part F148391*.
https://doi.org/10.1145/3323771.3323827