PSYCHOLOGY AND COGNITIVE SCIENCES

Openventio PUBLISHERS

ISSN 2380-727X

Open Journal

http://dx.doi.org/10.17140/PCSOJ-3-e009

Editorial

*Corresponding author
Stephen Ntim, PhD, MPhil, MA, BEd
Faculty of Education
Catholic University of Ghana
P.O. BOX 363, Sunyani
Fiapre, B/A, Ghana
E-mail: stephenntim58@yahoo.com; stephenntim58@gmail.com; stephen.ntim@cug.edu.gh

Volume 3 : Issue 4
Article Ref. #: 1000PCSOJ3e009

Article History
Received: October 2nd, 2017
Accepted: October 5th, 2017
Published: October 5th, 2017

Citation
Ntim S. Deprivation or interest-type curiosity and exploratory behaviour in humans: Are they inherently cognitive and implicate curiosity-induced teaching? *Psychol Cogn Sci Open J*. 2017; 3(4): e16-e18. doi: 10.17140/PCSOJ-3-e009

Deprivation or Interest-Type Curiosity and Exploratory Behaviour in Humans: Are they Inherently Cognitive and Implicate Curiosity-Induced Teaching?

Stephen Ntim, PhD, MPhil, MA, BEd*

Faculty of Education, Catholic University of Ghana, P.O. BOX 363, Sunyani, Fiapre, B/A, Ghana

BACKGROUND

The human cognitive architecture appears to be designed to resist uncertainty and doubt. In any new experience that appears to be incongruous to what one is already familiar with, the discrepancy sets into motion the desire to resist and overcome the uncertainty.[1] The incongruity induces a heightened state of arousal in the central nervous system, which sets into motion exploratory behavior aimed at reducing the doubt or the uncertainty. As one looks for the needed information through exploration in order to reduce the tension between the innate feeling of knowing, and the reality of doubt, the heightened arousal begins to reduce. It is in this respect that Berlyne[1] sees arousal, precipitated by deprivation-induced curiosity, as reinforcing in a similar way as food becomes reinforcing for the hungry person. This reduction of doubt, psychologically, becomes a survival value, and hence, essentially it has inner-directedness. The literature on human curiosity distinguishes between two types of human curiosity: a) *perceptual* and b) *epistemic.* The former is typically induced by the senses in a situation of incongruity, such as in a class, and all of a sudden, there is loud noise at the back of the class. All those in the class, would turn to that direction seeking for more information. This curiosity is caused by external stimuli. The latter, *epistemic,* on the other hand, is more cognitive. It is induced by internal stimuli precipitated cognitive dissonance. It is epistemic curiosity that is most significantly connected to human cognition. The connection between epistemic curiosity and human cognition lies in the fact that mental thoughts of ambiguity affect not just the direction of human thought, but also the intensity of the behavior to resolve the incongruity and ambiguity. This is akin to what Piaget would refer to as *disequilibrium*. To be able to adapt to one's environment, the mental disequilibrium would have to be resolved. The disequilibrium between cognition and doubt in people's experience precipitates *feelings of knowing*. This feelings-of-knowing in people's long-term memory stimulates the notion in people to have access to information and hence smaller knowledge gaps. Thus, the smaller the knowledge gaps, the more the intensity of arousal towards exploratory behavior. On the other hand, the higher the perception of knowledge gaps (as in people with little knowledge) the less the intensity of arousal.[2]

IMPLICATIONS OF THEORY FOR CLASSROOM PRACTICE

The above dispositional tendencies in humans to resolve disequilibrium have been consistently shown in varied empirical studies to enhance learning, especially self-directed learning as well as intellectual attainment.[3,4] With specific reference to individual differences and epistemic curiosity, the literature outlines two interrelated, but nevertheless, distinct approaches. They are: a) the I-type curiosity (interest-related curiosity) in which the individual seeks information for to increase feelings of pleasure and b) a stimulation to reduce cognitive tension of deprivation (D-type).[5-7]

Even though these distinctions are made in the literature for theoretical purposes,

ISSN 2380-727X http://dx.doi.org/10.17140/PCSOJ-3-e009

findings from empirical studies typically converge.[8,9] The fundamental point is that whether it is I-type curiosity or D-type, they are both implicated by two variables: a) arousal and b) performance. In classroom interaction, the teacher can explore this inherently cognitive conceptual conflict to make effective use of the Inquiry and Socratic methods of teaching.[10-12] In the former method students are asked questions, whereas in the latter, students are confronted to take a second look at their claims with discrepant information. In these two teaching methods, students' curiosity should be heightened, because students would likely experience some level of uncertainty in their answers. This uncertainty will induce some arousal. It is in this respect that there is always some level of correlation between arousal and human performance. This leads us to consider the relationship between the two, and to examine the Yerkes-Dodson law of 1908.[13] The Yerkes-Dodson law (1908) simply states that poor performance is the result of low-level of arousal. Similarly, a high-level of performance can equally induce poor performance. However, when arousal is in moderation it precipitates good performance.

The Yerkes-Dodson law (1908) suggests that, even though arousal is typically implicated in setting into motion exploratory behavior in humans to resolve cognitive dissonance or conflict as far as epistemic curiosity is concerned, it is not always the case that arousal induces exploratory behavior, especially, when humans reach a high optimal level of arousal. What is implied here is that, the conditions under which classroom teacher induces curiosity might not necessarily work all the time. Humans have optimal level of arousal. When reached, diminishing returns set in. Thus curiosity-producing strategy be it the interest type (I-type) or the deprivation-type (D-type) becomes effective classroom strategy conditionally: when they stimulate arousal level that is optimal. Beyond that, the intensity of humans' exploratory behavior diminishes.

CONCLUSION

Interest and deprivation-type curiosity in humans are inherently cognitive. Humans as adaptive species in their environment seem to have cognitive architecture designed to resolve cognitive dissonance through physiological-emotional arousal. It is in this instance that curiosity has a value in human survival. The disequilibrium in cognition typically induces human exploratory behavior to look for answers in the midst of uncertainty and doubt. It continues to play a critical role in human inventions and discovery. Additionally, curiosity is positively linked to self-directed learning and human intellectual achievement. It is in this respect that curiosity-induced teaching is recommended for classroom practice, bearing in mind that curiosity-producing techniques work best in classroom situation when they stimulate optimal arousal level.

REFERENCES

1. Berlyne DE. *Conflict, Arousal and Curiosity.* New York, USA: McGraw-Hill; 1960: 350. doi: 10.1037/11164-000

2. Litman JA, Crowson HM, Kolinski K. Validity of the interest- and deprivation type curiosity distinction in non- students. *Pers Individ Dif*. 2010; 49(5): 531-536. doi: 10.1016/j.paid.2010.05.021

3. Loewenstein G. The psychology of curiosity: A review and reinterpretation. *Psychol Bull.* 1994; 116: 75-98. doi: 10.1037/0033-2909.116.1.75

4. Richards JB, Kitman JA, Roberts DH. Performance characteristics of measurement instruments of epistemic curiosity in third-year medical students. *Medical Science Educator.* 2013; 23: 355-363. doi: 10.1007/BF03341647

5. Huang D, Zhou L, Wang M, Zhan J. Gender differences in motives of knowledge searching: Measurement invariance and factor mean comparison of the interest/deprivation epistemic curiosity. *Unpublished paper* presented at IEEE 2nd Symposium on Web Society. 16-17 August 2010; Beijing, China. doi: 10.1109/sws.2010.5607444

6. Litman JA, Museel P. Developmental and validation of German translations of interest and deprivation-type curiosity scales. *J Individ Differ.* 2013; (34): 59-68. doi: 10.1027/1614-0001/a000100

7. Piotrowski JT, Litman JA, Valkenburg P. Measuring epistemic curiosity in young children. *Infant Child Dev*. 2014; 23: 542-553. doi: 10.1002/icd.1847

8. Mussel, P. Epistemic curiosity and related constructs; Lacking evidence of discriminant validity. *Pers Individ Dif*. 2010; 49: 506-510. doi: 10.1016/j.paid.2010.05.014

9. Litman JA, Collins RP, Spielberger CD. The measurement of sensory curiosity. *Pers Individ Dif*. 2005; 39(6): 1123-1133. doi:

ISSN 2380-727X http://dx.doi.org/10.17140/PCSOJ-3-e009

10.1016/j.paid.2005.05.001

10. Sucham JR. *The Elementary School Training Programe in Scientific Inquiry* (Project #216, Grant#7-11-038). Washington DC, USA: Office of Education; 1962.

11. Anderson RC, Faust GW. *Educational Psychology: The Science of Instruction and Learning* New York, USA: Dodd Mead; 1974

12. Collins AM, Stevens AL. Goals and strategies of inquiry teachers. In: Glaser R, ed. *Advances in Instructional Psychology*. NJ, USA: Hillsdale; 1982.

13. Yerkes RM, Dodson JD. The relation of strength of stimulus to rapidity of habit-formation. *Journal of Comparative Neurological Psychology.* 1908; 18(5): 459-482. doi: 10.1002/cne.920180503