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# ODISHA JOURNAL OF SOCIAL SCIENCE



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## ODISHA JOURNAL OF SOCIAL SCIENCE

### A Bi-Annual Research Journal (English)

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## **DECLARATION**

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I, Santa Misra, hereby declare that the particulars given above are true to the best of my knowledge and belief.

**31<sup>st</sup> July, 2021**

*Santa Misra*

**Santa Mishra  
Publisher**

## EDITORIAL

During the past two years, the Covid-19 pandemic has trespassed into the matter of life of everybody all around the globe. People, young and old including children, have suffered in all fronts of social, economic, and psychological wellbeing. According to a WHO report, there is elevated rate of stress and anxiety among all sections of people. It is inducing a considerable degree of fear, worry and concern in the population at large and among certain groups in particular, such as older adults, care providers and people with underlying health conditions. In the face of such threats to the life of people, the Odisha Journal of Social Science brings out its second issue of the 8<sup>th</sup> volume with strong support from its authors, editorial, and technical teams. On this occasion, I, on behalf of the journal, extend my gratefulness to all of them.

The volume has included research articles from diverse issues of social science relating to health, education, economy, culture, ageing, and therapies. The article relating to the psychological aspects in architectural decision will be of good interest to readers because 'BastuSastra' is becoming popular among people and many people are actually in the psychology home-making. Similarly, neuroeconomics is a new and advanced field of research analyzing brain activity for economic choices. The article on neuroeconomics will definitely cater the interest of inter-disciplinary researchers in economics, psychology, gerontology, neurology and so on. An article is included in this volume on the socio-cultural dynamics of people of Natha-cult, a religious movement of India combining esoteric traditions drawn from Buddhism, Shaivism, and Hatha Yoga whose members strive for immortality by transforming the human body into an imperishable divine body. This article will provide a new look to researchers interested in the psychology of religion. Likewise, we hope that other articles like the philosophy of Gerontology through 'Gotcha' Wellness of the Japanese culture, etc. will provide good interest to the readers.

Thanking you



**(Santa Misra)**  
Chief Editor

# HEMATO - PSYCHOLOGICAL DESIGNS IN DECISION ARCHITECTURE

**\*Colonel (Dr) Jyotirmaya Satpathy**

## ***Abstract***

*Managers are voyaging through 'busitagion', with interregnums shifting and sprouting uninterruptedly. This paper intends to explore hiatuses in managerial decisions as linked to 'busitagion' ('business' and 'contagion') scenario. Objective is to transport inventive reflection upon 'busitagion' that countenance 'disruptive mental' approximations'. Attempt is to address the interregnums problem based on empirical study (hematological investigation) that provides synthesis of psychological mechanisms and strategies. Authors have examined a recurring phenomenon i.e. disruption, plagued with 'orthodox managerial replicas' and 'disruptors' has submerged the environment. Hybrid 'disruptive mental' approximations' are emerging as alternative to model complex systems under uncertainty. Authors find that managers are at crossroads with neuroscience and business laying a linkage that seemed an abnormal approximation. Managers are endorsing an ever-increasing amount of multilevel research that integrate delineated research domains and offer new lenses for understanding managerial practice. This research is confronted with limitation of having based the study on hematological investigation. Future research should focus on finding larger samples and neuro - based approaches to instrument for to explore interregnums linked to 'busitagion' scenario. This research attempts to answer issues like; do managers have the information they need? Are managers using right models? Is there new analysis that could make managers effective? With focal point on 'busitagion'; how do managers choose among alternatives on what decide to take? What characteristics of alternatives would generate 'mental' approximations'? How 'variables' figured in brain would help managers develop judgement? The study is the first to use to use hematological investigation based analysis towards managerial theoretic reasoning and advances dialogues by providing perceptive specifics concerning how managers operate and behave towards a decision.*

**Key Words: Neuromanagement, 'Busitagion' Behaviours and Neuro 'Disruption' Management**

## INTRODUCTION

The biggest question in the latter part of the 20<sup>th</sup> Century and during the last two decades of the 21<sup>st</sup> Century has been; Are we, from the field of management science, arriving a ecosphere of neuro subtleties? Is neuromanagement, consecrated by neuroscience thrusting the spectrum of management into a vortex tube of neuro calculations and viewing it from a pair of neurobiology (biological mechanisms and functional circuits that process information and mediate behaviour) lenses? The voyagers fail to factor that right from the evolution of this universe, mankind has been in a constant dialogue with nature, environment, natural factors and spreading outdo embrace the essence of evolution, genetics, heredity and molecular operative milieus. This formed the foundation of Darwin's Model of 'Survivability' of 'Fittest'. This has a fine thread connation with the world of business administration, business management and business dynamics that revolve around the dynamics of 'judgement modeling' in a protoplasm of neuroecology. This calls for a peep into the archetype of cognitive construction of mental simulation in judgement construction.

Cerebrum receives indications, accentuate recognition and transduction to grow and die in stochastic milieus. Impression that judgements are taken through rational or logical thought process have been exposed to questioning by experiments that analyse estimation during judgement making. Rationality is unclear with stochastic complexity. Are business 'agent's being threatened by 'judgement alarm'? Is there a problem with judgement making? Reference is drawn to cerebrums that impact judgements, genes they activate to differentiate based on multiple signals of origin, conditions that support or negate findings that aid understanding of how chromosomal configurations influence judgement making. Cerebrum - based judgement making can infer from noisy signals and anticipated state of business setting. Third, cells decide in presence of potentially competitive makers.

Judgements envelop business prospects. Research in judgment and judgement making has examined behavioural violations of rational judgement theory. Each business organisation is unique organically and landscape stimulates fresh queries, vigorous theoretical and conjectural practicalities, demanding approaches, challenging results, and audacious insinuations. Business organisations are at intersections with hematological science and business laying a conduit that seems an abnormal approximation with infinite 'scrolling' and 'interpolations' in 'disruptive hematological' guesstimates. Judgement 'impertinence' toward problem solving is used to portray business 'agent' as facing a set of alternative courses of action from which a judgement must be made. 'Assertiveness' assumes it as easy to come up with substitutions, but stimulating to choose among them is difficult to design a good alternative. Are business 'agent's being threatened by 'judgement alarm'? Business leaders assume that judgements they take are rational, optimal and based on best accessible data. They postulate that they are in total appreciation of judgemental behaviours. Such propositions are now scanned under lens of cellular and chromosomal prisms. Issues like how judgemental

processes transgress in cerebrum pathways, how cerebrum considers sources of data and what intrinsic processes embody conflicting values have been explored to design 'rational' judgements. Inquiry is witnessing an ever-increasing amount of multilevel research in organisational studies that integrates delineated research domains and offers novel lens for understanding business practice. A recurring phenomenon i.e. disruption, global business arena is plagued with 'non - orthodox business replicas' and 'disruptors'.

## **Objective**

Objective of this paper is to monitor philosophy of biology in behavioural models towards understanding neurobiological 'drivers' that underlie behaviour and judgement making by means of fundamental tools from economics, psychology, neuroscience, mathematics and statistics. Paper attempts propositions generated from theoretic 'mosaic' and presents directions advocated in 'Satpathy - Gankar' Hematological Calculation Model' via hematological (blood) analysis pathway. Considerations are based on critical analysis of relevant literature and hematological results obtained in an initial empirical study. These contribute in the direction of modeling cognitive construction of mental simulation.

## **Purpose**

Investigation is countersigning an ever - increasing quantity of multilevel examination in judgement studies that assimilates delineated research provinces and offers innovative lens for appreciative judgemental run-through. There is a 'noise' for a tactic to make 'Hematisation' ('hematological or blood predilection' and 'judgement') a reality via avant-garde strategy. Paper attempts plans made from theoretical 'mosaic' and presents directions in 'Satpathy - Gankar' Calculation Model'. Purpose is to assess that hematological (blood) investigations have motivation on business 'agent's judgement. Focus is to replicate philosophy of neurobiology in research. Results demonstrate signs for unrehearsed counterfactual imitation.

## **Literature Framework**

Neuro - Calibrations in business judgments has been a major incursion by business researchers in the 21st Century. Satpathy and Gankar, et.al. (2021; forthcoming) in a study on the Anthological Commentary on Haematological Guesstimates have coupled up few replicative studies towards preparing a mosaic of the mental calculations that go on in the brains at the time of perfecting a judgement. Satpathy and Gankar, et.al. (2021; forthcoming) in a study on the Hematological Signatures in Technopreneurial Judgement Corridors have outlined the complete blood count factors in a neuro - biochemistry treatment. Satpathy and Gankar, et.al. (2021; forthcoming) in a study on the Neuro - Graduations in Business Judgments have calibrated the judgement matrices while being calculated by a business actor. Satpathy, J. (2020) has charted out the Neuro - Milieus in Technopreneurial Judgements by generating a protoplasmic setting in a judgement environment.



Exploring the Noetic Alleyways: Choosing to Choose or Deciding to Decide, Satpathy, et. al. (2020) has portrayed the neural pathways undertaken by a manager in the journey of judgement making. In a surgical interpretation on Neuro - Couplings in Managerial Judgement, Satpathy and Gankar, et.al. (2020) have analysed the dynamics of neurotransmitters at synapses. A study on Neuro - Cursors in Managerial 'Judgement Mosaic' was undertaken by Satpathy and Gankar, et.al. (2020) wherein the authors have analysed the neuro cursors like fMRI, TMT, EEG, ECG etc. as determinants of judgement making. Satpathy (2020), with Prof Hejmadi, A. (2000) carried out an empirical study on Neuromanerial 'Judgement' as a precursor of judgement making. They also conducted a parallel study on Neuro - Smidgeons In Choosing To Decide and Skin Conductance in 'Smart' Managerial Judgement with Prof Gankar, S. (2020). Satpathy, J., Hejmadi, A. and Gankar, S. (2020) conducted replicative study on Ophthalmological Catalysts in Managerial Judgement to reveal that eyes are conductors of judgement making. This preceded a study on Visual Monikers in Managerial Judgements by Satpathy, J., Pati, P., Hejmadi, A., Gankar, S. and Malhotra, S. (2019). Do business judgements take a curve on the judgemental path (a graph summarizing his risk-taking attitude)? How do these integrate this risk - taking approach in judgement making? A paper was published by Satpathy, J., et. al. (2020) and Neena (2020) titled Neuro - Trajectories in Managerial Judgements. On this issue a parallel paper titled Random Reflections on Neurojudgements Dynamics (Satpathy, J. and Gera, S.; 2020) was submitted at the NeuroPsychoEconomics Conference Amsterdam, Netherlands with and Neuro - Smidgeons in Deciding to Decide Satpathy, J., Hejmadi, A. and Laza, S. (2020). A mathematical exposition under the title 'Computational 'Neuro - Trajectories' in Judgement Making' by Satpathy, J. and Mallik, B. (2020), lends credence to the issue in hand. A study on 'Genetic Underpinnings in Managerial Judgement' by Satpathy, J., Hejmadi, A., Singh, A. and Laza, S. (2020) explores the genetic traits associated with Neuro - Evidence Based Managerial Judgements.

**Very few studies have been undertaken in the arena of judgement making and blood chemistry. In a meta-analysis of blood glucose effects on human judgement making, Literature claims that short-term changes in blood glucose influence predilections and may shake judgements. Orquin (2015) conducted a psychometric meta-analysis on the effect of blood glucose on judgement making. The analysis determines that blood glucose has domain-specific effects, swaying judgement making inversely. This study reflects the significance of having a unswerving blood indices level. In a parallel study on hematological judgment in managerial judgement, Satpathy and Mallik (2018) report role of 'hematological undercurrents' in managerial judgement making apparatus. Paper adds to different results, insights and knowledge by contrasting managerial judgement with hematology. Paper intends to comfort managers advance judgment in judgement skills.**

## Methodology

The above literature reviews reflect cognitive construction of mental simulation through eye movement, sweat conductance and blood moniker dynamics. Very few studies have been undertaken in the arena of judgement making and blood chemistry except for Jacob LOrqun, Robert Kurzban, Jacob D Christensen, Carl Johan Lagerkvist, Satpathy, Mallik and Sayalee Gankar, to list a few as available in web engine search.

Methodology presents hematological (blood) investigations in judgement neuroscience. The complete blood count (CBC) methodology has been adopted. Paper attempts propositions generated from theoretic ‘mosaic’ and presents directions advocated in ‘Satpathy - Gankar’ hematological model’ via hematological (blood) analysis pathway. Methodology includes collecting human blood samples from different age cohorts and judgement processes through neurobiological ‘drivers’ (hematological) that underlie behaviour exploring causal mechanisms of judgement routes by formal modeling and how the blood chemistry calculates with regard to questions in management and organisational comporment.

## Findings and Results

**Table: 1**  
**Grouping of Respondents**

Group 1:	Male subjects	(Aged : 25 - 40 years)	Total: 32	}	Total: 80
Group 2:	Male subjects	(Aged : 41 - 55 years)	Total: 29		
Group 3:	Male subjects	(Aged : 56 - 70 years)	Total: 19		
Group 4:	Female subjects	(Aged : 25 - 40 years)	Total: 31	}	Total: 70
Group 5:	Female subjects	(Aged : 41 - 55 years)	Total: 30		
Group 6:	Female subjects	(Aged : 56 - 70 years)	Total: 09		

**Table: 2**  
**Openness to Experience**

Factor	Group 1	Group 2	Group 3	Group 4	Group 5	Group 6
<b>Multifaceted</b>	81 %	80 %	76 %	78 %	81 %	74 %
<b>Resourceful</b>	91 %	90 %	87 %	88 %	92 %	86 %
<b>Deep</b>	79 %	81 %	77 %	76 %	84 %	73 %
<b>Reflective</b>	76 %	86 %	84 %	74 %	85 %	88 %
<b>Knowledgeable</b>	76 %	79 %	72 %	79 %	77 %	77 %
<b>Rational</b>	61 %	68 %	64 %	64 %	65 %	65 %
<b>Unproductive</b>	12 %	10 %	09 %	19 %	08 %	08 %
<b>Unchallenging</b>	34 %	31 %	27 %	29 %	32 %	26 %

(N = 150 / Male = 80 / Female = 70)  
(Figures have been rounded off)

**Table: 3**  
**Decision to Join Business**(N = 150 / Male = 80 / Female = 70)

<b>Factor</b>	<b>Male Agree</b>	<b>Male Disagree</b>	<b>Female Agree</b>	<b>Female Disagree</b>
Training for business skills	94 %	06 %	91 %	09 %
Long run profit maximisation	78 %	22 %	59 %	41 %
Corporate social responsibility	12 %	78 %	18 %	82 %
Service to Society	16 %	84 %	37 %	63 %
Maximisation of sales	94 %	06 %	79 %	21 %
Improve market shares	91 %	09 %	66 %	34 %
Maximisation of shareholder value	87 %	13 %	53 %	47 %
Opportunities to develop through challenging and interesting work.	79 %	21 %	55 %	45 %
I have reasonable chance of promotion if I work hard.	32 %	68 %	45 %	55 %
I expect to grow and my career path is clearly mapped out.	44 %	56 %	57 %	43 %
I come to work purely to get business done.	96 %	04 %	87 %	13 %
My loyalty is defined and I feel part of a team in business.	85 %	15 %	84 %	16%
I feel business reciprocates effort put.	77 %	23 %	59 %	41 %
I am motivated to contribute 100% to Business for future benefits.	96 %	04 %	89 %	11 %
I will work for business indefinitely.	78 %	21 %	79 %	21 %
I work to achieve goals of business.	98 %	02 %	94 %	06 %
Being able to change things, I do not like about my business.	91 %	09 %	88 %	12 %
Having a say about the way I do things in my business.	95 %	05 %	91 %	09 %
Chance to learn new things in my work.	89 %	11 %	92 %	08 %
Chance to use my abilities within my business.	94 %	06 %	87 %	13 %
Chance of achieving something worthwhile.	93 %	07 %	91 %	09 %
I work for profit and expect to be paid for overtime.	99 %	01 %	97 %	03 %
Business is a high - concert occupation.	94 %	06 %	92 %	08%
Choice to remain involved (so) influential?	93 %	07 %	91 %	09 %
Business harnesses your potential.	79 %	21 %	76 %	24 %
'Carrot and stick' approach of motivating works in business.	57 %	43 %	68 %	32 %
Managers in business evaluate different practices of management.	69 %	31 %	71 %	29 %
Above factors, reflect desired values and virtues in business.	77 %	23 %	79 %	21 %
Above factors contribute towards better environment.	89 %	21 %	88 %	12 %

**Table: 4**

**Overall Proficiency about Decision Making**

<b>Age Group</b>	<b>Male</b>	<b>Female</b>
<b>25 - 40 Years</b>	51 %	49 %
<b>41 - 55 Years</b>	68 %	54 %
<b>56 - 70 Years</b>	87 %	73 %

(N = 150 / Male = 80 / Female = 70)

(Figures have been rounded off)

**Table No: 5**

**Overall Person - Business Fit**

(N = 150 / Male = 80 / Female = 70)

(Figures have been rounded off)

<b>Age Group</b>	<b>Male</b>	<b>Female</b>
<b>25 - 40 Years</b>	71 %	69 %
<b>41 - 55 Years</b>	88 %	84 %
<b>56 - 70 Years</b>	97 %	93 %

(Figures have been rounded off)

**Table No. 6**

**Work - Personal Interface**

(N = 150 / Male = 80 / Female = 70)

(Figures have been rounded off)

<b>Age Group</b>	<b>Male</b>	<b>Female</b>
<b>25 - 40 Years</b>	71 %	69 %
<b>41 - 55 Years</b>	88 %	84 %
<b>56 - 70 Years</b>	97 %	93 %

**Table No. 7**

**Profit and Wages**

(N = 150 / Male = 80 / Female = 70)

(Figures have been rounded off)

<b>Age Group</b>	<b>Male</b>	<b>Female</b>
<b>25 - 40 Years</b>	74 %	59 %
<b>41 - 55 Years</b>	78 %	74 %
<b>56 - 70 Years</b>	87 %	73 %

(Figures have been rounded off)

**Table No. 8**  
**Benefit Satisfaction Index**

(N = 150 / Male = 80 / Female = 70)  
(Figures have been rounded off)

Age Group	Male	Female
25 - 40 Years	76 %	71 %
41 - 55 Years	81 %	79 %
56 - 70 Years	88 %	83 %

(Figures have been rounded off)

**Table No. 9**  
**Satisfaction Index**

(N = 150 / Male = 80 / Female = 70)  
(Figures have been rounded off)

Age Group	Male	Female
25 - 40 Years	79 %	76 %
41 - 55 Years	88 %	77 %
56 - 70 Years	89 %	87 %

**Table No. 10**  
**Deciding on Own**

(N = 150 / Male = 80 / Female = 70)  
(Figures have been rounded off)

Age Group	Male	Female
25 - 40 Years	78 %	77 %
41 - 55 Years	86 %	75 %
56 - 70 Years	87 %	85 %

(Figures have been rounded off)

**Table No. 11**

**'Intelligence' Over Choices Selected'**

(N = 150 / Male = 80 / Female = 70)  
(Figures have been rounded off)

Age Group	Male	Female
25 - 40 Years	88 %	77 %
41 - 55 Years	89 %	78 %
56 - 70 Years	90 %	80 %

(Table - 12)

**HAEMATOLOGICAL COUNTS**

<b>MALE SUBJECTS (Aged : 25 - 40 Years)</b>				
<b>(ROUNDED - OFF AVERAGE RECORDINGS)</b>				
<b>INDEX</b>	<b>RESULT</b>		<b>NORMAL VALUE</b>	<b>OBSN DURING</b>
	<b>NO STRESS</b>	<b>STRESSED</b>		
Blood Sugar Fasting	70 mg / dl	61 mg / dl	60 - 100	Drastic Drop
Blood Sugar Post - Prandial	110 mg / dl	90 mg / dl	< 140	Drastic Drop
Blood Sugar Random	179 mg / dl	159 mg / dl	< 200	Drastic Drop
Urea	27 mg / dl	21 mg / dl	15 - 40	Drastic Drop
Creatine	0.6 mg / dl	0.4 mg / dl	0.5 - 1.0	Minor Drop
Sodium	141 mEq / L	129 mEq / L	130 - 145	Drastic Drop
Potassium	3.9 mEq / L	3.2 mEq / L	3.5 - 5.0	Drastic Drop
Lipid T - Cholesterol	138 mg / dl	108 mg / dl	< 200	Drastic Drop
Lipid Tri - Glyceride	78 mg / dl	58 mg / dl	60 - 150	Drastic Drop
Low Density Lipo Protein	79 mg / dl	59 mg / dl	60 - 130	Drastic Drop
Very Low Density Lipo Protein	31 mg / dl	17 mg / dl	00 - 36	Drastic Drop
High Density Lipo Protein	56 mg / dl	36 mg / dl	40 - 60	Drastic Drop
S Bilirubin Total	0.9 mg / dl	0.4 mg / dl	0.1 - 1.2	Drastic Drop
S Bilirubin Direct	0.12 mg / dl	0.2 mg / dl	< 0.3	Drastic Drop
S Bilirubin Indirect	0.4 mg / dl	0.2 mg / dl	0.1 - 1.0	Drastic Drop
Aspartate Trans Amines	24 IU / L	16 IU / L	15 - 40	Drastic Drop
Alanine Trans Amines	23 IU / L	16 IU / L	15 - 40	Drastic Drop
Creatine Phosphate K	21	4	M : 6 - 37	Drastic Drop
CPK - Muscular / Brain	14	12	F : 5 - 27	Minor Drop
T - Protein	6.3 g / dl	5.3 g / dl	6 - 8	Minor Drop
Albumin	3.9 g / dl	3.4 g / dl	3.5 - 5.5	Minor Drop
Globulin	1.9 g / dl	1.8 g / dl	1.7 - 3.2	Minor Drop

(Table - 13)

**HAEMATOLOGICAL COUNTS**

<b>MALE SUBJECTS (Aged : 41 - 55 Years)</b>				
<b>(ROUNDED - OFF AVERAGE RECORDINGS)</b>				
<b>INDEX</b>	<b>RESULT</b>		<b>NORMAL VALUE</b>	<b>OBSN</b>
	<b>NO STRESS</b>	<b>STRESS</b>		
Blood Sugar Fasting	71 mg / dl	70 mg / dl	60 - 100	Minor Drop
Blood Sugar Post - Prandial	87 mg / dl	85 mg / dl	< 140	Minor Drop
Blood Sugar Random	113 mg / dl	111 mg / dl	< 200	Minor Drop
Urea	19 mg / dl	14 mg / dl	15 - 40	Minor Drop
Creatine	0.6 mg / dl	0.3 mg / dl	0.5 - 1.0	Drastic Drop
Sodium	141 mEq / L	131 mEq / L	130 - 145	Drastic Drop
Potassium	3.7 mEq / L	3.4 mEq / L	3.5 - 5.0	Minor Drop
Lipid T - Cholesterol	119 mg / dl	114 mg / dl	< 200	Drastic Drop
Lipid Tri - Glyceride	71 mg / dl	64 mg / dl	60 - 150	Drastic Drop
Low Density Lipo Protein	79 mg / dl	69 mg / dl	60 - 130	Drastic Drop
Very Low Density Lipo Protein	24 mg / dl	21 mg / dl	00 - 36	Minor Drop
High Density Lipo Protein	48 mg / dl	45 mg / dl	40 - 60	Minor Drop
S Bilirubin Total	0.8 mg / dl	0.5 mg / dl	0.1 - 1.2	Minor Drop
S Bilirubin Direct	0.13 mg / dl	0.10 mg / dl	< 0.3	Minor Drop
S Bilirubin Indirect	0.4 mg / dl	0.2 mg / dl	0.1 - 1.0	Drastic Drop
Aspartate Trans Amine	22 IU / L	19 IU / L	15 - 40	Minor Drop
Alanine Trans Amines	19 IU / L	17 IU / L	15 - 40	Minor Drop
Creatine Phosphate K	21	18	M : 6 - 37	Minor Drop
CPK - Muscular / Brain	26	13	F : 5 - 27	Drastic Drop
T - Protein	6.7 g / dl	6.2 g / dl	6 - 8	Minor Drop
Albumin	3.6 g / dl	3.4 g / dl	3.5 - 5.5	Minor Drop
Globulin	1.2 g / dl	1.0 g / dl	1.7 - 3.2	Minor Drop

(Table -14)

**HAEMATOLOGICAL COUNTS**

<b>MALE SUBJECTS (Aged : 56 - 70 Years)</b>				
<b>(ROUNDED - OFF AVERAGE RECORDINGS)</b>				
<b>INDEX</b>	<b>RESULT</b>		<b>NORMAL VALUE</b>	<b>OBSN DURING</b>
	<b>NO STRESS</b>	<b>STRESSED</b>		
Blood Sugar Fasting	74 mg / dl	73 mg / dl	60 - 100	Minor Drop
Blood Sugar Post - Prandial	113 mg / dl	111 mg / dl	< 140	Minor Drop
Blood Sugar Random	126 mg / dl	123 mg / dl	< 200	Minor Drop
Urea	25 mg / dl	22 mg / dl	15 - 40	Minor Drop
Creatine	0.9 mg / dl	0.7 mg / dl	0.5 - 1.0	Minor Drop
Sodium	137 mEq / L	131 mEq / L	130 - 145	Minor Drop
Potassium	3.9 mEq / L	3.1 mEq / L	3.5 - 5.0	Minor Drop
Lipid T - Cholesterol	124 mg / dl	120 mg / dl	< 200	Minor Drop
Lipid Tri - Glyceride	76 mg / dl	71 mg / dl	60 - 150	Minor Drop
Low Density Lipo Protein	79 mg / dl	73 mg / dl	60 - 130	Minor Drop
Very Low Density Lipo Protein	14 mg / dl	12 mg / dl	00 - 36	Minor Drop
High Density Lipo Protein	43 mg / dl	41 mg / dl	40 - 60	Minor Drop
S Bilirubin Total	0.5 mg / dl	0.6 mg / dl	0.1 - 1.2	Minor Rise
S Bilirubin Direct	0.1 mg / dl	0.2 mg / dl	< 0.3	Minor Rise
S Bilirubin Indirect	0.4 mg / dl	0.5 mg / dl	0.1 - 1.0	Minor Rise
Aspartate Trans Amine	21 IU / L	18 IU / L	15 - 40	Minor Drop
Alanine Trans Amines	23 IU / L	21 IU / L	15 - 40	Minor Drop
Creatine Phosphate K	8	06	M : 6 - 37	Minor Drop
CPK - Muscular / Brain	11	08	F : 5 - 27	Minor Drop
T - Protein	6.4 g / dl	6.1 g / dl	6 - 8	Minor Drop
Albumin	3.7 g / dl	3.1 g / dl	3.5 - 5.5	Minor Drop
Globulin	1.7 g / dl	1.3 g / dl	1.7 - 3.2	Minor Drop



(Table – 15)

**HAEMATOLOGICAL COUNTS**

<b>FEMALE SUBJECTS (Aged : 25 - 40 Years)</b>				
<b>(ROUNDED - OFF AVERAGE RECORDINGS)</b>				
<b>INDEX</b>	<b>RESULT</b>		<b>NORMAL VALUE</b>	<b>OBSN</b>
	<b>NO STRESS</b>	<b>STRESS</b>		
Blood Sugar Fasting	76 mg / dl	56 mg / dl	60 - 100	Drastic Drop
Blood Sugar Post - Prandial	112 mg / dl	98 mg / dl	< 140	Drastic Drop
Blood Sugar Random	124 mg / dl	100 mg / dl	< 200	Drastic Drop
Urea	22 mg / dl	12 mg / dl	15 – 40	Drastic Drop
Creatine	0.4 mg / dl	0.2 mg / dl	0.5 – 1.0	Drastic Drop
Sodium	121 mEq / L	101 mEq / L	130 - 145	Drastic Drop
Potassium	3.1 mEq / L	2.1 mEq / L	3.5 – 5.0	Drastic Drop
Lipid T - Cholesterol	102 mg / dl	92 mg / dl	< 200	Drastic Drop
Lipid Tri - Glyceride	62 mg / dl	61 mg / dl	60 - 150	Minor Drop
Low Density Lipo Prote	76 mg / dl	72 mg / dl	60 - 130	Minor Drop
Very Low Density Lipo Protein	12 mg / dl	11 mg / dl	00 - 36	Minor Drop
High Density Lipo Protein	43 mg / dl	37 mg / dl	40 - 60	Drastic Drop
S Bilirubin Total	0.7 mg / dl	0.4 mg / dl	0.1 - 1.2	Drastic Drop
S Bilirubin Direct	0.2 mg / dl	0.2 mg / dl	< 0.3	No Drop
S Bilirubin Indirect	0.4 mg / dl	0.4 mg / dl	0.1 – 1.0	No Drop
Aspartate Trans Amine	22 IU / L	18 IU / L	15 - 40	Minor Drop
Alanine Trans Amines	21 IU / L	19 IU / L	15 - 40	Minor Drop
Creatine Phosphate K	7	4	M : 6 - 37	Minor Drop
CPK - Muscular / Brain	9	6	F : 5 - 27	Minor Drop
T - Protein	7 g / dl	6 g / dl	6 - 8	Minor Drop
Albumin	3.1 g / dl	30 g / dl	3.5 - 5.5	Minor Drop
Globulin	1.6 g / dl	1.4 g / dl	1.7 - 3.2	Minor Drop

(Table – 16)

**HAEMATOLOGICAL COUNTS**

<b>FEMALE SUBJECTS (Aged : 41 - 55 Years)</b>				
<b>(ROUNDED - OFF AVERAGE RECORDINGS)</b>				
<b>INDEX</b>	<b>RESULT</b>		<b>NORMAL VALUE</b>	<b>OBSN</b>
	<b>NO STRESS</b>	<b>STRESS</b>		
Blood Sugar Fasting	82 mg / dl	80 mg / dl	60 - 100	Minor Drop
Blood Sugar Post - Prandial	59 mg / dl	56 mg / dl	< 140	Minor Drop
Blood Sugar Random	98 mg / dl	94 mg / dl	< 200	Minor Drop
Urea	16 mg / dl	11 mg / dl	15 – 40	Minor Drop
Creatine	0.6 mg / dl	0.4 mg / dl	0.5 – 1.0	Minor Drop
Sodium	121 mEq / L	110 mEq / L	130 - 145	Minor Drop
Potassium	3.2 mEq / L	2.2 mEq / L	3.5 – 5.0	Minor Drop
Lipid T - Cholesterol	79 mg / dl	72 mg / dl	< 200	Minor Drop
Lipid Tri - Glyceride	71 mg / dl	68 mg / dl	60 - 150	Minor Drop
Low Density Lipo Protein	65 mg / dl	62 mg / dl	60 - 130	Minor Drop
Very Low Density Lipo Protein	12 mg / dl	09 mg / dl	00 - 36	Minor Drop
High Density Lipo Protein	41 mg / dl	38 mg / dl	40 - 60	Minor Drop
S Bilirubin Total	0.4 mg / dl	0.3 mg / dl	0.1 - 1.2	Minor Drop
S Bilirubin Direct	0.1 mg / dl	0.1 mg / dl	< 0.3	No Change
S Bilirubin Indirect	0.4 mg / dl	0.3 mg / dl	0.1 – 1.0	Minor Drop
Aspartate Trans Amines (AST)	22 IU / L	19 IU / L	15 - 40	Minor Drop
Alanine Trans Amines (ALT)	21 IU / L	18 IU / L	15 - 40	Minor Drop
Creatine Phosphate K	7	5	M : 6 - 37	Minor Drop
CPK - Muscular / Brain	9	7	F : 5 - 27	Minor Drop
T - Protein	7 g / dl	5 g / dl	6 - 8	Minor Drop
Albumin	3.6 g / dl	3.2 g / dl	3.5 - 5.5	Minor Drop
Globulin	1.9 g / dl	1.7 g / dl	1.7 - 3.2	Minor Drop

(Table – 17)

**HAEMATOLOGICAL COUNTS**

<b>FEMALE SUBJECTS (Aged : 56 - 70 Years)</b>				
<b>(ROUNDED - OFF AVERAGE RECORDINGS)</b>				
<b>INDEX</b>	<b>RESULT</b>		<b>NORMAL VALUE</b>	<b>OBSN DURING</b>
	<b>NO STRESS</b>	<b>STRESS</b>		
Blood Sugar Fasting	47 mg / dl	46 mg / dl	60 - 100	Minor Drop
Blood Sugar Post - Prandi	78 mg / dl	76 mg / dl	< 140	Minor Drop
Blood Sugar Random	110 mg / dl	100 mg / dl	< 200	Minor Drop
Urea	14 mg / dl	13 mg / dl	15 – 40	Minor Drop
Creatine	0.4 mg / dl	0.3 mg / dl	0.5 – 1.0	Minor Drop
Sodium	115 mEq / L	113 mEq / L	130 - 145	Minor Drop
Potassium	3.1 mEq / L	3.0 mEq / L	3.5 – 5.0	Minor Drop
Lipid T - Cholesterol	78 mg / dl	75 mg / dl	< 200	Minor Drop
Lipid Tri - Glyceride	48 mg / dl	45 mg / dl	60 - 150	Minor Drop
Low Density Lipo Protein	56 mg / dl	54 mg / dl	60 - 130	Minor Drop
Very Low Density Lipo Protein	24 mg / dl	22 mg / dl	00 - 36	Minor Drop
High Density Lipo Protein	39 mg / dl	37 mg / dl	40 - 60	Minor Drop
S Bilirubin Total	0.3 mg / dl	0.2 mg / dl	0.1 - 1.2	Minor Drop
S Bilirubin Direct	0.1 mg / dl	0.1 mg / dl	< 0.3	No Change
S Bilirubin Indirect	0.3 mg / dl	0.2 mg / dl	0.1 – 1.0	Minor Drop
Aspartate Trans Amines (AST)	14 IU / L	12 IU / L	15 - 40	Minor Drop
Alanine Trans Amines (ALT)	13 IU / L	11 IU / L	15 - 40	Minor Drop
Creatine Phosphate K	05	04	M : 6 - 37	Minor Drop
CPK - Muscular / Brain	04	03	F : 5 - 27	Minor Drop
T - Protein	4.9 g / dl	4.7 g / dl	6 - 8	Minor Drop
Albumin	3.2 g / dl	3.0 g / dl	3.5 - 5.5	Minor Drop
Globulin	1.6 g / dl	1.4 g / dl	1.7 - 3.2	Minor Drop

(Table –18)

**AVERAGE OF DIFFERENT SITUATIONS**  
**(SKIN CONDUCTANCE TEST)**

	<b>Tasks</b>	<b>Conscious</b>	<b>Sense</b>
<b>Calibration</b>	1.3057	1.5834	1.5365
<b>Calibration</b>	1.1112	1.1272	1.1373
<b>Calibration</b>	0.765 1	1.8456	1.0508
<b>Calibration</b>	1.0011	1.0757	1.0675
<b>Calibration</b>	0.7127	0.8803	0.7753
<b>Calibration</b>	1.101	1.1134	1.1104
<b>Calibration</b>	1.050	1.1186	1.0584
<b>Calibration</b>	0.6085	0.6435	0.6730
<b>Calibration</b>	1.0418	1.0574	1.0782
<b>Calibration</b>	1.2588	1.4431	1.4488
<b>Calibration</b>	0.7127	0.8803	0.7753

(Table –19)

**TIME TO FIXATE****Time to First Fixation**

Fixation_observation4.JPG_1_Mean	Time to First Fixation_observation4.JPG_1_Sum	Time to First
Fixation_observation4.JPG_2_N	Time to First Fixation_observation4.JPG_2_Mean	Time to First
Fixation_observation4.JPG_2_Sum	Time to First Fixation_observation4.JPG_3_N	Time to First
Fixation_observation4.JPG_3_Mean	Time to First Fixation_observation4.JPG_3_Sum	Time to First
Fixation_observation4.JPG_4_N	Time to First Fixation_observation4.JPG_4_Mean	Time to First
Fixation_observation4.JPG_4_Sum	Time to First Fixation_observation5.JPG_5_N	Time to First
Fixation_observation5.JPG_5_Mean	Time to First Fixation_observation5.JPG_5_Sum	Time to First
Fixation_observation6.JPG_6_N	Time to First Fixation_observation6.JPG_6_Mean	Time to First
Fixation_observation6.JPG_6_Sum	Time to First Fixation_observation6.JPG_7_N	Time to First
Fixation_observation6.JPG_7_Mean	Time to First Fixation_observation6.JPG_7_Sum	Time to First
Fixation_observation7.JPG_10_N	Time to First Fixation_observation7.JPG_10_Mean	Time to First
Fixation_observation7.JPG_10_Sum	Time to First Fixation_observation7.JPG_8_N	Time to First
Fixation_observation7.JPG_8_Mean	Time to First Fixation_observation7.JPG_8_Sum	Time to First
Fixation_observation7.JPG_9_N	Time to First Fixation_observation7.JPG_9_Mean	Time to First
Fixation_observation7.JPG_9_Sum	First Fixation Duration_observation4.JPG_1_N	First Fixation
Duration_observation4.JPG_1_Mean	First Fixation Duration_observation4.JPG_1_Sum	First Fixation
Duration_observation4.JPG_2_N	First Fixation Duration_observation4.JPG_2_Mean	First Fixation
Duration_observation4.JPG_2_Sum	First Fixation Duration_observation4.JPG_3_N	First Fixation
Duration_observation4.JPG_3_Mean	First Fixation Duration_observation4.JPG_3_Sum	First Fixation
Duration_observation4.JPG_4_N	First Fixation Duration_observation4.JPG_4_Mean	First Fixation
Duration_observation4.JPG_4_Sum	First Fixation Duration_observation5.JPG_5_N	First Fixation



Count_observation6.JPG_7_Mean	Fixation	Count_observation6.JPG_7_Sum	Fixation											
Count_observation7.JPG_10_N	Fixation	Count_observation7.JPG_10_Mean	Fixation											
Count_observation7.JPG_10_Sum	Fixation	Count_observation7.JPG_8_N	Fixation											
Count_observation7.JPG_8_Mean	Fixation	Count_observation7.JPG_8_Sum	Fixation											
Count_observation7.JPG_9_N	Fixation	Count_observation7.JPG_9_Mean	Fixation											
Count_observation7.JPG_9_Sum	Total Visit	Duration_observation4.JPG_1_N	Total Visit											
Duration_observation4.JPG_1_Mean	Total Visit	Duration_observation4.JPG_1_Sum	Total Visit											
Duration_observation4.JPG_2_N	Total Visit	Duration_observation4.JPG_2_Mean	Total Visit											
Duration_observation4.JPG_2_Sum	Total Visit	Duration_observation4.JPG_3_N	Total Visit											
Duration_observation4.JPG_3_Mean	Total Visit	Duration_observation4.JPG_3_Sum	Total Visit											
Duration_observation4.JPG_4_N	Total Visit	Duration_observation4.JPG_4_Mean	Total Visit											
Duration_observation4.JPG_4_Sum	Total Visit	Duration_observation5.JPG_5_N	Total Visit											
Duration_observation5.JPG_5_Mean	Total Visit	Duration_observation5.JPG_5_Sum	Total Visit											
Duration_observation6.JPG_6_N	Total Visit	Duration_observation6.JPG_6_Mean	Total Visit											
Duration_observation6.JPG_6_Sum	Total Visit	Duration_observation6.JPG_7_N	Total Visit											
Duration_observation6.JPG_7_Mean	Total Visit	Duration_observation6.JPG_7_Sum	Total Visit											
Duration_observation7.JPG_10_N	Total Visit	Duration_observation7.JPG_10_Mean	Total Visit											
Duration_observation7.JPG_10_Sum	Total Visit	Duration_observation7.JPG_8_N	Total Visit											
Duration_observation7.JPG_8_Mean	Total Visit	Duration_observation7.JPG_8_Sum	Total Visit											
Duration_observation7.JPG_9_N	Total Visit	Duration_observation7.JPG_9_Mean	Total Visit											
Duration_observation7.JPG_9_Sum	Percentage	Fixated_observation4.JPG_1_N	Percentage											
Fixated_observation4.JPG_1_Mean	Percentage	Fixated_observation4.JPG_1_Sum	Percentage											
Fixated_observation4.JPG_2_N	Percentage	Fixated_observation4.JPG_2_Mean	Percentage											
Fixated_observation4.JPG_2_Sum	Percentage	Fixated_observation4.JPG_3_N	Percentage											
Fixated_observation4.JPG_3_Mean	Percentage	Fixated_observation4.JPG_3_Sum	Percentage											
Fixated_observation4.JPG_4_N	Percentage	Fixated_observation4.JPG_4_Mean	Percentage											
Fixated_observation4.JPG_4_Sum	Percentage	Fixated_observation5.JPG_5_N	Percentage											
Fixated_observation5.JPG_5_Mean	Percentage	Fixated_observation5.JPG_5_Sum	Percentage											
Fixated_observation6.JPG_6_N	Percentage	Fixated_observation6.JPG_6_Mean	Percentage											
Fixated_observation6.JPG_6_Sum	Percentage	Fixated_observation6.JPG_7_N	Percentage											
Fixated_observation6.JPG_7_Mean	Percentage	Fixated_observation6.JPG_7_Sum	Percentage											
Fixated_observation7.JPG_10_N	Percentage	Fixated_observation7.JPG_10_Mean	Percentage											
Fixated_observation7.JPG_10_Sum	Percentage	Fixated_observation7.JPG_8_N	Percentage											
Fixated_observation7.JPG_8_Mean	Percentage	Fixated_observation7.JPG_8_Sum	Percentage											
Fixated_observation7.JPG_9_N	Percentage	Fixated_observation7.JPG_9_Mean	Percentage											
Fixated_observation7.JPG_9_Sum														
Rec 01	1	1.20	1.20	1	18.39	18.39	1	23.75	23.75	1	26.07	26.07	1	
	8.75	8.75	1	3.19	3.19	1	14.00	14.00	1	8.66	8.66	1	2.32	
	2.32	1	5.56	5.56	1	0.15	0.15	1	0.11	0.11	1	0.44	0.44	1
	0.07	0.07	1	0.17	0.17	1	0.39	0.39	1	0.17	0.17	1	0.17	
	0.17	1	0.24	0.24	1	0.16	0.16	7	0.19	1.32	12	0.19	2.27	1
	0.44	0.44	7	0.12	0.82	2	0.12	0.25	10	0.19	1.94	1	0.17	
	0.17	7	0.15	1.06	3	0.16	0.47	4	0.15	0.58	1	1.32	1.32	1
	2.27	2.27	1	0.44	0.44	1	0.82	0.82	1	0.25	0.25	1	1.94	
	1.94	1	0.17	0.17	1	1.06	1.06	1	0.47	0.47	1	0.58	0.58	1
	7.00	7.00	1	12.00	12.00	1	1.00	1.00	1	7.00	7.00	1	2.00	
	2.00	1	10.00	10.00	1	1.00	1.00	1	7.00	7.00	1	3.00	3.00	1
	4.00	4.00	1	1.72	1.72	1	2.78	2.78	1	0.44	0.44	1	1.23	

	1.23	1	0.25	0.25	1	2.28	2.28	1	0.17	0.17	1	1.73	1.73	1
	0.94	0.94	1	0.85	0.85	1	100%	100%	1	100%	100%	1	100%	100%
	100%	1	100%	100%	1	100%	100%	1	100%	100%	1	100%	100%	100%
	100%	1	100%	100%	1	100%	100%	1	100%	100%	1	100%	100%	100%
Rec 02	1	3.97	3.97	1	29.23	29.23	1	35.48	35.48	1	39.96	39.96	1	
	14.63	14.63	1	12.08	12.08	1	45.81	45.81	1	22.38	22.38	1		
	3.13	3.13	1	17.22	17.22	1	0.14	0.14	1	0.29	0.29	1	0.21	
	0.21	1	0.97	0.97	1	0.20	0.20	1	0.25	0.25	1	0.41	0.41	1
	0.27	0.27	1	0.21	0.21	1	0.34	0.34	7	0.22	1.54	16	0.22	
	3.45	8	0.22	1.77	7	0.35	2.44	13	0.24	3.07	15	0.28	4.22	9
	0.23	2.04	15	0.19	2.91	8	0.24	1.95	10	0.20	2.01	1	1.54	
	1.54	1	3.45	3.45	1	1.77	1.77	1	2.44	2.44	1	3.07	3.07	1
	4.22	4.22	1	2.04	2.04	1	2.91	2.91	1	1.95	1.95	1	2.01	
	2.01	1	7.00	7.00	1	16.00	16.00	1	8.00	8.00	1	7.00	7.00	1
	13.00	13.00	1	15.00	15.00	1	9.00	9.00	1	15.00	15.00	1		
	8.00	8.00	1	10.00	10.00	1	1.64	1.64	1	3.77	3.77	1	1.89	
	1.89	1	2.55	2.55	1	3.34	3.34	1	4.56	4.56	1	2.70	2.70	1
	3.77	3.77	1	2.15	2.15	1	2.32	2.32	1	100%	100%	1	100%	
	100%	1	100%	100%	1	100%	100%	1	100%	100%	1	100%	100%	
	100%	1	100%	100%	1	100%	100%	1	100%	100%	1	100%	100%	
	100%													
Rec 03	1	3.18	3.18	1	31.36	31.36	1	49.27	49.27	1	53.08	53.08	1	
	18.93	18.93	1	8.97	8.97	1	42.40	42.40	1	20.88	20.88	1		
	3.93	3.93	1	14.64	14.64	1	0.26	0.26	1	0.28	0.28	1	0.26	
	0.26	1	0.77	0.77	1	0.35	0.35	1	0.25	0.25	1	0.31	0.31	1
	0.33	0.33	1	0.33	0.33	1	0.13	0.13	9	0.27	2.40	20	0.30	
	6.05	4	0.42	1.68	9	0.27	2.39	12	0.27	3.20	15	0.28	4.15	
	13	0.30	3.92	8	0.29	2.28	11	0.24	2.65	6	0.24	1.42	1	
	2.40	2.40	1	6.05	6.05	1	1.68	1.68	1	2.39	2.39	1	3.20	
	3.20	1	4.15	4.15	1	3.92	3.92	1	2.28	2.28	1	2.65	2.65	1
	1.42	1.42	1	9.00	9.00	1	20.00	20.00	1	4.00	4.00	1	9.00	
	9.00	1	12.00	12.00	1	15.00	15.00	1	13.00	13.00	1	8.00	8.00	1
	11.00	11.00	1	6.00	6.00	1	2.58	2.58	1	6.71	6.71	1		
	1.73	1.73	1	2.73	2.73	1	3.68	3.68	1	4.70	4.70	1	4.15	
	4.15	1	2.47	2.47	1	3.06	3.06	1	1.57	1.57	1	100%	100%	1
	100%	100%	1	100%	100%	1	100%	100%	1	100%	100%	1	100%	
	100%	100%	1	100%	100%	1	100%	100%	1	100%	100%	1	100%	
	100%	100%												
All Recordings	3	2.78	8.35	3	26.33	78.98	3	36.17	108.50	3	39.70			
	119.10	3	14.10	42.31	3	8.08	24.24	3	34.07	102.21	3	17.31		
	51.93	3	3.13	9.38	3	12.48	37.43	3	0.18	0.55	3	0.23		
	0.68	3	0.30	0.91	3	0.60	1.80	3	0.24	0.72	3	0.30	0.89	3
	0.30	0.89	3	0.26	0.77	3	0.26	0.78	3	0.21	0.63	23	0.23	
	5.27	48	0.25	11.77	13	0.30	3.88	23	0.25	5.66	27	0.24	6.52	
	40	0.26	10.32	23	0.27	6.14	30	0.21	6.25	22	0.23	5.07	20	
	0.20	4.02	3	1.76	5.27	3	3.92	11.77	3	1.29	3.88	3	1.89	
	5.66	3	2.17	6.52	3	3.44	10.32	3	2.05	6.14	3	2.08	6.25	3

1.69	5.07	3	1.34	4.02	3	7.67	23.00	3	16.00	48.00	3	4.33	
13.00		3	7.67	23.00	3	9.00	27.00	3	13.33	40.00	3	7.67	
23.00		3	10.00	30.00	3	7.33	22.00	3	6.67	20.00	3	1.98	
5.94	3	4.42	13.27	3	1.36	4.07	3	2.17	6.52	3	2.42	7.27	3
3.84	11.53	3	2.34	7.02	3	2.66	7.97	3	2.05	6.15	3	1.58	
4.74	3	100%	300%	3	100%	300%	3	100%	300%	3	100%	300%	3
100%	300%	3	100%	300%	3	100%	300%	3	100%	300%	3		
100%	300%	3	100%	300%									
<b>Time to First Fixation_observation4.JPG_1_Mean Time to First Fixation_observation4.JPG_2_Mean</b>													
<b>Time to First Fixation_observation4.JPG_3_Mean Time to First</b>													
<b>Fixation_observation4.JPG_4_Mean Time to First Fixation_observation5.JPG_5_Mean Time to First</b>													
<b>Fixation_observation6.JPG_6_Mean Time to First Fixation_observation6.JPG_7_Mean Time to First</b>													
<b>Fixation_observation7.JPG_10_Mean Time to First Fixation_observation7.JPG_8_Mean Time to First</b>													
<b>Fixation_observation7.JPG_9_Mean First Fixation Duration_observation4.JPG_1_Mean First Fixation</b>													
<b>Duration_observation4.JPG_2_Mean First Fixation Duration_observation4.JPG_3_Mean First Fixation</b>													
<b>Duration_observation4.JPG_4_Mean First Fixation Duration_observation5.JPG_5_Mean First Fixation</b>													
<b>Duration_observation6.JPG_6_Mean First Fixation Duration_observation6.JPG_7_Mean First Fixation</b>													
<b>Duration_observation7.JPG_10_Mean First Fixation Duration_observation7.JPG_8_Mean First</b>													
<b>Fixation Duration_observation7.JPG_9_Mean First Fixation Duration_observation4.JPG_1_Mean</b>													
<b>Fixation Duration_observation4.JPG_2_Mean Fixation Duration_observation4.JPG_3_Mean</b>													
<b>Fixation Duration_observation4.JPG_4_Mean Fixation Duration_observation5.JPG_5_Mean</b>													
<b>Fixation Duration_observation6.JPG_6_Mean Fixation Duration_observation6.JPG_7_Mean</b>													
<b>Fixation Duration_observation7.JPG_10_Mean Fixation Duration_observation7.JPG_8_Mean</b>													
<b>Fixation Duration_observation7.JPG_9_Mean Total Fixation</b>													
<b>Duration_observation4.JPG_1_Mean Total Fixation Duration_observation4.JPG_2_Mean Total Fixation</b>													
<b>Duration_observation4.JPG_3_Mean Total Fixation Duration_observation4.JPG_4_Mean Total Fixation</b>													
<b>Duration_observation5.JPG_5_Mean Total Fixation Duration_observation6.JPG_6_Mean Total Fixation</b>													
<b>Duration_observation6.JPG_7_Mean Total Fixation Duration_observation7.JPG_10_Mean Total Fixation</b>													
<b>Duration_observation7.JPG_8_Mean Total Fixation Duration_observation7.JPG_9_Mean Fixation</b>													
<b>Count_observation4.JPG_1_Mean Fixation Count_observation4.JPG_2_Mean Fixation</b>													
<b>Count_observation4.JPG_3_Mean Fixation Count_observation4.JPG_4_Mean Fixation</b>													
<b>Count_observation5.JPG_5_Mean Fixation Count_observation6.JPG_6_Mean Fixation</b>													
<b>Count_observation6.JPG_7_Mean Fixation Count_observation7.JPG_10_Mean Fixation</b>													
<b>Count_observation7.JPG_8_Mean Fixation Count_observation7.JPG_9_Mean Total Visit</b>													
<b>Duration_observation4.JPG_1_Mean Total Visit Duration_observation4.JPG_2_Mean Total Visit</b>													
<b>Duration_observation4.JPG_3_Mean Total Visit Duration_observation4.JPG_4_Mean Total Visit</b>													
<b>Duration_observation5.JPG_5_Mean Total Visit Duration_observation6.JPG_6_Mean Total Visit</b>													
<b>Duration_observation6.JPG_7_Mean Total Visit Duration_observation7.JPG_10_Mean Total Visit</b>													
<b>Duration_observation7.JPG_8_Mean Total Visit Duration_observation7.JPG_9_Mean Percentage</b>													
<b>Fixated_observation4.JPG_1_Mean Percentage Fixated_observation4.JPG_2_Mean Percentage</b>													
<b>Fixated_observation4.JPG_3_Mean Percentage Fixated_observation4.JPG_4_Mean Percentage</b>													
<b>Fixated_observation5.JPG_5_Mean Percentage Fixated_observation6.JPG_6_Mean Percentage</b>													
<b>Fixated_observation6.JPG_7_Mean Percentage Fixated_observation7.JPG_10_Mean Percentage</b>													
<b>Fixated_observation7.JPG_8_Mean Percentage Fixated_observation7.JPG_9_Mean</b>													
Rec 01	1.20	18.39	23.75	26.07	8.75	3.19	14.00	8.66	2.32	5.56	0.15	0.11	0.44
	0.07	0.17	0.39	0.17	0.17	0.24	0.16	0.19	0.19	0.44	0.12	0.12	0.19
	0.17	0.15	0.16	0.15	1.32	2.27	0.44	0.82	0.25	1.94	0.17	1.06	0.47
	0.58	7.00	12.00	1.00	7.00	2.00	10.00	1.00	7.00	3.00	4.00	1.72	2.78



	0.44	1.23	0.25	2.28	0.17	1.73	0.94	0.85	100%	100%	100%	100%	100%
	100%		100%	100%	100%	100%							
Rec 02	3.97	29.23	35.48	39.96	14.63	12.08	45.81	22.38	3.13	17.22	0.14	0.29	0.21
	0.97	0.20	0.25	0.41	0.27	0.21	0.34	0.22	0.22	0.22	0.35	0.24	0.28
	0.23	0.19	0.24	0.20	1.54	3.45	1.77	2.44	3.07	4.22	2.04	2.91	1.95
	2.01	7.00	16.00	8.00	7.00	13.00	15.00	9.00	15.00	8.00	10.00	1.64	3.77
	1.89	2.55	3.34	4.56	2.70	3.77	2.15	2.32	100%	100%	100%	100%	100%
	100%	100%	100%	100%	100%								
Rec 03	3.18	31.36	49.27	53.08	18.93	8.97	42.40	20.88	3.93	14.64	0.26	0.28	0.26
	0.77	0.35	0.25	0.31	0.33	0.33	0.13	0.27	0.30	0.42	0.27	0.27	0.28
	0.30	0.29	0.24	0.24	2.40	6.05	1.68	2.39	3.20	4.15	3.92	2.28	2.65
	1.42	9.00	20.00	4.00	9.00	12.00	15.00	13.00	8.00	11.00	6.00	2.58	6.71
	1.73	2.73	3.68	4.70	4.15	2.47	3.06	1.57	100%	100%	100%	100%	100%
	100%	100%	100%	100%	100%								
ALL RECORDINGS													
26.33	36.17		39.70	14.10	8.08	34.07	17.31	3.13	12.48	0.18	0.23	0.30	0.60
	0.24	0.30	0.30	0.26	0.26	0.21	0.23	0.25	0.30	0.25	0.24	0.26	0.27
	0.21	0.23	0.20	1.76	3.92	1.29	1.89	2.17	3.44	2.05	2.08	1.69	1.34
	7.67	16.00	4.33	7.67	9.00	13.33	7.67	10.00	7.33	6.67	1.98	4.42	1.36
	2.17	2.42	3.84	2.34	2.66	2.05	1.58	100%	100%	100%	100%	100%	100%
					100%	100%	100%	100%					

### T-Test

**GET**

FILE='C:\Users\Ritika.DESKTOP-730O9R4\Desktop\phd data final\JS SIR DATA.sa v'.

DATASET NAME DataSet1 WINDOW=FRONT. T-TEST GROUPS=Gender(1 2)

/MISSING=ANALYSIS

/VARIABLES=BSF BSP BSR UREA CREATINE SODIUM POTASSIUM LTC LTG LDLP  
VLDLPHD LP SBT SBD SBI AST ALT CPK CPKMB GGT TP ALBUMIN GLOBULIN AGRATIO

/CRITERIA=CI(.95).

[DataSet1] C:\Users\Ritika.DESKTOP-730O9R4\Desktop\phd data final\JS SIR DATA.sav

## Group Statistics

Gender		N	Mean	Std. Deviation	Std. Error Mean
BloodSugar Fasting	Male		61	11.112	4.536
	Female		60.00	15.218	6.213
Blood SugarPost-Prandial	Male		120.00	26.061	10.640
	Female		119.67	45.994	18.777
BloodSugarRandom	Male		171.00	41.536	16.957
	Female		152.33	46.449	18.963
Urea	Male		32.67	11.130	4.544
	Female		32.33	17.317	7.069
Creatine	Male		.9833	.63061	.25744
	Female		.9667	.55737	.22755
Sodium	Male		143.50	4.461	1.821
	Female		134.00	16.721	6.826
Potassium	Male		4.3667	1.15007	.46952
	Female		4.1333	1.09666	.44771
Lipid T - Cholesterol	Male		162.83	63.307	25.845
	Female		134.67	53.865	21.990
Lipid Tri -Glyceride	Male		107.83	39.148	15.982
	Female		110.33	55.745	22.758
Low DensityLipoProtein	Male		99.83	44.065	17.990
	Female		115.67	55.500	22.658
Very LowDensityLipoProtein	Male		32.67	12.028	4.910
	Female		34.33	26.212	10.701
High DensityLipoProtein	Male		57.00	9.839	4.017
	Female		51.00	12.458	5.086

Gender		N	Mean	Std. Deviation	Std. Error Mean
S Bilirubin Total	Male		1.2000	.57619	.23523
	Female		.9667	.57850	.23617
S Bilirubin Direct	Male		.3333	.26583	.10853
	Female		.8167	1.18392	.48333
S Bilirubin Indirect	Male		.9000	.54772	.22361
	Female		1.0333	.80166	.32728
Aspartate Trans Amines (AST)	Male		32.33	11.039	4.507
	Female		31.00	13.130	5.360
Alanine Trans Amines (ALT)	Male		33.33	13.049	5.327
	Female		30.00	13.130	5.360
Creatine Phosphate K	Male		26.67	12.372	5.051
	Female		26.33	21.933	8.954
CPK - Muscular / Brain	Male		22.50	12.818	5.233
	Female		18.83	12.891	5.263
GGT	Male		18.00	4.648	1.897
	Female		15.67	5.680	2.319
T - Protein	Male		7.0000	.77460	.31623
	Female		7.6333	1.65005	.67363
Albumin	Male		4.7333	1.10393	.45068
	Female		4.3000	1.12071	.45753
Globulin	Male		2.6000	1.14193	.46619
	Female		2.7000	1.10635	.45166
A : G Ratio	Male			.000 <sup>a</sup>	.000
	Female			.000 <sup>a</sup>	.000

a. t cannot be computed because the standard deviations of both groups are 0.

Independent Samples Test

		Levene's Test for Equality of Variances		t-test for Equality of	
		F	Sig.	t	Sig.
Blood Sugar Fasting	Equal variances assumed	1.003	.340	1.217	
	Equal variances not assumed			.217	
Blood Sugar Post Prandial	Equal variances assumed	2.258	.164	.015	
	Equal variances not assumed			.015	
Blood Sugar Random	Equal variances assumed	.839	.381		.734
	Equal variances not assumed				.734
Urea	Equal variances assumed				.040
	Equal variances not assumed	3.821	.079		.040
Creatine	Equal variances assumed				.049
	Equal variances not assumed	.008	.931		.049
Sodium	Equal variances assumed				1.345
	Equal variances not assumed	63.048	.000		1.345
Lipid T - Cholesterol	Equal variances assumed				.360
	Equal variances not assumed	.052	.825		.360
Lipid Tri -Glyceride	Equal variances assumed				.830
	Equal variances not assumed	.924	.359		.830
Low Density LipoProtein	Equal variances assumed				-.090
	Equal variances not assumed	4.932	.051		-.090
		2.640	.135		-.547

Independent Samples Test

		t-test for Equality of Means		
		df	Sig.(2-tailed)	Mean Difference
BloodSugar Fasting	Equal variances assumed	10	.833	1.667
	Equal variances not assumed	9.151	.833	1.667
Blood Sugar Post Prandial	Equal variances assumed	10	.988	.333
	Equal variances not assumed	7.911	.988	.333
BloodSugarRandom	Equal variances assumed	10	.480	18.667
	Equal variances not assumed		.480	18.667
Urea	Equal variances assumed	9.878	.969	.333
	Equal variances not assumed	10	.969	.333
Creatine	Equal variances assumed	8.525	.962	.01667
	Equal variances not assumed	10	.962	.01667
Sodium	Equal variances assumed	9.851	.962	.01667
	Equal variances not assumed	10	.208	9.500
Potassium	Equal variances assumed	5.708	.230	9.500
	Equal variances not assumed	10	.727	.23333
Lipid T - Cholesterol	Equal variances assumed	9.977	.727	.23333
	Equal variances not assumed	10	.426	28.167
Lipid Tri -Glyceride	Equal variances assumed	9.750	.426	28.167
	Equal variances not assumed	10	.930	-2.500
Low DensityLipoProtein	Equal variances assumed	8.967	.930	-2.500
	Equal variances not assumed	10	.596	-15.833
	Equal variances assumed	9.511	.597	-15.833
	Equal variances not assumed			

Independent Samples Test

		t-test for Equality of Means		
		Std. Error Difference	95% Confidence Interval of the Difference	
	Equal variances assumed		Lower	Upper
Blood Sugar Fasting	Equal variances assumed	7.693	-15.474	18.807
	Equal variances not assumed	7.693	-15.692	19.025
Blood Sugar Post Prandial	Equal variances assumed	21.582	-47.754	48.421
	Equal variances not assumed	21.582	-49.533	50.199
Blood Sugar Random	Equal variances assumed	25.438	-38.014	75.347
	Equal variances not assumed	25.438	-38.109	75.442
Urea	Equal variances assumed	8.404	-18.391	19.058
	Equal variances not assumed	8.404	-18.839	19.505
Creatine	Equal variances assumed	.34359	-.74890	.78224
	Equal variances not assumed	.34359	-.75047	.78381
Sodium	Equal variances assumed	7.065	-6.242	25.242
	Equal variances not assumed	7.065	-8.004	27.004
Potassium	Equal variances assumed	.64876	-1.21219	1.67886
	Equal variances not assumed	.64876	-1.21264	1.67930
Lipid T - Cholesterol	Equal variances assumed	33.934	-47.444	103.777
	Equal variances not assumed	33.934	-47.707	104.041
Lipid Tri -Glyceride	Equal variances assumed	27.809	-64.462	59.462
	Equal variances not assumed	27.809	-65.444	60.444
Low Density Lipo Protein	Equal variances assumed	28.931	-80.296	48.629
	Equal variances not assumed	28.931	-80.748	49.081

Independent Samples Test

		Levene's Test for Equality of Variances		t-test for Equality of
		F	Sig.	t
Very Low Density Lipoprotein	Equal variances assumed	1.485	.251	-.142
	Equal variances not assumed			-.142
High Density Lipoprotein	Equal variances assumed	.43	.525	.926
	Equal variances not assumed			.926
SBilirubinTotal	Equal variances assumed			.700
	Equal variances not assumed			.700
S Bilirubin Direct	Equal variances assumed	.00	1.000	.700
	Equal variances not assumed			.700
S Bilirubin Indirect	Equal variances assumed	4.72	.055	-.976
	Equal variances not assumed			-.976
	Equal variances assumed			-.336
	Equal variances not assumed	1.52	.245	-.336
Aspartate Trans Amines	Equal variances assumed			.190
	Equal variances not assumed	1.52	.245	.190
Alanine Trans Amines (	Equal variances assumed			.441
	Equal variances not assumed	.00	1.000	.441
Creatine Phosphate K	Equal variances assumed	17.578	.002	.032
	Equal variances not assumed			.032
CPK - Muscular/Brain	Equal variances assumed			.494
	Equal variances not assumed	.261	.621	.494
GGT	Equal variances assumed			.779
	Equal variances not assumed	.792	.394	.779

Independent Samples Test

		t-test for Equality of Means		
		df	Sig.(2-tailed)	Mean Difference
Very Low Density Lipoprotein	Equal variances assumed	10	.890	-1.667
	Equal variances not assumed	7.016	.891	-1.667
High Density Lipoprotein	Equal variances assumed	10	.376	6.000
	Equal variances not assumed	9.490	.377	6.000
SBilirubinTotal	Equal variances assumed	10	.500	.23333
	Equal variances not assumed	10.000	.500	.23333
S Bilirubin Direct	Equal variances assumed	10	.352	-.48333
	Equal variances not assumed	5.503	.370	-.48333
S BilirubinIndirect	Equal variances assumed	10	.744	-.13333
	Equal variances not assumed	8.833	.744	-.13333
Aspartate Trans Amines	Equal variances assumed	10	.853	1.333
	Equal variances not assumed	9.714	.853	1.333
Alanine Trans Amines (	Equal variances assumed	10	.669	3.333
	Equal variances not assumed	10.000	.669	3.333
CreatinePhosphateK	Equal variances assumed	10	.975	.333
	Equal variances not assumed	7.885	.975	.333
CPK - Muscular/Brain	Equal variances assumed	10	.632	3.667
	Equal variances not assumed	10.000	.632	3.667
GGT	Equal variances assumed	10	.454	2.333
	Equal variances not assumed	9.627	.455	2.333

Independent Samples Test

		t-test for Equality of Means		
		Std. Error Differenc	95% Confidence Interval of the Difference	
			Lower	Upper
Very Low Density Lipoprotein	Equal variances assumed	11.774	-27.900	24.567
	Equal variances not assumed	11.774	-29.494	26.161
High Density Lipoprotein	Equal variances assumed	6.481	-8.440	20.440
	Equal variances not assumed	6.481	-8.546	20.546
SBilirubinTotal	Equal variances assumed	.33333	-.50938	.97605
	Equal variances not assumed	.33333	-.50938	.97605
S Bilirubin Direct	Equal variances assumed	.33333	-.50938	.97605
	Equal variances not assumed	.49537	-1.58708	.62041
S Bilirubin Indirect	Equal variances assumed	.49537	-1.72250	.75583
	Equal variances not assumed	.39637	-1.01651	.74984
Aspartate Trans Amines	Equal variances assumed	7.003	-14.271	16.937
	Equal variances not assumed	7.003	-14.333	17.000
Alanine Trans Amines (	Equal variances assumed	7.557	-13.505	20.172
	Equal variances not assumed	7.557	-13.505	20.172
Creatine Phosphate K	Equal variances assumed	10.281	-22.5	23.240
	Equal variances not assumed	10.281	-23.4	24.098
CPK - Muscular/Brain	Equal variances assumed	7.421	-12.8	20.203
	Equal variances not assumed	7.421	-12.8	20.203
GGT	Equal variances assumed	2.996	-4.3	9.009
	Equal variances not assumed	2.996	-4.3	9.045



**Independent Samples Test**

		Levene's Test for Equality of Variances		t-test for Equality of
		F	Sig.	t
T - Protein	Equal variances assumed	4.386	.063	***
	Equal variances not assumed			-.851
Albumin		.000	1.000	.675
	Equal variances not assumed			.675
Globulin		.000	1.000	-.154
	Equal variances not assumed			-.154

**Independent Samples Test**

		t-test for Equality of Means		
		df	Sig.(2-tailed)	Mean Difference
T - Protein	Equal variances assumed	10	***	
	Equal variances not assumed	7.102	.422	-.63333
Albumin		10	.515	.43333
	Equal variances not assumed	9.998	.515	.43333
Globulin		10	.881	-.10000
	Equal variances not assumed	9.990	.881	-.10000

Independent Samples Test

		t-test for Equality of Means		
		Std. Error Difference	95% Confidence Interval of the Difference	
			Lower	Upper
T - Protein	Equal variances assumed	.74416	-2.29143	1.02476
	Equal variances not assumed	.74416	-2.38790	1.12124
Albumin	Equal variances assumed	.64222	-.99762	1.86429
	Equal variances not assumed	.64222	-.99766	1.86433
Globulin	Equal variances assumed	.64910	-1.54629	1.34629
	Equal variances not assumed	.64910	-1.54649	1.34649

ONEWAY BSF BSP BSR UREA CREATINE SODIUM POTASSIUM LTC LTG LDLP VLDLP HDLP SBT  
SBD SBI AST ALT CPK CPKMB GGT TP ALBUMIN GLOBULIN AGRATIO BY Age

/MISSING ANALYSIS.

**Oneway**

[DataSet1] C:\Users\Ritika.DESKTOP-730O9R4\Desktop\phd data final\NS SIRDATA

.sav

## ANOVA

		Sum of Squares	df	Mean Square	F
Blood Sugar Fasting	Between Groups	61.800		30.900	.162
	Within Groups	1721.867		191.319	
	Total	1783.667			
Blood Sugar Post-Prandial	Between Groups	1728.200		864.100	.635
	Within Groups	12245.467		1360.607	
	Total	13973.667			
Blood Sugar Random	Between Groups	3452.200		1726.100	.913
	Within Groups	17006.467		1889.607	
	Total	20458.667			
Urea	Between Groups	178.333		89.167	.414
	Within Groups	1940.667		215.630	
	Total	2119.000			
Creatine	Between Groups	.196		.098	.263
	Within Groups	3.347		.372	
	Total	3.543			
Sodium	Between Groups	359.583		179.792	1.149
	Within Groups	1408.667		156.519	
	Total	1768.250			
Potassium	Between Groups	.305		.153	.110
	Within Groups	12.485		1.387	
	Total	12.790			
Lipid T - Cholesterol	Between Groups	735.450		367.725	.091
	Within Groups	36190.800		4021.200	
	Total	36926.250			
Lipid Tri - Glyceride	Between Groups	2182.250		1091.125	.467
	Within Groups	21036.667		2337.407	
	Total	23218.917			
Low Density Lipo Protein	Between Groups	369.450		184.725	.065
	Within Groups	25492.800		2832.533	
	Total	25862.250			
Very Low Density Lipo Protein	Between Groups	1232.133		616.067	1.889
	Within Groups	2934.867		326.096	
	Total	4167.000			
High Density Lipo Protein	Between Groups	196.800		98.400	.756
	Within Groups	1171.200		130.133	
	Total	1368.000			

## ANOVA

		Sig.
Blood Sugar Fasting	Between Groups Within Groups Total	.853
Blood Sugar Post - Prand	Between Groups Within Groups Total	.552
Blood Sugar Random	Between Groups Within Groups Total	.435
Urea	Between Groups Within Groups Total	.673
Creatine	Between Groups Within Groups Total	.774
Sodium	Between Groups Within Groups Total	.359
Potassium	Between Groups Within Groups Total	.897
Lipid T - Cholesterol	Between Groups Within Groups Total	.913
Lipid Tri - Glyceride	Between Groups Within Groups Total	.641
Low Density Lipo Protei	Between Groups Within Groups Total	.937
Very Low Density Lipo Protein	Between Groups Within Groups Total	.207
High Density Lipo Protei	Between Groups Within Groups Total	.497

			ANOVA			
			Sum Squares	of df	MeanSquare	F
SBilirubinTotal	Between	C	2.722	9		
	Within	G				
	Total		2.722	11		.388
S Bilirubin Direct	Between	C	3.497	2	.320	
	Within	G	.641	9	.825	
	Total		7.422	11		.046
S BilirubinIndirect	Between	C	8.063	2	.024	
	Within	G	.048	9	.524	
	Total		4.719	11		
Aspartate Trans Amines (AST)	Between	Gr	128.800	2	64.400	.430
	Within	Gr	1347.867	9	149.763	
	Total		1476.667	11		
Alanine Trans Amines (AL	Between	Gr	97.800	2	48.900	.267
	Within	Gr	1648.867	9	183.207	
	Total		1746.667	11		
CreatinePhosphateK	Between	Gr	325.800	2	162.900	.000
	Within	Gr	2845.000	9	316.133	
CPK - Muscular/Brain	Between	Gr	3171.000	11		
	Within	Gr	209.867	2	104.933	
GGT	Between	Gr	1482.800	9	164.756	
	Within	Gr	1692.667	11		
T-Protein	Between	Gr	9.200	2	4.600	
	Within	Gr	276.467	9	30.719	
	Total		285.667	11		
Albumin	Between	Gr	.362	2	.181	
	Within	Gr	17.455	9	1.939	
	Total		17.817	11		
Globulin	Between	Gr	1.202	2	.601	
	Within	Gr	11.735	9	1.304	
	Total		12.937	11		
A :G Ratio	Between	Gr	.961	2	.481	
	Within	Gr	11.709	9	1.301	
	Total		12.670	11		
			.000	2	.000	

9	.000	.515
11		.637
		.150
		.093
		.461
		.369

		Sig.
S Bilirubin Total	Between Groups Within Groups Total	.324
S Bilirubin Direct	Between Groups Within Groups Total	.689
S Bilirubin Indirect	Between Groups Within Groups Total	.955
Aspartate Trans Amines (AST)	Between Groups Within Groups Total	.663
Alanine Trans Amines (ALT)	Between Groups Within Groups Total	.772
Creatine Phosphate K	Between Groups Within Groups Total	.614
CPK - Muscular / Brain	Between Groups Within Groups Total	.551
GGT	Between Groups Within Groups Total	.863
T - Protein	Between Groups Within Groups Total	.912
Albumin	Between Groups Within Groups Total	.645
Globulin	Between Groups Within Groups Total	.701
A : G Ratio	Between Groups Within Groups Total	

### **Observations**

- Decision making potential is good (Bad) when Blood Sugar Fasting readings are observed as 'NORMAL (ABNORMAL)'.

## Observations

- Decision making potential is good (Bad) when Blood Sugar Fasting readings are observed as ‘NORMAL (ABNORMAL)’.
- Decision making potential is good (Bad) when Blood Sugar Post – Prandial readings are observed as ‘NORMAL (ABNORMAL)’.
- Decision making potential is good (Bad) when Blood Sugar Random readings are observed as ‘NORMAL (ABNORMAL)’.
- Decision making potential is good (Bad) when Urea readings are observed as ‘NORMAL (ABNORMAL)’.
- Decision making potential is good (Bad) when Creatine readings are observed as ‘NORMAL (ABNORMAL)’.
- Decision making potential is good (Bad) when Sodium readings are observed as ‘NORMAL (ABNORMAL)’.
- Decision making potential is good (Bad) when Potassium readings are observed as ‘NORMAL (ABNORMAL)’.
- Decision making potential is good (Bad) when S Bilirubin Direct readings are observed as ‘NORMAL (ABNORMAL)’.
- Decision making potential is good (Bad) when S Bilirubin Indirect readings are observed as ‘NORMAL (ABNORMAL)’.
- Decision making potential is good (Bad) when Aspartate Trans Amines (AST) readings are observed as ‘NORMAL (ABNORMAL)’. Decision making potential is good (Bad) when Alanine Trans Amines (ALT) readings are observed as ‘NORMAL (ABNORMAL)’.
- Decision making potential is good (Bad) when Lipid T – Cholesterol readings are observed as ‘NORMAL (ABNORMAL)’.
- Decision making potential is good (Bad) when Lipid Tri – Glyceride readings are observed as ‘NORMAL (ABNORMAL)’.



- Decision making potential is good (Bad) when Low Density Lipo Protein readings are observed as ‘NORMAL (ABNORMAL)’.
- Decision making potential is good (Bad) when Very Low Density Lipo Protein readings are observed as ‘NORMAL (ABNORMAL)’.
- Decision making potential is good (Bad) when High Density Lipo Protein readings are observed as ‘NORMAL (ABNORMAL)’.
- Decision making potential is good (Bad) when S Bilirubin Total readings are observed as ‘NORMAL (ABNORMAL)’.
- Decision making potential is good (Bad) when Creatine Phosphate K readings are observed as ‘NORMAL (ABNORMAL)’.
- Decision making potential is good (Bad) when CPK - Muscular / Brain readings are observed as ‘NORMAL (ABNORMAL)’.
- Decision making potential is good (Bad) when GGT readings are observed as ‘NORMAL (ABNORMAL)’.
- Decision making potential is good (Bad) when T - Protein readings are observed as ‘NORMAL (ABNORMAL)’.
- Decision making potential is good (Bad) when Albumin readings are observed as ‘NORMAL (ABNORMAL)’.

Decision making potential is good (Bad) when Globulin readings are observed as ‘NORMAL (ABNORMAL)’.

Decision making potential is good (Bad) when A: G Ratio readings are observed as ‘NORMAL (ABNORMAL)’.

## **Conclusion**

The only conclusion drawn is that when the blood parameters are ‘NORMAL (ABNORMAL)’, then the decision making potential is good (Bad).

**Major finding** is that business ‘agent’ attempts to decide and evaluates prospective judgement using neuro - hematological (blood) medium. Paper discusses new findings to understand neuro - hematological (blood) chromosomal design and offers to answer issues in data - driven leadership judgement-making dynamics.

## REFERENCES

- Deo, M. and Satpathy, J. (2018). Hematological Insight into Entrepreneurial 'hemachoicovation' decision, 71st All India Commerce Conference, 20-22 Dec, Department of Commerce, Osmania University, Hyderabad, India. (National).
- Jacob L. Orquin, A Meta-Analysis of Blood Glucose Effects on Human 'hemachoicovation' decision Making, Psychological Bulletin, American Psychological Association, Vol. 142, No. 5,(2016),Pp: 546–567, USA.
- Satpathy, J. and Hejmadi, A.,Subhashree P. and Mishra, S., 'hemachoicovation' decision Monikers in Entrepreneurial Eyes, Proceedings of International Conference on Contemporary Issues in Business Innovation, Technology and Social Sciences, Gautam Buddha University, 01 - 02 June 2018, June 2018, Noida (UP), India (International).
- Satpathy, J. and Mallik, B. (2018). Hematological Judgement in Entrepreneurial 'hemachoicovation' decision, Proceedings of International Conference on Management, Sciences, Engineering and Applications (ICMSEA - 2018), Dept. of Mathematics, Centurion University, Odisha; Kaziranga University, Assam and University of Perpetual Help, Philippines, 20 - 22 Dec 2018, Vishakhapatnam, India (International).
- Satpathy, J. and Mallik, B. (2018). Hematological Judgement in Entrepreneurial 'hemachoicovation' decision, International Journal of Management, Technology and Engineering, ISSN No: 2249-7455, Volume 8, Issue XII, Pp: 2849 - 2863, December, India (International).
- Satpathy, J. and Mishra, B.P.,Review on Neuroentrepreneurial 'hemachoicovation' decision Crescendos, Imperial Journal of Interdisciplinary Research (IJIR), Vol. 3, Issue 9, (2017), ISSN: 2454 - 1362, Pp: 65 - 115, UAE (International)
- Satpathy, J., Gankar, S, S., Malik, B, Okeyo, W. and Chhaniwal P. (2021). Hematological Signatures in Technopreneurial 'hemachoicovation' decision Corridors, Proceedings of the NIRMA International Conference on Management (NICOM - 2021), 07 - 09 Jan 201, Ahmedabad, Gujarat (India). (International)



# LEARNING PHILOSOPHY OF GERONTOLOGY THROUGH GOTCHA! WELLNESS REPORT FROM IWANUMA, MIYAGI, JAPAN

\*Ryo Takahashi

## *Abstract*

*Gerontology is a systematic study of aging. Interdisciplinary research across many disciplines is being conducted to understand the complexity of aging and to anticipate and prepare for the impacts of an aging society. In Japan, which is celebrating the declining birthrate and aging age, which is the first experience in the world, in order for the elderly to lead a worthwhile life through Gerontology, and to spend a healthy life from birth to death, the quality of life is improved. In order to raise the age and create a beautiful age, the country of longevity, including the idea of normalization. Gotcha Wellness was started of Gerontology. If we replace the role of Hakusan faith with today's scholarship, "God with welfare science of harmony" is interdisciplinary research, research on peace, " It is dreamed to be achieved to develop of these concepts through Gotcha Wellness with Philosophy of Gerontology.*

**Key Words:** *Gotcha Wellness, Gerontology, Health, Welfare Science*

## INTRODUCTION

It has been ten years since Aftermath of the 2011 Tōhoku earthquake and tsunami was occurred on March 11, 2011. The official figures released in 2021 reported 19,747 deaths, 6,242 injured, and 2,556 people missing. The leading causes of death were drowning (90.64 or 14,308 bodies), burning (0.9% or 145 bodies) and others (4.2% or 667 bodies, mostly crushed by heavy objects). Injuries related to nuclear exposure or the discharge of radioactive water in Fukushima are difficult to trace as 60% of the 20,000 workers on-site declined to participate state-sponsored free health checks (Iwanuma City 2020; Wikipedia 2021).

Iwanuma City, located near Sendai airport, experienced devastating damage from the tsunami following the Great East Japan Earthquake. Here's are some places where you can know the reconstruction process after the disaster and tsunami. Human damage (as of the end of January 2014). Direct death 180 people (number of confirmed bodies). 133 citizens who died in the city 16 citizens who died outside the city. 47 people. Indirect death 6 people (died due to the disaster). Missing 1 person (Higashinihon daishinsai ano toki, Iwanuma dewa henshū iinkai 2012:114-117).

In 2021 Mr. Joseph Robinette Biden Jr. was elected as 46<sup>th</sup> United State of America. President Biden has been supported people in Sendai Area including Iwanuma city since he was serving as Vice President with 44<sup>th</sup> President Barack Hussein Obama II.

Iwanuma city has been associated with Dover city, the State of Delaware as a friend city since 2003. Since President Biden is originally from Delaware, he has special concern about Iwanuma city and all Tohoku area. President Biden visited Sendai area on August 23, 2011 and gave address at the Sendai Airport as follows: "One eighth grade English teacher I'm told, as school resumed, told her students, and I quote: "Many of us lost our homes and possessions in an instant. The important thing is now making a first step toward something brighter. My dear mother, an old Irish lady used to say, in the most difficult moments, including when I lost my wife and daughter, she said, Joey, out of everything terrible, something good will come if you look hard enough for it. It's hard to look for it. It's hard to accept that. But it's true. And the DNA of the Japanese people is riddled with the notion that it's true... That's why within hours, our military launched what we refer to in English as "Operation Friend" -the single largest humanitarian relief effort in American history. And it was done without having to convince the American people of anything. It was spontaneous. It's because of the affection for the people — the people of Japan. That's the building block upon which this partnership and alliance of ours is built... Our partnership continues to thrive. Even as you recover from the earthquake and the tsunami, Japan continues to play a prominent and positive role in world affairs. I just want you to know that we remember and we are aware that whatever and wherever on the planet disaster strikes, Japan has always been among the first to lend a hand and deploy aid workers, generous contributions, essential donations to the recovery of that country or region."

During these dates many volunteers have been working for helping each other for recovering from disasters.

One of the volunteer teams are called as Japan Overseas Cooperation Volunteers. This organization is “a system of dispatching Japanese volunteers overseas operated by Japan International Cooperation Agency (JICA). The program is similar to the U.S. Peace Corps, and includes volunteers in wide range of fields such as agriculture, forestry, fisheries, education, health, and more than 120 technical fields. More than 30,000 volunteers have ever been dispatched to more than 80 countries in Asia, Middle East, Africa, Central and South America, the Caribbean, and Oceania.” After serving in overseas experienced volunteers have been advanced souls for willingly to serve for the community. For those reasons there is additional organization which is called Japan Overseas Cooperative Association (JOCA) for those who have served in overseas. Immediately after the Great East Japan Earthquake, members of JOCA the Association dispatched an advance team to the disaster area, and based on the local needs survey, dispatched “disaster relief volunteers” who work every two weeks. They have started dispatching a “domestic cooperation team” for long-term support. From 2013, through a tripartite collaboration between the Association, the Reconstruction Agency, and the Japan International Cooperation Agency (JICA), experienced members of the Japan Overseas Cooperation Volunteers were dispatched to local governments in the disaster area as reconstruction supporters. Many returnees are involved in reconstruction projects to support the early reconstruction of the disaster area. At the end of March 2016, five years after the earthquake, the support activities by domestic cooperation members ended. They were continuing our activities in Iwanuma City and Natori City, Miyagi Prefecture, with a focus on supporting the formation of communities for disaster victims. Iwanuma city and JOCA has been working together for community development under Local Revitalization Act for area revitalization planning. Next, section introduce about Concept of Gotcha Wellness.

## **CONCEPT OF GOTCHA WELLNESS**

Ryosei Oya, the chief priest of Renshoji Temple and Chief of JOCA JPANA, is a person who is known not only in Buddhism but also in the welfare and community development. Until now, the welfare industry divided the people with disabilities, the elderly people, the students, etc. in the vertical division. Ryosei Oya, the president of the Social Welfare Corporation Busshi-En means Child of Buddha has made a new approach to the community care. The connection between the person and the person became it in a short time ago. Busshi-En was founded by the grandfather, Honei Oya (1909-1986), the former chief priest in 1960 (Oya 1954). The Ghozen Ji temple founded in 1418 by Nichiren’s grand disciple Nichizo. The secret statue of the Buddha’s mother Maya’s birth of Buddha, carved by King Pishkema of India, is enshrined and is widely handed down as a dojo for childbirth. Kyoka Izumi, a literary master who lost his mother at a young age, remembers the image of his mother in this image of Maya, and looks forward to worshipping for the rest of his life, and has a great influence on Kyoka’s “world of beauty and fantasy works”. About 40 years ago, Honei Oya (first deputy director), the chief priest of Nichiren-shu Gyozen Ji Temple, took over the children who had nowhere to go while selling religious magazines (A little inside story ` \$). Honei Oya wrote that “Scholars say that there can be no human being who does not stand on what “all mankind stands on the economy.” However, he believes that science based on the foundation of sincerity will bring happiness to humankind for the first time. ... It is said that 250 million children are dying of starvation in the world now. Let’s add to these pretty

children by giving them an exaggerated declaration of human rights, without giving them food, clothing and shelter” (Oya 1954). It has started welfare facilities for people with intellectual disabilities, and has been responsible for the welfare of the community for many years, including working support facilities for people with disabilities and the management of nursing homes for the elderly. In 2013, the elderly people, the university students, and the person with disabilities, and the center base “Share Kanazawa” which were symbiotic without being separated were opened. As an advanced case that shows the shape of a new community, it attracts great attention from home and abroad. A suburb of Kanazawa City, Ishikawa prefecture. “Share Kanazawa” opened in 2014 in the area of about 36000 square meters, three times as large as the dome of Tokyo Dome. There are three workshop houses for children with disabilities, 32 houses for the aged with services, 8 houses for students about 90 people. Employment support for persons with disabilities and elderly day service are provided. In addition, there are natural hot springs, soba dokoro, cafe bars, Thailand type massage shops and Futsal facilities, which are not seen in general welfare facilities, and many local residents come in and out. Dog run and alpaca ranch are also popular. It is the condominium of the social welfare corporation with the headquarters in Hakusan city next door. Recently, the concept of the birth of the United States of America in which the retirement generation carries out the second life is called “CCRC (continuation Care Improvement Community) is noticed, and the Japanese government also migrates to the region according to hope and interacts with the local residents. The Japanese version of CCRC “the life activity town” which is necessary for medical treatment and nursing is received is promoted. Share Kanazawa is highly regarded as an advanced model, and the inspection is not followed. It is because Busshi-En has a different concept from existing regional activation. The aim is “town planning by **Gochamaze** (Be all mixed up together) which means” Regardless of the presence, a variety of people interact with each other including any kinds of disabilities, and everyone has a role, function, and vigor. It is such a community symbiosis society required for life 100 years. “It has been shown chemical reactions in the elderly and people with disabilities. In addition to the support of the people with disabilities, the child development support, and the function of the elderly day service and the nursing, and so on, the new hot spring excavated newly, the cafe which becomes a bar at night, the confectionery shop, the regular city of vegetables and handicrafts The weekend’s live concert and concerts call nearby residents and children. The environment of this infestation caused an unexpected chemical reaction. A woman of dementia who came through tried to eat a jelly of a man with severe mental and physical disabilities. A man takes a wheelchair, and his neck can hardly move. At first it didn’t work, but I was able to eat jelly for three weeks every day. The range of movement of a man’s neck spread. Moreover, the runaway at midnight of the woman decreased sharply. The woman said, “If I don’t go, that child will die.” Oya speaks.” The range of motion in which the physiotherapist could improve only about 15 degrees in two years was improved to 30 degrees in three weeks when the grandmother of dementia tried to eat jelly. Even if welfare and medical professionals are not involved, when two people meet, they find the role with each other and regain their ability to live. The chemical reaction is caused by the people and the human being symbiotic. This was a big notice. “The further surprise was that the population of Noda Cho in Komatsu city began to increase as Saien-Ji Temple was bustling. It will increase by 50% from 55 families to 76 families in 11 years from the establishment. It is said that it is comfortable to have the people with disabilities and the elderly of the dementia

with the local inhabitant always at the time when the reason is heard in the U-turn and the influx group from outside, and the reason is heard in Saien-Ji Temple. The person with disabilities of the object of the welfare and people of the dementia become the main character, and the welfare becomes the nucleus of the town planning. This awareness was inspiring and brought about our turn. “The Ministry of Health&Labour and Welfare, which was aimed at the realization of a symbiotic society, was put forward to the Ministry of Health, Labour and Welfare, and it was a typical vertical government. “The Founder Ryosei Oya was born in 1961, one year after the foundation of Busshi-En. Because grandfather and parents were working in the facility, they lived in the same roof as people with disabilities, and they were held by the busy family instead of a busy family. Ryosei Oya was chosen as a member of the Japan Overseas Cooperation corps to work as a member of the Japan Overseas Cooperation corps to select the Kanazawa University. After returning from Dominica, Otani joined the local newspaper company and was active and decided to go back to his parents’ home after a certain event. Mr.Oya, who returned to his parents’ home at the age of 34, entered into the shingyo Do Hall of Nichiren sect for the acquisition of Buddhist priesthood. Therefore, he met one of the teachings of the Lotus Sutra called ‘San Sou Nimoku.’”The sun and the rain fall equally into the ground, but the trees are big, medium, small, or different, grow flowers, and bear fruit. In addition to the size, various kinds of plants with different shapes and shapes grow up, and each of them has its own appearance. ‘Oya who lived with the persons with disabilities from a small time deeply understood the teaching. For him, San Sou Nimoku is one of the most important keywords. Oya noticed an important keyword to be lined up with San Sou Nimoku, and it was triggered by the rebellion of Saien-Ji Temple in Komatsu City, Ishikawa prefecture. Saien -Ji Temple was a temple of other sects, and there was nothing to do with Oya. The residents were asked to “get rid of that temple that would be abandoned,” but the hurdle was high. However, he decided to meet the place where he discusses the end of Saien-Ji Temple. There is an opinion that “it should be a parking lot in the reclaimed land”, but Oya was relieved by the tears that the grandmother of the family member of Saien-Ji Temple said, “If there is no temple in this generation, I will not go to the Heaven”. As a result, it was decided to clean up regularly in the people of Oya and Bussi-En to avoid being in the desert. However, there is a limit for Oya to continue cleaning. One year later, he considered the abolition of the temple again, but he was forced to leave the land and building of Sainen-Ji Temple, eventually being forced to manage the members of the faith and the local people. The place that was handed down at Busshi-En was decided not to be a temple but to be used as a facility for Busshi-En. In addition to the functions of support services for people with disabilities, daycare services, daycare services for elderly people, day service after school, and support for child development support, the functions of cafes and community centers are provided to help people gather on the daily basis other than users. It became a facility to gather for each purpose (Oya 2018). After the birth of San Sou Nimoku Saien-Ji Temple in January 2008, the number of households in the Noda Cho District, which was 55 households, increased to 76 families. The center is a young man who has turned U-turn. Oya was surprised that the main reason they decided to move to the district was “cozy”. When he heard it in detail, “the first time he was surprised to hear that the person with the disability caused a strange voice and the person of the dementia took the mysterious action”, and the answer was “It is strange and it is strange”.”This chemical reaction was quite unexpected. It is this

problem to think that the person who is a healthy person, a handicapped person, a dementia, and various people are made to be cozy. “Oyamentioned that there was a hint about “coalescing cosy” in the “Amazing Social Network’s amazing power” written by Professor Nicolas A. Christakis of Harvard University(Christakis 2020; Christakis &Fowler2011). The results of the experiment by Professor Christakis were as follows: It is reported that about 15% of people are affected by the words when I tell the person who is close to me in the radius about 1.6 km.It is 10% in the acquaintance of the acquaintance of the person who said happiness and 6% in the acquaintance. It is said that it has some influence on the person who doesn’t know at all, and it is influenced by the contrary in itself.”He was surprised at the experimental results. It was because the same thing as the thought of Buddhism’s Engi(Auspicious) theory and causal correspondence occurred. When they live in a town full of living and pleasure, they come back to themselves.However, it is suggested that the city is full of sorrow, and that it will return to the residents. “According to the data released by the Ministry of Health, Labour and Welfare in 2016, 71 percent said to “yes” and 20% answered “most likely”.If you have a Down syndrome person in the area, happiness will spread. The cohesion caused by mixing is also suggested by these studies and findings (Oya 2018).

## **JOCA TOHOKU IN IWANUMA CITY**

JOCA’s official name is originally from the Japan Overseas Cooperative Association. JOCAhas role in international society and expand the number of activities and serving as a leader in international exchange and international cooperation with roots in local communities, as well. JOCA has begun with the first group of 26 volunteers in the organization preceding today’s Japan Overseas Cooperation Volunteers program returned to Japan after completing their service since 1969. These first volunteers planned to enhance their networks while applying the valuable experiences gained overseas to provide support for and to promote participation in the programs. As a private organization at the time, it organized various activities, including conferences for families whose members were away on the volunteer program, recruitment drives, interviews with volunteers concerning experiences in the field (meetings in which returning volunteers reported on their experiences), and public relations. During the 1970s, 47 prefectural associations of former volunteers were formed. Since then, these associations have pursued various activities to promote international understanding and cooperation in local communities. As the reputation of the volunteer program and of volunteers after returning to Japan grew, so did the expectations of various parties. JOCA was founded in 1983, and certified by the Ministry of Foreign Affairs. On February 1, 2012 JOCA was certified as Public Interest Incorporated Associations by Cabinet Office.

JOCA TOHOKU opened up on March 2021. JOCA TOHOKU has been operating a nursery school, restaurant, hot springs, fitness, and day service for the elderly. It has been 10 years since JOCA’s activities, which came to the site to support the Great East Japan Earthquake, started to work on the “City of Lifelong Success” project.JOCA calls the “Lifelong Town” project in Iwanuma City “IWANUMA WAY”. = The road has the following meanings.”Road” as a timeline of history Iwanuma was once a key point of land and water transportation, and the remnants of a post station that prospered greatly even within the territory of the Sendai domain still remain on the street corner.”Road” from reconstruction to revitalization After reconstruction from



the Great East Japan Earthquake, to regional revitalization. Members of JOCA and Peoples in TOHOKU are moving toward creating a new community(Matsuda2021).The JOCA TOHOKU facility is a steel-framed second floor with a total floor area of approximately 2730 square meters. The association rented 3980 square meters of the former site of the municipal Kametsuka housing from the city and maintained it. Under the theme of “a city of lifelong success,” JOCA TOHOKU aims to create a place where children and the elderly can interact with each other regardless of their disabilities or nationalities. At the local commemorative ceremony, Chairman Ryosei Oya of the association said, “We want to make it a base that connects this place. JOCA TOHOKU and IWANUMA began to connect immediately after the disaster, Iwanuma City is one of the disaster-stricken areas that the returnees received support. JOCA TOHOKU members were voluntary worked for those who lived in temporary housing, watched over the victims, and supported the residents in discussions on group relocation from the side. It gained a lot of trust from the residents and the city. JOCA was also entrusted with community support at the mass relocation destinations of the victims. In 2015, an agreement on regional revitalization will be signed with the city. He has laid the groundwork for “after reconstruction,” such as becoming a designated manager of three facilities for persons with disabilities.

“The declining birthrate and aging population in rural areas is advancing, the industry leaders are disappearing, and the bonds in the region are weakening. We were aware of the problem whether we should not look not only in developing countries but also in Japan.” Kazuto Kitano (61), the representative of JOCA Tohoku, speaks that from overseas cooperation to disaster recovery support, and to help with domestic community development. Taking Iwanuma as a precedent, JOCA is also involved in the regeneration of mountainous areas and the revitalization of shopping districts. Their strengths are their on-site capabilities and ability to adapt to different cultures, which they have cultivated by jumping into local people in developing countries (Ishibashi2021).

One of the JOCA TOHOKU members, Jun Aoki (42) is from Chiba prefecture. He was dispatched to Africa and Kenya to set up a soccer club at a juvenile delinquent facility and taught for two years. Immediately after the earthquake, he entered Iwanuma and is now involved in employment support for persons with disabilities. Jun said that “We value the connection with the community and always think from the perspective of the other party. That kind of experience of the cooperative team is alive.”The most unique project in Iwanuma is “Iwanuma Hitsuji Village”. JOCA TOHOKU rented 3 hectares of the site of mass relocation in the coastal area and involved the affected people to open ranches and fields. The goal is to charge an admission fee of 100 yen and make it a major tourist spot that attracts 100,000 people annually (Ishibashi 2021).This mingled education can be allied through Health and Welfare Science at Sendai University. The next section is introducing about background of Health and Welfare Science curriculum background of Sendai University.

## **CONCEPT OF HEALTH AND WELFARE SCIENCE AT SENDAI UNIVERSITY**

Sendai University was opened in 1967 (Showa 42) as the only four-year university with the Department of Physical Education in the Faculty of Physical Education in Tohoku and Hokkaido, and the Department of Health and Welfare Science was opened in 1995 (Heisei 27). Sendai, the name of Sendai University, broadly

captures the Sendai area, and the foresight of the founder from the time of its establishment envisions the expansion of the university and the expansion of faculties other than physical education with the future in mind. Then, there is a background that it refrains from inserting physical education characters. In addition, the etymology of Sendai is said to be old in “Chiyo” during the Warring States period, and since Date Masamune (September 5, 1567 – June 27, 1636) built a castle on Aobayama in 1601 (Keicho 6) and renamed it “Sendai”. It is said that it became “Sendai”. In addition, there are various myths as the etymology of “Chiyo”, but the most popular one is “There is a thousand Buddhas in the Sendai area, and the castle name is” because the castle was built there. It was called “Sendai Castle”, but it was named after the wish to prosper in Chiyo (a thousand year). Looking back on the etymology of Sendai, the etymology of “Sen”, and “The right side of Sen is the ideograph and phono-seman of” both hands + person’s crouching shape + note west “. After training, learn how to get rid of your soul as if you were going through a hole in Sendai. Sen uses it as a musical note and adds a person to indicate the person who has practiced it. (Kanji source) “(from the character source). The origin of the word “dai” is written as “Dai”, which is a combination of soil + high + to, which means “a lectern for watching people come by stacking high soil.” Therefore, Sendai University wishes to foster “a group of teachers and students who stand on a high lectern and practice to gain a divine work (building a new and unprecedented one) like a hermit.” It can be thought of as a university that was established with all its might. In the words, “Nurturing the body toward the desire for human communication called” health “leads to the realization of” social welfare “, and it is also the mission of the Faculty of Physical Education to aim for human resource development in that field. “The idea of being one of the above” is included in “health and welfare”, and it can be said that this name is a curriculum that originated from Sendai University. Former President Yutaka Kumeno compiled the following draft in the “Purpose and Reason for Establishment” of the application for opening a department in 1994. “A new field of education that aims for organic integration of health and welfare that helps people to become independent of healthy lives, improve their quality of life, and create a healthy society where they can feel the joy of living. As a result, we decided to establish a new department of health and welfare in the Faculty of Physical Education. “(Hozawa 2003). In the group of teachers involved in the education of care and welfare teacher training facilities as a department of health and welfare, the teachers in the recreation field are a major component, and even in the current curriculum, the subjects in the same area are “Les” as specialized basic subjects. “Creation Practical Skill I”, “Welfare Recreation Practical Skill” as a development subject, “Recreation Support Theory”, “Recreation Practical Skill II” as an applied subject, “Care Welfare and Recreation Activity Support” as a care welfare teacher subject, “Care Welfare and Recreation” There are quite a few “help exercises”. The concept of the above is very similar to Philosophy of Gerontology which the author has been developed with Care-Fit Education Institute. The Author introduces about Philosophy of Gerontology as conclusion (Takahashi 2007).

## CONCLUSION

Gerontology is a systematic study of aging. Interdisciplinary research across many disciplines is being conducted to understand the complexity of aging and to anticipate and prepare for the impacts of an aging society (Takahashi 2019). In Japan, which is celebrating the declining birthrate and aging age, which is the first

experience in the world, in order for the elderly to lead a worthwhile life through Gerontology, and to spend a healthy life from birth to death, the quality of life is improved. In order to raise the age and create a beautiful age, the country of longevity, including the idea of normalization (Takahashi&Shibata 2019). In addition, as an effect, we will consider the reduction of medical and long-term care costs and the economic effect that the elderly can position as consumers. Gerontology is said to be an international and interdisciplinary discipline as well as interdisciplinary research. However, in university education, it is difficult to say that the business network, which is an interdisciplinary academic discipline, is substantial. Therefore, what is required of Japan and the world in the future is the practice of applied collaborative learning. What makes this possible is the cafeteria curriculum, which consists of curriculums that meet each need. With the introduction of the cafeteria curriculum, it will be possible to develop human resources who can immediately judge and act on the provision of personalized services. For that purpose, a universal approach from the viewpoint of the earth and the space environment is required. The Nippon Care-Fit Service Association (Nippon Care-Fit Education Institute) made declaration to the world from Okinawa as follows:

### **Okinawa Proclamation on Respect for Aging and in Support of the DaVinci Project 2012**

**Be it known unto all nations and interested persons that on March 3, 2007, the International Gerontology Synthesis Meeting, sponsored by the Care-Fit Service Association in Okinawa, Japan, issued the Okinawa Proclamation on Respect for Aging. This proclamation is made in support of the Da Vinci Project, which is a universal approach that recognizes the importance of all age groups accepting the dignity and value of older adults. The theme of this international synthesis meeting reflects the essential components of the proclamation: Youth is a Gift, Age is an Art.**

**The Proclamation recognizes the importance of Implementing a curriculum that is interdisciplinary and reflects the complex nature of aging. Implementing a curriculum that reflects the life span for persons with and without disabilities within settings including the home, education, public life, and the work place. Through this proclamation, we encourage collaborative relationships between business, government, education and all organizations related to aging and disabilities throughout the universe. In addition this collaboration also recognizes the importance of individual creativity, art and science in achieving universal understanding of See, Observe, Understand and Listen (SOUL) which is called KIGATSUKU, which means an inner spirit to act without being told what to do. Therefore, may all persons and organizations with an interest in the welfare of our universe strive to work toward developing applied knowledge that integrates the best wisdom about older persons with the SOUL.**

### **Congress Representatives for Okinawa Da Vinci Project 2012**

In conclusion, the reason why this paper was written was this Gotcha Wellness was started from Hakusan. Which the paper was published about Hakusan (Takahashi 2018). The important point is the chrysanthemum in the Hakusan faith in Godness Kukurihime. Today is an era in which we rethink our role in humankind. The

author feels that it has reached in this day. In other words, if we replace the role of Kukurihime with today's scholarship, "God of harmony" is interdisciplinary research, research on peace, "God of marriage" is research on family, "God of tooth healing" "God of healing of smallpox" is research on health and science, and "God of child lover", and the "god of childbirth" is a study of life science, and Hakusan is also a place of worship for Shugendo which practical study in real world. It is dreamed to be achieved to develop of these concepts through Gotcha of Complex facilities with Philosophy from Hakusan, Ishikawa and Iwanuma Miyagi toward to the world and universe by universal Gotcha MEN.

## REFERENCES

Christakis NA (2020) *Blueprint*, Littlebrownspark.

Christakis NA&Fowler JH (2011) *Connected*, Littlebrownspark.

Higashinohon daishinsai ano toki, Iwanuma dewa henshû iinkai(2012) Higashinohon daishinsai ano toki, Iwanuma dewa. 50-nin no shôgen(Great East Japan Earthquake At that time, in Iwanuma. Testimony of 50 people), Kunii Press.

Hozawa T(2003) Research fund based on the 2001 research plan (4-year plan) Target first year research report Research theme Contribution from physical education and sports activities (education) to the field of care and welfare-What should the Department of Health and Welfare be in the Faculty of Physical Education-(Heisei 13-nendo kenkyû keikaku ni motodzuku kenkyû-hi (4-nen keikaku) taishô shonendo kenkyû hôkoku-sho kenkyû tçma kaigo fukushi bun'ya e no taiiku supôtsu sho katsudô (kyôiku) kara no kiyo - taiiku gakubu no naka de kenkô fukushi gakka wa dô arubeki ka), Sendaidaiigaku taiiku gakubu, 5 - 9.

Ishikawa M (2015) A Study on Community-Based Reconstruction from Great East Japan Earthquake Disaster –A Case Study of Iwanuma City in Miyagi-Pref., *Journal of Disaster Research: Special Issue on Creating Community-Based Robust and Resilient Society*, 10(5), 807-817.

Matsuda Y (2021) "JOCA Tohoku", a facility for everyone from children to the elderly, is born in Iwanuma City Kamezuka Onsen Good water is boiling today, *Nowty*, Vol.68, June, 4-5.

Oya H (1954) *Chowa, Koufuku no Shiori*, Vol.18.

Oya R (2018) Sôsharuinobçshon-shakaifukushihôjin bussien ga 'gocha maze' de idomu chihô sôsei! (The social innovation Social Welfare Corporation bussien challenges "Gotchamaze"), *Diamond sha*.

Takahashi R (2017) Sendai University Faculty of Sports Science, Department of Health & Welfare Science, 20th Anniversary Foot Step and Future Prospect Sendai University Faculty of Physical Education Department of Health and Welfare 20th Anniversary Magazine, 33-44.

Takahashi R (2018) Inishie kara manabi mirai e to mukau fukushi no kadai: 'Funaoka' no rekishi kara manabu ichikôsatsu (Welfare issues learned from ancient times and headed for the future: A consideration learned from the history of "Funaoka"), *Kusanone fukushi' henshû iinkai*, 48, 11-21.

Takahashi R&Shibata H (2019) The Historical Philosophy of Gerontology in the Context of Our Future, HSOA Journal of Gerontology & Geriatric Medicine, 5, 1-26.

Takahashi R (2019) The Science, Philosophy and Bioethics of Gerontology: An Individual and Community Journey from Japan, APLAMBERT Academic Publishing, 1-236.

### **Web-Site**

A little inside story “\$ “Birthplace of Bussi-En, Myorinzan Gyozenji” [http://www.bussien.com/info/history\\_inside.html](http://www.bussien.com/info/history_inside.html)

Essence of success: People with disabilities, elderly people and residents are symbiotic

Local welfare, <https://www.works-i.com/works/series/seikou/detail027.html>

Future society and temples proposed by expert monks in community and community development, <https://dialoguetemple.com/ryosei-oya/>

Ishibashi H (2021) Seinen kaigai kyôryoku-tai fô hisai-chi Iwanuma ni onsen• soba-ya hoikuen fukugô fukushi shisetsu OB OG ‘kokunai ni mo mewomukeru(Japan Overseas Cooperation Volunteers for disaster area Hot springs in Iwanuma • Soba shop • Nursery school... Complex welfare facility OBOG “Looking at Japan), Asahi Shibun, May 7. <https://www.asahi.com/articles/ASP566RP1P47UNHB002.html>

Iwanuma City (2020) Great earthquake in Japan

<https://www.reuters.com/article/us-japan-usa-idUSTRE77M0QV20110823>

Mason J (2011) Don’t count U.S., Japan out, Biden tells the world (AUGUST 23, 2011), <https://www.reuters.com/article/us-japan-usa-idUSTRE77M0QV20110823>

Reconstruction Agency: The existing conditions of the Reconstruction from 2011 earthquake Disaster, March 10, 2015, [http://www.reconstruction.go.jp/topics/main-cat1/sub-cat1-1/150313\\_gennjyoutokadai.pdf](http://www.reconstruction.go.jp/topics/main-cat1/sub-cat1-1/150313_gennjyoutokadai.pdf) [accessed July 30, 2015]

Remarks by Vice President Biden at Sendai Airport (3:22P.M. (Local) August 23, 2011)

<https://obamawhitehouse.archives.gov/the-press-office/2011/08/23/remarks-vice-president-biden-sendai-airport>

Takahashi R (2007) Gerontology International Synthesis Meeting 2007 in Okinawa [https://www.carefit.org/sympo2007/outline1\\_en.html](https://www.carefit.org/sympo2007/outline1_en.html).

Tohoku365(2020) Memory of the Great East Japan Earthquake ~Iwanuma City~,

<https://tohoku365.com/en/culture/10841>

Wikipedia (2021) 2011 Tōhoku earthquake and tsunami, [https://en.wikipedia.org/wiki/2011\\_T%C5%8Dhoku\\_earthquake\\_and\\_tsunami](https://en.wikipedia.org/wiki/2011_T%C5%8Dhoku_earthquake_and_tsunami).



# **CULTURAL DIMENSION IN EDUCATION OF TRIBAL CHILDREN: A STUDY OF TEACHING –LEARNING PRACTICES IN GOVERNMENT ELEMENTARY SCHOOLS IN KORAPUT DISTRICT, ODISHA**

**\*Avijeet Bhadra**

**\*\*Dr. Laxmidhar Behera**

## ***Abstract***

*Education is a tool of transmission of culture, accumulated knowledge and experience of a society. It is also the tool for economic betterment and societal change. Today all educationists are discussing of uniformity in design, content and structure of education. There is no wonder that there is such confusion about the purpose and goal of general education, the current education scenario is not focus on tribal education. Socio- Cultural factors impact the way children participate in education. To engage students effectively in the learning process, teachers must know their students and their academic abilities individually, rather than relying on racial or ethnic stereotypes or prior experience with other students of similar backgrounds. Parents and educators are aware of the disparities that exist under their own school house roofs. Disparities exist in achievement, funding and readiness. But we may not be expected to sufficiently address any of these gaps without acknowledging the cultural impact that continue to exist between students and teachers. Scheduled tribe constitutes one of the socially and economically disadvantaged sections of the Country. School participation of tribal children in the country as well as in the state of Odisha is comparatively less. Teaching learning processes i.e. pedagogy, assessment and teacher preparation are important components for improving the quality of school education at elementary level. Koraput is one of the tribal concentrated and educationally backward districts of Odisha. It is also one of the aspirational districts categorized by Government of India during 2018. The present research was undertaken to study the teaching learning practices with respect to cultural contexts in government elementary schools.*

**Key Word: Culture, pedagogy, School, curriculum and assessment.**

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## **INTRODUCTION**

The essence of culture in education is one of the dynamic features of human resource development. It reflects human identity in a societal condition and enlightens our life to grow with belongingness. It is a learned behavior of mankind expressed in various forms and created collectively. Both education and culture are interrelated to each other because learning takes place in the social context with purpose and meaning. As it is experienced, the trend of education is far away from cultural integration and the created gap between culture and education has become a challenge in Tribal pockets. In spite of several initiatives of Govt., the status of education of tribals is still alarming. Education is a tool of transmission of culture, accumulated knowledge and experience of a society. It is also the tool for economic betterment and societal change. In a country a bowl of languages, castes, religions and ideas; cementing indigenous values while embracing modernity, is a progressive phenomenon. Within the context of the education of marginalized communities such as tribal, to engage children effectively in the learning process, teachers must know their students and their academic abilities individually, rather than relying on racial or ethnic stereotypes or prior experience with other children of similar backgrounds. In this perspective it is important to examine the cultural context in education of tribal children of Koraput district at elementary level.

A large number of indigenous communities in India, speaking their own languages and following cultural practices relatively distinct from the mainstream, were categorised as aboriginals or tribes by the colonial rules in the 19<sup>th</sup> century. Scheduled Tribe groups are one of the recognized disadvantaged groups of the society, special planning and efforts have been made after independence to achieve the equality in education for them. Various committees and commissions, working groups and study teams were constituted to formulate policies, programmes and promotion of education of tribal communities. Despite the Government initiatives and efforts to promote education among STs, the literacy rate among STs as compared to national average has remained low and the female literacy rate has been still lower compared to national female literacy rate. The status of school education i.e. enrolment, achievement and other aspects of quality are poor in case of education of ST children. The education gap between indigenous peoples and mainstream populations remains critical: rates of enrolment retention, completion of and performance at primary school level are significantly lower and gender disparities are often pronounced. Indigenous educational deficits range from generalized exclusion to limited access to the upper levels of primary and secondary education, with admittance to higher education still being the exception. Indigenous people's acute educational marginalization is closely connected to a number of interlinking factors, such as poverty (child labour), ethnicity (social stigma and institutionalized discrimination), language barriers, gender-based discrimination, traditional practices (including early marriage), and a lack of access to basic services due to their geographical isolation.

## **OBJECTIVE OF THE STUDY**

- To explore the cultural perspectives of tribal children associated with teaching learning practices i.e. curricular, other curricular and assessment.

- To examine the challenges in use of cultural contexts in teaching learning process from the perspectives of stakeholders of tribal area/s.
- To explore the context, trends of formal and informal school education system of scheduled tribe in Koraput district with focus on curriculum, textbooks, transaction strategies, teacher preparation.

## SCOPE AND LIMITATION

In the present study descriptive survey method was used with. Participatory observation, case study and focus group discussion are the part of study the tribal education. This study is descriptive-cum-explanatory research design to address the objectives of the project. The sampling size is 20 elementary school from Similiguda block from Koraput district. As the focus is qualitative the schools and locality was selected purposively taking in to account different tribal communities, remote as well as areas near to block Head Quarter. For the present study different tools like interview schedule, questionnaire, Focus group discussion, and Case study format have been used apart from video and photographs of relevant episodes. The details of focus, tools and data source is presented below.

## REVISION OF LITERATURE

A study conducted by **Acharya (2008)** on enrolment, retention and achievement among the students of primitive tribes of Rayagada districts of Orissa examined the problems of enrolment, retention of students of primitive tribes. The findings of the study revealed that enrolment rate of students among Dongria Knodhas in Class-II were slightly more than the Bondas. Problems like management problem, non-tribal based culture-based languages, problem in learning, teaching tribal languages through regional script languages, lack of proper training for teachers and lack comprehensive data on learning achievements of students of tribal communities had been identified. Most of the tribal schools were single teacher school and were held either in thatched huts or in open spaces, pupil-teacher ratio was very high, in spite of free education, free supply of books, mid-day meals, school uniforms to children, appointment of trained teachers, no substantial benefits had been arrived so far, problem of wastage and stagnation was there.

**Padhi (2008)** conducted a case study on learning-teaching problem of tribal children and development of strategies in Mayurbhanj, Keonjhar, Gajapati and Malkanagiri. Four tribes had been taken as sample of the study using interview schedule and analysing achievement tests. The objectives of the study were to identify the learning needs of the tribal, to assess their level, to study the profile of teachers, to study the language situation and to suggest remedial measures. And it clearly indicated that nearly two-third of the children were not happy about irregularity of the teachers and shortage of books, use of mother tongue was a felt need, one-third percent of teachers had minimum qualification of Matric, CT, teachers had very little knowledge about tribal language, the discussion with the Gram Sabha members and VEC members was quite discouraging, community leaders contributed to the development of the schools and mid-day meal scheme.



**Panda (2009)** studied on job satisfaction and adjustment of primary school teacher under SSA having objectives of estimating the level of job satisfaction of teachers, compare among assistant teachers and Shiksha Sahayak and their adjustment level. A sample of 250 assistant teachers and 250 Shiksha Sahayak were selected. Job satisfaction scale and teacher adjustment inventory were used as tools of the study. The major findings of the study were majority of teachers had average degree of job satisfaction, the Shiksha Sahayak were better satisfied in their profession in comparison to the assistant teachers and assistant teachers were better adjustment in their profession than the Shiksha Sahayak.

**DashandRoul (2009)** studied on early childhood care and education across integrated child development services in the district of Odisha. The study reported that Angawadi centers were running at different places, durries, water drums, plates and cups, glasses and different play materials for children and drinking water facilities for children were available in more than 60 percent of the Anganawadi centers but their position were not better in backward and tribal are as than in urban locality due to lack of awareness about Anganwadi Centre and educated parents.

**Sahoo (2010)** in a study on 'Identification of problems in using TL Min class room and designing strategy to ensure use of TLM in Nabarangpur district' took 5 primary school sassample and interview and observation schedule used as tools of the study. Objectives of the study were to observe the classroom process with TLMs in the classroom, to chalk out strategy for solving the problems identified. The findings of the study were more than 61 percent of teachers opined that some materials were developed and some were procured by them, about 78 percent of teachers stated that some TLMs were available in their school, TLMs were stored in office room and CRCC monitored their school weekly, no innovative TLM had been developed by them and 90 percent of teachers were of view that they had no idea about contextual teaching learning resources.

**Mishra (2003)** conducted a study on the causes of dropouts of ST girls in Korukunda block of Malkanagiri district taking the sample of fifty-seven parents of dropout girls and 14 Headmasters of 14 tribal primary schools. Interview and school schedules were used as tools of the study. The objectives of the study were to identify the social, cultura lbarriers in education, schooling facilities available, suggest measures to reduce the dropout rate of ST girls. It revealed that lack of knowledge about the utility of education among the tribal parents, their poverty, social barrier for girl child education, inadequate schooling facilities, less motivation among teachers and gap between school language and home language lead to dropout of girls.

## **RESEARCH METHODOLOGY**

Descriptivesurvey method was used to realize the objectives of the research study. A mixed method has been followed using both quantitative and qualitative design. Participatory observations, case studies and focus group discussions were part of study method. The sampling size is 20 elementary school from Similiguda block from Koraput district. As the Focus is qualitative the schools and locality was selected purposively taking in to account different tribal communities, remote as well as areas near to block Head Quarter. For the

<i>Sample</i>	<i>Total in Block</i>	<i>Sample for the study</i>	<i>Remarks</i>
Panchyat	16	3	20%
Total Primary UPS school	88	10	20% from total schools including cum residential and non-residential
Total Sevashrams	14	10	

present study different tools like interview schedule, questionnaire, Focus group discussion, and Case study format have been used apart from video and photographs of relevant episodes. The details of focus on sample, tools and data source is presented below.

**Sample:** For the study, 20 elementary schools both residential and non-residential were purposively selected from Similiguda block of Koraput district.

**Tools:** The study has used six tools such as; Institute profile, Interview schedule for functionaries, Questionnaire for students, Focus group discussion for parents, Classroom observation schedule and Case study of selected schools.

**Analysis of data-** Data have been analyzed by using both qualitative and quantitative approach.

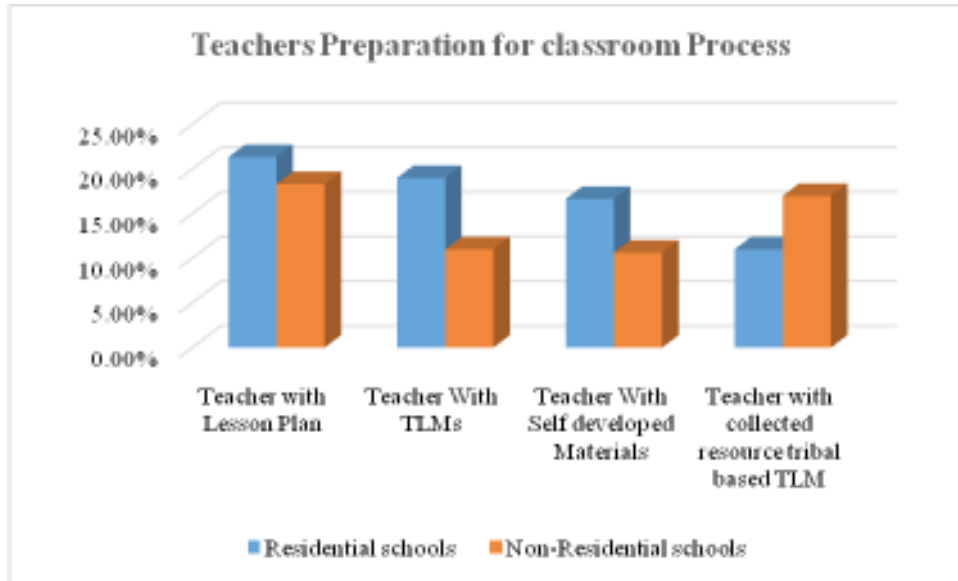
## **RESULT AND DISCUSSION**

### **Situation of Classroom process in both residential and non-residential schools**

#### **(A) Teachers Preparation for classroom Process (Table -1)**

	<i>Teacher with Lesson Plan</i>		<i>Teacher With Teaching and learning Materials (TLMs)</i>		<i>Teacher With Self developed Materials based TLM</i>		<i>Teacher with collected resource tribal</i>		<i>No any specific plan</i>	
	<i>N</i>	<i>In %</i>	<i>N</i>	<i>In %</i>	<i>N</i>	<i>In %</i>	<i>N</i>	<i>In %</i>	<i>N</i>	<i>In %</i>
Residential schools	13	21.33%	11	19%	10	16.66%	7	11%	19	32%
Non-Residential schools	12	18.33%	13	22%	11	18.00%	10	17%	14	24%

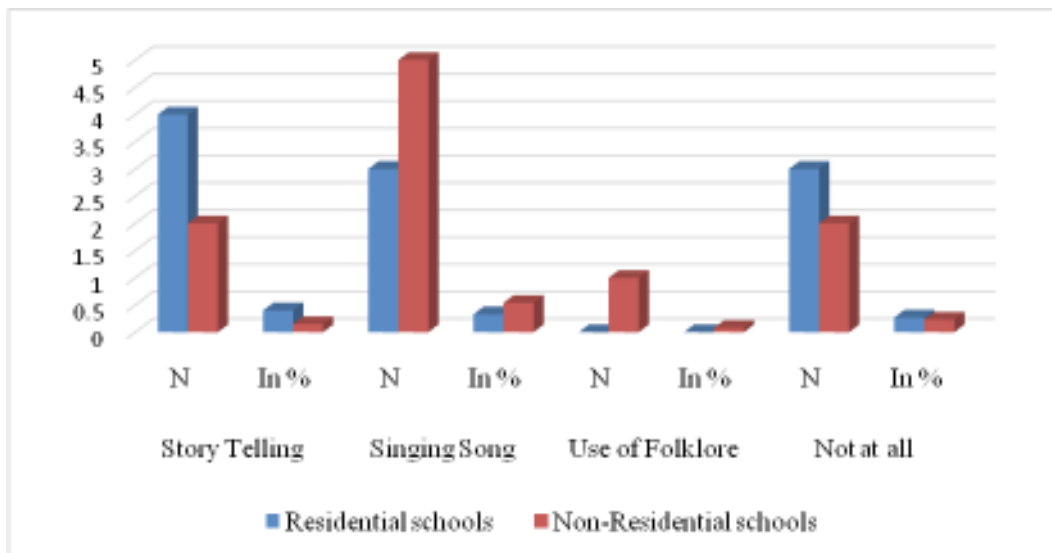
(Fig of Table-1)



The above figure states the teachers’ preparation in classroom transaction in which it is found that 21% teachers were having lesson plan in residential school and 18.33% in non-residential school before going to transact the topic where as 79% and 82% had taken classes without adequate preparation, 19% and 11% teachers had focused on use of TLMs in their content transaction where as 81% and 89% teachers managed

	<i>Story Telling</i>		<i>Singing Song</i>		<i>Use of Folklore</i>		<i>Not at all</i>	
	<i>N</i>	<i>In %</i>	<i>N</i>	<i>In %</i>	<i>N</i>	<i>In %</i>	<i>N</i>	<i>In %</i>
Residential schools	4	40%	3	33%	0	0%	3	27%
Non-Residential schools	2	15%	5	54%	1	8%	2	23%

**Fig of table -2**



The Table -2 shows the creative opportunities for children provided by teachers during classroom teaching. It is found that only 40% teachers have chosen storytelling as a creative method of teaching whereas 33% have chosen their method in singing song and none of the teacher is using folklore to teach tribal children in non-residential schools. Similarly, in residential schools shows the creative opportunities for children provided by teachers during classroom teaching. It is found that only 15% teachers have chosen storytelling as a creative method of teaching whereas 54% have chosen their method in singing song and 23% of the teachers are using folklore to teach tribal children in residential schools.

**(A) LANGUAGE USED BY CHILDREN FOR COMMUNICATION**

**Table -3- Language used by children for communication**

<i>How children communicate with children of other language</i>	<i>Residential school</i>	<i>Non-residential school</i>
<i>Language of children</i>	<i>Mode of communication with others</i>	<i>Mode of communication with others</i>
Paraja	Desia	Desia
Kandha	Odia	Gadaba
Desia		
Gadaba		

Looking the Table -3 both the residential and non-residential schools the above number of Language mostly prefer in the tribal school are *Paraja, Kandha, Desia and Gadaba*. But in the residential school mostly children are using the Desia and Odia language while in non-residential school the children are using Desia and Godaba language. So the language is one of the factors in tribal location which is influenced in teaching and learning practices.

Considering the constitutional directives and actual implementation of educational scheme one would certainly find a gap or mismatch between what should have been done and what has been done so far. A state like Odisha, where diverse linguistic groups are found, some quite significant and some negligible in number pose a great problem as to how to streamline them in the education process. As per the constitutional directives, the basic education may be provided free of cost to indigenous tribal in their own mother tongue which seems to be a Herculean task for any state government. The indigenous tribal although have a definite territory, they have a number of sub-groups within it. Therefore, language varies in a limited geographical area and within a particular tribe. It also varies from sub-tribe to sub-tribe. Language of one sub-tribe is quite different from another within the limited geographical area due to impact of bordering community and their exposure to outside world. Such examples are innumerable in this district. One such example is that in similiguda, Koraput (as administrative division of the district) which has a sizeable number of Paraja population and sub-sections like Kondh, (relatively primitive) and Desia (relatively assimilated) who live close to each other. “Although there are certain similarities in language and culture they differ a lot linguistically. Any textbook on either language could not solve the problem”.(Sources: Kanungo, A.K., and Mahapatra, H. (2004). *Tribal Education in Rayagada*)

Despite its demonstrated effectiveness as a system of quality education for the ST children, the Multi lingual education (MLE) programme in Odisha, like any other good system of leaves scope for further improvement. The programme itself has remained under the shadow of uncertainties due to several factors:

- a) Absence of a clear long— term perspective,
- b) Inherent weaknesses in the nature of the programme,
- c) Implementation difficulties,
- d) Evaluation and monitoring problems and
- e) limitations of the current model of MLE in dealing with diverse linguistic context of the classrooms.

Recent developments such as the incorporation of mother tongue based educational programme component in pre-primary education for 3 –6 year olds in Odisha and the questions of quality of education as envisaged in the RTE Act, call for a review of the current MLE Programmes in The state. Of Extension of MLE to larger number of languages and schools would require flexibility and structural adjustments in the nature of the programme and its implementation. Beginning with overlapping location of the schools, with the

MLE Plus intervention taking place within the state MLE paradigm and the MLE schools existing within the assimilative paradigm of 'mainstreaming' of the non MLE schools, the individuals in any of these systems could no longer be seen as participants of an independent system. Rather in Engeström's (1999) words, the goal directed participants of a given system while relatively independent on some occasions, became subordinate units of a larger unit of analysis which included their network of interacting systems. The excerpts presented in the previous section show how activity systems do not get formed overnight by the stroke of a pen in the policy documents. The understanding and the objectives of the older systems appeared to get carried forward both in policy and practice.

## **CONCLUSION**

This study has been conducted in Koraput and explored key cultural aspects in education of tribal children in light of classroom practices used by teachers. Cultural context in education of tribal children needs to be encouraged and considered during text book publication. There should be link with curriculum, pedagogy, local language particularly in tribal context. Community knowledge needs to be the base in development of curriculum for school children and designing strategies for continuous professional development of teachers. The realistic realization within a person is possible only by the combination of education and culture. It can be stated that the education without culture is meaningless. Education is the science and culture is the art. If education is static in nature, the dynamic multidimensional thoughts can be generated by culture. The opportunities of applying education in practice are possible only by the proper use of cultural beliefs

## **RECOMMENDATION**

- There is urgent need of appointment of trained and qualified teachers in each elementary schools and appointment of specified teachers for co- scholastic activities at the school and cluster level
- Frequency of monitoring need be enhanced from grassroots level.
- Multi-lingual education and contextual curriculum may be encouraged in elementary schools  
Quality teacher recruit policy need to be reviewed preferably through a state level written test and teacher aptitude test.
- Cultural context in education especially the tribal areas needs to be encouraged and considered during text book publication
- These should be link with curricula, teachers' pedagogy, language particularly in tribal context.

## REFERENCE

- Acharya, S. (2008). *Enrolment Retention and Achievement problems among the students of Primitive Tribes of Orissa*. Research Abstract, OPEPA, 9, 14-16.
- Bijayini, S. (2010). Assessing the roles and functions of BRCC and CRCC of Jatniblock in relation to academic achievement of primary school students. *Research Abstracts*, OPEPA, 10, 38-39.
- Chaudhari, G.N (1979), Jharkhand's Roots: socio-cultural changes among the tribals residing in villages near Ranchi, *Education research journal* 52-77.
- Dash, A. (2009). Role of MCSs (Model Cluster School) in promoting girls education Sundergarh district. *Research Abstracts*, OPEPA, 10, 45.
- DRCWC. (2011). A Report on the Status of Primary Education of Adivasi Children in Andhra Pradesh and Orissa in the Context of the Right to Education Act 2009. *Educational Journal of Science Education*, 26(5).
- Ghurye, G. S. (1980). The Scheduled Tribes of India. New Brunswick: Transaction Books. Conceptions, misconceptions and alternative conceptions. *Studies in Science Education*, 10, 61–98.
- Mishra. M (2009) Community, Culture and Curriculum in the Context of Tribal Education in Orissa, India.
- Padhi, U. (2008). Learning-Teaching Problem of Tribal Children and Development of Strategies in Mayurbhanja, Keonjhar, Gajapati and Malkanagiri. *Research Abstract*, OPEPA, 9, 23-24.
- Panda, N. (2009). *Job satisfaction and adjustment of Primary School teacher under SSA*. Vivek, 2, 43-48.
- Sahoo, A.K. (2010). Involvement of school committee in school management for the improvement of primary education in Jagatsinghpur district. Research Abstract, OPEPA, 10, 10-12



# ONLINE TEACHING AND LEARNING SYSTEM:ITS EFFECT ON ATTENTION LEVEL

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\*\*Antav Banerjee

## Abstract

*The research is defined as the creation of new knowledge and/or the use of existing knowledge base in a new and creative way to generate new concepts, methodologies and understandings. In this research paper there is an attempt to focus on the importance of attention level of the adolescents and how it is being affected by online teaching and learning systems. Attention is on the process which allows the individual to plan, regulate, preview, and monitor the thoughts and actions in the learning, memory and other behavioral manifestations. Emphasis is given on academic field of participants about their experience on the difference they feel in online and classroom based education. By administering AQ (Attention Level Questionnaire) of Schepers (1992) upon 200 (Age 17 -19) college going students (100 from India and 100 from Netherlands), it is found that their attention is better in classroom teaching systems than the online teaching system ( $t' = 17.99$  \*\*,  $P < .01$ ,  $df = 198$ ).*

**Keywords:** *Attention, experience, online and classroom teaching*

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## **INTRODUCTION**

In the present scenario of Covid -19 pandemic, the academic atmosphere and the teaching & learning process are badly affected. Both the teachers and the students are in trouble to cope with the situations. But as there are no alternatives, the online teaching system is prevailing in educational institutions. The difficulties created by the system and its multifarious effects on its stakeholders leads the social scientists, psychologists and researchers to think of it for a better system on academic pursuits.

Online education as stated by Chang li, in World Economic Forum in 2020, is - “electronically supported learning that relies on the Internet for teacher/student interaction and the distribution of class materials.” From this simple definition comes an almost infinite number of ways to teach and learn outside of traditional classrooms teaching and away from educational institutions/campuses. With online education, students can turn any place with Internet access and electricity into a classroom. It can include audio, video, text, animations, virtual training environments and live chats with professors. It’s a rich learning environment with much more flexibility than a traditional classroom.

Upon used to its full potential, online education has been shown to be more effective than face-to-face instruction. It can be engaging, fun and tailored to almost anyone’s schedule. But there are many more challenges faced by both teachers and students in its practice.

One of the important challenges of online system is the short attention span of the viewers. Attention is a process in which certain small area of conscious field is focused on. And Span of attention is the range of attention or the amount of time spent concentrating on a task before becoming distracted.

Attention has to do with the immediate experience of the individual. it is a state of current awareness. There are, of course, myriad events taking place in the world all the time, each impinging upon a person’s senses. There are also events taking place within the body that affect attention, just as there are representations of past events stored in one’s memory but accessible to awareness under appropriate circumstances.

In the view of Edward Bradford Titchener, attention determined the content of consciousness and influenced the quality of conscious experience. In subsequent years less emphasis was placed on the subjective element of consciousness and more on the behavior patterns by which attention could be recognized in others. Although human experience is determined by the way people direct their attention, it is evident that they do not have complete control over such direction. There are, for example, times when an individual has difficulties on concentrating on a task, a conversation, or a set of events. At other times an individual attention is “captured” by an unexpected event rather than voluntarily directed toward it.

Similarly as per the cognitive psychologist George A. Miller who has interpreted and argued that the number of objects an average human can hold in short-term memory is  $7 \pm 2$ . This has usually been referred to as *Miller's law*.

Online teaching and learning process, when there is a need to show students visual elements (Ostashewski, Reid, & Ostashewski, 2016), are becoming a main component of formal and informal learning environments, such as Massive Open Online Courses (MOOCs by Daniel, 2012; Kalman, 2014; Raffaghelli, Cucchiara, & Persico, 2015; Siemens, Gašević, & Dawson, 2015); Online video lectures for face-to-face learning (Botton & Gregory, 2015; Brecht, 2012; Kinash, Knight, & McLean, 2015; Whatley & Ahmad, 2007; Wieling & Hofman, 2010), as well as in classroom learning, etc. However, online video lectures are not an accurate solution for solving the challenges of online learning (Geri, 2011; Guri-Rosenblit, 2009; Lee, 2017). Nitzza Geri et al., (2017), in a study indicated that, one of the main drawbacks of online video lectures is - “their availability may lead to procrastination, which eventually would cause student dropout” (Diver & Martinez, 2015; Geri, 2012; Geri, Gafni, & Winer, 2014; You, 2015). Nevertheless, considering student procrastination tendency during the instructional design stage and adding elements such as mandatory viewing of the online videos throughout the semester was found effective in encouraging timely viewing (Costley, Hughes, & Lange, 2017).

Research findings indicate that the engagement time in viewing video lectures was six minutes at most of the students (Guo, Kim, & Rubin, 2014; Kim, Guo, Seaton, Mitros, Gajos, & Miller, 2014; Lagerstrom, Johanes, & Ponsukcharoen, 2015).

Another factor is Interactivity. It is a crucial element for improving the quality of online learning (Guri-Rosenblit, 2009; Siemens et al., 2015). Furthermore, empirical studies demonstrated the effectiveness of interactivity in extending the attention span of learners and enhancing their achievements (Cherrett, Wills, Price, Maynard, & Dror, 2009; Dror, Schmidt, & O'connor, 2011). Conversely, interactivity may be regarded as an interruption, which distracts students' attention (Davenport & Beck, 2001; Geri & Gefen, 2007; Pearce, Ainley, & Howard, 2005).

However challenges have been found across the countries. For example, whilst 95% of students in Switzerland, Norway, and Austria have a computer to use for their schoolwork, only 34% in Indonesia do, according to OECD data. In US, there is a significant gap between those from privileged and disadvantaged backgrounds with regards to online teaching learning processes due to financial factors. To focus in India it is found that over 1.5 million schools across India closed down due to the pandemic .A switch to large-scale digital education is not possible now.Only 24 percent house-holds have access to the internet, according to a 2019 government survey.In rural India, the numbers are far lower, with only 4 per cent households having access. The education ministry's budget for digital e-learning was slashed to Rs 469 Crores in 2020-21—the year Covid struck—from Rs 604 Crores than the previous year. According to UNICEF, the Covid-19 pandemic has battered education systems around the world, affecting close to 90 per cent of the world's student

population. In India, over 1.5 million schools closed down due to the pandemic, affecting 286 million children from pre-primary to secondary levels. This adds to the 6 million girls and boys who were already out of school prior to Covid-19. This disruption in education has severe economic implications too. A World Bank report, *'Beaten or Broken: Informality and Covid-19 in South Asia'*, has quantified the impact of school closures in monetary terms. India is estimated to lose \$440 billion (Rs 32.3 lakh Crores) in possible future earnings.

The future of on-line teaching learning process provides differential opinions on it. Some are of the opinion that the unplanned and rapid move to online learning – with no training, insufficient bandwidth, and little preparation – will result in a poor user experience that is uncondusive to sustained growth, whereas others believe that a new hybrid model of education will emerge, with significant benefits.

The effectiveness of online teaching learning process also can't be ignored. If the technology provisions to the students will be perfect it can have a good effect.

The effectiveness of online learning varies among the age groups. The general consensus on children, especially younger ones, is that a structured environment is required, because kids are more easily distracted. Research findings indicate to get the full benefit of online learning, there needs to be a concerted effort to provide this structure and go beyond replicating a physical class/lecture through video capabilities, instead, using a range of collaboration tools and engagement methods that promote “inclusion, personalization and intelligence.

In early 2020, the global pandemic (COVID-19) broke out and severely affected the progress of education in many ways throughout the world, that promoted the progress of online system almost in all educational institutions. Cicekci & Sadik (2019) in one study on “Teachers’ and Students’ Opinions About Students’ Attention Problems During the Lesson” investigated “teachers’ and students’ opinions about students’ attention problems during the lesson is a descriptive study in the survey model. 432 teachers and 1023 students from secondary schools in the central districts of Adana voluntarily participated in the study. The research data were collected with a ‘Written Interview Form’ developed by the researchers and a descriptive content analysis was used for data analysis. As a result of the research, it was observed that the teachers perceived the attention problems that the students experienced during the course mostly as a problem arising from the students themselves while the students associate this problem not only with themselves, but also with other students, teachers and the environment. According to the results, teachers as well as students easily noticed the psychological characteristics, the behaviors they exhibited and their low academic performance, but the teachers evaluate this situation more as disciplinary problems. The solution suggestions of the teachers who kept the attention problems of the students out of their own sphere and their teaching practices were that passing exams should be harder and discipline regulations should change to facilitate punishment. The students stated that teachers should show more interest towards the students, approach the students positively and use a variety of teaching methods in accordance with the students’ level”.

Many more researches have been done to explain the relationship between online education and attention level of the subject. This interdisciplinary study is based on concepts from the domains of: cognitive fit theory (Vessey, 1991), student retention in online learning (Ferguson & Clow, 2015; Geri, 2012; Guo et al., 2014; Kim et al., 2014; Lagerstrom et al, 2015), attention economy (Davenport & Beck, 2001; Geri & Gefen, 2007), and applies them to student viewing patterns of online video lectures. According to cognitive fit theory (Vessey, 1991), compatibility between task and information presentation format would improve task performance. There are differences among individual students in their abilities to learn independently. Hence, offering them diverse tools from which they can choose those that fit their learning preferences is expected to increase their academic motivation and performance (Chandler & Teckchandani, 2015; Keller & Karau, 2013). Terras and Ramsay (2015) emphasize the importance of considering the diverse psychosocial and cognitive profiles of learners during the design, development, and delivery of MOOCs. Moreover, different types of video lectures have dissimilar effects on the sustained attention and cognitive load of verbalizers and visualizers (Chen & Wu, 2015). In the context of viewing online video lectures, adding interactive elements is expected to increase student engagement and performance (Cherrett et al, 2009; Dror et al., 2011). Furthermore, in a survey of 246 Chinese students, interactivity was found as positively influencing students' intention to revisit MOOCs (Huang, Zhang, & Liu, 2017). However, adding interactive elements to a video may interrupt the viewing experience (Pearce et al, 2005), and, as the students stop watching the video, they may be distracted and use the break for checking email, answering messages on social applications, or tending to other external requests for their limited attention resources (Davenport & Beck, 2001; Geri et al., 2014; Ramsay & Terras, 2015). The study of Geri and Gefen (2007) about MBA students' perceptions of the usefulness of various online tools did not examine online video lectures, but its findings revealed that students appreciated mostly summaries of class meeting and presentations, sample exams, as well as task solutions. Students were less interested in interactivity on discussion boards or collaborative tasks. In the same vein, students may not be interested in completing tasks while watching videos, although it is supposedly helpful. Another aspect that should be considered is procrastination (Steel, 2007). Students tend to delay their studies until the last minute (Gafni & Geri, 2010). When the video lectures are available online, students may wait until the end of the semester (Geri et al., 2014). At that point of time students may skip the interactive activities, due to their limited time. Another way to address the attention challenge is to offer students mechanisms that would encourage them to complete viewing the course videos in a timely manner. Wandler and Imbriale (2017) propose that online instructors should promote the use of self-regulated learning strategies by students, including scaffolding time expectations, by dividing large assignments to sub assignments with several due dates. Romero, Cerezo, Espino, and Bermudez (2016) suggest using smartwatches for students to decrease procrastination behaviors in MOOCs. Specifically, Romero et al. (2016) developed an- Evaluating the Impact of Interactivity in Online Video Lectures 218 droid wear-based application, which receives notifications from MOOCs and reminds students to complete their missions, in a similar manner to the tactics used for encouraging people to exercise. However, this study focuses on instructional design elements that may increase the attention span of learners who are already watching the online video lectures. Therefore, external mechanisms such as those

suggested by Wandler and Imbriale (2017) and Romero et al, (2016), are beyond the scope of the current study.

In one study Mehmet Ali Cicekci & Fatma Sadik ( 2019) investigated teachers' and students' opinions about students' attention problems during the lesson in a descriptive study by using survey model. 432 teachers and 1023 students from secondary schools in the central districts of Adana voluntarily participated in the study. The research data were collected with a Written Interview Form developed by the researchers and a descriptive content analysis was used for data analysis. As a result of the research, it was observed that the teachers perceived the attention problems that the students experienced during the course mostly as a problem arising from the students themselves while the students associate this problem not only with themselves, but also with other students, teachers and the environment. According to the results, teachers as well as students easily noticed the psychological characteristics, the behaviors they exhibited and their low academic performance, but the teachers evaluate this situation more as disciplinary problems. The solution suggestions of the teachers who kept the attention problems of the students out of their own sphere and their teaching practices were that passing exams should be harder and discipline regulations should change to facilitate punishment. The students stated that teachers should show more interest towards the students, approach the students positively and use a variety of teaching methods in accordance with the students' level.

Different findings have stated differential results with regards to attention span. Some studies opined that It is difficult to concentrate on one thing for very long time . Whereas some other state that it is possible to keep the attention on tough or 'boring' tasks for **between 10 and 20 minutes**, though the attention span has also been argued to be closer to **5 minutes**.

And when it comes to the attention span online, the evidence is even more remarkable . For example in searching through net it is found out that sometimes the attention span is shorter than that of a goldfish – **17% of all page views last less than 4 seconds**. The reason for this can be explained through three theories, like, "*The 'everything instantly' culture, Mobile Apps set expectations, & The 'can't sit still' culture*".

The first condition in learning through observation is to pay attention to the model taken. The individual mimics the behavior s/he is paying attention to. Many characteristics related to the observer, model and the modeled behavior as well as reinforcements taken in the past play a role in the formation of attention. According to Gestalt theory, attention is related to shape and ground. Shape is what attention is focused on. According to this theory, when the attention changes, the shape and ground may change (Cücelođlu, 1994; Feldman, 1997; Senemođlu, 2013; Schultz & Schultz, 2002). Therefore, attention is involved in many types of learning and it is necessary for the individual to reach a level of arousal in order for any learning to occur.

The fact that attention can be focused on a certain point/work for a long time involves a high level of cognitive efforts (Solso, MacLin & MacLin, 2011). In this process, students should be able to prevent other stimulants that attract their attention but do not contribute to the learning process and make efforts to keep themselves in the activity. Performing the task of selectivity for a long time and concentration on the desired

stimuli of attention depend on continuous stimulation (Cücelođlu, 1994). When there is no change in the nature and severity of these arousals, since the individual got used to the stimulant, s/he starts not to react to the stimuli and the learning environment becomes meaningless (Uluđ, 1991). In other words, even if all factors are positive, learning does not occur when students cannot pay attention to the activities in the classroom environment, or when attention is shifted to an out-of-purpose stimulus. According to studies, errors increase, quality in the product decreases and the learning process fails (Eastwood, Frischen, Fenske & Smilek, 2012; Rosegard & Wilson, 2013). Accordingly, it is necessary to evaluate the failure situation in the school environment not only with regard to low intellectual skills or motivational levels of the students but also as a situation related to the gathering and maintenance of attention (Aydýn, 1999).

As their age progresses, their control over attention increases and their attention span begins to grow. They develop awareness of what to focus on when performing a learning task (John & Flavell, 1985, as cited in Yaycý, 2007, p.50). However, there is no conclusive evidence of how long the attention can be focused (Bradbury, 2016). Likewise, studies show that attention cannot remain at the same intensity for a long time on the same work, decreases as a function of time, and that the duration of the focus and the focus itself are related to the age of the individual as well as the task and timing within a course (Bunce, Flens, & Neiles, 2010; Cummings Hlas, Neyers, & Molitor, 2017; Dörfler, 2004; Wilson & Korn, 2007). As a matter of fact, the condition that students are experiencing a lot of problems in concentrating and maintaining attention and that this problem is widely observed in all levels of education supports this view (Bunce, Flens, & Neiles, 2010; Cummings Hlas et al., 2017; Kaymak Özmen & Demir, 2012; Wang, 2015; Weimer, 2014). For this reason, one of the most important tasks of teachers during teaching is to help students to focus their attention on the right stimulators and to stay alert throughout the course in order to ensure that students get the most out of their learning opportunities (Öztürk & Kýsaç, 2006). Attention helps to store the property or information correctly in the memory (Gathercole, Alloway, Kirkwood, Elliott, Holmes, & Hilton, 2008). When knowledge is learned with greater attention, it becomes more resistant to deterioration and forgetting (Prakash, 2015). Attention is necessary to see the center of a problem, to understand the problem and to generate ideas. One of the characteristics of people who can think creatively and critically is their high ability to focus on stimuli (Piaw, 2014). Attention is therefore the basis of thinking. Students who cannot pay attention have difficulties in following the instructions of the teacher, lose interest in the lesson quickly, discontinue their learning tasks, have problems in following the rules and behave in a harmful way to the classroom environment (Lauth & Naumann, 2009, as cited in Kaymak Özmen & Demir, 2012, p. 137). Therefore, attention is also a prerequisite for cognitive, social and emotional development during the childhood. When the related literature is examined, it can be observed that studies which examine the relationship between the focus on the attention levels of students during the course, the factors negatively affecting the attention in the classroom environment, the distractibility of students and the teaching practices of the teachers were mostly conducted abroad (Abdullah, 2004; Ainley & Luntley, 2007; Amjah, 2014; Bunce, Flens, & Neiles, 2010; Clikeman, Nielsen, Clinton, Sylvester, Parle, & Conner, 1998; Cummings Hlas et al., 2017; Mehralizadeh, Ghorbani, Zolfaghari, Shahinfar, Nikkha, & Pourazizi, 2013; Risko, Anderson, Sarwal, Engelhardt, & Kingstone, 2012; Rosegard & Wilson,

2013; Sáez, Sidler Folsom, Al Otaiba, & Schatschneider, 2012; Szpunar, Khan, & Schacter, 2013; Wang, 2015). The focus of these studies with teachers and students in diverse types and levels of education was to minimize the factors that negatively affect the educational environment and to increase the quality of learning and teaching. While examining international literature, it emerged that related studies are mostly in the field of medicine and psychology; diagnosing children with attention deficit disorder (Aslan, 2013; Cameçyođlu-Almacýođlu, 2007; Ėimpek, Yýldýrým, & Bostan, 2015; Tufan & Yaluđ, 2009; Tuđlu & Ėahin, 2010) and focused on developing skills of attention gathering (Akçýnlý Yurdakul, Çamlýyer, Çamlýyer, Karabulut, & Soytürk, 2012; Akçýnlý, 2005; Asan, 2011; Bozan & Akay, 2012; Demirova, 2008; Gözalan, 2013; Karaduman, 2004a; 2004b; Kaymak, 1995; 2003; Sazak Pýnar, 2015; Tunç, 2013; Uskan, 2011; Yaycý, 2007). Only a limited number of studies examining the attention of students during courses were carried out at upper-secondary and tertiary educational levels and it was evaluated how the teachers attract attention of the students at the start of the course (Çaðlar, 2009; Ergin, Battal, & Çardak, 1999; Eryýlmaz, 2007; Karaduman, 2004; Karahan, 2008; Kaymak Özmen & Demir, 2012; Yaycý, 2007). A study examining this issue with students and teachers in the primary education level (primary and middle schools) could not be detected. Understanding which stimulus distract the students' attention during the lesson and how they behave in such a situation is necessary to help students develop their ability to initiate and maintain the process of focusing attention. Knowing how teachers associate distraction with attention and how they perceive distracted students is important in terms of producing effective solutions against distractions during teaching. For these reasons, it was necessary to conduct research that examines the reasons of attention problems experienced by secondary school students during the lesson, the characteristics of students who are experiencing this problem, behavior types of teachers and students in situations where attention is distracted and the expectations from each other. The reason for performing this research in secondary schools is that it is a new education level where students meet different teachers after primary school and those they are at a critical age. The childhood ends during this age period, also known as the first adolescence and a development boom occurs. As the growth hormones enter the bloodstream, a rapid physical change commences (Gerrig & Zimbardo, 2012). Because of these physiological changes, the interest of adolescents is concentrated on their developing bodies (Muus, 1996). During this period, there are rapid changes in the social and emotional circumstances of children. The transition from primary to secondary school as well as a transition to a new school can be stressful for them (Leonard & Elias, 1993). The expectations of children from their parents and teachers change (Rice & Dolgin, 2008). Friends become more valuable than before. Adolescents who spend more time with their peers need similar apparel, speaking and behaving to be accepted by them (Adams, 1995; Furman & Buhrmester, 1992; Larson, Richards, Moneta, Holmbeck & Duckett, 1996). Anger, suspicion, frustration and jealousy are the dominant emotions of this age group (Fisher, 2006; Slavin, 2013). The interest of adolescents towards learning and academic studies decreases (Öztürk, 2003). Not being able to concentrate, not knowing how to study, an unwillingness to work, woolgathering and similar behaviors are observed more frequently in students in this age period (Muus, 1996; Yörükođlu, 1986). Therefore, the importance of the efforts of teachers working in secondary schools to draw attention to the right point and to maintain this energy is getting more important for the students to benefit from education and training activities at the highest level.

## **Rationale of the study**

The COVID-19 has created a chaotic situation throughout the world resulted in schools, colleges and universities shut down. Globally, over 1.2 billion children are out of the classroom. As a result, education has changed dramatically, with the distinctive rise of e-learning, whereby teaching is undertaken remotely and on digital platforms. Research suggests that online learning has been shown to increase retention of information, and take less time, meaning the changes coronavirus have caused might be here to stay. The survey on COVID-19 indicated that for infection rates, currently more than 1.2 billion children in 186 countries are affected by school closures due to the pandemic. In Denmark, children up to the age of 11 are returning to nurseries and schools after initially closing on 12 March, but in South Korea students are responding to roll calls from their teachers online.

The researchers are also apprehensive about the adoption of online learning if it will continue then definitely it would impact the worldwide education market also.

As derived from reviews of literature, several studies also reported that the attention levels of the students are being differentially affected by this online teaching learning system. Especially in the age of adolescence due to change in hormones in the bloodstream, a rapid physical and psychological change commences which affect their attention level.

Hence there is a necessity to explore the effects of on-line teaching learning system and its effects on the attention level of the adolescents that influences their academic pursuits.

## **OBJECTIVE:**

Thus the primary objectives of the study are:

- To differentiate between the effects of classroom and online teaching and learning system among the students.
- To analyse Participants' differential attention level in online v/s classroom study method of teaching
- To explore the direction of research on education to reform the systems in colleges and universities based on online and classroom teaching methods in regards to attention level of the adolescents.

## **HYPOTHESIS**

- Attention level of the students will be better in classroom teaching methods than in on-line methods of teaching



## METHODOLOGY

### Sample

200 college going students (Age 17-19) were randomly selected (100 from India and 100 from Netherlands (MBO level) as sample of the study. All the subjects (100 classroom and 100 on-line students) from different colleges (random sample) were administered AQ questionnaire in their respective home environment.

### Instrument

AQ (Attention Level Questionnaire) of Schepers (1992) was selected to administer upon the subject to examine their attention level. It consists of 20 questionnaire, with a three point scale. They are 1-Not at all 2-Minimum and 3 - Maximum. The value for each item will be zero, one and two respectively, resulting maximum score of 40 (Scheper, 2007).

### Procedure

Randomly selected 200 college going students (Age 17-19) were administered AQ (Attention Level Questionnaire) of Schepers (1992) in their respective home environment. The test was made through online survey. And the responses were recorded in raw data Table. Then the final result was calculated and reported in final data table. According to the final data table the conclusions and interpretations were made

### Results and Discussion

From the result table it is evident that Mean scores for on-line and classroom Attention level scores are 14.02 (SD = 2.11) and 19.40 (SD = 2.12), respectively. The obtained  $t'$  value is found to be statistically significant at .01 level ( $t' = 17.99$  \*\*,  $P < .01$ ,  $df = 198$ ). This clearly indicates the beneficiary value of classroom learning system over the online teaching learning system with regard to attention level of college going students.

Results Table

Nature of learning system	Online Teaching system	Classroom Teaching system	Significance test
Mean attention level	14.02	19.40	$t' = 17.99$ ** $P < .01$ $df = 198$
SD	2.11	2.12	
N	100	100	

**Fig 1 :**

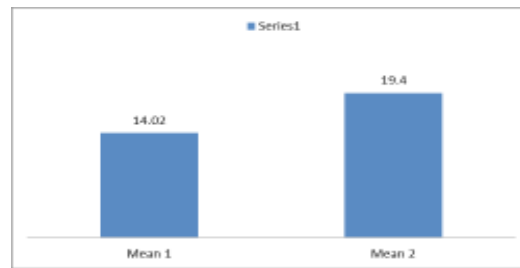


Figure 1 showing the difference of attention level between online and offline system of adolescents. Mean 1 represents the scores of online data and mean 2 represents the scores of offline data of attention level of college students of India and Netherlands.

## **CONCLUSION**

It is no doubt that attention problem is obvious for both the teacher and the students in online teaching system. Mainly it is perceived more among students than the teachers. indicating that attention is distracted in the class environment are considered as disciplinary problems and the aim of interventions is to stop the students' behavior instead of recollecting the students' attentions again. Again in considering the stage of adolescence which generally considered as the age of transition the attention level to stick on a point is naturally a difficult task. To which considerable watch of the teacher is required in the processes of teaching which is only possible maximum in classroom teaching learning system.

The result table indicates that the mean attention level scores of classroom teaching scores are better than the online teaching learning system. And the difference is found to be statistically significant. Hence it can be concluded that classroom teaching learning system has a facilitatory effects on attention level of the adolescents than online teaching learning system.

## **IMPLICATION**

The study has an important implication in the present situation of pandemic, Covid -19, considering the academic pursuits of educational institutions. The focus is on demerits of on-line teaching learning system that affects the attention level of the students. Attempts should be taken to foster best methods of online system which can keep attention level of the students intact / perfect to enhance their academic achievements.

## **SUGGESTION**

- The role of a teacher is much more important to keep the attention level of the students intact in the class.
- The teacher should be aware of individual differences factors among the students and should deal accordingly

- But in on-line teaching it is becoming difficult for the teacher to have a control over it. So appropriate methods of teaching should be implemented that can help the teachers to be vigilant upon the students' attention level.
- It may be suggested that teachers should not forget that some students may need more support for self-regulation, focusing and maintaining their capacity of learning. Hence necessary steps may be taken on these issues.

## REFERENCES

- Abdullah, S. H. Z. (2004). The role of English teachers in drawing students' attention in salft district schools and the factors affecting attention as perceived by teachers. Unpublished doctoral thesis, An-Najah National University, Nablus, Palestine.
- Adams, J. M. (1995). Ergenliđi anlamak. Yayýna Hazýrlayan. Bekir Onur. Ankara: Ýmge Yayýnevi.
- Ainley, J., & Luntley, E. M. (2007). The role of attention in expert classroom practice. *J Math Teacher Education*, 10, 3–22. <https://doi.org/10.1007/s10857-007-9026-z>
- Akcýnlý, N. (2005). Sekiz yađ grubu çocuklarda hareket eđitimi ile dikkat ve hafýza geliřiminin iliřkisi. Yayýmlanmamýř yüksek lisans tezi, Celal Bayar Üniversitesi, Manisa.
- Akcýnlý, Y. N., Çamlýyer, H., Çamlýyer, H., Karabulut, N., & Soytürk, M. (2012). Sekiz yađ grubu çocuklarda hareket eđitiminin dikkat ve hafýza geliřimine etkileri. *Selçuk University Journal of Physical Education and Sport Science*, 14(1), 103–108.
- Amjah, D. Y. P. H. (2015). A study of teachers' strategies so develop students' interest towards learning English as a second language. *Procedia - Social and Behavioral Sciences*, 164, 188–192. <https://doi.org/10.1016/j.sbspro.2014.04.238>
- Ariga, A., & Lleras, A. (2011). Brief and rare mental 'breaks' keep you focused: Deactivation and reactivation of task goals preempt vigilance decrements. *Cognition*, 118, 439–443. <https://doi.org/10.1016/j.cognition.2010.12.007>
- Asan, R. (2011). Sekiz haftalýk masa tenisi egzersizinin 9–13 yađarasý çocuklardadikkatüzerineetkisi. Yayýmlanmamýř yüksek lisans tezi, Selçuk Üniversitesi Sađlýk Bilimleri Enstitüsü, Konya.
- Aslan, F. (2013). Farklý sosyodemografik közellikleresahipolanailelerindikkateksikliđivehiperaktivitebozukluđu (DEHB) olan çocuklarailiřkinbilgidüzeylerininbelirlenmesi. Yayýmlanmamýř yüksek lisans tezi, Hacettepe Üniversitesi Sađlýk Bilimleri Enstitüsü, Ankara.
- Aydýn, A. (1999). Geliřim ve öđrenme psikolojisi. Ankara: Aný Yayýncýlýk.

- Belton, T., & Priyadharshini, E. (2007). Boredom and schooling: A cross-disciplinary exploration. *Cambridge Journal of Education*, 37(4), 579–595. <https://doi.org/10.1080/03057640701706227>
- Bornstein, M.H. (1990). Attention in infancy and the prediction of cognitive capacities in childhood. In J.T. Enns (Ed.). *The development of attention: Research and theory* (pp. 3-19). North-Holland: Elsevier Science Publishing Company, Inc.
- Boyacı, A. (2009). İlköğretim öğrencilerinin disiplin, öğrenme ve davranışları ile ilgili algıların incelenmesi (Türkiye-Norveç örneği). *Kuram ve Uygulamada Eğitim Yönetimi*, 15(60), 523–553.
- Bozan, A., & Akay, Y. (2012). Dikkat geliştirmeye yönelik ilköğretim 5. sınıf öğrencilerinin dikkatleri toplamabecerelerine etkisi. *Western Anatolia Journal of Educational Science*, 3(6), 53–66.
- Bradbury, N. A. (2016). Attention span during lectures: 8 seconds, 10 minutes, or more? *Adv. Physiol Education*, 40, 509–513. <https://doi.org/10.1152/advan.00109.2016>
- Brown, W. (1910). Some experimental results in the correlation of mental abilities. *British Journal of Psychology*, 3, 296-322.
- Browne, M.W. (1980). Factor analysis of multiple batteries by maximum likelihood. *British Journal of Mathematical and Statistical Psychology*, 33, 184-199.
- Bunce, D. M., Flens, E. A., & Neiles, K. Y. (2010). How long can students pay attention in class? A study of student attention decline using clickers. *Journal of Chemical Education*, 87(12), 1438–1443. <https://doi.org/10.1021/ed100409p>
- Camcıođlu-Almacıođlu, D. (2007). Yönetim sorunları olarak dikkate sıklıkla verilen hiperaktivite bozukluđu olan öğrencilerin öğrenme psikolojik davranışları ile ilgili öğretmenler tarafından alınmayan yeterlik düzeylerinin incelenmesi (Gaziantep il merkez örneği). Yayınlanmamış yüksek lisans tezi. Gaziantep Üniversitesi, Gaziantep.
- Carotenuto, M. R. (2011). Pupil misbehavior and classroom management: The impact of congruence. Unpublished doctoral thesis, University of Southampton, Faculty of Law, Art and Social Sciences, England.
- Chen, C. M., & Huang, S. H. (2014). Web-based reading annotation system with an attention-based self-regulated learning mechanism for promoting reading performance. *British Journal of Educational Technology*, 45(5), 959–980. <https://doi.org/10.1111/bjet.12119>

- Clikeman, M. S., Nielsen, K. H., Clinton, A., Sylvester, L., Parle, N., & Connor, R. T. (1999). An intervention approach for children with teacher and parent identified attentional difficulties. *Journal of Learning Disabilities*, 32, 581–590. <https://doi.org/10.1177/002221949903200609>
- Cummings, H. A., Neyers, K., & Molitor, S. (2017). Measuring student attention in the second language classroom. *Language Teaching Research*, 1–19. <https://doi.org/10.1177/1362168817713766>
- Cücelođlu, D. (1994). Ýnsanvedavranýþý (5. Basým). Ýstanbul: RemziKitabevi.
- Çankaya, Ý., & Çanakçý, H. (2011). Sýnýföđretmenlerininkarþýlaþtýklarýistenmeyenöđrencidavranýþlarývebudavranýþlarlaba þaçýkmayollarý. *Turkish Studies*, 6(2), 307–316.
- Çelik, V. (2003). Sýnýfyönetimi (2. Basým). Ankara: Nobel Dađýtým.
- Cudeck, R. (1991). Program: MBFA: Maximum likelihood solution for multiple battery factor analysis. Department of Psychology, University of Southern California, Los Angeles.
- Damrad-Frye, R. & Laird, J.D. (1989). The experience of boredom: The role of the self-perception of attention. *Journal of Personality and Social Psychology*, 57(2), 315-320.
- Davidoff, L.L. (1987). *Introduction to psychology* (3rd ed). New York: McGraw-Hill.
- De W Vos, S.J. & Schepers, J.M. (1993). Kognitiewe en persoonlikheidskorrelate van aandaggewing. *Journal of Industrial Psychology*, 19(3), 23-29.
- Demirova, D. (2008). Piyanoeđitimininilköđretimöđrencilerinindikattoplamayetisineetkisi. *Mehmet AkifErsoyÜniversitesiEđitimFakültesiDergisi*, 8(16), 58–69.
- Diehl, M., Semegon, A.B. & Schwarzer, R. (2006). Assessing attention control in goal pursuit: A component of dispositional self-regulation. *Journal of Personality Assessment*, 86(3), 306-317.
- Dörfler, V. (2004). Factors of attention. In *Proceedings of the Bangkok International Conference on Applied Business Research, BICABR*, Bangkok, Thailand. Retrieved from [https://strathprints.strath.ac.uk/9677/1/Dorfler\\_ICABR\\_2004\\_Factors\\_of\\_attention.pdf](https://strathprints.strath.ac.uk/9677/1/Dorfler_ICABR_2004_Factors_of_attention.pdf)
- Eastwood, J. D., Frischen, A., Fenske, M. J., & Smilek, D. (2012). The unengaged mind: Defining boredom in terms of attention. *Perspectives on Psychological Science*, 7(5), 482–495. <https://doi.org/10.1177/1745691612456044>
- Ergin, Ö., Battal, N., & Çardak, Z. E. (1999). Fen bilgisivefizikderslerindedikkatçekmevegüdülemeetkinlikleri. *D.E.Ü. BucaEđitimFakültesiDergisi*, 10, 192–197.

- Eryılmaz, A. (2007). Okuldamotivasyonveamotivasyon:  
Öğrencinindersekатыlmasýndaetkiliolanöđretmenleilgelifaktörler. XVI. UlusalEđitimBilimleriKongresi  
Tam MetinBildiriKitabý, 3, 709–712.
- Eysenck, H.J. (1967). The biological basis of personality. Springfield: Charles C. Thomas.
- Finch, J.F. & West, S.G. (1997). The investigation of personality structure: Statistical models. *Journal of Research in Personality*, 31, 439-485.
- Feldman, R. S. (1997). Essential of understanding psychology (3rd ed.). USA: The McGraw-Hill Companies, Inc.
- Fisher, R. (2006). Still thinking: The case for meditation with children. *Thinking Skills and Creativity*, 1(2), 146–151. <https://doi.org/10.1016/j.tsc.2006.06.004>
- Furman, W., & Buhrmester, D. (1992). Age and sex differences in perceptions of networks of personal relationships. *Child Development*, 63, 103–115. <https://doi.org/10.2307/1130905>
- Gathercole, S. E., Alloway, T. P., Kirkwood, H. J., Elliott, J. G., Holmes, J., & Hilton, K. A. (2008). Attentional and executive function behaviors in children with poor working memory. *Learning and Individual Differences*, 18(2), 214–223. <https://doi.org/10.1016/j.lindif.2007.10.003>
- Gerrig, R. J., & Zimbardo, P. G. (2012). Psikolojiveyađam (Çev. Gamze Sarý). Ankara: Nobel Yayýnlarý.
- Gözalán, E. (2013). Oyuntevellidikkateđitimprogramýnýn 5–6  
yađçocuklarýnýndikkatvedilbecerilerineetkisininincelenmesi. Yayýmlanmamýđ yüksek  
lisans tezi, SelçukÜniversitesiSosyalBilimlerEnstitüsü, Konya. [https://doi.org/10.18493/  
kmusekad.12328](https://doi.org/10.18493/kmusekad.12328)
- Greenglass, E. (2002). Proactive coping. In Frydenberg, E. (Ed.). *Beyond coping: Meeting goals, vision and challenges* (pp. 37-62). London: Oxford University Press.
- Grossman, S.P. (1973). *Essentials of physiological psychology*. New York: Wiley & Sons.
- Gündođdu, R. (2013). Eđitimpikolojisi. In B. Gündüz& B. Çapri (Eds.), *Öđrenmeyietkileyenfaktörler* (pp. 176–192). Adana: KarahanKitapevi.
- Harkins, S. & Geen, R.G. (1975). Discriminability and criterion differences between extraverts and introverts during vigilance. *Journal of Research in Personality*, 9, 335-340.
- Hendriks, A.A.J., Hofstee, W.K.B. & De Raad, B. (1999). The Five-Factor Personality Inventory (FFPI). *Personality-and- Individual-Differences*, 27(2), 307-325.
- Howard, D.V. (1983). *Cognitive psychology*. New York: Macmillan.

- Kaiser, H.F. (1961). A note on Guttman's lower bound for the number of common factors. *British Journal of Statistical Psychology*, 14(1), 1.
- Karaduman, B. D. (2004a). Dikkattoplamaeđitimprogramýnynilköđretim 4. ve 5. sýnyföđrencilerinindikattoplamaüzeyi, benlikalgýsývebaparydüzeylerineetkisi. YayýnlanmamýpDoktoraTezi, Ankara Üniversitesi, Ankara.
- Karaduman, B. D. (2004b). DikkattoplamaeđitimprogramýnynKanadalýöđrencilerinindikattüzeyleriüzerindekietkisi. OMEP 2003 DünyaKonseyToplantýsýveKonferansýBildiriKitabý, 1, 232–244.
- Karahan, Ý. (2008). Ýlköđretimokullarýndagörevyapanöđretmenlerinöđretmesürecindekidikkattoplamastratejileri. Yayýmlanmamýp yüksek lisans tezi, Yeditepe Üniversitesi Sosyal Bilimler Enstitüsü, Ýstanbul.
- Karasar, N. (2012). Bilimsel arařtırma yöntemleri (31. Basým). Ankara: Nobel Yayın Dađıtým.
- Kaymak, S. (1995). Yuvayagidenbepýabýndakiçocuklarladikkattoplamaçalýpmaları. Yayýnlanmamýp yüksek lisans tezi, Ankara Üniversitesi, Ankara.
- Kaymak, S. (2003). Dikkattoplamaeđitimprogramýnyn 2. ve 3. sýnyföđrencilerinindikattgeliptirmesineetkisi. Yayýmlanmamýp Yüksek Lisans Tezi, Ankara Üniversitesi, Ankara.
- Kaymak, Ö. S., & Demir, Ö. (2012). Ýlköđretimöđrencilerinindikattoplama sürecine ili°kingörü°lerinin incelenmesi. Ç.Ü. Sosyal Bilimler Enstitüsü Dergisi, 21(1), 135–154. Larson, R.
- W., Richards, M. H., Moneta, G., Holmbeck, G., & Duckett, E. (1996). Changes in adolescents' daily interactions with their families from ages 10 to 18: Disengagement and transformation. *Developmental Psychology*, 32, 744–754. <https://doi.org/10.1037/0012-1649.32.4.744>
- Leonard, C. P., & Elias, M. J. (1993). Entry into middle school: Student factors predicting adaption to an ecological transition. *Prevention in Human Services*, 10, 39–57. [https://doi.org/10.1300/J293v10n02\\_04](https://doi.org/10.1300/J293v10n02_04)
- Matthews, K.A., Carver, C.S. & Scheier, M.F. (1982). Focus of attention and awareness of bodily sensations. In G.Underwood (Ed.). *Aspects of consciousness*, vol. 3 (pp. 165-197). New York: Academic Press.

- Mehralizadeh, S., Ghorbani, R., Zolfaghari, S., Shahinfar, H., Nikkhah, R., & Pourazizi, M. (2013). Factors affecting student concentration in classroom: Medical students' viewpoints in Semnan University of Medical Sciences. *Iranian Journal of Medical Education*, 13(8), 661–671.
- Miles, M. B., & Huberman, A. B. (1994). *Qualitative data analysis* (2nd ed.). Thousand Oaks, CA: Sage Publications.
- Muss, R. E. (1996). *Theories of adolescence* (6th ed.). USA: The McGraw-Hill Companies, Inc.
- Neisser, U. (1976). *Cognition and reality: Principles and implications of cognitive psychology*. San Francisco: Freeman and Company.
- Öztürk, B. (2003). Sýnýftaistenmeyendavranýplarýnönlenmesivegiderilmesi. In E. Karip (Ed.), *Sýnýfyönetimi* (pp. 131–166). Ankara: PegemAYayýncýlýk.
- Öztürk, B., & Kýsaç, Ý. (2006). Bilgiyiöplememodeli. In B. Yepylyaparak (Ed.), *Eđitimpsikolojisi* (pp. 275–307). Ankara: PegemAYayýncýlýk.
- Piaw, C. Y. (2014). Effects of gender and thinking style on student's creative thinking ability. *Procedia - Social and Behavioral Sciences*, 116, 5135–5139. <https://doi.org/10.1016/j.sbspro.2014.01.1087>
- Picton, T.W., Campbell, K.B., Baribeau-Braun, J. & Proulx, G.B. (1978). The neurophysiology of human attention. In J.
- Posner, M. I., & Peterson, S. E. (1990). The attention system of the human brain. *Annual Review of Neuroscience*, 13, 25–42. <https://doi.org/10.1146/annurev.ne.13.030190.000325>
- Prakash, J. (2015). What is the importance of attention in learning? Retrieved from <http://www.preservearticles.com/201105206854/importance-of-attention-in-learning.html>
- Requin (Ed.). *Attention and performance*, VII (pp. 429-467). Mahwah, N.J.: Erlbaum.
- Reeve, J. (2009). Why teachers adopt a controlling motivating style toward students and how they can become more autonomy supportive. *Educational Psychologist*, 44(3), 159–175. <https://doi.org/10.1080/00461520903028990>
- Rice, F. P., & Dolgin, K. G. (2008). *The adolescent: Development, relationships and culture* (12th ed.). Boston: Allyn & Bacon.
- Risko, E. F., Anderson, N., Sarwal, A., Engelhardt, M., & Kingstone, A. (2012). Attention: Variation in mind wandering and memory in a lecture. *Applied Cognitive Psychology*, 26, 234–242. <https://doi.org/10.1002/acp.1814>



- Rothbart, M.K., Posner, M.I. & Boylan, A. (1990). Regulatory mechanisms in infant development. In J.T. Enns (Ed.). *The development of attention: Research and theory* (pp. 47-66). North-Holland: Elsevier Science Publishing Company, Inc..
- Rosegard, E., & Wilson, J. (2013). Capturing students' attention: An empirical study. *Journal of the Scholarship of Teaching and Learning*, 13(5), 1–20.
- Rusinova, V. (1990). Psychological regulation of tension in work. *Studia Psychologica*, 32, 163-170.
- Sáez, L., Sidler, F. J., Al, O. S., & Schatschneider, C. (2012). Relations among student attention behaviors, teacher practices, and beginning word reading skill. *J Learn Disabil*, 45(5), 418–432. <https://doi.org/10.1177/0022219411431243>
- Saygýlý, G., & Gürþimpek, I. (2008). Sýnýftaistenmeyendavranýplarailipkinöðrencigörüşleri. *Dokuz Eylül Üniversitesi Buca Eğitim Fakültesi Dergisi*, 23, 152–159.
- Sazak Pýnar, E. (2015). Effectiveness of time-based attention schedules on students in ýnclusive classrooms in Turkey. *Educational Sciences: Theory & Practice*, 15(5), 1305–1316. <https://doi.org/10.12738/estp.2015.5.0145>
- Schafer, E.W.P. (1979). Cognitive neural adaptability: a biological basis for individual differences in intelligence. *Psychophysiology*, 16, 199.
- Schafer, E.W.P. (1982). Neural adaptability: a biological determinant of behavioral intelligence. *International Journal of Neuroscience*, 17, 183-191.
- Scerbo, M. W., Warm, J. S., Dember, W. N., & Grasha, A. F. (1992). The role of time and cuing in a college lecture. *Contemp. Educ. Psychol*, 17, 312–328. [https://doi.org/10.1016/0361-476X\(92\)90070-F](https://doi.org/10.1016/0361-476X(92)90070-F)
- Schwarzer, R., Diehl, M. & Schmitz, G.S. (1999). Self-Regulation Scale. Retrieved 15 August, 2006 from <http://www.fu-berlin.de/gesund/skalen>.
- Schwarzer, R. & Jerusalem, M. (1995). Generalized Self-Efficacy scale. In Weinman, J., Wright, S. & Johnston, M. (Eds.).
- Schultz, D. P., & Schultz, S. E. (2002). *Modern psikolojitarhi* (Çev. Yasemin Aslay). Ýstanbul: Kaktüs Yayýnlarý.
- Senemođlu, N. (2013). *Geliþim, öðrenme ve öðretim* (23. Basým). Ankara: Yargý Yayýnevi.
- Slavin, R. E. (2013). *Eðitim psikolojisi kuram ve uygulama* (Çev. Ed. Galip Yüksel). Ankara: Nobel Yayýnlarý.

- Smith, E. E., & Kosslyn, S. M. (2014). Bilişsel psikoloji, zihin ve beyin (Çev. Muzaffer Paşin). Ankara: Nobel Yayınları. Measures in health psychology: A user's portfolio. Causal and control beliefs (pp. 35-37). Windsor, England: NELSON.
- Schepers, J.M. (1992). Toetskonstruksie: Teorie en praktyk. Rand Afrikaans University. Johannesburg: RAU-Press.
- Schepers, J.M., Stuart, A.D. & Todd, A.E. (1999). Electrophysiological Concomitants of psychometric intelligence. *South African Journal of Psychology*, 29(3), 138-144.
- Schepers, J.M. (2002). Construction of a computerised information-processing test battery. *SA Journal of Industrial Psychology*, 28(2), 55-66.
- Schepers, J.M. (2004). The power of multiple battery factor Analysis in coping with the effects of differential skewness of variables. Special edition of *SA Journal of Industrial Psychology*, 30(4), 78-81.
- Schepers, J.M., Gropp, L. & Geldenhuys, D.J. (2006). The factor structure, metrical properties, and convergent validity of the third edition (1999) of the Locus of Control Inventory. *SA Journal of Industrial Psychology*, 32(2), 1-8.
- Solso, R. L., MacLin, M. K., & MacLin, O. H. (2011). Bilişsel psikoloji (Çev. Ayşe Ayçiçeği-Dinn). İstanbul: Kitapevi Yayınları.
- Szpunar, K. K., Moulton, S. T., & Schacter, D. L. (2013). Mind wandering and education: From the classroom to online learning. *Frontiers in Psychology*, 4, 495. <https://doi.org/10.3389/fpsyg.2013.00495>
- Pimpek, P., Yıldırım, V., & Bostan, R. (2015). Psikolojik dayanıklılık verebilen öğretmenlerin didaktik ve hiperaktivite bozukluğu hakkındaki inançları. *Van Tıp Dergisi*, 22(1), 34-40.
- Tufan, A. E., & Yalıt, Y. (2009). Didaktik ve hiperaktivite bozukluğunda öğretmenler. *Psikiyatri Güncel Yaklaşımlar*, 1, 187-200.
- Tuđlu, P., & Paşin, Ö. Ö. (2010). Erişkin didaktik ve hiperaktivite bozukluğu: Nörobilim, tanılardan klinik özellikler. *Psikiyatri Güncel Yaklaşımlar*, 2(1), 75-116.
- Tucker, L.R. & Lewis, C. (1973). A reliability coefficient for maximum likelihood factor analysis. *Psychometrika*, 38(1), 1-10.

- Tunç, A. (2013). Golf sporuyapan çocukların dikkat düzeylerinin incelenmesi. Yayınlanmamış doktora tezi, Selçuk Üniversitesi Sağlık Bilimleri Enstitüsü, Konya.
- Uluđ, F. (1991). Okulda başarı: Etkili öğrenme ve ders çalışmaya yöntemleri. İstanbul: Remzi Kitabevi.
- Uskan, C. (2011). Dikkateksikliğin bozukluğu olan 8-10 yaşındaki çocukların dikkat becerilerinin geliştirilmesinde etkili bir programın etkinliğini inceleyen araştırma. Yayınlanmamış yüksek lisans tezi, Maltepe Üniversitesi, İstanbul.
- Wang, W. (2015). Factors affecting learners' attention to teacher talk in nine ESL classrooms. *Teaching English as a Second or Foreign Language*, 19(1), 1-20.
- Weimer, M. (2014). Students and attention: An interesting analysis. Retrieved from <https://www.facultyfocus.com/articles/teaching-and-learning/students-attention-interesting-analysis>
- Wilson, K., & Korn, J. (2007). Attention during lectures: Beyond ten minutes. *Teaching of Psychology*, 34, 85-89. <https://doi.org/10.1177/009862830703400202>
- Wood, R.E. & Locke, E.A. (1987). The relation of self-efficacy and grade goals to academic performance. *Educational and Psychological Measures*, 47, 1013-1024.
- Yaycı, L. (2007). İlköğretim dördüncü sınıf öğrencilerinde seçici ve odaklanma yeteneklerinin geliştirilmesinde etkili bir programın etkinliğini inceleyen araştırma. Yayınlanmamış doktora tezi, Marmara Üniversitesi Eğitim Bilimleri Enstitüsü, İstanbul.
- Yıldırım, A., & Şimşek, H. (2011). Sosyal bilimlerde nitelaraştırma yöntemleri. Ankara: Seçkin Yayıncılık.
- Yörüköđlü, A. (1986). Gençlik çağı ruhsal problemler ve eğitim sorunları. Ankara: Türkiye İş Bankası Kültür Yayınları.

## Appendix -1

### ATTENTION LEVEL QUESTIONNAIRE

	Not at all	Minimum	Maximum
Score -	0	01	02

1. To what extent would the incessant barking of dogs in the vicinity distract you if you are concentrating intensively on a problem?
2. How much would it distract your attention if an invigilator came and stood near you while you are writing an examination?

3. To what extent would the constant ringing of a telephone in another room distract your attention while you are studying?
4. To what extent is your attention disturbed if someone giggles in the class?
5. To what extent is your concentration disturbed if you are feeling cold?
6. To what extent is your concentration disturbed if you are feeling hungry?
7. To what extent is your concentration disturbed if you are feeling too warm?
8. How strongly will you react to a shrill sound if it is presented to you repeatedly?
9. How readily will you be alerted by an unfamiliar noise while you are reading a gripping story?
10. How easily will you be alerted by the sound of breaking glass amidst a high level of background noise?
11. How easily will you be aroused from your sleep by a scream close to your bedroom?
12. How strongly will you react to a loud but familiar sound while you are quietly relaxing with an interesting book?
13. How easily will you be aroused from your sleep by the sound of a car braking heavily?
14. How easily will you be alerted by an unfamiliar sound while you are reading and it is absolutely quiet?
15. How strongly will you react to a shrill sound if you know exactly when it will be activated?
16. To what extent is your ability to concentrate facilitated by change and variety in a lecture?
17. To what extent does humor in a lecture facilitate your concentration?
18. How strongly will you react to a shrill sound if it is accidentally activated?
19. To what extent does hostility on the part of a lecturer inhibit (disturb) your ability to concentrate?
20. To what extent does regular rest pauses facilitate your ability to concentrate?



# BRAIN, MIND AND NEUROECONOMICS

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## ***Abstract***

*Has economics an unconscious base? Sigmund Freud was one of the greatest intellectual figures of the 20<sup>th</sup> century, an Austrian neurological doctor of Jewish origin. Much of his work remains, to this day, highly controversial, where some point to him as a genius, while others highlight his alleged lack of scientific seriousness. Freud tries to give an explanation to the way mind operates, proposing a structure divided into three parts: the id, the ego and the superego. The Freudian theory covers several aspects of human psychic functioning, with a high preponderance the Austrian doctor gave to two points: the unconscious and the sensation of pleasure, repressed or not, in the interpretation of human comportment. Let's rescue the following paragraphs of Freud: The ID represents the primal impulses and constitutes the engine of human thought and comportment, motivation and our most primitive gratification desires. The SUPEREGO is the part that counteracts the id, representing moral and ethical thoughts. The EGO remains between them, and acts mediating between our primitive needs and our ethical and moral beliefs.*

**Key Words: Brain, Mind and Neuroeconomics**

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## INTRODUCTION

*“The unconscious is the largest circle that includes within itself the smallest circle of the conscious, all conscious has its preliminary passage in the unconscious, while the unconscious can stop with this step and still claim full value as a psychic activity. The unconscious of a human being can react to that of another without going through the conscious.”*

Consumer Neuroscience today teaches (via neuroimaging techniques not available in Freud’s time) that we do not know at all why we choose what we buy. The decision would be taken, to a large extent, below the threshold of consciousness, where our most instinctive biology and our most emotional parts, the Freud’s ID, sharpen. The ID would elucidate the interest in the product, the intention to purchase and the loyalty to the brand. These elements correspond to the construction, induced by the promotional campaigns, of desires and brand loyalty. Undoubtedly, the Freud’s postulates 100 years ago are not at all far from these modern findings. The mechanism would work, at the ID, in the following way: certain sensory stimuli (induced by large corporations) activate deep areas of our brain. The reward system (limbic and subconscious), especially the nucleus accumbens and ventral striatum, are put into action and drives to seek food, sex and safety, the three basic pillars of human survival.

Brands, creations of large corporations to induce, seek to activate brain areas that regulate the sense of belonging, making us part of a group, a tribe, a community. All this, together with the natural tendency to imitate and / or empathize with everything that surrounds us (mirror neurons), leads us to consume much less rationally than we believe, pulling down the dogma of free choice, the sovereignty of the consumer. Therefore, the Marketing of Emotions tries to strongly exploit the Freudian concept of the ID - the most primitive and hidden instincts of the human being, to create value and, ultimately, benefits. Today it seems as a strong resurrection of Freud’s ideas, at least under the Consumer Neuroscience field<sup>1</sup>.

## DOPAMINE

Dopamine area is considered as ‘pleasure center’, since it regulates motivation and desire and causes us to repeat compartments that provide us with benefits or pleasure. It is released with both pleasant and unpleasant stimuli, causing us to demand more of something, or to avoid them if the result is unpleasant. It is very studied also in the case of addictions. That is, we live clearly today in a world where, thanks to Neuromarketing, corporations are learning to find product mixes that give maximum sensory enjoyment to the consumer (visual, tactile, auditory enjoyment, etc.), generating a true Freudian Economy, in the sense of enjoyment and pleasure, not repressed this time. The cerebral reward system, around the ventral striatum and the nucleus accumbens (limbic system), where the neurotransmitter king is dopamine, is key in this process. It turns out that this neurotransmitter influences the sensation of pleasure in the brain, and therefore, shapes the tastes and preferences of consumers. Its secretion increases during pleasant situations and stimulates one to look for that activity, occupation or pleasant goods and services.

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<sup>1</sup><http://discovermagazine.com/2014/april/14-the-second-coming-of-sigmund-freud>

Its objective is clear: to make us want to repeat one or more comportments, as a way to assure existence. For example, the pleasant sensation we feel when having sex or eating something delicious, make us want to repeat the action, ensuring the survival of the species through the reproduction and / or consumption of food. That is to say, for Economics, dopamine is of vital importance, being one of the main responsible for modeling the consumer's preference curves, and the whole valuation-pricing system of the economy. Neuroeconomics shows today that the unconscious basis of comportment, highlighted by Freud, connected to the dopamine centers of pleasure or cerebral reward, are not far from the economic reality, and today large corporations are designing real experiences of pleasure for its consumers, generating a truly Freudian paradise of high added value for companies, which at some point will lead governments to assess how much danger they represent in terms of purchase addictions, but that today represent great profits for companies.

## **SOME ANOMALIES**

In 1952, a few years after the publication of the Von Neumann and Morgenstern expected utility theory, a meeting was held in Paris to discuss risk economics. Many of the most renowned economists of the time were present. Among the American guests were futures Nobel laureates Paul Samuelson, Kenneth Arrow and Milton Friedman, as well as the illustrious statistician Jimmie Savage. One of the organizers of the Paris meeting was Maurice Allais, who a few years later would also receive the Nobel Prize. Allais set out to show that his guests were susceptible to a 'certainty effect', and that, therefore, they violated the theory of expected utility and the axioms of rational choice in which that theory rested. Allais's paradox was later developed by Maurice Allais in his book *'Le Comportement de L'homme Rationnel Devant le Risque: Critique des Postulats et Axiomes de L'école Américaine'*, published in 1953.

In the first bet the least risky option is preferable to a higher expected utility, while in the second bet a higher profit is preferable to a less risky option. That ends up being the paradox, based on the fact that in financial risk or betting choices, although people generally prefer certainty to uncertainty, if the bet is presented differently, they will prefer the uncertainty that was previously rejected. As Allais had anticipated, the well-educated participants in the meeting did not notice that their preferences violated utility theory until the moment they were reminded that the meeting was about to conclude. Allais demonstrated that the most outstanding decision theorists around the world had preferences that were inconsistent with their own concept of rationality. Apparently, he believed that his audience, persuaded, would abandon the approach that he somewhat disdainfully labeled 'American school' and adopt its alternative logic of the election he had developed.

However, Allais was going to suffer great disappointment. The majority of economists, little fans to the theory of the decision, ignored the problem of Allais. As often happens when a theory that has been widely accepted and considered useful is challenged, they saw the problem as an anomaly and continued to use the theory of expected utility as if nothing had happened. On the other hand, the decision theorists (a group we can find statisticians, economists, philosophers and psychologists) took Allais' challenge very seriously. When

Amos Tversky and Daniel Kahneman began their work, one of our first goals was to find a satisfactory psychological explanation of Allais' paradox.

Most decision theorists maintained their belief in human rationality and tried to twist the rules of rational choice to allow this pattern. For years there have been multiple attempts to find a plausible justification for the effect of certainty, but none has been convincing. Amos Tversky was little patient with these efforts; he called on theorists who tried to rationalize the violations of the utility theory 'lawyers of confusion', since together with Kahneman they went in a different direction. They maintained the theory of utility as a logic of rational choice, but abandoned the idea that humans are perfectly rational in their choices. They set out to develop a psychological theory that would describe the choices people make regardless of whether they are rational or not. In the perspective theory (prospects), the decision values are not identical to the values of the probabilities.

Fortunately, and thanks to all these strong criticisms over the last 50 years, there is now growing curiosity about Neuroeconomics, Comportmental Economics and other 'rebellious' branches towards the neoclassical status quo, although still with uncertain credulity about what can change important aspects of traditional economic theory, the neoclassical. It happens that the tradition in economic science of ignoring neuropsychological regularities in making assumptions, both in the micro and macro models, is so strongly rooted-and in fact has proven to be, to some extent, successful, that to know more about the brain and of its underlying neuropsychology seems to be unnecessary for a few colleagues. And it is likely that economists continue a few years more hesitant to give importance to the new neuro findings, beyond the curiosity that they show today, and that they have also shown with Comportmental Economics; but nevertheless, it is difficult to believe that certain neuroscientific regularities are going to be ignored for a long time, especially those that help explain better certain anomalies that have been discussed for years in our discipline.

Mention some of these anomalies, for example, in order to illustrate possible contributions of Neuroeconomics to solve them. They argue Camerer, Loewestein and Prelec<sup>2</sup>, that in many areas of economics there are basic or variable constructs that can be usefully thought as neural processes, and in this way, studied using Neuroimaging, Trasncranean Magnetic Stimulation and other related tools (these tools have already been mentioned in a previous chapter). For example, let's take the field of finance, where millions of daily stochastic observations are made in markets, but despite such statistical access, and after decades of arduous academic research, there is still little agreement on basic issues such as why prices of financial stocks are usually so volatile, based on changing risk perceptions. Perhaps knowing a little more about the neural mechanisms that underlie the assessment of risks by human beings, biases and other human 'fragilities' can help explain these theoretical riddles better.

Continuing with the enumeration of anomalies in economic theory, let us now turn to labor markets, where a major question is still why wages are rigid to the downside. It is generally said that companies are afraid of

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<sup>2</sup> *Camerer, Loewestein and Prelec (2005); Neuroeconomics: How Neuroscience Can Inform Economics; Journal of Economics Literature, Vol. XLIII, N°1.*



such casualties because they want to keep high the ‘morale of the workers’; and that paying a high salary also induces effort. But probably, this ‘workers’ moral’ is not sensitive only to salary levels, but also depends on the feelings of employees towards their employers, and also can be very sensitive to recent experience, to the opinion of other workers, whether the salary cuts are procedurally fair, among others. And there are no reasons why these aspects cannot be described as neural processes and studied in this way, hand in hand with Neuroeconomics.

Also, within the current theoretical base of economics, there would be an important series of anomalies in terms of intertemporal choices. In the United States, Camerer, Loewenstein and Prelec mention, debt with credit cards is quite high at present (about US \$ 5,000 average per family) and, as a consequence, a large number of personal bankruptcies are declared annually. There is also the case of low-calorie food, which is cheap and easier to obtain than ever before, but spending on diets and treatments for obesity (no cheap at all) is growing more and more. Surely, understanding how brain mechanisms process reward for what we consume, or how they produce compulsion (shopping, food, etc.), could help explain these facts and shape effective policies on the subject, since analysis based on traditional economic theory (hyper-rationalist) do not fit too much.

But the empirical findings of alleged anomalies crop up everywhere. Let’s see additional examples, in this case from the work of the Peruvian economist Ernesto López, which is more based on Comportmental Economics than on Neuroeconomics, but illustrates the current theory-practice disparity in economics with eloquent examples<sup>3</sup>. For example, let’s go back to the field of finance and consider investor overconfidence. In theory, rational investors are expected to make periodic contributions and withdrawals from their investment portfolios, which try to keep them balanced in terms of the profitability-risk ratio and carry out some transactions for tax purposes. However, it is difficult that these legitimate needs of the rational investor can justify the high volumes of transactions registered in stock exchanges throughout the world. In a very interesting work, Barber and Odean<sup>4</sup>, empirically evaluated the comportment of a sample of 35,000 investors from the United States and came to the conclusion that:

- The volume of transactions was excessive compared to what was recommended and,
- As a consequence of this comportment, agents that carried out the most transactions, in general, obtained worse results than the market average.

Something else: in the same study, investors were classified by sex and it was found that males (who, moreover, are overrepresented in the financial sector worldwide) made 45% more transactions than women

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<sup>3</sup> López, Ernesto, ‘We all have our quarter of an hour: Behavioral Economics, Neuroeconomics and its implications for consumer protection’, mimeo, year 2005, INDECOPI, p. 114-116.

<sup>4</sup> BARBER, B. and T. ODEAN (2001). ‘Boys Will Be Boys: Gender, Overconfidence and Common Stock Investment’, *The Quarterly Journal of Economics*.

and obtained lower net profits by approximately one percentage point, a statistically significant margin. What explanation can be given to these results? In these cases we speak of overconfidence, which consists of the conviction of an agent, that the accuracy of his knowledge about the value of an action is superior to that of the market and that is reflected in the current price.

In agreement with the empirical findings, psychological studies show an excess of confidence in men with greater intensity than women, especially in what refers to tasks that are perceived as ‘masculine’ -among which finance is counted- and in those situations in which the feedback information is non-existent or ambiguous (again, this is the case of finance). So, even when both men and women show signs of overconfidence, the excess of confidence of the ‘macho’ in an activity that assumes as ‘his domain’ leads him to invest in excess and to obtain worse results than women. That is, again, the neoclassical maximizing cost-benefit calculation seems to fail, and what is worse, we are talking about a large sample of investors, not isolated cases.

Another interesting example is related to household savings. In effect, the theory of the life cycle, widely accepted in the traditional academic world, predicts that people will save during the most productive periods of their lives and will get into debt or consume their savings during the years of lower income. Clearly, this prediction is not supported empirically. On the contrary, it is appreciated that the consumption of people is very closely related to their income and that, in many cases, the consumption of individuals falls drastically when they go to retirement, simply because they do not have enough savings to ‘soften’ their consuming patterns. An analysis conducted for the United States shows that many middle and lower income families simply do not have the capacity to save and, therefore, do not save. And if this happens in the United States, surely similar studies in Latin American countries would lead to results, similar or probably worse.

We can also give as an example the case of those markets characterized by the use of veiled information (hidden): it is verified that there are several markets where companies choose to hide information from consumers. Take as an example bank, which spend large amounts on advertising to express the virtues of their services, but do not sufficiently highlight the various costs that the consumer must assume, such as commissions and expenses of various kinds. In this case, although banks could compete based on these charges (as indicated by conventional economic theory), they decide to hide them, in such a way that most consumers take a long time to understand the cost structure of services associated with their bank accounts. And similarly, in the printer market manufacturers compete intensively for the cost of printing equipment, but they do not compete with respect to the main cost associated with having a printer, namely, ink cartridges only compatible with one type of equipment, that can end up costing ten times the value of the equipment throughout its useful life. As already mentioned, in these cases, conventional theory would imply that this concealment of information would end up affecting the agent responsible for it, since the veiled information - which is probably not favorable to consumers - would lead to the ‘rational consumers’ discover the information or, at least, establish the conjecture that hidden prices must be high prices and, consequently, be directed towards those suppliers that do not hide information. In balance, all suppliers would reveal the full information relevant to consumers.

However, the results of the analysis show that the existence of ‘myopic’ consumers leads to the emergence and permanence of information hiding compartments by suppliers, a situation that would configure a market equilibrium in which a part of the information is veiled. These results are consistent with other research that show that consumers give more weight to the sale price of an electrical device than to the cost of the associated electricity consumption during the product’s useful life, or that reveal that, in the case of purchases over the Internet, the consumers pay more attention to direct costs than to shipping costs. Through all these eloquent examples, we have analyzed just a few of all the anomalies that the traditional, hyper-rational theory, cannot explain today, and that ‘give rise’ to the fact that Neuroeconomics (and also Comportmental Economics) can help to overcome them, with results so far promising. Next, we will analyze more in detail specific findings that different research teams in Neuroeconomics are currently obtaining around the world.

## **ECONOMIC BRAIN**

In a classic neuroeconomic papers, *The Neural Basis of Financial Risk Taking*, Kuhnen and Knutson<sup>5</sup> tell us that financial investors systematically deviate from rationality when making their portfolio decisions, and in this way, in their study, they try to identify neural mechanisms responsible for such anomalies. Using fMRI (neuroimaging), the authors examined whether, by anticipating investors’ neural activity (i.e. by seeing what goes on inside their brain during decision making), optimal and suboptimal financial decisions can be predicted. They characterized two types of deviations with respect to the optimal investment decision (neoclassical):

- Risk search errors, and
- Risk aversion errors.

As for the concrete results, it was found that activation of the nucleus accumbens (eminently emotional area of the brain, activated when the person has a marked preference for something) preceded both risky choices and risk-seeking errors, while activation of the anterior insula (part of the emotional brain, center of disgust-displeasure) preceded choices without risk and risk aversion errors. These findings suggest that:

- Different neural circuits, linked to anticipatory effects, promote different types of financial decisions, and
- That excessive activation of these circuits can lead to investment errors (risk and search aversion).

In this way, they conclude that taking into account anticipatory neural mechanisms can add predictive power to the rational decision model of neoclassical economics, which evidently ‘remains in shame’ in the face of empirical evidence.

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<sup>5</sup> Kuhnen, C. and Knutson, B. (2005), ‘*The Neural Basis of Financial Risk Taking*’, *Neuron*. September.

## RISK AND NEUROECONOMICS

People react to risks at two different levels. On the one hand, people try to assess the objective level of risk that different scenarios have. But on the other hand, people also react - in situations with a certain degree of risk and uncertainty - on an emotional level, and such emotional reactions can greatly affect their comportment. The existence in human beings of separate systems for the cognitive and the affective, which respond differently to the risks, is more noticeable when the two systems collide. People often seem to be 'two minds' (one deliberative and one more visceral) when facing situations with risk: for example when we have to invite someone to leave, or speak before a certain number of people, or take an important examination, our deliberative mind uses various tactics to propel us to take risks, which perhaps our visceral (emotional, non-deliberative) mind would prefer to avoid. Perhaps the most dramatic illustration of the separation of visceral reactions and cognitive / rational evaluations is found in the various degrees of phobias that people suffer: what distinguishes a phobia is the impossibility of facing a risk that one recognizes -objectively- be little dangerous (move by elevator, by an escalator, to name some of the most scandalous). Moreover, the fact that we humans spend some money on drugs and / or therapies to overcome our phobias is a clear sign that our deliberative and visceral systems are not in mutual peace usually.

However, today there is much that is known about the neural processes underlying the emotional / affective responses to risks. Most of the risk-averse comportments are caused by fear responses / fear of risks, where this fear seems to originate in the region called the amygdala (the center of fear, located in the emotional part of our brain). The amygdala constantly monitors new stimuli that indicate potential threat and responds to inputs from both automatic and controlled processes in our brain. However, the amygdala also receives stimuli from the cerebral cortex (the most rational part of the brain), which can moderate or even eliminate the emotional response.

The decision making under risk and uncertainty, as for example the case of intertemporal elections, adequately illustrate both the collaboration and the competition between the emotional and rational systems that exist within us. The case of the difference in risk taking between people with brain damage in the pre-frontal zone (which produces a disconnection between the emotional and rational systems) and normal people is much cited; the former always tend to make decisions that are much riskier than the latter. And while clearly, having pre-frontal damage to the brain in general decreases the quality of our decision-making, there are particular situations in which people with brain damage such as the above can make higher decisions than normal people, for example before very risky scenarios where normal people are usually paralyzed.

The evidence from Neurosciences also substantiates the distinction between risk (known probability) and Knightian uncertainty (ambiguity). Different studies with neuroimaging show that different degrees of risk and

uncertainty activate different areas of the brain. For example Ming Hsu and others<sup>6</sup> found greater activation of the frontal insula and the amygdala (both eminently emotional zones) when people faced ambiguous choices (uncertainty) compared to risky ones. Again, it can be seen that Neurosciences, and specifically, a consideration of emotional and automatic processes - both long forgotten by economists in dominant economic models- could potentially lead an important line of research and theory, argue Camerer, Loewenstein and Prelec in his aforementioned paper<sup>7</sup>. And they add that, if the current theory continues failing to incorporate the affective dimensions of risk, it will be unable to shed light on such important phenomena as the ups and downs in the stock markets, the betting markets and the vicissitudes of public responses to threats as diverse as terrorism and global warming, to name just a few important issues.

## NEUROECONOMICS AND GAME'S THEORY

Game theory is an area of applied mathematics that uses models to study interactions in formalized incentive structures (so-called games) and carry out decision processes. Their researchers study the optimal strategies as well as the predicted and observed comportment of individuals in games. Apparently different types of interaction may; in fact, present similar incentive structures and, therefore, jointly represent the same game.

While economics was one of its first applications (especially for oligopolistic markets), game theory today is used in many fields, from biology to philosophy. It experienced a substantial growth and was formalized for the first time from the works of John von Neumann and Oskar Morgestern, before and during the Cold War, mainly due to its application to military strategy. Since the seventies, game theory has been applied to animal comportment, including the development of species by natural selection. In the wake of games like the Prisoner's Dilemma, in which widespread egoism hurts the players, game theory has been used in political science, ethics and philosophy. Finally, it has also attracted the attention of computer researchers, using artificial intelligence and cybernetics. But punctually in the field of economics, Neurosciences in general and Neuroeconomics in particular are already well equipped to explore the main assumptions upon which the predictions of game theory rest. These assumptions are:

- Players have appropriate beliefs about what others are going to do,
- Have no emotions or concerns about what others earn,
- Plan forward,
- Learn from experience.

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<sup>6</sup> Hsu, Ming; Camerer, Colin and others; 2005, 'Ambiguity Aversion in the Brain: FMRI and Lesion Patient Evidence.', Caltech Working Paper.

<sup>7</sup> Camerer, C., Loewenstein, G. and Prelec, D. (2005), 'Neuroeconomics: How Neuroscience can inform Economics', *Journal of Economic Literature*. Vol. XLIII. N° 1.

In strategic interactions (games), knowing how other people think, and also knowing how other people think you think, is critical in predicting other people's comportment. Nowadays, many neuroscientists think that in the human brain there is an area specialized in 'mind reading' (also called Theory of Mind), probably in the pre-frontal zone of our brain, known as area 10 of Brodmann, which generates reasoning about what people who interact with us probably think and then do. In fact, autism is believed to imply a deficit in this area and related circuits. People with autism often have problems imagining what other people think and believe, and therefore are driven to have abnormal comportments for the common people.

McCabe and others<sup>8</sup> used neuroimaging to measure brain activity when different people played games involving trust, cooperation, rewards and punishments. They found that those players who cooperated showed significant activation in the aforementioned Brodmann area 10 and in the thalamus. On the contrary, those who cooperated little did not show systematic activation in those areas.

Also, interesting is the research by Tania Singer and others<sup>9</sup>, who reported an important link between reward and comportment in certain games. These researchers played the participants of their study, repeated games of the type 'prisoner's dilemma', where some players, while they were scanned, faced a series of opponents. First, only the scanned participants were informed that some of their opponents would cooperate intentionally while others would cooperate, but unintentionally. Subsequently - also only the scanned ones - they were shown the faces of those against whom they had played. The faces of the intentional cooperators activated the insula, the amygdala and areas of the ventral striatum, among others. And since striatum is a brain area related to rewards, activations in this region meant that simply seeing the face of people who intentionally cooperated with one is retributive.

In an interesting work on the relationship between Neuroeconomics and Theory of Games, the Argentine economist Alfredo Navarro<sup>10</sup> tells us that, apart from the importance that Neurosciences have for Economics -in particular to redefine the rationality hypothesis-, it is also important to keep in mind that there is a mechanism to export economic methodologies to neuroscience and biology, giving a new perspective to the theory of evolution and allowing analyzing the reciprocal comportment of living beings, where Game Theory plays a very important role. That is, according to this vision, there would be a round trip: Neurosciences impacting Economics, which gives rise to Neuroeconomics (the object of analysis of this work), but also, and this is the novelty, Economics impacting on Neurosciences That is, a soft science impacting a hard science. Let's see how this is. In what follows of this section we will make a review of the work of the aforementioned Navarro, which in turn is based on the very interesting work of the neurobiologist Paul Glimcher<sup>11</sup>, where this round trip between Economics, Neurosciences and Biology is analyzed.

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<sup>8</sup> McCabe, K., Houser, D., Ryan, L., Smith, V. and Trouard, T. (2001) 'A functional imaging study of cooperation in two person reciprocal exchange'. *Proceedings of the National Academy of Sciences of the United States of America*, [www.pnas.org/cgi/doi/10.1073/pnas.211415698](http://www.pnas.org/cgi/doi/10.1073/pnas.211415698)

<sup>9</sup> Singer, Tania, Kiebel, Stefan and others, 2004, 'Brain Responses to the Acquired Moral Status of Faces', *Neuron*, 41 (4): 653-62.

<sup>10</sup> Alfredo Navarro, *Neuroeconomics and Game Theory. Methodological Implications*, mimeo (2007). The author is a Full Member of the National Academy of Economic Sciences.

<sup>11</sup> Glimcher, P. (2003), *Decisions, Uncertainty and the Brain. The Science of Neuroeconomics*, Cambridge, Mass.: The MIT Press.

Paul Glimcher, who comes from the field of medicine, not economics, in a recent work entitled: *Decisions, Uncertainty and the Brain. The Science of Neuroeconomics*, analyzes the comportment of living beings based on their effect on other living beings and of these on the first, trying to establish a new paradigm for a better interpretation of the comportment of living beings in general and of humans in particular. Glimcher, after reviewing the ideas about the nature of human comportment of Hippocrates, Galen, Harvey, Bacon and Galileo among others, considers Descartes (1596-1650) as the founder of neuroscience. Divide human comportment into two types, the simple and the complex. The first corresponds to the responses to the impulses of the environment, where there is no free will, as when we perceive the heat of a flame near one hand and quickly remove it. This was revolutionary, because no one before had seriously argued that a phenomenon as complex as comportment could be seen as the product of pure physical interactions in physiological systems. But, the complex comportments have as characteristic that they are at the mercy of the soul, which supposed lodged in the pineal gland, and that can decide freely according to the circumstances. While the first type of comportment is determined, as is the movement of the planets, whose trajectory we can foresee exactly, it does not occur as well as the second, where free will retains all its validity.

The idea that human comportment, at least that which we call simple, was perfectly predictable took more force at the end of the 18th century with the development of the mathematics of Leibnitz, Newton, Lagrange and Laplace, which allow to predict the future position of the planets every time with better precision. Why then not analyze the comportment of living beings with the same purpose of predicting their comportment? Charles Scott Sherrington, an Oxford neurophysiologist, at the beginning of the last century laid the foundations for the physiological study of reflexes, through a neat description of the processes, but still maintaining the Cartesian distinction between simple, deterministic comportments and complex comportments, not deterministic. Subsequently Pavlov generalized the analysis of reflexes to the totality of human comportment and therefore also generalized determinism to all human comportment.

Several reactions against the Sherrington paradigm took place, especially that of Marr, who in the seventies proposed a different hypothesis: comportments should be analyzed in terms of the organism's objective, which is basically to maximize their 'inclusive fitness', meaning that rate at which genes are propagated. But to this must be added the fact that living organisms do not have a full knowledge of the world that surrounds them, for which reason they find themselves in a situation of relative uncertainty. The deterministic mathematics, which was the basis of the theories of reflexes, become insufficient, and it is necessary to resort to the mathematics of the uncertain, that is, to the theory of probabilities, since we rarely have a total knowledge of the circumstances around us. Although the theory of probabilities was born in the eighteenth century with Pascal and Bayes, three centuries pass until it is incorporated into human comportment, both in economics and in neurobiology.

In this way Glimcher, through his historical analysis, presents a way to analyze the comportment of organisms from two different perspectives: simple comportments, in the Cartesian division, can be solved by applying classical economic theory, because either there is nothing random, or the uncertain is due to our lack of

knowledge, so we must use the calculation of probabilities. But in other circumstances -complex compartments-, we must resort to the theory of games, to analyze compartments that are unpredictable, not because epistemologically we do not reach knowledge to explain the causes of compartment, as Pavlov maintained, but because they are, necessarily, intrinsically random.

This is a very striking statement for two reasons, firstly because it implies accepting that economic theory explains not only human compartment, but the compartment of all beings belonging to the animal kingdom, and not only economic compartment, but all kinds of compartment, and in second term because, to this affirmation, it is not made by an economist, but by a neurobiologist. According to Pavlov and Laplace, the uncertainty comes from the lack of knowledge of who decides, while what Glimcher says is that the uncertainty comes from outside, from the outside world to who decides, and that the latter must necessarily make a random decision if you do not want your opponent to predict your compartment and gain an advantage from it. In this way, following the reasoning of the neurobiologist Glimcher, the analysis of the compartment of living organisms can be understood much more fully if we do so from the perspective of game theory, which we remember begins to be applied to the analysis of economic problems with the appearance of the developments of von Neumann and Morgenstern, in 1944, where non-cooperative zero-sum games are analyzed, but more especially after the Nash developments, which analyzes the determination of equilibrium in more generalized situations, such as games cooperatives and non-zero sum. The analysis of the compartment of organisms that have brains allows Glimcher to argue that there are two types of uncertainty: one that we can call epistemological, which is originated in the lack of information and knowledge of the agent, and that could allow a mechanistic interpretation of the compartment, and another that derives from the need to follow a random compartment.

Glimcher reaches its conclusion<sup>12</sup>, in the sense that:

*We should begin to employ probabilistically based approaches to understand how the brain takes information from the outside world and uses that information in concert with stored representations of the structure of the world to achieve defined computational goals. It has been my central thesis that this goal can be best achieved through the synthesis of economics, biology and neuroscience. The central challenge facing neural scientist is to link compartment and brain. Economics was designed to be just that, a mathematical corpus which attempts to describe how any goal should be achieved in an uncertain world like the one we inhabit. Compartmental ecologist recognizes this; their field is focused on the study of how animals approximate economically defined goals with regard to the maximization of inclusive fitness. Experimental economics recognize this; their field is focused on the study of how economic compartment approximate economically defined goals with regard to the maximization of utility. Neurobiologist are also beginning to recognize this, and today it seems natural to assume that some*

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<sup>12</sup> Glimcher (2003), 'Decisions, Uncertainty and the Brain. The Science of Neuroeconomics', Cambridge, Massachussets: The MIT Press, p. 321.



*form of Neuroeconomics will play a critical role in explaining how the brain of humans and other animals actually solve the maximization problems this two other disciplines have identified.*

In short, Alfredo Navarro, in his great review on the work of Glimcher, illustrates us about something that should fill us with pride to who we come from a soft science such as economics: we are in a position to export analytical tools to tougher sciences such as neurobiology, since it has been discovered that, for example, Game Theory, is a very useful resource to understand the comportment of a large part of living beings, and not only of companies in their economic interactions (such as the theory of the oligopoly).

## **ECONOMIC MIND OF OTHERS**

In a truly leading study, Sanfey, Rilling, Cohen and others<sup>13</sup>, tried to determine in two different games (Prisoner's Dilemma and Ultimatum), if people who interact socially, receiving feedbacks from other human beings, and intuiting how these feedbacks could be used to infer how our brain works, could predict what others think. Recall that in game theory, one of the most important tasks for participants is to act strategically from what others do or plan to do, and this implies a key role of the so-called Theory of Mind, i.e. those circuits' brain cells that are activated when trying to predict the comportment of our interlocutors.

The so-called 'Theory of Mind' studies our social brain. One of the distinctive attributes of human social cognition is our propensity to build models of other minds, that is, to make inferences about the mental states of others. This human capacity has become known in Neurosciences as a theory of the mind and many neuroimaging studies have attempted to elucidate the neural substrates of this natural human ability. Previous studies to the here detailed have already shown the main activable cerebral areas (some more rational, others more emotional) in this type of action.

The brains of the participants in this experiment (led by the aforementioned Sanfey) were scanned using fMRI (functional magnetic resonance) while playing two different games: Ultimatum Game (UG) and Prisoner's Dilemma (PDG), both in front of other humans and in front of computer screens. Comparing both games, a striking degree of coincidence was observed between the brain areas that were activated, including both areas already accepted as specific to the Theory of Mind (mentioned above), as well as several other brain areas that had not been previously reported, and that may be related to the immersion of participants in real social interactions. And while the interactions of humans with computers also achieved activation in some of the same areas activated by games between only humans, in the latter case these activations were more notorious and defined.

In both games, the participants witnessed a decision on the part of their partners, in the UG they observed an offer of money that another made them, either fair or unfair, and on which they had to react and in the PDG

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<sup>13</sup> Sanfey, Rilling, Cohen and others, *The Neural Correlates of Theory of Mind within Interpersonal Interactions*, in *Science Direct Magazine*, 2004.

they observe an election what another did, whether cooperative or selfish, and about which they also had to respond. That is, before deciding the answer to take, in both cases, they witnessed something that revealed the partner's intentions. What brain areas would be activated in both cases? That was the central core of the study.

If in the previous study the activated brain areas were analyzed when responding to a fair or unfair offer, in this new study<sup>14</sup> the previous moment was analyzed, that is to say, the activable brain areas when a proposal was recently known, just or unjust, and it is deliberating what to do, and at the same time, inferring what the other person is like and his true intentions. Going to the concrete results of the study, for both games (UG and PDG), activation was detected in two of the four classic areas of the Theory of Mind: anterior paracingular cortex and posterior superior temporal sulcus (STS later). Both areas were activated in interactions with both humans and computers, but showed stronger responses to human partners in both games, that is, respondent participants rejected unfair offers from humans to a greater extent than from computers in the UG and cooperated more often with humans than with computers in the PDG.

Following with the results of the study -where we remember there is social immersion of the participants-, brain areas were also found that were activated that had not been noticed in previous studies -without social interaction. These are:

- Precuneus
- Upper temporal sulcus (sts) medium
- An area that includes hypothalamus, middle brain and thalamus
- Left hippocampus

Both the activation of the posterior cingulate and the hypothalamus can be related to emotional issues when receiving responses from humans, who obviously have less presence when doing studies without human interaction. The activation of the average STS, normally attributable to the biographical memory, may be related to the fact that the participants are learning new information about other people -the ones who make the offers-. Finally, the activation of the hippocampus could be related to the activity of decoding comportments and intentions of others: are they just or unjust? Are they cooperative or non-cooperative?

In summary, and taking into account that the paper leaves perhaps more questions than answers, the brain areas that can be activated with respect to the theory of the mind (many of them more emotional than rational, without a doubt), would be at least:

- The Anterior Paracingular Cortex
- Upper Posterior Temporal Sulcus (Posterior Sts)

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<sup>14</sup> Sanfey et al, *The Neural Basis of Economic Decision Making in the Ultimatum Game*, in *Science Magazine*, June 2003.

- The Posterior Cingulate / Precuneus
- The Average Sts
- An Area That Includes Hypothalamus, Middle Brain And Thalamus
- The left hippocampus

In other landmark study in Neuroeconomics, Sanfey, Rilling, Cohen and others<sup>15</sup>, applied fMRI (functional magnetic resonance) about nineteen players of the Ultimatum Game, to investigate the neuro fundamentals of the cognitive and emotional processes put into play when making economic decisions. The aforementioned Ultimatum Game (in this case a single shot -one shot game-) consists of two people trying to share a certain sum of money: one player proposes a division and the other can accept it or not.

Brain images were taken only of the players responding to the proposals (not those who formulated them), where such formulated proposals were sometimes fair and sometimes unfair. The offers considered fair (50/50 distribution of money, or half for each) were all accepted, while unfair offers (all those involving a distribution below 50/50 for the respondent) were more rejected as that increased their degree of injustice (60/40 is not the same as 80/20). And through the neuro images, it was observed that these unfair offers activated brain areas related to both the emotional (anterior insula) and the cognitive (dorsal-lateral pre-frontal cortex). And in another data that is interesting, it was also observed that the degrees of rejection of unfair offers were greater when the bidder was a human being than when it was simply the computer (who were also used in this experiment as formulators of proposals), illustrating that human beings have a superior emotional reaction to unfair offers from other humans than to the same formulated via some impersonal mechanism (computers in this case).

Another interesting finding of this work was given that, in the face of unfair offers that were later rejected, greater activation of the insula than pre-frontal cortex was observed, while the accepted offers showed the opposite, greater activation of the prefrontal cortex than insula. This situation would be reaffirming what is already known in Neurosciences: the rational / cognitive tendency of the pre-frontal cortex and the eminently emotional nature of the insula. But beware... it is not a competition in our brain between the rational and the emotional separately, but it is a performance of both together, related and complementing. Also, in another interesting finding, it was observed that the activation of the pre-frontal cortex remained constant before less or more unfair offers, perhaps representing how stable the mental representation of a monetary maximization is, while the activation of the insula scales depending on the degree of injustice of the offer.

Finally, Sanfey and other researchers also observed, in the case of unfair offers, an activation of the anterior cingulate, a cerebral area bordering the pre-frontal cortex, normally activated in situations of conflict

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<sup>15</sup> Sanfey, Rilling, Cohen and others, *The Neural Basis of Economic Decision Making in the Ultimatum Game*, in *Science Magazine*, June 2003.

between the emotional and the cognitive, such as this one experiment. In this way, we can conclude that the observed activation in the anterior insula (eminently emotional area of the brain) before unfair treatment or offerings, indicates a very important role of emotions in human decision-making processes, despite the attempt of the standard economic theory for suggesting that any sum of money offered to a person - without any cost or consideration - should be accepted, since net income is maximized. In general, all these neuroeconomic papers, combined with game's theory, suggests that the human being does not always maximize in his economic decisions, since sometimes, although the economic calculation advises one clear path, the emotional influences, making the decision apparently irrational, taking other way. But such decisions are not irrational, are just human.

## **OXYTOCIN, TRUST AND MARKET ECONOMIES**

No one can argue, surely, that trust between people is essential to strengthen human societies. Trust is necessary to make friends, form partners, families and organizations and of course play an essential role in economic exchanges and politics. In the absence of trust between people and companies, market transactions are cut, and in the absence of trust in the institutions and leaders of a country, political legitimacy is lost. Recent empirical evidence in humans has identified the role of neuroactive hormones, especially oxytocin, as a facilitator of pro-social comportment based on trust. Recent neuroeconomic experiments with humans have shown that the reception of a signal of confidence from a stranger is associated with an endogenous release of oxytocin by the brain and also that high levels of oxytocin have been strongly associated with reciprocal comportments of said signals of trust. In this work, Paul Zak and Ahlam Fakhar<sup>16</sup>, test whether the endocrinological bases of trust between humans (in small groups, that is, at the micro level) can be scaled at the country level (macro level), especially taking into account the statistics on confidence at the national level show substantial disparities (in Norway for example, 65% of respondents answered that they could trust their fellow citizens, while in Peru only 6% responded in that way).

Oxytocin (a type of neuroactive hormone we said), whom Zak calls the 'molecule of morality', is synthesized in the hypothalamus (belonging to the limbic system - eminently emotional zone of the brain) and then released into the circulatory system. In humans, certain areas of the brain associated with memory (the diagonal band of Broca and the basal nucleus of Meynert) and areas associated with emotions (hypothalamus and amygdala) present an important accumulation of oxytocin receptors, although there are receptors of oxytocin distributed throughout the brain. This distribution of oxytocin receptors in limbic areas suggests that the decision to trust others has an important emotional component, and therefore a high component of speed and low introspection when deciding. And, as both studies with animals and humans, indicate that estrogen is highly related to oxytocin levels, the authors of this work used estrogen as a proxy for oxytocin. The hypothesis to be demonstrated in this study was that people who live in societies settled in environments with high levels of oxytocin and / or estrogen are more likely to affirm that their fellow citizens are reliable, that is, to have more confidence in their peers.

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<sup>16</sup> Zak and Fakhar, *Neuroactive Hormones and Interpersonal Trust: International Evidence*, Elsevier, 2006.

Analyzing in detail the work, thirty-one variables were taken (between biological, social and environmental) associated with interpersonal trust for a sample of forty-one countries, where the authors found that two groups of variables are related to trust interpersonal at the country level: the consumption by its inhabitants of plants based on estrogens (phytoestrogens) and the existence of environmental conditions that include the presence of molecules of the estrogen type. In this way, these results provide preliminary evidence that levels of confidence at the country level may be related to the intake of neuroactive hormones by its inhabitants, via food or via the environment, mainly. They also comment Zak and Fakhar that there are more than 300 plants in the world that have been identified as phytoestrogenic. For example, phytoestrogens are found in foods such as soybeans and derivatives, rye and derivatives, rice, beans, beef and tea / mate, among others.

In summary, this paper shows that endocrinological effects can be a new explanation-independent of the usual institutional causes-for the problem of confidence differentials observed between countries, indicators directly associated with higher or lower levels of investment and economic development of each country. That is to say, this work tries to show that specific environmental / food conditions in some countries, which impact the oxytocin levels of its inhabitants, can lead to higher levels of confidence. Specifically, nations that have high per capita incomes, clean environments and consume more food with phytoestrogens have a good chance of showing high levels of generalized trust among their inhabitants, which facilitates economic transactions in general and investment levels in particular. This information, Zak and Fakhar conclude, should be useful for politicians, if they are interested in raising the levels of trust among their governed, and therefore the quality of their market systems, especially in developing countries. Also the conclusions of this work give certain rationality towards the maintenance of clean environments and towards the consumption of healthy foods.

## **LIBERTARIAN PATERNALISM**

The term 'libertarian paternalism' was coined by the aforementioned comportmental economist Richard Thaler and the jurist Cass Sunstein, in a 2003 article in the American Economic Review. The authors developed their ideas in a more extensive article at the University of Chicago Law Review that same year.

Why are there so many people who smoke a lot or are addicted to different types of drugs? Why do so many people eat junk food in excess? And more generally ... why do so many people voluntarily decide to do things that they know hurt them in the long term? Richard Thaler, the last Nobel Prize in Economics, and solid member of the 'Economics of Comportment' School, argues that the problem originates in the limited rationality of human beings. In their mental processes, argues the academic, people separate the immediate effects of an action from the aggregate and long-term effects of it, valuing them in different ways (usually more value to the present than to the future), and behaving systematically in a contrary to their own benefit. In this way, Thaler justifies the state intervention, 'libertarian paternalism' he calls, to remedy the incorrectness of people with an exacerbated 'limited rationality', giving them a nudge in the right direction. It is, without a doubt, a form of interventionism that liberal libertarians will blaspheme forever.

In any case, the intervention suggested by Thaler is much less 'interventionist' than those we are accustomed to seeing in the real policies of the day-to-day governments. Thaler argues that, given the imperfect and limited rationality of many people, small changes in the rules of initiation could encourage people to behave in the 'socially desirable' way, reducing long-term interventionism. For example, the basic rule, for him, should be the donation of organs after death; if someone did not want to donate, they could opt for it. The junk food must be in the most hidden places of the supermarkets, so that the effort of buying it is greater. If someone does not manifest their willingness to have a pension fund, it must be considered that they do want one.

In the aforementioned article, they propose that, both from the private sector and from the government, it is about influencing the comportment of people to make their life longer, healthier and better. They continue that, in proven findings of the social sciences, it has been shown that, in many cases, individuals make very bad decisions, decisions that they would not have made if they had paid attention and had had all the information, unlimited cognitive abilities and absolute self-control. And while it is paternalistic / interventionist, they justify that it is liberal / libertarian in the sense that its goal is to ensure that people are freed from many of their biases of limited rationality, to disassociate from disadvantageous agreements, if they prefer. According to them, libertarian paternalists want to facilitate people to follow their own path; they do not want to put obstacles in the way of those who wish to exercise their freedom.

## **CONCLUSION**

Thaler's critics say that his 'libertarian paternalism' is just a modern justification for state interventionism, which starts from considering people are irrational because they do not make the decisions that a certain group of people find desirable. And critics add: if people are really irrational, as Thaler says, what makes sure that those who design the rules are not? What assures us that their 'pushes', far from helping us to be better, enslave us to their tastes and appreciations, depriving us of our tastes and our appreciations?

Libertarian paternalism is a relatively weak and soft type of paternalism that does not involve interference, because the options are not blocked or eliminated, nor are they taxed in a significant way. If someone wants to smoke, eat a lot of candy, subscribe to unfavorable medical insurance or not save for retirement, libertarian paternalists do not force him to act differently, they only induce him with incentives.

Thaler and Sunstein argue that government and private companies often become 'architects of choice', because our perceptions often depend on how we organize the different options that are presented to us. The world is full of these 'architects' - parents, religious leaders, professors, doctors, etc. - who influence our choices and have the responsibility to give them shape through 'nudges', which do not limit us but can compensate for human error, if we use them correctly.

State interventionism based on ‘socially desirable patterns’ is not new, although the term ‘libertarian paternalism’ can be. The idea of inducing through ‘incentives’ (fiscal, or otherwise) certain economic comportments, which do not arise spontaneously, by limited rationality or for whatever reason, is the guide of modern economic policy for a century at least, although now it is better grounded in neuropsychological terms.

Therefore, new labels for old uses and customs of economic policy, although this time with a bias towards a more limited, more intelligent interventionism, since it is based on a deeper knowledge of human rationality, backed in Neurosciences, and not in mere philosophical speculations about the human psyche, quite deficient in many cases.

## REFERENCES

- Camerer, C., Loewenstein, G. and Prelec, D. (2005), ‘Neuroeconomics: How Neuroscience can inform Economics’, *Journal of Economic Literature*. Vol. XLIII. N° 1.
- Glimcher, P. (2003), *Decisions, Uncertainty and the Brain. The Science of Neuroeconomics*, Cambridge, Mass.: The MIT Press.
- Hsu, Ming; Camerer, Colin and others; 2005, ‘Ambiguity Aversion in the Brain: FMRI and Lesion Patient Evidence.’, Caltech Working Paper.
- Kuhnen, C. and Knutson, B. (2005), ‘The Neural Basis of Financial Risk Taking’, *Neuron*. September.
- López, Ernesto, ‘We all have our quarter of an hour: Behavioral Economics, Neuroeconomics and its implications for consumer protection’, mimeo, year 2005, INDECOPI, p. 114-116.
- McCabe, K., Houser, D., Ryan, L., Smith, V. and Trouard, T. (2001) ‘A functional imaging study of cooperation in two person reciprocal exchange’. *Proceedings of the National Academy of Sciences of the United States of America*, [www.pnas.org/cgi/doi/10.1073/pnas.211415698](http://www.pnas.org/cgi/doi/10.1073/pnas.211415698)
- Alfredo Navarro, *Neuroeconomics and Game Theory. Methodological Implications*, mimeo (2007). The author is a Full Member of the National Academy of Economic Sciences.
- Glimcher (2003), ‘Decisions, Uncertainty and the Brain. The Science of Neuroeconomics’, Cambridge, Massachussets: The MIT Press, p. 321.
- Singer, Tania, Kiebel, Stefan and others, 2004, ‘Brain Responses to the Acquired Moral Status of Faces’, *Neuron*, 41 (4): 653-62.
- Zak and Fakhar, *Neuroactive Hormones and Interpersonal Trust: International Evidence*, Elsevier, 2006.

Barber, B. and T. Odean (2001). 'Boys Will Be Boys: Gender, Overconfidence and Common Stock Investment', The Quarterly Journal of Economics.

Camerer, Loewenstein and Prelec (2005); Neuroeconomics: How Neuroscience Can Inform Economics; Journal of Economics Literature, Vol. XLIII, N°1.

Sanfey et al, The Neural Basis of Economic Decision Making in the Ultimatum Game, in Science Magazine, June 2003.

Sanfey, Rilling, Cohen and others, The Neural Basis of Economic Decision Making in the Ultimatum Game, in Science Magazine, June 2003.

Sanfey, Rilling, Cohen and others, The Neural Correlates of Theory of Mind within Interpersonal Interactions, in Science Direct Magazine, 2004.





# THE CASE OF A TEENAGER GIRL WITH CONVERSION DISORDER MIXED ASSOCIATIVE BEHAVIOUR - ROLE OF COGNITIVE BEHAVIORAL THERAPY WITH MOTIVATIONAL INTERVIEWING METHOD

**\*Dr. Shweta Tripathy**

## ***Abstract***

*This paper discusses a cognitive-behavioral therapeutic intervention combined with Motivational Interviewing method in the case of a 15- year old teenager, named Pooja hospitalized several times for conversion disorder mixed associative Identity with having pain in lower abdomen and forehead. Symptoms were different from one hospital admittance to the other, and initially included chronic vomiting, restlessness, irritability, then rebel headaches and crying, non-kinetic mutism with language regression, major walking disorders and fainting episodes. From a psychological point of view, her mother describes her as being sensitive, hyperemotional, emotionally unstable, anxious, impressionable, and loving to be the center of attention. At the age of 9yrs she complained about the sever pain in stomach and forehead for which she stopped her school. The family members took her several doctors including Gastrologist, Neurologist and all test reports were positive, the doctors explained to them. They took her also some temple where treatment on those person who suffering from evil spirits (Sankatwalas) get relief from distress. She stayed their for 9 months with her parents for treatment too. These situations were interpreted as conversion disorder with mixed dissociative behaviour based on a developing personality with sensitive and histrionic traits by psychiatric. We initiated a cognitivebehavioral combined with motivational Interviewing method. A favorable evolution was noticed with every hospitalization.*

**Key words:** *conversion disorder with dissociative behaviour, cognitive-behavioral therapy and motivational Interviewing method.*

## INTRODUCTION

Hysterical functional manifestations and hysterical personalities are characterized, as Cottraux (2003) said, by “a continuous show”, which consists of excessive emotional responses and constant attempts of attracting attention on themselves. Some traits, like reflection, self-control and systemization are little expressed, while expressiveness and exhibitionism are substantial, the world around being perceived as a “choir of admirers”.

According to Cottraux (2003), the fundamental belief of hysterical personalities is: “I have to impress the others or I am not worth anything”. In order to attain this imperative, the patient proceeds at dramatizing personal relations, has anger and crying crises and sometimes, suicidal attempts. The most important unconditioned postulates that describe hysterical personalities are: “I can’t bear to be bored”; “I want to be loved and admired”; “Only eccentric persons get attention”. The conditioned postulates and functioning rules of the same patients are: “In order to get what I desire I have to charm and amuse the others”; “I must be an interesting person at all times”; “The others won’t love me unless I’m interesting”; “If the others believe I am special, they won’t notice my deficiencies”; “If I am in the mood for something, I must do that thing, whatever it takes” (Cottraux, 2003).

According to the WHO, ICD-10 classification, the diagnosis of dissociative disorders of movements and sensations involves perturbations of motor and intentional activity and perturbations of sensations that lead to a neurological disorder, and the presence of the following features: there is no organic cause; symptoms may be correlated with a conflict situation; the patient needs special attention; the patient is hardly influenced by any kind of therapy; the displayed symptoms depend on the subject’s personal representations about his/her illness; the onset is acute, related to a psychological trauma; there is always a secondary benefit in manipulating the others and attracting attention toward himself/herself; it appears more often in young persons and may become a way of solving problems and stressful situations, representing an expression of personality; “la belle indifference” may be present; the patient may respond to psychotherapy the patient is highly suggestible, and may imitate symptoms displayed by people around him/her; manifestations may have a symbolic character (e.g. he/she paralyzes for fear of not becoming aggressive), and may be associated with a low educational level and a high level of suggestibility; the prevalence is higher in certain families that suffer from this kind of disorder, while in the general population the prevalence is 10-25%.

A significant part of children and adolescents’ hysterical symptoms are effects of emotional trauma. After the trauma they become very sensitive to the adults’ reactions. Conversion disorder in adolescents debuts by the age of 12. Individuals affected are mostly girls (2/3 of the total number of cases). The most frequent manifestations of conversion disorder at this age are: psycho-motor agitation, somnambulism, astasiaabasia, paralyzes, muscle spasms and vicious attitudes, enuresis, combined with tetany and/or epilepsy crises, as well as eating behavior disorders (Marie – Cardine & Collet, 1985). Ajuriaguerra (1971) speaks about a true hysteria epidemic in girl boarding schools, and Lebovici (1985) asserts that, at this age, conversion disorder is often mistaken for mythomania and simulation. Concerning the importance of hypnotherapy for

conversion disorder, Patris (1985) believes that this technique leads to the disappearance of a hysterical symptom, which is quickly replaced by another. For this reason, it is useful to combine cognitive-behavioral techniques and suggestive techniques.

## **Sample**

Ms. Pooja, a 15 -year-old teenager girl studied in 9th standard, Vodadara Gujarat., She was the eldest child of a Upper middle-class family and was reared up by both parents along with her one brothers. Being the eldest and only daughter, she was overprotected by her family members. Different physical illness and episodes of painful rheumatic fever since childhood made her ‘center of attention’ of the family. All members were extremely supportive whenever she showed any symptoms of physical illness. She developed a strong belief of unconditional acceptance by the family members (shared core belief: I am always loved). She was emotionally very dependent on her father. Being the eldest, she was to follow everyone else decision which made her nonassertive and non-expressive since childhood. When she was 9 years she started complaining about the lower abdomen and forehead pain, which she cant able to tolerate which leads her many time for hospitalizations, but all are in vain. Family members took her to a temple suspecting for evil spirt and she undergone for a treatment for 9 month, which lead her feel anxious, insecure and sad. These events made her confused and fearful, and as a result,her belief of unconditional acceptance by family members was disapproved. These events created fear and helplessness in her mind. She could not protest and lost the courage of expressing feelings. During that time, there was uncertainty in her study because of some complexity in the academic registration process. These issues ledher to develop some core beliefs like “I am helpless”, Nobody understands me”, “My future is dark”, and some dysfunctional assumptions like “If I protest the injustice happening to me, then I will become alone”. Because of her attention gaining problem she started complain some evil spirit or a ghost entered in my body and after that she had sever pain in lower abdomen, for-head, unconscious and restlessness. She somehow adapted to such condition but things became unbearable. She could not do anything to stop it or protest about it but screamed continuously and shouted for a long time. She then stopped talking to everyone out of sadness and after a day she found that she was unable to make any sound. Then her other physical symptoms developed. After being unable to talk for six months, which was thought to be malingering by her family members, she was taken to a hospital for her physical symptoms and the medical officer referred her to psychiatry department where she was diagnosed with conversion disorder with dissociative Identity, prescribed psychiatric medication, and was referred to clinical psychology service for CBT. Assessment The exclusive mode of assessment of this case was ‘writing’

The exclusive mode of assessment of this case was ‘writing’ which is atypical to standard CBT. Since the patient was mute she replied to all questions in writing. Clinical in-depth interview, observation, thought diary, sleep diary, BDI (21 items, self report rating inventory that measures characterize attitude and symptoms of depression ( Beck,et.al, 1961) and BAI scale consist of 21-items, each describing a common symptoms of anxiety.

The patient's baseline problems were assessed: cognitive, emotional, behavioral, physiological, sociocultural and motivational. The significant findings are as follows:

- a) Cognitive- I am guilty; I will not be able to speak anymore; I am valueless and insignificant; I will become alone; nobody believes my words; my future is uncertain.
- b) Behavioral- Avoidance of social interaction, reassurance seeking, lack of self-care, avoidance of any real-life issue.
- c) Affective- Frustration, intolerance to sympathy, panic, and fear of death, decreased confidence, and feeling confined, feeling anxious and low patience.
- d) Physiological lower abdomen pain, severe headache, smothering, throat pain, loss of appetite, burning sensation, agitation, pounding heart, recurrent sickness, Hot and discomfort in chest, tiredness, feeling choked and sickness, insomnia.
- e) Socio-environmental- lack of assertion, interpersonal relationship with mother , family members' shock caused by the patient's problems, isolation. f) Motivational inattention and disinterest in study not eager to think deeply.

The patient developed lots of Negative Automatic Thoughts (NATs) (“I will never be able to talk”, “I am a tree of sorrow”, “I can never take myself back to my previous condition”, “Nobody believes me”, “I am a person with misfortune”, “I will become alone”, “All my achievements have gone into vain”) which increased her negative and automatic feelings and behavior. After the onset of her problem, her whole family became too soft to her, and all the beating, scolding and oblique references were stopped. Besides, the patient had some secondary gains such as receiving extra attention, importance and care, written expression facility for her needs. She again became the focus of attention of the family. She started communicating through writing. These secondary gains, NATs, dysfunctional thoughts and maladaptive behaviors and the symptoms itself helped in maintaining her problems.

## **INTERVENTION PROCEDURE**

The patient's consent was taken before starting assessment. Problem assessment, intervention, and follow-up consisted of 30 sessions including both individual and family psychotherapy sessions. The sessions were designed and devised differently from conventional CBT structure with motivational interviewing. Each session consisted of weekly 90 to 100 minutes instead of standard 50 minutes from the beginning as the patient was completely mute and she had to express her words through writing. It was difficult to conduct each session at a stretch because she could be tired and sick due to her physical symptoms. The psychological conflicts and cognitive biases were identified with guided discovery during the in-depth interview. Sometimes, the patient used to bring a written description of different incidences and current situation. Agenda were set collaboratively at the beginning of each session and the whole session used to progress following the agenda.

Pretest assessment included 15 sessions. However, psychometric assessment tools were not administered at every session since patient's expression through writing made assessment process to be too slow. Then formulation was shared in 15<sup>th</sup> session and the intervention was started from 25<sup>th</sup> session. After the assessment, long-term treatment goal (Developing skills to functionally deal with real life situation) and some short term treatment goals (To be able to talk; to be assertive; to reduce anxiety related somatic symptoms) were set collaboratively with the patient. From the 25<sup>th</sup> session, which was the pick time when the patient had an internal urge of expressing her feelings, the patient's expression through writing in the therapeutic session was stopped and was encouraged to express things verbally. The therapist utilized this urge to help her utter some words for the first time in psychotherapy. Besides, after taking the patient's consent, the therapist discussed the procedure of stopping secondary gains within a family session as part of managing environmental contingency. After 25<sup>th</sup> sessions, the patient's problems were found significantly reduced by both subjective and objective ratings, and she was gradually prepared for termination. Finally, the case was terminated at the 29<sup>th</sup> session and was sent for one-month follow-up. The CBT model and applied therapeutic techniques were reviewed at the 29<sup>th</sup> session, and it made the patient realize her own contribution in recovery. This empowered her. The post-test assessment was done at the 30<sup>th</sup> session.

## **INTERVENTION TECHNIQUES:**

A number of CBT with motivational interviewing techniques were used to achieve treatment goals: Psycho education about the development of symptoms and prevalence of conversion disorder and related issues was given in 4<sup>th</sup> session. Through psychoeducation, the patient reported of realizing her problems, becoming normalized, and feeling optimistic about recovery. The Formulation was shared in the 13<sup>th</sup> session. The patient became very emotional and she was crying intensively while formulation was shared. She accepted the formulation without any objection. Secondary gain was withdrawn after consultation with the patient in 15<sup>th</sup> session after formulation sharing, which helped the patient to keep trying to make sounds and express needs verbally. It also helped her to overcome other physical, affective and motivational problems rapidly. Upon her consent, her parents were invited to a family therapy session as she was living with them. Case formulation was also shared with them and they were trained in controlling secondary gains. They were also educated about the negative effects of corporal punishment and were encouraged to stop it.

## **RESULTS AND DISCUSSION**

Progress was evident both objective and subjective rating. The pre- test and post test final scores obtained on BDI and BAI, are given in Table 1. Measures were used on regular basis . The scores show noticeable improvement in anxiety, depression, at the end of the intervention. Treatment goals were achieved within 25 sessions. The following table presents the treatment goals and the level of achievements throughout the treatment sessions: Subjective ratings of overall well-being were taken by 0 to 100 scales throughout the therapeutic sessions where 100 meant quite very good state and 0 meant quite a bad state. The patient's improvement by subjective ratings is presented in the following Table 2. So, she did take psychiatric medication, though on an irregular basis. The subjective and objective ratings provide evidence in favor of CBT and

motivational interviewing method to be effective for treating conversion disorder with mixed dissociative identity . (Figure 1).

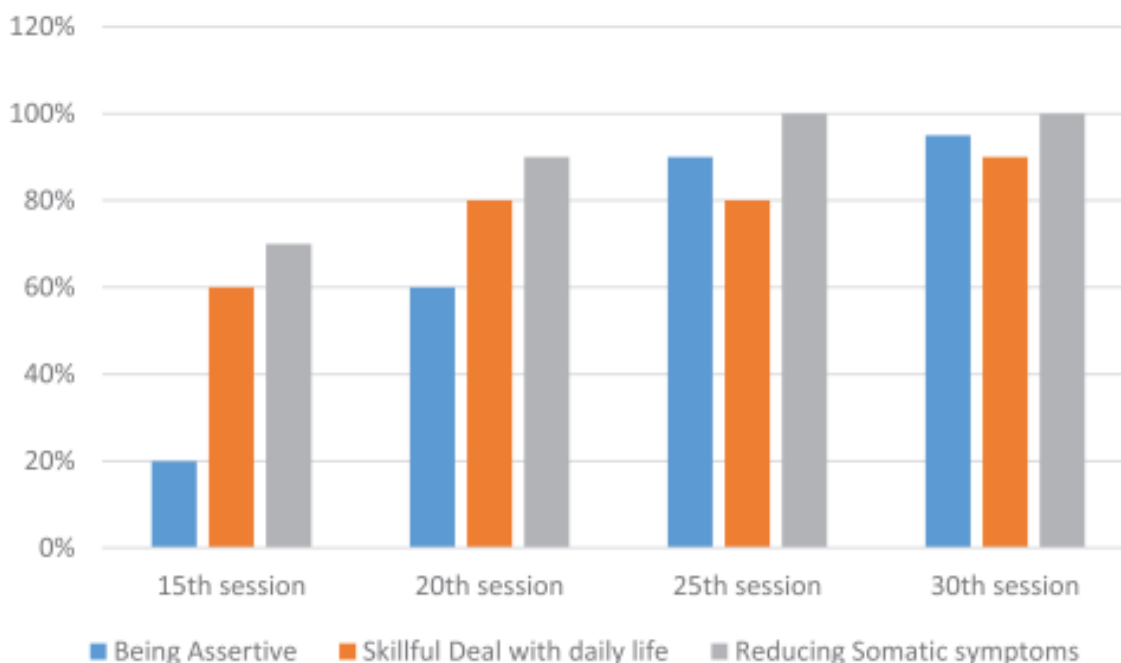
**Pretest and Post Test Scores**

Scales	Scores	Interpretation	Scores on 25 <sup>th</sup> of session	Interpretation
<b>BAI</b>	<b>36</b>	<b>Potential Concerning level of anxiety</b>	<b>15</b>	<b>Low anxiety</b>
<b>BDI</b>	<b>29</b>	<b>Moderate Clinical depression</b>	<b>11</b>	<b>Mild Mood disturbances</b>

**Table 2: Level of achievement of treatment goals (100% indicates full achievement and 0% indicates no achievement at all).**

Treatment Goal	15 <sup>th</sup> session	20 <sup>th</sup> session	25 <sup>th</sup> session	30 <sup>th</sup> session
Being Assertive	20%	60%	90%	95%
Skillful Deal with daily life	60%	80%	80%	90%
Reducing Somatic symptoms	70%	90%	100%	100%

**Graphical Representation Figure 1**



- Ajuriaguerra, J. De. (1971). Manuel de Psychiatrie. Paris: Masson.
- American Psychiatric Association (1994). Diagnostic and Statistical Manual of Mental Disorders. (4<sup>th</sup> edition). Washington DC.
- \* \* \* (1998). Classification of Mental and Behavioral Disorders (ICD-10). Clinical descriptions and diagnostic guidelines. WHO. Bucure\_t\_i: All Educational.
- Cottraux, J. (2003). Terapiile cognitive. Cum s accionm asupra propriilor gînduri. Ia\_i: Ed. Polirom. 147
- Georgescu, M. (1998). Psihiatrie, ghid practic. Bucure\_t\_i: Ed. Nacional. 191-193.
- Lebovici, S. (1985). L'hysterie chez l'enfant et l'adolescent. Confrontation psychiatriques. L'Hysterie , 25, 99-119.
- Lupu, V. (2003). Introducere in hipnoterapia \_i în psihoterapia cognitivcomportamental a copilului \_i adolescentului. Cluj-Napoca: Ed. ASCR. 32.
- Marie-Cardine, M., & Collet, B. (1985). Clinique de l'Hysterie. Confrontation psychiatriques. L'Hysterie , 25, 11-44.
- Patris, M. (1985). Hysterie et hypnose. Confrontation psychiatriques. L'Hysterie, 25, 214-215.



# CHALLENGES OF FOOD SECURITY IN ODISHA AGRICULTURE, ENVIRONMENTAL DEGRADATIONS, MALNUTRITION, POOR HEALTH, UNEMPLOYMENT AND IMPLICATION OF FOOD SECURITY ACT, 2013

\*Habibullah Ansari

## *Abstract*

*Historically, food security has been the biggest challenge in Odisha. It has witnessed frequent incidence of starvation and hunger. Some districts are highly prone of starvation such as Kalahandi, Balangir, Koraput, and Mayurbhanj. Food security depends mainly on the agricultural production, public distribution system, employment, earning, and availability food items in the market. The role of local traders is also associated to the food insecurity. The main cause of low food production is land quality and agricultural loss due to natural disasters. Major part of the Odisha land is hilly, mountain, forests, water logged, marshy only a small portion is cultivable. Uneven distribution system, scanty settlements of communities in remote villages and hilly areas where food supply chain is very poor. Livelihoods of the tribes are based on the forest products. Mining and deforestation have made their life doubly miserable. Almost all the welfare schemes of governments are in-force. PDS is running well all over the state but reaching to tribal and poor people living remote villages is difficult. Malnutrition in children and poor health is obvious everywhere. The implication of the food security act on the food security in Odisha is debatable.*

**Key Words:** *Food Security, Malnutrition, Hunger, Poor Health, Environmental Degradation, Agriculture and Food Production*

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## INTRODUCTION

Odisha state is different from other states on its geographic and climatic conditions as well as on its social and economic condition. This state is frequently suffering from the some and the other crisis whether it is natural disasters or some human induced problems. The hunger and famine are the most prominent calamities which has been causing the deaths of lakhs of people. There are certain areas in the states which are historically known for the food crisis and hunger such as Kalahandi, Balangir, Koraput, Mayurbhanj and some others. There are coastal areas that are proneness to suffer from cyclone and sea rises saline water. On the other hand there are forests and hilly areas which are not cultivable and due to mining and deforestation the tribal community are facing lots of problems of their livelihoods. Though the majority of the people depend on the agriculture or the forest products but both the sources of livelihood are on the strain. Majority of the population live in remote villages, on coastal areas or on hills in the forests where food supply chain is weakest. It becomes more difficult in the rainy season. Other welfare and developmental programmes are hardly reached there. So agriculture, forests products, fisheries, and supply of food all are related to the food crisis in Odisha. This is the big challenge before the government to feed its tribal and scheduled castes population. In such scenario the food security act 2013 will must be beneficial for these marginalised communities.

This paper is based on the secondary sources of data mainly collected through internet. This paper aims to highlight certain challenges that Odisha State is facing in the context of food crisis and yet the solutions have not been achieved. This paper will also highlight certain issues such as natural disasters, agriculture and food production, market forces, public distribution system, malnutrition and public health and implications of the food security act 2013.

Orissa, a province under the Indian federal government system, is situated on the western coast of the Bay of Bengal in the eastern part of the country, 480 km in length. Odisha has a total land proportion of 4.74 % of total land mass of the country have a population of 3.74% of the country. Orissa is one of the major states of the Indian union with population of 36.81 million as per 2001 Census. Odisha is a rural state as it has only 14.97% urban Population in 2001 (UN Report, 2002). So 85 % Odisha population is rural which is dominated by the economically vulnerable sections STs and SCs. There are 22.13% ST and 16.53 % SC a total 38.66 % population in addition to 12 % most backward communities scattered in high hills forest and remote rural areas. There are 66.33% population is below the poverty line (BPL) highest in the country (Planning Commission, Modified Expert Group Survey, 2004-05). Poverty ratio is 46.8% that is the highest at national average 26%. Per capita income is Rs 5985, 16<sup>th</sup> rank at national level second lowest (first lowest is Bihar). More poor people belonging to ST, SC and OBC are in rural areas (UN Report, 2002).

Agriculture is the main economy of the state which is frequently facing some and other problems. Its coastline is rich in natural resources and minerals and is the homeland of millions of strugglers fighting against acute poverty and food insecurity. The mostly inhabited indigenous tribal people, schedule caste and other backwards communities are dependent on traditional agricultural practices, small livestock rearing, agro-

forest-based activities and daily wage earning as their means of sustainability. With alarming records of starvation, sale of newborn babies for food, evidence of health epidemics due to consumption of unhygienic wild food (Cholera in Koraput and Rayagada Districts during 2007) and a huge exodus to other parts of the country in search of work opportunities, the provincial government is unable to understand the realities on the ground.

## **CHALLENGES OF FOOD SECURITY IN ODISHA**

### **Food Production, Indebtedness and Farmers' Suicide**

The major production of the food grain is rice that was 63% of the total cropped area in 1995-96 which is declined from 8.273 million tonnes in 1992-93 to 5.486 million tonnes in 1999-2000 (UN Report, 2002). Drastic decline has also been seen in the production of other produces such as coarse production, pulses, oil seeds etc. The average yield of food grain is also very low. It was 985 Kg per hectare in 1999-2000 lowest in the decade. Though the food production is on decline in Odisha but the state has the capacity to produce the adequate food.

Average per capita food consumption is highest in the State in comparison to other states. The average cereal consumption per capita was 503 grams per capita per day (NSSO Reports, 2000). Among the lowest 10% of the population has the average cereal consumption was 397.33 grams which. So on average and among the poorest the consumption is higher than the national average. However the consumption of the other items is lower in Odisha than other states. It is remarkable that Odisha produce less cereal per capita but eat more per capita per day.

This shift of food growing land to cash crops also has an adverse impact on some of the expenditure-saving and non-economic livelihood strategies of small farmers, such as food collection and gathering activities. This has led to a severe decline in the overall availability of food sources and food diversity. This has serious implications both for food sovereignty of the state (<http://www.living-farms.org>).

There has been an increase of 66% in the use of pesticide in the last five years. A recent survey on the impact of pesticides on human health in west-southern and a part of southern Orissa which is a cotton growing belt reveals alarming trends. Incidents of ulcers, multiple abortions, sterility, breathing difficulties, erosion of nails, loss of appetite etc. are prevailing in villages of this region (<http://www.living-farms.org>).

There is a shift of food growing lands to commercial crops driven by market force, industry and mining. These continue to put traditional crops and farming systems of dry land and hilly regions under serious threat. The transfer of a technology model adopted by the agriculture department has created perpetual external dependency and de-skilled the farmers by replacing their traditional knowledge base. This has led to a gradual increase in costs of cultivation due to externalization of inputs. Especially fertilizers, pesticides and seeds combined with dependency on institutional and private money lenders for credit have put them under major threat. As a result there are serious indebtedness problems in the rural areas.

Another problem is the indebtedness of farmers due to increase cost of agriculture. According to the report “Situation Assessment Survey published by the National Sample Survey Organization of the Indian Government in 2005, 47.8% of farmer households in Orissa are indebted. Of these approximately 75% have less than 1 hectare of land (<http://www.living-farms.org>). A trend of farmers committing suicides due to debt traps has begun in the state. In the last year alone 12 farmers are reported to have committed suicide. Many have gone unreported (<http://www.living-farms.org>).

The production of live stocks is also very poor. People rear cows, goats, pigs, hens and ducks. But the local breed of such animals is resistant and production is very low and the farmers do not get much financial benefits. Such low production is solely utilized for self-consumption purposes with little ability to sell them during emergencies (Mohanty Ashutosh, 2008).

### **Sustaining Agriculture, fisheries, forest and environmental degradations**

While Odisha is still struggling to overcome the issue of Hunger, climate change is leading to a situation of climate emergency threatening food security across the state (iGovernment Bureau: <http://www.igovernment.in>). Due to climate change and natural disasters the sustaining the agriculture is big challenge in Odisha. Rapid forest depletion, annual rainfall has become erratic over the years and drought-like situations have made farmers the most affected victims. Moreover, crop management has remained a basic problem for the people who usually use a traditional variety of seeds. Different advanced agricultural technology is hardly used, leading to reduction in production year after year.

Rise in temperature and sea level has made agriculture vulnerable as seawater is more often gushing into the land filling their paddy fields with saline water combined with erratic rain often destroys their crop. Agriculture across the coast of Odisha is now facing a situation of climate emergency. The Sea is crossing the embankment more often and damaging the crops by filling the land with saline water. Because agriculture is almost regularly hit by tidal waves and floods, food security of these people has been threatened as they have no other option to earn a livelihood and feed the family (Hot n Hit News, 2013. <http://hnfvideonews.com>).

Another problem that coastal farmers are facing is that the Bay of Bengal has crossed miles into the human habitations grabbing villages and agricultural lands on its way. This is mainly due to rise in sea level that has happened due to increase in atmospheric temperature which may have a link with global warming. The sea has in graded into land area in Paradeep, Puri, Astaranga and Gopalpur coasts of Orissa (Mahapatra, B. 2009).

Almost 90 percent of the village is washed away by the violent tidal waves. The villagers have lost most of their land in the sea. Even a low pressure with minimum intensity is enough to snatch away sleep from the people of this village. Hundreds of families have left the village after losing most of their land in the sea. All the more, Coastal Orissa has become the victim of natural disasters that occurred almost every year in

different forms. During last 30 years, the coastal climate has changed to a great extent and rainy season is expanded to almost half the year.

Another frequent problem in Odisha is its heat in summer. It was reported that in 1998 summer the atmospheric temperature went up to 50 degree Celsius in coastal Orissa and 100s of people died of Sun Stroke. Terrible super cyclone of 1999 took over 10000 lives and shattered the economy of coastal Orissa. 2000 onwards Coastal Orissa has been regularly visited by flood almost every year (Mahapatra, Basudev, 2009).

Due to excessive heat rising, after March, the state government virtually declares a state of emergency. Schools and colleges finish their sessions by the end of March; offices open early; hospitals stock more ice sheets than medicines; all employment-generation schemes begin early in the morning and stay closed during the day; brick kilns are shut down during summer. People have begun holding marriage ceremonies during winter. Although the government brushes aside talk of any marked change in climate, the lives of the people of Orissa have definitely changed.

Changing climate pattern is not only affecting agriculture in coastal villages, the farmers living in forest areas are also facing the wrath of climate change. Rain pattern has also changed drastically in the forest areas during the last years. In Kalahandi district of Orissa the rain pattern has gone erratic (Hot n Hit News, 2013).

Natural calamities have seriously affected livelihoods in the state and the income level of households. Important fallout has been the serious setback suffered by the capital formation process in the economy. Consequently, the state's Gross Domestic Product (GDP) has been substantially depressed, says the State Human Development Report of 2003 (Mahaptar, Richard, 2006).

As an economic disaster there was economic losses due to disasters are steadily increasing. Figures indicate that disasters have not only become more frequent, they are striking new areas. In 30 years, the average annual loss due to disasters has gone up 27 times. The average loss of property and damages due to disasters was 14.18 crores in 1970s, 67.33 crores in 1980s and it rose up to 383.50 crores in 1990s (State Human Development Report, 2003).

### **Deforestation, Mining and Degradation of Environment**

There is better cover of the forest area in Odisha than other states. The forest area is declining in the state. The forest area was 37.4 % of its total geographical area in 1997 which was 40% in the year 1972-73. At present it has reached to the 16.74% the dense forests and 13.32% open forest areas (U N Report, 2002). All the tribal population 23% inhabit in the forest areas. They depend on the forest produce for their livelihood. They are facing a great challenge due to deforestation and mining. Its environment is already degraded and stressed due to over-dependence on natural resources. Close to 80% of the state's population depends on these resources to survive. Forest plays a major role in the life and livelihood of the people particularly in the western and southern parts of Orissa. The Tribal people collect different forest produces

like *mahu* flowers and seeds, *tendu* leaves, *salle* leaves, different kinds of roots (*kanda*), tamarind, berries and so on from the forest for both self-consumption and to sell. But due to the exploitation of these resources by the local traders and middlemen this community is facing a problem with their livelihoods. They have not any idea about the market system and market rates fixed by the government for forest products and they sell their collection for some paltry amount (Mohanty Ashutosh, 2008).

Today, 52% of the state's land suffers erosion due to deforestation. With mangrove forests being cleared, more and more areas have come under the effect of cyclones. Rivers flood more areas due to siltation. Almost 490,000 ha of fertile lands are waterlogged, salinated and sandcasted in coastal Orissa as a result of cyclones and floods (Mahapatra Richard, 2006).

Massive deforestation in west Orissa is not only destroying the livelihoods of the local people but also silting up riverbeds, causing floods in downstream coastal Orissa. Studies show that forest cover in the state has declined to 4.72 million ha from around 6.8 million ha in 1960-61. Of the existing cover, only 2.73 million ha of forests have a density higher than 40%. Barren hills lead to heavy runoff of rainwater resulting in flash floods in the local area and more floods in Orissa's low coastal areas (Mahapatra Richard, 2006).

## **Employment and Income**

The poverty is very high in rural areas (48.01 % NSSO 55 round). According to the poverty rectification report released in March 07, the Orissa poverty line is Rs 325.79 (USD 6,5 / EUR 5) per capita per month i.e. less than Rs 10 /- (USD 0,20 / EUR 0,15) per capita per day. 49% of the total population of Orissa comes in this category (<http://www.living-farms.org>). There were as high as 71 per cent households whose annual per capita income was less than Rs. 2500/-. More so, there were only 3 per cent sample households whose annual per capita household income was more than Rs.6000 (Planning Commission, 2007).

The National Rural Employment Guarantee Scheme (NREGA) has generated a ray of hope among the people to receive an assured income of 100 days in a year, which once again has not achieved its target. Schemes like the Integrated Rural Development Programme (IRDP), the Swarnajayanti Gram Swarozgar Yojana (SGSY), the Prime Minister Rozgar Yojana (PMRY) and many other government-led programmes are lagging far behind expectation; that is, to challenge poverty and maintain food security. The major player in this situation is the lack of awareness or understanding, and illiteracy of the people. Callousness of local self-governance mechanisms and government officials also add fuel to the problem, making people more vulnerable to poverty and food insecurity (Mohanty Ashutosh, 2008).

In another report it was found that about 77 per cent of the very poor and needy sample households in Orissa did not get even a single day of the NREGS employment during previous one year (Rai, Parshuram, 2011). The average NREGS employment actually provided to the surveyed households in Orissa during the previous one year was only about 4 days per household. Only 2.2 per cent of the sample households in Orissa had got over 50 days of job during the previous year. It is shocking to note that out of 2000 very poor

households surveyed in Orissa, only 5 households had received 100 days of job during the previous year. The average actual NREGS employment provided to per needy and eligible household in Bolangir district during previous 12 months was about 8 days. The status of NREGS in Nuapada and Kalahandi is worse. The average actual NREGS employment provided to per needy and eligible household during previous 12 months was only about 3 days in Nuapada district. The average actual NREGS employment provided to per needy and eligible household during previous 12 months was only about 3 days even in infamous Kalahandi district. The average actual NREGS employment provided to per needy and eligible household in Ganjam district during previous 12 months was less than half day (0.26 day to be precise). During previous year, all the 300 sample households from 12 sample villages of Ganjam put together had got only 80 days of NREGS job as against their total entitlement of 30,000 days. It is a tragic irony that Ganjam district was declared by Orissa Government as the best practice district in NREGS and it has received best performing /model district award by the Central Government too. In fact, we had included Ganjam in this survey to study and learn the NREGS best practices of the district so that we could prescribe those practices for other districts of Orissa and other states too. However, we have sadly ended up discovering only worst NREGS practices in this so-called best practice district of Orissa. The average actual NREGS employment provided to per needy and eligible household during previous 12 months was about 4 days in Gajapati, about 5 days in Sundargarh and about 6 days in Kendujhar district (Rai, Parshuram, 2011).

The current level of hunger and deprivation in the sample districts of Orissa is as deep, demeaning and dehumanising as ever even after five years of the launch of the NREGS. The NREGS has made virtually zero impact on the livelihood security of Orissa's rural poor. On the Human Development Index, the Sub-Saharan villages would fare much better than most of the sample villages in Orissa. Chronic hunger and abject poverty are widespread in all the villages of Orissa surveyed by the CEFS. Large numbers of children in these villages are suffering from acute malnutrition. Hunger and abject poverty are apparent and writ large on the hollowed cheeks, sunken eyes and distended bellies of the children living in the sample villages of Orissa (Rai, Parshuram, 2011).

### **Food Insecurity: Hunger and Starvation**

The present development process has strengthened the control of the privileged class over the resources of the earth. The wealthiest 26% of the world's population consumes 80-86% of non-renewable and 34-50% of the wood supplies of the world. ("Our common future: World Commission of the Environment & Development") (Behera, A and Behera, B; 2011). At the World Food Summit held at Rome in 1996, food security was defined as "access by all people at all times to enough quantities of nutritionally adequate and safe food for an active and healthy life". Forests and hills- traditional source of livelihoods Food security is not guaranteed merely by adequate food grain production or even by food availability. It is more fundamentally linked to effective access to food, both physically and economically. Livelihood security and livelihood access are important determinants of food access. According to observation made by M.S. Swaminathan Research

Foundation and World Food Programme 2001, "If people have access to livelihood, they would in general have access to food and nutrition. Those who are unemployed or employed on casual basis or underemployed would have limited access to food. From another point of view, it may be added here that even the ability to buy food will not guarantee food security unless there is an effective delivery system". Thus food insecurity relates to a situation, when all people at all times, do not have physical and economic access to sufficient, safe and nutritional food to meet their dietary needs and food preferences for an active and healthy life. Food insecurity could therefore lead to a cycle of malnutrition, deficiency, diseases, poor food absorption and heightened food insecurity (Behera, A and Behera, B, 2011).

There are a number of indicators that influence food insecurity in one way or the other. These indicators have been combined into a set of three broad food security indices. (i) Production factors, influencing availability; (ii) Household and individual access to food, and (iii) ability to absorb food in context to State of Orissa, a combination of economic, social, ecological and institutional factors contribute to food insecurity. It has been pointed out that severe food insecurity in Orissa is primarily due to the presence of vulnerable rural population who are basically Schedule Caste and Schedule Tribe with poor and marginal livelihood assets or livelihood susceptible to natural disasters.

Due to degradation of forest, supplies of non-timber forest products (NTFP) have reduced and household income has become grossly inadequate. 20-50% of the tribal household income per annum comes from the non-timber forest produce (Human Development Report, Orissa, 2004). With incomes insufficient to buy food; many of the households are in debts and are in food-insecure category. Currently these tribal households have limited access to any form of safety net or food security. Similar is the fact of scheduled caste that constitutes a little more than 16 percent of the State population. Unlike the tribal population they are mostly concentrated in the four (undivided) coastal districts of Balasore, Cuttack, Ganjam and Puri (National Human Development Report, 2001). All the eight districts in the Eastern Ghat Region lay in the most food insecure categories as also most of the Central Table Lands. These are the districts that have a higher proportion of forest and tribal population. The coastal plains are relatively better off with only 4 of 11 districts lying in this category.

The best option to counter the food insecurity would undoubtedly be to go for- Subsidized distribution of food grains, Nutrition provisioning through Anganwadis/midday meals, Food for work programme. Consequently food and livelihood insecurity of these forest dwelling communities is showing greater manifestation day by day. Having understood this intrinsic relationship between existence of sound forest cover and the socio-economic well-being of the forest dwellers many curative & preventive measures have been taken up. One such intervention has been "Food for Work" Programme under WFP wherein assistance has been channelized through the ongoing forest development programmes of the state to benefit the under-privileged population group who largely depend upon the rapidly decreasing forest wealth (Behera, A. and Behera, B., 2011).

## **Malnutrition, Poor Health, and Poor Health Care Services**

Malnutrition continues to be the wide spread problem in Orissa despite launching various poverty alleviation programmes and many nutrition related programmes in the State for past many years (Planning Commission, 2007). Malnutrition is a very serious problem and a real challenge before the administration and the society at large. The undivided districts of Kalahandi, Balangir and Koraput of Orissa, popularly known as the KBK region is a typical region that has drawn the attention of the world because of persistent poverty and mal-nutrition as a result of multifaceted undeveloped characteristics despite quite a large number of development endeavours have been put in place by the State, Centre and various non-government organisations in this region. As it is Orissa is continuing to be poor as compared to all other states in the country as per the official estimates released by Government of India at various intervals. But the fact remains that this KBK region has specific rudimentary problems as compared to the rest of Orissa for which the region continues to remain backward (Planning Commission, 2007).

The Planning Commission report (2007) reveals that about 72 per cent of the households depend on wage labour and that too from non-agriculture sources. Being very poor and having hardly any productive assets, dependence on non-agricultural wage employment has been resorted to by majority of the households. While 95 per cent households are taking two square meals a day, 5 per cent households take only one square meal a day. Majority of the households (89 per cent) take other dietary intake only once a day, 6 per cent take twice a day and 5 per cent do not take other dietary intakes during a day at all. A large number of households taking one square meal a day belong to Malkangiri district. More so in the said district of Malkangiri, 35 per cent of the households do not take any other dietary intakes at all other than the principal square meals.

Nutrition and health is related to the consumption of food. It was found that per capita food consumption was less than 3.5 kg a week or alternatively less than 500 gms a day, was 34 per cent. There were hardly 1 (one) per cent of the households who were consuming more than 7 kg a week per capita or alternatively more than one kg a day. This implies that irrespective of the type of food, the total food consumption among the households in the KBK region is almost half of the recommended dietary allowances (Planning Commission, 2007).

Irrespective of quantity, only 57 per cent households consume animal protein, 18 per cent milk and milk products, 10 per cent roots and tubers and 10 per cent fruits. Consumption of milk and milk products is lowest in Malkangiri districts followed by Rayagada that provides essential nutritional requirements for the body. Consumption of protein is usually among higher income groups (Planning Commission, 2007).

Another problem was found in the area was that in 36 per cent of the households the adults had a habit of consuming alcohol. Majority of such cases was found in Malkangiri district. Not only adults but it was that 8 per cent children in Malkangiri district were also consuming alcohol (Planning Commission, 2007).



## **Market forces and food crisis**

The role of local traders is associated to the food insecurity. The main traders are the non-Odia spread in almost all the towns of Odisha who control almost all the trading. They sell the goods on high price as there is no competition in the market. They are owners of all rice mills in the State. They purchase the paddy on the through-away price from the cultivators and sell the rice on the highest price.

Orissa is reeling under heavy increase in food prices and people from all walks of life have been affected. A combination of factors like the unprecedented flood is coupled with over dependence on the neighbouring states has created the problems for people of the state. But the crux of the matter is that food supplies in the state are not enough to keep the prices under control (Orissa Economy, October 11, 2011).

Orissa depends a lot on Andhra Pradesh and West Bengal for food products like Onions, potatoes, fish and cabbages. The prices of available food items sky rocketed in the state. Though Orissa is self-sufficient in the production of rice, it is the production of vegetables that is mostly neglected by farmers of the state. Add to it the recent flash floods, the situation has simply compounded. Traders from the state rue the lack of initiative on the part of state farmers to grow vegetables that come from outside though Orissa has good conditions for producing onions. They also blame the faulty agricultural policies of the Orissa government to provide enough incentives to the farmers for taking on horticulture that is behind the complicating problem of short supply and rising prices.

Not just vegetables foods of other daily consumption like eggs, fish and sugar are supplied to Orissa by Andhra Pradesh. Andhra Pradesh in fact is now supplying 50 per cent of Orissa's sugar requirement. Earlier, Andhra Pradesh used to supply 75 per cent of the sugar requirement. But with the rise in value added tax (VAT) in Andhra Pradesh and fall of VAT in Karnataka and Maharashtra, the supply from Andhra Pradesh has come down. Apart from sugar, Andhra Pradesh supplies more than 80 per cent of the pulses (dal) requirement in Orissa. The matrix of demand and supply in Orissa is so pathetic that if Andhra Pradesh stops the supply of pulses (dal) and sugar to Orissa even for two days, there will be unprecedented shortages in Orissa market (Orissa Economy, October 11, 2011).

## **Public Distribution System (PDS) and Mid-Day Meal (MDM)**

Very negligible percentage of the households has received the benefit under the schemes of TSC and Swajaldhara which have adequate bearing on the health, hygiene and sanitation of the people. While the percentage of households accessing the ICDS and AWC is quite satisfactory, the same in case of MDM and PDS is appreciably low. Access of households to PDS is only 41 per cent. There being adequate number of fair price shops the possible reasons for not using PDS commodities by large majority of the households may be due to lack of purchasing power in the hands of poor people in the region (Planning Commission, 2007).

The public distribution system (PDS) is not able to help the poor in the present form. The distribution is too low for alleviating the even the seasonal food crisis. The chain of supply was very weak in tribal and

remote rural areas. It becomes further worse in the rainy season. The Centre for Environment and Food Security (CEFS) New Delhi has conducted performance audit of ten food security and poverty alleviation schemes in Orissa and Uttar Pradesh (Rai, Parshuram, 2011). This performance audit was conducted during July- October 2010 through sample survey over 12 districts of Orissa include Bolangir, Nuapada, Kalahandi, Ganjam, Gajapati, Sundergarh and Kendujhar. It was found that 28.3 per cent of the households in Orissa do not have any ration card, only 44.5 per cent BPL cards, 18.8 per cent have AAY cards, 8.3 per cent have APL cards and 3 households have Annapurna cards. In the KBK districts of Orissa, every household which has a ration card (AAY, BPL or APL) has effective access to PDS grain; but, in the non-KBK districts only BPL and AAY card holders have effective access to PDS grain and APL card holders hardly get any grain under the PDS (Rai, Parshuram, 2011). It was reported that 22.5 per cent had not been provided the full quantity of grain. Irregular availability of grain at the PDS shop was reported by 13.5 per cent, 22.2 per cent said about corruption in the PDS, 33.5 per cent of the said about poor quality of grain, and by 21.2 percent reported of lack of cash when grain was available at the PDS shop (Rai, Parshuram, 2011).

From the detailed field study it is revealed that 58 per cent (as against the ideal of 100 per cent) of the school going children were receiving the benefit of MDM. A sizeable proportion of them (i.e., 42 per cent) were not able to receive the benefit of MDM as a result of not attending schools. On physical observation it reveals that the number of women and children exhibiting the signs and symptoms relating to abnormally smooth tongue, thyroid swelling, bending bone, muscle wasting and motor weakness are very less and on the organs like the hair, facial appearance, eye, cornea, lip, teeth, chest, foot and skin, the percentage is very high in the range 33-47 per cent. The study reveals that the number of signs and symptoms of malnourishment among the children and women increases according to their age. However, the number of signs and symptoms among women are more as compared to the children (Planning Commission, 2007).

### **State Interventions**

Comparison with the neighbour Andhra Pradesh only proves the point. Government there has done enough for farmers to make them take up agriculture seriously and thus achieve higher production. For example, there are seven dams across the Godavari River, while only one across the Mahanadi. On the other hand, there is no additional canal system to increase productivity in Orissa. While farmers in Andhra Pradesh are going for three crops of rice in a year, in Orissa it is difficult to sustain two crops of rice each year. In Andhra Pradesh and Bengal, there is no additional marketing and sales tax on paddy and rice, but Orissa the government has levied several taxes, making the price less competitive. And add to it, the problem of floods that impede standing crops and discourage people to take agriculture seriously.

What Orissa needs today is better production and an equally better marketing and supply chain management strategy to make it self-sufficient in the production of food materials. Andhra Pradesh has successfully implemented the marketing and supply chain management strategies and its state government has used the private market forces in achieving its goal. Something similar needs to be done in Orissa by the

government. Apart from providing incentives for better productivity, better storage facilities and an efficient supply chain management will be needed to address this problem. Until then it will be the common man who will survive in the state.

The National Development Council met for the first time in the history of this country to deliberate “exclusively” on issues in agriculture sector in May this year (2007) and as a result of such discussions, two schemes have recently been launched to address the issue relating to agricultural development and food security. Whereas the National Food Security Mission has been launched as a centrally sponsored scheme to increase the production and productivity of major food crops such as rice, wheat and pulses on a sustainable basis to ensure food security of the country, the Rashtriya Krishi Vikas Yojana has been launched to incentivise States investing additional funds in the agriculture sector. Both these schemes may enhance the productivity of major food crops and revitalize the agriculture sector in the entire country.

In a poor State like Orissa, the growth in agriculture to sustain the economy needs no emphasis. The productivity of major food crops is pretty low in comparison to those in better producing States as well as the national average (Padhee Arabinda K. 2007).

## **IMPLICATIONS OF FOOD SECURITY ACT, 2013**

The President of India has accorded assent to the Food Security Ordinance, 2013, which has now become a law of the land. But for the past few months, the representatives of the BJD Government have been claiming that there is nothing new in the Food Security Bill as the State Government is already providing 25 kg of rice to the BPL families at Rs 1 per kg. “This is an absurd and politically-motivated argument. The fact is the State Government is not showing any seriousness and sincerity to free Odisha from the scourge of hunger,” said Patnaik (Daily Pioneer Tuesday, 09 July 2013).

Once the law is implemented, any authority responsible for allowing a person to go hungry can be held accountable and even punished under Section 41 of the Act, he said. At the State level, there would be a State Food Commission and at the Centre a Central Food Commission under Sections 22 and 26 of the Indian Constitution. The commission would enjoy powers of a civil court and can award punishment amounting to a fine of Rs 5,000, Patnaik pointed out (Daily Pioneer Tuesday, 09 July 2013).

Odisha Chief Minister Naveen Patnaik had launched a Rs. 1 per kg rice scheme for poor people in Odisha from the Maoist dominated district of Malkangiri, an official said (News Tracker, Feb 3, 2013). According to the scheme, the government will provide 25 kg of rice at Rs. 1 per kg every month to every family below the poverty line (BPL) along with some other categories from state’s backward regions, the official said. The chief minister distributed the highly subsidised rice to people of primitive Bonda tribe at a ceremony organised by Malkangiri administration, about 600 km from Bhubaneswar. Patnaik had announced the scheme on Republic Day to provide food security to over 58 lakh families in the state. “A hunger free Odisha is my dream,” Patnaik said. All Dalit and tribal students; Antyodaya card holders, the physically

challenged and families listed under above poverty line (APL) category in Kalahandi, Bolangir and Koraput districts will also be covered under this scheme. The state was earlier also providing subsidised rice at the rate of Rs. 2 per family to about five million people, including poor and other selected categories since 2008, as per its pre-poll commitment (News Tracker, Feb 3, 2013).

In a poor state where the population below the poverty line is highest, population of other poor is very high and the food insecurity is very high, frequent hunger death is reported from certain parts of the state the National food security Bill will be helpful to the majority of the people of Odisha. But what the problem of the Odisha poor are going to face is the determination of the priority group those who are below the poverty line. The planning commission of India has fixed the criteria of determination of the BPL as 32 Rs per day income in urban and 28 per day wage in rural areas is going to exclude the majority of the needy people who will out of the cape of the food security act. So the activists of Odisha demand fare criteria to fix and the state government should identify the BPL category not the planning commission. As per the Tendulkar Committee report the 66% Odisha population is below the poverty line but as per the planning commission of India the same is 38% so nearly 28 % needy people will be out of the cape of food security. Another issue is the quantity of the food grain that is 5 kg rice per person per month is very low. It should be adequate at least 7 kg per person where a person could fill his stomach not merely to fulfil the norms of the planning commission (Daily Pioneer Tuesday, 09 July 2013).

There is problem in identification of the BPL families. The Bill does not specify criteria for the identification of households (Priority or Antyodaya) eligible for PDS entitlements. The Central Government is to determine the state-wise coverage of the PDS, in terms of proportion of the rural/urban population. Then numbers of eligible persons will be calculated from Census population figures. The identification of eligible households is left to state governments, subject to the scheme's guidelines for Antyodaya, and subject to guidelines to be "specified" by the state government for Priority households.

Another problem is the non- education of the tribal and rural people those do not know the schemes and programmes and also not aware how to avail the benefits. So lots efforts are required to educate them and by force issuing them BPL cards.

PDS Reforms has been suggested in the Bill. In Chapter VII, the Bill states that central and state governments "shall endeavour to progressively undertake" various PDS reforms, including: doorstep delivery of food grains; ICT applications and end-to-end computerisation; leveraging "aadhaar" (UID) for unique identification of entitled beneficiaries; full transparency of records; preference to public institutions or bodies in licensing of fair price shops; management of fair price shops by women or their collectives; diversification of commodities distributed under the PDS; full transparency of records; and "introducing schemes such as cash transfer, food coupons or other schemes to the targeted beneficiaries in lieu of their food grain entitlements" as prescribed by the central government.

There will be state and district level redressal mechanism with designated nodal officers. The States will be allowed to use the existing machinery for District Grievance Redressal Officer (DGRO), State Food Commission, if they so desire, to save expenditure on establishment of new redressal set up. Redressal mechanism may also include call centres, helpline etc.

Another problem is that the Bill mentions of grievance redressal mechanism through food commissioners at Dist level not at local level. Tribal and rural people hardly any access to the DistHeadquarters. So their grievances will hardly reach to the food commissioner. There should be some local mechanism.

The local self-governments are totally flops in tribal areas in providing them the food security. The food distribution has been given to the private dealers where the tribal people are marginalised. Those shops open only on two or three days in a week. If a person fails to collect his quantity of grain on those days he/she misses her term for whole months. So it demanded that the ration shops should be open regularly for the whole month and the private dealership should be abolished and it should be given to the Panchayat what Justice Radha Committee has suggested. Panchayat in tribal areas should be modernised with latest information system such internet and should be connected to cities by pucca roads, adequate transportation should be assured. The monthly information of food grain allotments to each Panchayat should be put on the websites so that it could be monitored by others also.

## **CONCLUSIONS**

After above analyses and discussions it could be concluded that in Odisha food crisis is still prevailing. The reasons of the food crisis are the low land quality and low production, unemployment and low purchasing power, the marginalised communities are scattered in remote hilly and village areas where food supply is hampered particularly during the rainy season etc. Deforestation and environmental degradation further increased the problems of the tribal people for their livelihoods. Natural disasters such floods and frequent cyclones have added their problems in multi times. The role of uncontrolled market forces contributing in increasing the food and vegetable prices and thus it is going to be out of the reach of poor. Though the government is trying it best to address the challenges of food crisis in Odisha but yet have to achieve a lot. The implication of the food security act passed 2013 will be helpful if the government take strong initiatives to improve the PDS system by installing more rations shops in hilly and tribal areas, by issuing ration cards to all the deserving beneficiaries in easy ways, by improving the supply chains to rural and tribal areas, by improving the agriculture to produce more foods and vegetable items in Odisha rather focussing on importing vegetables from the other states. Other initiatives could be to stop mining, deforestation and degradation of environment. Better disaster management and rehabilitations after any natural disaster could be the most important step. Anyhow the livelihoods of the most vulnerable sections of the society such as tribal, schedules castes and other backward communities has to be improved so that overall economy of the state could be improved. Malnutrition and poor health of the children and mothers could be the top priority of the government and anyhow it could be improved for the better living of people of Odisha.

## REFERENCES

- BeheraAurobindo and Behera Bhagirathi, 2011.Food Security in Odisha. Environmental Information System (ENVIS) News Letter, Vol. 24; Jan- March, 2011 Pub by Centre for Environmental Studies, Forest & Environment Department, Government of Orissa Bhubaneswar. <http://www.cesorissa.org/PDF/Newsletter24.pdf>
- Daily Pioneer Tuesday, 09 July 2013: ‘Support Food Security Bill, end hunger’ <http://www.dailypioneer.com/state-editions/bhubaneswar/support-food-security-bill-end-hunger.html> (retrieved on Sept 6, 2013)
- Economic Survey of Odisha, 2003-04.
- Farms.Org, 2013. <http://www.living-farms.org> <http://www.living-farms.org/site/articles/97-the-agricultural-situation-in-orissa> (retrieved on Sept 5, 2013)
- Hot n Hit News, 2013. Climate change impacts agriculture, threatens food security in Odisha. Website:<http://h n f v i d e o n e w s . c o m />  
[Climate change impacts agriculture threatens food security in coastal Odisha HNF VIDEO NEWS Bhubaneswar Orissa 281011046.html](http://h n f v i d e o n e w s . c o m /Climate%20change%20impacts%20agriculture%20threatens%20food%20security%20in%20coastal%20Odisha%20HNF%20VIDEO%20NEWS%20Bhubaneswar%20Orissa%20281011046.html) (retrieved on Aug 28, 2013).
- iGovernment Bureau, 2013. Climatic changes hit farming in coastal Orissa. Website: <http://www.igovernment.in/site/climatic-changes-hit-farming-coastal-orissa> (retrieved on Aug 23, 2013)
- India news diary, 2013. SC Panel worries over Odisha hunger death. <http://indianewsdiary.com/?p=517> (retrieved on Aug 12, 2013).**
- Mahapatra, Basudev, 2009. Orissa experiences the wrath of Climate Change in India. [http://hotnhitnews.com/Orissa experiences wrath of climate change in India by basudev mahapatra Global Warming 09002.htm](http://hotnhitnews.com/Orissa%20experiences%20wrath%20of%20climate%20change%20in%20India%20by%20basudev%20mahapatra%20Global%20Warming%2009002.htm)(retrieved on Aug 12, 2013).
- Mahapatra,Richard. 2006. Disaster dossier: The impact of climate change on Orissa. InfoChange News & Features, March 2006: <http://infochangeindia.org/environment/features/disaster-dossier-the-impact-of-climate-change-on-orissa.html>(retrieved on Aug 12, 2013).
- MohantyAshutosh, 2008.*Food Insecurity: Some Ground Realities in Orissa Context*. Guest Editorial of Fragile Ecologies, India, 21 March 2008.
- News Tracker, 2013. Rice at Rs 1, hunger free Odisha my dream, says Patnaik, Feb 3, 2013. <http://www.firstpost.com/fwire/rice-at-rs-1-hunger-free-odisha-my-dream-says-patnaik-611697.html>(retrieved on Aug 12, 2013).**

NSSO 55 Round, 2000. *The situation of employment and unemployment in India* (July 1999- June 2000).

**Orissa Economy, October 11th, 2011. Food Production Shortfall in Orissa A Real Crisis.**<http://scraps.oriyaonline.com/blog/food-production-shortfall-in-orissa-a-real-crisis/>(retrieved on Aug 16, 2013).

PadheeArabinda K. 2007. Agriculture and food security in Orissa (Special). Mon, 15 Oct 2007. <http://www.odisha.in/news>(retrieved on Aug 05, 2013).

Planning Commission, 2004-5. *Modified Expert Group Survey Report, 2004-05*.

Planning Commission, 2007. *A Study of Food Related Nutritional Deficiency in KBK Districts of Orissa*. Agricultural and Rural Development Consultancy Society (ARDCOS) Bhubaneswar, Sponsored by Planning Commission Govt. of India

Rai, Parshuram, 2011. Performance Audit of Food Security Schemes in Orissa and UP. Project report sponsored by ActionAid India conducted by Concern India Centre for Environment and Food Security, New Delhi 2011

State Human Development Report, 2003. Quoted from Mahapatra, Richard. 2006. Disaster dossier: The impact of climate change on Orissa. InfoChange News & Features, March 2006.

**TNN Feb 23, 2013. 05.46AM IST** [http://articles.timesofindia.indiatimes.com/2013-02-23/bhubaneswar/37256514\\_1\\_bpl-families-kg-rice-rice-scheme](http://articles.timesofindia.indiatimes.com/2013-02-23/bhubaneswar/37256514_1_bpl-families-kg-rice-rice-scheme)(retrieved on Aug 14, 2013).

TNN Feb 24, 2013 [http://articles.timesofindia.indiatimes.com/2013-02-24/bhubaneswar/37269737\\_1\\_nso-cheap-rice-scheme-odisha](http://articles.timesofindia.indiatimes.com/2013-02-24/bhubaneswar/37269737_1_nso-cheap-rice-scheme-odisha)(retrieved on Sept 5, 2013).

U N Report, 2002. *Food Insecurity in Odisha: An Analysis of Secondary Data*. United Nations World Food Programme, India. <http://documents.wfp.org/stellent/groups/public/documents/enal/wfp035267.pdf>(retrieved on Aug 16, 2013).



# **SOCIO-CULTURAL DIMENSIONS AND DYNAMICS OF NATHA-CULT: A STUDY IN KENDRAPARA DISTRICT, ODISHA**

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## ***Abstract***

*Kendrapara is concomitant with “Kendara”(one kind of musical instrument made of gourd) and ‘para’ means hamlet of a village. This instrument is played by some sects of people called Nath Jogi (Yogi), who earns his livelihood by playing ‘Kendara’ and by moving from door to door for alms. After the advent of the new Nathism, some sects of people adopted Nathism and called themselves Natha or Natha Yogi. It is worth mentioning here that one ancient stone image of Machhendranath, one of the chief preacher of Nath cult is worshipped at Rajnagar (Pattamundai). It is understood from an inscription on the body of this image that Nath Cult was prevalent in Kendrapara area during 9<sup>th</sup> Century A.D. The descendants of Nath family are now living in area surrounding Kendrapara at Ichhapur (Kendrapara) Choudakulat, Taradipal (Pattamundai), Chandiapalli (Aul), Nikirai, Kashati, Chandol, Rajnagar, Derabisetc and Kendrapara being its Kendra (Centre) the name derived Kendrapada or Kendrapara. Another thing to be noted that the word ‘Kendrapara’ is derived from the word ‘Kendra Palli’. In ancient times, it was a centre (Kendra) of business.*

**Key word: Natha Jogi and Kendara**

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## INTRODUCTION

Indian cultural history has been derived by the absorbing customs, traditions, and rituals from both invaders and immigrants. Many Indian customs, cultural practices and languages are examples of this comingling over centuries. It was the birthplace of many religious systems like Hinduism, Buddhism, and Sikhism which influenced not only this country but also the neighboring countries. India's culture is among the world's oldest; civilization in India began about 4,500 years ago. Many sources describe it as "*Sa Prathama Sanskrati Vishvavara*" the first and the supreme culture in the world, according to the All World GayatriPariwar (AWGP) organization. Western societies did not always see the culture of India very favourably. According to Christina De Rossi, an anthropologist at Barnet and Southgate College in London. Early anthropologists once considered culture as an evolutionary process, and "every aspect of human development was seen as driven by evolution," she told Live Science. "In this view, societies outside of Europe or North America, or societies that did not follow the European or Western way of life, were considered primitive and culturally inferior. Essentially this included all the colonized countries and people, such as African countries, India, and the Far East."

However, Indians made significant advances in architecture (Tajmohall), mathematics (the invention of zero) and medicine (Ayurveda). Different regions have their own distinct culture. Language, religion and food are just some of the various aspects of Indian culture. Here is a brief overview of the culture of India. "Unity in diversity" - these are not just words, but something that are highly applicable to a country like India that is incredibly rich in Art, Craft, Culture and Heritage. A few quotations or statements cannot describe the pedestal that India holds on to the world map because of its colourful and unique culture. From the times of Maura's, Cholas and Mughals to the period of British Empire, India have always been famous for its traditions and hospitality. The warmth in the relations and euphoria in celebrations make the country stand out distinctively in the global fraternity. The country's liveliness and generosity attract a number of tourists to its vibrant culture which is an amalgamation of religions, festivals, food, art, crafts, dance, music and many other subtle things. Everything, from the culture and values to customs, rituals and traditions, are special in this 'Land of Gods'.

We may define culture as a system of ideas, values and beliefs, knowledge and customs transmitted from generation to generation within a social group. The canvas of India's culture is vast and has hues and vibrancy of all sorts. The country itself has been a living example of tolerance, cooperation and non-violence over so many centuries and continues to do so even today. Some of its various hues can be found in its different ideologies: Cultural and Social Bond: India's history is replete with instances of cooperation and brotherhood. In spite of having suffered oppression from different foreign conquerors at different periods of history, its culture and oneness has not taken a beating and continued to remain intact.

## OBJECTIVE OF THE STUDY:

The purpose of this research is to investigate the socio-cultural dimensions and dynamics of Natha Cult. Impact of modernization and lack of social acceptance to our ancient culture, the previous custom and tradition

has been in the verge of losing its entity. The main objectives around which this research intends to explore are as follows:

- a) To understand the importance of Natha cult, their socio cultural aspects and are they culturally trained to play the musical instrument called *Kendara* or that have any religious or ethical objective for the society.
- b) To explore the characteristics, significance, current trends of Natha Cult. Why Current Natha Cult are not playing the *kendara*. “Are they not accepted by the society or they are struggling for modern facilities”.
- c) To know whether *Kendara* music is for livelihood or preaching ethical values.

## **SCOPE AND LIMITATION**

This study focused on the Nath cult people and associated with the religion in Kendrapara district. the Sample size is Rajanagar and Marsagahi block, out of 9 block the sample has been taken in 20% which is two blocks (ieRajanagar and Marsagahi block) there are 150 respondents has been selected those are the associated with the Nath Cult. So more sample size can be taken in future to increase the accuracy of the result.

## **REVIEW OF LITERATURE**

According to Adityanath (2002) and Bandyopadhyay, P. K. (1992)-. Natha Cult and Mahanad. page 73, Delhi “The Nath Sampradaya, a development of the earlier Siddha or Avadhut Sampradaya, is an ancient lineage of spiritual masters. Its founding is traditionally ascribed to Shri Bhagavan Dattatreya, considered by some to have been an incarnation of Lord Shiva. However, the establishment of the Nathas as a distinct historical sect began around the 8<sup>th</sup> or 9<sup>th</sup> century with a simple fisherman, Matsyendranath (sometimes called Minanath, who may be identified with or called the father of Matsyendranath in some sources).

One story of the origin of the Nath teachings is that Matsyendranath was swallowed by a fish and while inside the fish overheard the teachings given by Lord Shiva to his wife Parvati, who had taken her to the bottom of the ocean in order to avoid being overheard. After being rescued from the fish by another fisherman, Matsyendranath took initiation as a sannyasin from Siddha Carpati. It was Matsyendranath who became known as the founder of the Nath Sampradaya.

Deshpande, M.N. (1986).-Mahendranath (1911-1991- of the Adi-Nath Sampradaya, Shri GurudevMahendranath (1911-1991), who received initiation in 1953 from H.H. Shri SadguruLokanath, the Avadhut of the Himalayas. In 1978, he founded the International Nath Order in order to make the Nath way of life available in the West. He wrote many essays and articles, some of which were collected as The Scrolls of Mahendranath, first published in 1990. His successor as head of the Order, Sri Kapilnath, continues to teach and initiate sincere seekers

## **The Nath Initiation**

The Nath Initiation is conducted inside a formal ceremony in which some portion of the awareness and spiritual energy (Shakti) of the Guru is transmitted to the Neophyte. The Neophyte, now a Nath, is generally also given a new Name with which to support their new identity. This transmission or “touch” of the Guru is symbolically fixed by the application of ash to several parts of the body.

Davisson, Sven (2003). Shri Kapilnath Interview in *Ashé: Journal of Experimental Spirituality*, Vol. 2, No. 4, Winter 2003 “The passage of wisdom and knowledge through the generations required the mystic magick phenomenon of initiation, which is valid to this day in the initiation transmission from naked guru to naked novice by touch, mark, and mantra. In this simple rite, the initiator passes something of himself to the one initiated. This initiation is the start of the transformation of the new Natha. It must not be overlooked that this initiation has been passed on in one unbroken line for thousands of years. Once you receive the Nath initiation, it is yours throughout life. No one can take it from you, and you yourself can never renounce it. This is the most permanent thing in an impermanent life.” In *The Magic Path of Tantra*, Shri Gurudev Mahendranath wrote,

“The Nath Tantriks value the development of the three super-psychic faculties of Insight, Intuition, and Imagination. These three super-faculties or master powers also enable them to create their own texts, mantras, and rituals, all having utility and being in harmony with Cosmic Law. The faculties of Insight, Intuition, and Imagination are the building blocks on which we build our occult world and magic way of life.””The Tantra or Nath way of life can best be described as a state of mind. In no way can it be mistaken for an agglomeration of rules, morals, or prohibitions. It assumes that human beings can and want to live without them. Even when it advises you to do or not to do something, it is not a rule but a guideline to spare you trouble and pain. But you are still free to do and think as you wish.”

“Of course, our way of life has many physical aspects, but our minds still determine the success or pleasure of an act. Our life should have a plan and purpose, since most people blunder their way through life and generate misery for themselves and for others too. Our aims in life are to enjoy peace, freedom, and happiness in this life, but also to avoid rebirth onto this Earth plane. All this

## **RESEARCH METHODOLOGY**

### **Research Design**

Descriptive-method was used for this research design to address the objectives of the project. Descriptive type of design denotes to a preliminary study and the detailed discussion about the problem. Exploring means

to enquiry into social phenomenon with 'care' i.e to scrutinize study materials related to the phenomena under investigation. This flexible research design provides opportunity for considering different aspects of a problem under study and emphasizing on the discovery of ideas and insights.

## **Tools of Data Collection**

In this research data has been collected to magnify the purpose and goal. In this quantitative and qualitative process of research is fraught with different data collected from different sources mostly primary data sources like

- Interviews- the methodology can be the interview means the face to face interview of the Kendara communities and need to explore their traditional objective to play Kendara.
- Focus group discussion – focus group discussion among the Kendara communities to find out the unique point.
- Participation observation- a participant observation need to be done in their social and cultural life.
- Case studies – case studies can be used as a main tools for the Kendara communities to explore and analysis the life and the cultural pattern.

This study focused on the Nath cult people and associated with the religion in Kendrapara district. the Sample size is Rajanagar and Marsagahi block, out of 9 block the sample has been taken in 20% which is two blocks (ieRajanagar and Marsagahi block) there are 150 respondents has been selected those are the associated with the Nath Cult.

## **RESULT AND DISCUSSION**

**Cultural perceptive of Kendrpara-** Kendrapara, popularly known as TulasiKshetra, occupies a prominent place in the religious map of Odisha for the magnificent temple of Baladevjew. Tulasi was the daughter of demon Kandara. As the demon became tyrannical and the people suffered a lot, God Balabhadra killed him. By the request of his daughter Tulasi, Balabhadra married her and the place became famous as 'TulasiKshetra' after TulasiHistorians debateon TulasiKshetra. The name might have been derived from Tosali. "N.K.Sahu "states that Lokavighraha, a Vighraha king changed the name of 'Kalinga Rashtra' to 'Dakshina Toshali'. He further states that around 600 A.D. northern Tosali extended from the river Kapisa to Mahanadi and Southern Tosali extended from river Mahanadi to Rishikulya. Both the Toshalis remained under Sambhuyasa and Lokavighraha, respectively. However, around 602-03 A.D. Sambhuyasa succeeded in unifying both the Tosalis. From this Tosali, it is suggested that the term Tulasi is derived. Of course, the fact is not tenable. Another reference to TulasiKshetra is found from Sarala Dasa's *Mahabharata*. He was a poet of the 15th Century and most probably served in the army of Kapilendradeva. There after he became a saint and composed the *Mahabharata* in Odia language. He might have composed this epic amidst Tulasigarden and named this

place as 'Tulasadevapura' which later on became famous as TulasiKshetra. It is worthwhile to quote a stanza from his *Mahabharata. Tulasadevapura je puniBhratakhandaJambuRashtra Odra Rashtra Svarna Maratanda It means :* "There are many places like Tulasidevapura, Bhrata Khanda, Jambu Rashtra, Odra Rastra and Golden Martanda". This is very brief studies of Kendrapapa.

### **'Kendara' and Natha Jogi**

The members of *jogi* community, who used sing ancient religious songs by playing an instrument called kendra, and beg for alms from door to door, have decreased in number in the state. Over the years, members of this community have changed the means of earning their livelihood by switching to other professions. The kendra players used to sing songs from *TikaGobind Chandra, DanbiraHarishchandra, Boulagai* and other ancient spiritual texts. One hardly gets to hear songs such as *Bhaju Kina Ram Naam Re Gobinda* these days. However, few members of this community are still seen in some villages wearing a saffron attire and *pagdi* as headgear. Their songs are accompanied by the music of kendra — a percussion instrument made of monitor lizard skin that is hit with a small stick to create vibrations. Earlier, kendra singers used to adopt the profession as a family tradition. "Right from our birth, we were baptised by our forefathers to continue the tradition of singing at doorsteps playing the kendra and asking for alms. We were strictly instructed since childhood to lead this traditional life and not to follow any other profession," says Balabhadra Nath, a 65-year-old kendra player. Nath, who belongs to the Kandarsingha village of Parjanga area in Dhenkanal, says he began his traditional profession of begging alms from the age of nine. "I have travelled to many parts of the state such as Sambalpur, Talcher, Angul, Pallahara, Deogarh and some coastal districts as part of the tradition of going around places singing religious hymns," he adds.

But the singer laments that the response he was getting earlier is absent now. "Earlier, I used to collect at least 15 kg rice daily whereas it hardly sums up to 8 kg now," he says. His family of four members sustains with these alms. "The advent of modernity has lured the members of jogi families with 90 per cent shunning the tradition now. The kendra players have discarded begging and got into trade or jobs," he says. He said that the jogi community had arrived in the state during ancient times from Nepal and settled here in Orissa. They were scattered in various parts of the state and continued their activities. The communities are still found at Parajanga and Kamakhyanagar of Dhenkanal and at parts of Sambalpur and coastal districts like Kendrapara.

Natha - the word of words, religion of religions and in other words- the Master, the Almighty, *the Rakshyak, the Ishwar and the Prabhu*. Natha attracts many culture, community and ism. But above all it is yogic culture. As a religion it bears, order and value of life, vision and philosophy of thinking which make it for a vast acceptance irrespective of caste, class, color, creed, religion, race and territorial barriers. In this context Natha cult proves itself the broadness of Natha religion. Rich vision of Natha cult has globalised the grip.

It is believed that in between 10-12<sup>th</sup> Centuries, Sidha cult was replaced by Natha cult & owes its mark by eminent preacher like Gorakhanath, Matsyendranath and Jalandharnath. The Nathas are known for their great inclination towards religion and yogic disciplines.

Therefore, it is one of the sublime and sumptuous communities, aims to reach the blessing by supreme soul through Yoga and Meditation. Therefore it is designated as Natha dharma which is popular not only in Odisha, but also in India. Out of 12<sup>th</sup> main branches, the Satyanathi branch is situated in Odisha. This was known as headquarter of Natha Dharma in Odisha. In this regard Matsyendranath & Gorakhanath are the main preachers of Natha Dharma. According to different sources more than 40,000 Natha followers are there in Odisha. So Odisha is the hub of this religion, clearly shows the density and gravity enables to procure a pick point.

## **CONCLUSION**

In the modern time the Nath communities are still in the society but they are not performing their traditional Kendara music or neither are they moving from door to door. There are many thoughts and evidences comes to my mind that the when the Nath communities comes to our door people were wrongly interoperate that they came to beg. But no one listening their Kendara and ethical religious values in seriously. Due to lack of social acceptances and lack of motivation they live out their traditional occupation. The Nath communities are not only in Odisha but also the different states and they recognized the different name in other state like, Chhattisgarh, Jharkhand and Bihar.

## **RECOMMENDATION**

- There must be provision of research study for declining of ancient culture and changing scenario of Tridinal religion
- Cultural, religion and contemporary situations could be the three dimensions of current socio-economic life of the 21<sup>st</sup> Centre . that can be reviewed by through different stakeholders for an effective society
- This is to understood and evidenced that the culture and religion which has been lost during the periods. As this is the research about the traditional culture of Odisha. So it is open some crucial aspects of Odisha History.

## **REFERENCE**

- Chaudhari, G. N. (1979). Jharkhand's Roots: Socio-Cultural Changes among the Tribals residing in Villages near Ranchi, *Education Research Journal*, 52-77.
- Bandyopadhyay, P. K. (1992). *Natha Cult and Mahanad*, New Delhi, 73.
- Sujatha. K. ( 2001). A study on Koraput District, *Impact of Cultural Contaxt Journal*, New Delhi, 27-29.

Fuller, B. & Clarke, P. (1996). Life in Indian Classroom: The Influence of Culture and Caste. In R. S. Saxena (Ed.) *Studies on Classroom Process and School Effectiveness at Primary Stage*, New Delhi, NCERT, 329-259.

Deshpande, M.N. (1986). *The Caves of Panhale-Kaji*, New Delhi.

GOI. (2014). Report of the *High Level Committee on Socio-Economic, Health and Educational Status of Tribal Communities of India*, New Delhi, Ministry of Tribal Affairs, Mahendranath, Shri Gurudev.

<http://www.amritnathashram.org/about-ashram/nath-sampradaya/>

Bipra Madhuri, (1927). *Sri Tulasikshetra Mahatmya*, Cuttack, 34-53.

Mallik, B.K. (2004). *Khanavachana, Eastern India: Eassays in History, Society and Culture*, Bhubaneswar, 60-63.

Banerjee, A.K. (1983). *Philosophy of Gorakhnath with Goraksha-Vacana-Sangraha*, ISBN 978-8120805347

Popay, J., Enoch, E., Johnston, H., & Rispel, L. (2006). *Social Exclusion Knowledge Network: Scoping of SEKN and proposed approach*. The Central Co-ordinating Hub for the SEKN.



# EFFECT SIZE ANALYSIS OF BILINGUALISM ON METALINGUISTIC DEVELOPMENT FOR PRIMARY SCHOOL CHILDREN

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\*\* Jaba Varadwaj

## *Abstract*

*The study examined the development of metalinguistic awareness among the rural primary school children in Odisha as consequences of bilingualism. The participants were 240 primary school children including 120 each from unilingual and bilingual groups. They were randomly selected from grade II, IV, and VI. The participants were Telugu-Odia bilinguals or Odia speaking monolinguals by virtue of their family status. Eight measures of metalinguistic awareness relating to both their analysed knowledge of language and control over and ability to manipulate language were administered on each participant. The results pointed out that metalinguistic awareness is an important cognitive development among primary school children although the rate of development varies for different measures. Bilingualism has an advantage in the development of metalinguistic skills, although its effects are not same for each of the skills. Some of the skills best influenced by bilingualism are correction of other's speech, meaning and referent relationship, and word creation. Bilinguals are at disadvantage with respect to appropriateness of utterances.*

**Key words:** *Bilingualism, metalinguistic, effect size, eta squared*

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## INTRODUCTION

Nearly for a century, the phenomenon of bilingualism has been puzzling the researchers. In the early 1920s the quest began with the fundamental question: Is bilingualism desirable? No definite answer to this question has emerged until 1980s, which has been evident in the McLaughlin's (1977) statement that "findings in regard to the consequences of bilingualism can at best be described as inconclusive". However, during the past four decades, researchers on bilingualism have used a multidisciplinary approach which helped to explicate the psychological, sociological, linguistic, and educational characteristics of the bilingual setting that determine whether bilingualism is a source of enrichment and diversity and hence desirable or a source of frustration and confusion and thus to be avoided.

During the period from 1920 to 1960, many researchers speculated that bilingualism caused language handicaps and cognitive confusion among children (Manuel & Wright, 1929; Mitchell, 1937; Rigg, 1928) while a few others (Anastasi & de Jesus, 1953; Carrow, 1957; Darcy, 1953). According to Arsenian (1977), sixty percent of the early studies reported bilingualism as an intellectual handicap, thirty percent reported that this handicap exists in a minor form, and only ten percent of the studies found no ill effects of bilingualism.

However, an optimistic trend in bilingual research emerged with the investigation of Peal and Lambert (1962) on Canadian bilingual children. Far from being negative in child's cognitive development, bilingualism was shown to positively affect both academic and linguistic processes. Research evidences in confirmation with the findings of Peal and Lambert began to gather from different parts of the world, from Singapore (Torrance, Gowan, Wu, & Allioti, 1970), Switzerland (Balkan, 1970), South-Africa, Ianco-Worrall, 1972), Israil (Ben-zeev, 1972), New York (Ben-zeev, 1972), and Canada (Cummins & Gulutsan, 1974). All these studies reported that bilingual children were superior to their unilingual counterparts on measures of intelligence, cognitive flexibility, creativity, and divergent thought.

### **Bilingualism and Metalinguistic Development**

Metalinguistic development refers to both the development of children's awareness of certain properties of language and their ability to analyze linguistic input; that is to make language forms as the object of focal attention and to look at language rather than through it to the intended meaning. In 1980s, attempts were made to clarify the notion of metalinguistic development in terms of two underlying dimensions, namely children's analyzed knowledge of language and their control over language (Bialystok, 1984; Bialystok & Ryan, 1985). Number of studies reported that while bilingualism would enhance children's control over and ability to manipulate language, its relationship with their analyzed knowledge of language remains uncertain. However, many contemporary researchers claimed that exposed to and gaining control over two language systems, the bilingual child has had to decipher much more language input than the unilingual child, hence they have better skills than unilingual in both analyzing and controlling the language.

Vygotsky (1962) argued that being able to express the same thought in different languages would enable the child to view the phenomenon under more general categories. He suggested that when the application of sound pedagogical principles ensured that each language had an independent sphere of influence, bilingualism could orient the child towards more abstract thought processes freed from the prison of concrete language form and phenomenon. Lambert and Tucker (1972) found that the experimental group in the St. Lambert's bilingual education project had learned to engage in a form of constructive linguistics. Ben-zeev (1977) reported that bilinguals develop an analytic strategy towards language as a means of overcoming inter-lingual interference.

Kuile et al. (2011) investigated whether greater metalinguistic awareness is related to an increased ability to understand an unknown language. In the study, Dutch high school students from monolingual and bilingual classes were administered an Indonesian Language Test consisting of items about a story in Indonesia. The results showed that bilingual students scored significantly higher than monolingual students in the unknown language pointing to their higher skills in analyzing the language inputs. The observations support the notion that bilingual education increases metalinguistic awareness and therefore the ability to understand an unknown language.

Bailystok & Barac (2012) reported different factors associated with advantage for bilingual children for their metalinguistic awareness and executive control. They reported that level of proficiency in the language of testing was related metalinguistic awareness and length of time spent in bilingual activities was related to executive control. Hence, they proposed the distinction between representational structure and executive control, as sources of effect for bilinguals' better metalinguistic awareness.

Bialystok et al., (2014). examined metalinguistic awareness in children who were becoming bilingual in an immersion education program to determine at what point in emerging bilingualism the metalinguistic advantages appear and what types of metalinguistic tasks reveal these developmental differences. Measures included morphological awareness, syntactic awareness, and verbal fluency, with all testing in 1<sup>st</sup> language English. These tasks differed in their need for executive control, a cognitive ability that is enhanced in bilingual children. Overall, the metalinguistic advantages emerged gradually. These findings demonstrated the gradual emergence of changes in metalinguistic awareness associated with bilingualism over a period of about 5 years.

Huang (2016) compared two groups of bilinguals speaking same first language (L1) but different second language on measures of metalinguistic proficiency, having their L1 proficiency and nonverbal intelligence statistically controlled. He reported that language characteristics in bilinguals helped the development of metalinguistic awareness.

Sanz (2019) documented studies from different types of metalinguistic awareness from phonological to pragmatic. Her findings suggested that speakers of multiple languages have greater metalinguistic awareness and develop this awareness at an earlier age than those who speak only one language. Metalinguistic awareness is posited as a key factor in explaining the bilingual edge; that is, multilinguals' enhanced capacity to learn further languages and to acquire literacy earlier than monolingual children. The results for positive effects of

multilingualism on the development of metalinguistic awareness are quite robust, even though variables, including age, level of proficiency, biliteracy, language typologies of the bilingual, and the nature of the task used to measure the effects. Research on multilingualism and metalinguistic awareness includes case studies as well as comparisons of monolinguals, bilinguals, and multilinguals in laboratory settings or classroom/school settings. Procedures implemented in this research vary from participant observations to language proficiency tests. Researchers also use language tasks that elicit superordinate, communicatively adequate definitions; rich/poor object descriptions, word/object associations, grammaticality and semantic congruence judgments, error correction, sound substitution, and word length judgments.

The review of above studies pointed out the significance of research on bilingualism and particularly the need to gather evidences from diverse sociocultural backgrounds. Hence, the present study was designed to examine the development of metalinguistic awareness among rural primary school children who have their unilingual or bilingual status by exigencies of life. The following objectives were proposed for the present study.

### **Objectives**

1. To examine the developmental changes in the skills of metalinguistic awareness during primary school period among both unilingual and bilingual children
2. To examine the effect size in the change of each of the metalinguistic measures during the primary school years
3. To compare the relative changes in the effect size for unilingual and bilingual children in each of the metalinguistic measures.

### **METHOD OF STUDY**

The participants were 240 primary school children from the rural areas of Ganjam district in Odisha. Large number of school students in the southern part of the district belongs to Telugu speaking families and are taught in Odia medium schools. Hence, they are Telugu-Odia bilinguals from childhood. On the other hand, in the northern part of district, large number of students belongs to Odia speaking families and read in Odia medium schools and hence they are Odia speaking unilingual from childhood. Students were randomly selected from grades II, IV, and VI, nearly from twenty schools in both the area. Eight different measures of metalinguistic awareness were administered on each of the students. The measures were Rhyme recognition, Appropriateness of utterances, Correction of other's speech, Meaning and referent relationships, symbol substitution, Arbitrariness of language, word creation, and ambiguity detection. Two trained students having the degree of Master of Philosophy in Psychology administered the tests.

## RESULTS AND DISCUSSION

The means and standard deviations for each of the eight measures of metalinguistic awareness are presented in Table 1. The means of the unilingual and bilingual subjects across the three grades for each of the measures are plotted in Figures 1 to 8. Each of the figures shows that the metalinguistic skills of both unilingual and bilingual subjects are consistently increasing across the grades. On the other hand, the curves of the bilinguals' are above the curve of the unilinguals' except only in appropriateness of utterances in which unilinguals are above the bilinguals. Arising from the nature of means and standard deviations as shown in the figures, two-way factorial ANOVA were computed on each of the measures and the results are reported in Table 2.

**Table 1.** Group Means and Standard Deviations for the measures of Metalinguistic language awareness (N=40 in each group)

Tests (Maximum Score)	Grade Group	II		IV		VI	
		Uni	Bili	Uni	Bili	Uni	Bili
Rhyme Recognition (8)	Mean	3.89	3.74	5.80	6.37	6.90	7.45
	SD	0.69	0.71	0.68	0.84	0.86	0.79
Appropriateness of Utterances (8)	Mean	2.93	2.18	3.76	3.05	5.53	4.19
	SD	0.69	0.83	0.74	0.77	0.89	1.02
Correction of Other's Speech (8)	Mean	2.31	2.44	3.09	3.35	4.08	4.66
	SD	0.45	0.56	0.69	0.61	0.84	0.87
Meaning and Referent Relationship (8)	Mean	1.36	1.53	2.31	2.69	3.14	3.97
	SD	0.48	0.53	0.51	0.49	0.55	0.64
Symbol Substitution (8)	Mean	2.63	3.34	3.67	4.12	4.76	5.66
	SD	0.46	0.69	0.77	0.52	0.65	0.83
Arbitrariness of Language (8)	Mean	2.67	2.87	3.54	3.91	4.68	5.76
	SD	0.32	0.57	0.75	0.81	0.65	0.83
Word Creation (8)	Mean	2.21	2.72	3.54	3.98	4.61	4.96
	SD	0.58	0.69	0.62	0.75	0.84	0.68
Ambiguity Detection(12)	Mean	2.94	3.65	4.57	5.31	5.88	6.73
	SD	0.53	0.42	1.07	1.02	0.83	0.81

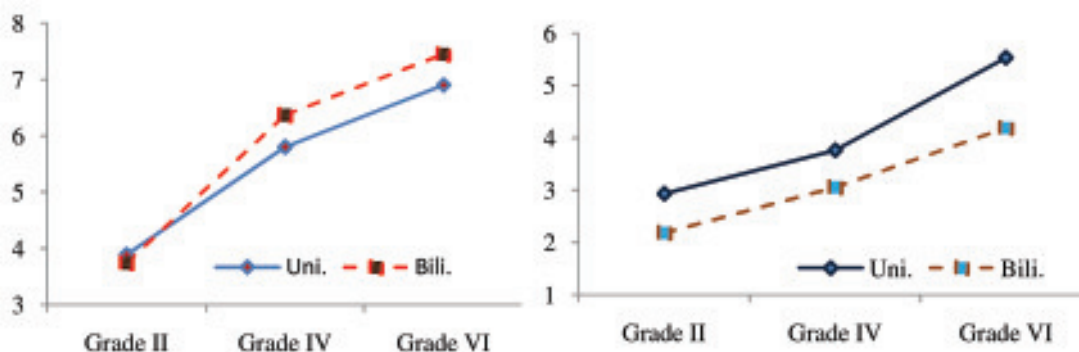


Figure 1. Rhyme recognition

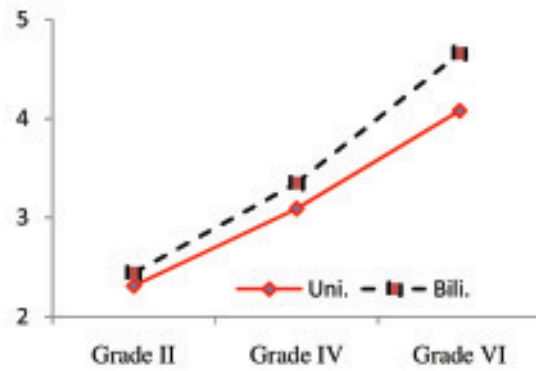


Figure 2. Appropriateness of utterances

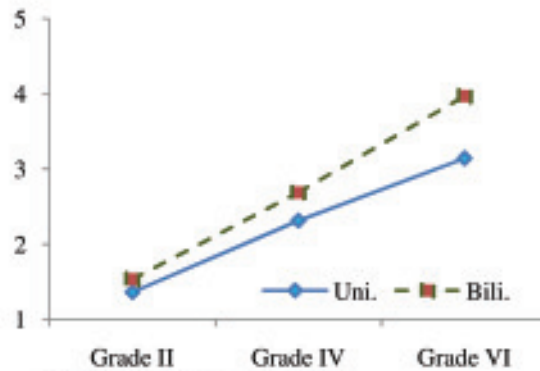


Figure 3. Correction of other's speech

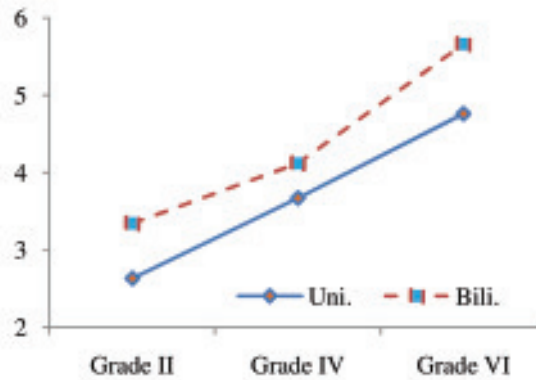


Figure 4. Meaning and referent relationship

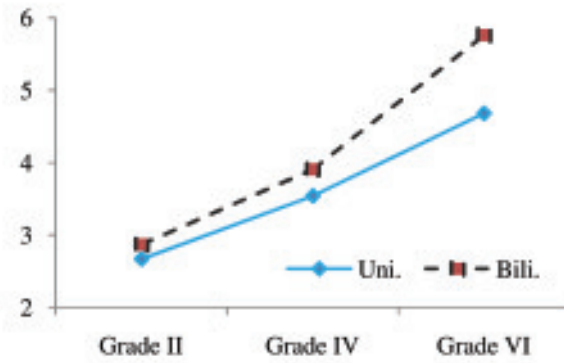


Figure 5. Symbol substitution

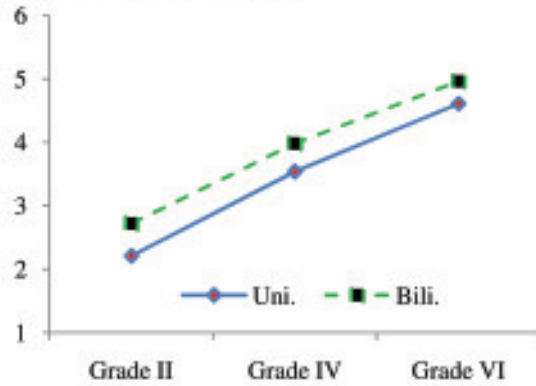


Figure 6. Arbitrariness of language

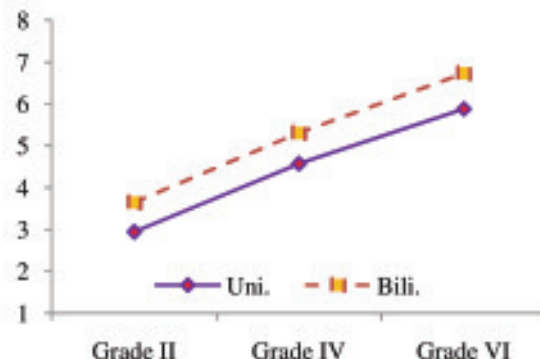


Figure 7. Word creation

Figure 8. Ambiguity detection

### Development of metalinguistic awareness

Each of the eight measures of metalinguistic awareness have shown significant developments across grades clearly suggesting that primary school years are important period for the development of metalinguistic awareness among both unilingual and bilingual children. All the F-values relating to the main effect of grade are significant (Table 2). In order to examine the relative effects of grade on each of the measures of metalinguistic awareness, eta squares ( $\zeta^2$ ) are calculated for effect size and are presented in Table 2 and Figure 9. Observation of eta

squared point out that the rate of development across the grades vary for different metalinguistic skills. Rhyme recognition, correction of other's speech, and meaning and referent relationship are found to have very strong development, while appropriateness of utterances, symbol substitution, and ambiguity detection have weak development. On the other hand, arbitrariness of language and word creation have moderate development.

With regard to language-status as unilingual and bilingual, main effects of ANOVA are significant for all the eight measures (Table 2). While seven of the measures are significant in favour of bilinguals, appropriateness of utterances is significant in favour of the unilinguals. Eta squares as measures of effect size are presented in Table 2 and Figure 10. Bilingual-unilingual differences are found to be strong in meaning and referent relationship, correction of other's speech, and word creation in favour of bilinguals. On the other hand, differences are weak in symbol substitution, arbitrariness of language, and ambiguity detection in favour of bilinguals and in appropriateness of utterances in favour of unilinguals.

**Table 2**  
Summary of Analysis of Variance Showing the Influence of Grade (A) and Language Status (B) on Language Awareness Measures

Sources	SS	df	Ms.	F	$\eta^2$
<b>Rhyme Recognition</b>					
Grade (A)	284.24	2	142.12	63.73**	7.98
Language Status (B)	58.41	1	58.41	26.19**	3.43
A x B	27.52	2	13.76	6.17**	1.66
Within	521.73	234	2.23		
<b>Appropriateness of Utterances</b>					
Grade (A)	122.46	2	61.23	21.94**	2.80
Language Status (B)	34.43	1	34.43	12.34**	2.10
A x B	10.66	2	5.33	1.91	
Within	654.66	234	2.79		
<b>Correction of Other's Speech</b>					
Grade (A)	315.76	2	157.88	92.87**	7.39
Language Status (B)	68.64	1	68.64	40.37**	4.87
A x B	6.43	2	3.21	1.89	
Within	398.36	234	1.70		
<b>Meaning and Referent Relationship</b>					
Grade (A)	151.50	2	75.75	75.00**	8.62
Language Status (B)	43.54	1	43.54	43.12**	6.53
A x B	18.63	2	9.32	9.22**	3.02
Within	236.78	234	1.01		

<b>Symbol Substitution</b>					
Grade (A)	184.68	2	92.34	34.07**	3.55
Language Status (B)	73.56	1	73.56	27.14**	3.16
A x B	45.60	2	22.80	8.41**	1.76
Within	634.55	234	2.71		
<b>Arbitrariness of Language</b>					
Grade (A)	431.85	2	215.93	93.07**	6.33
Language Status (B)	41.54	1	41.54	17.90**	2.78
A x B	49.62	2	24.81	10.69**	2.15
Within	543.56	234	2.32		
<b>Word Creation</b>					
Grade (A)	362.25	2	181.13	96.85**	7.20
Language Status (B)	86.41	1	86.41	46.21**	4.97
A x B	24.24	2	12.12	6.48**	1.86
Within	438.56	234	1.87		
<b>Ambiguity Detection</b>					
Grade (A)	327.68	2	163.84	46.94**	3.66
Language Status (B)	81.55	1	81.55	23.36**	2.59
A x B	44.51	2	22.26	6.38**	1.35
Within	817.46	234	3.49		

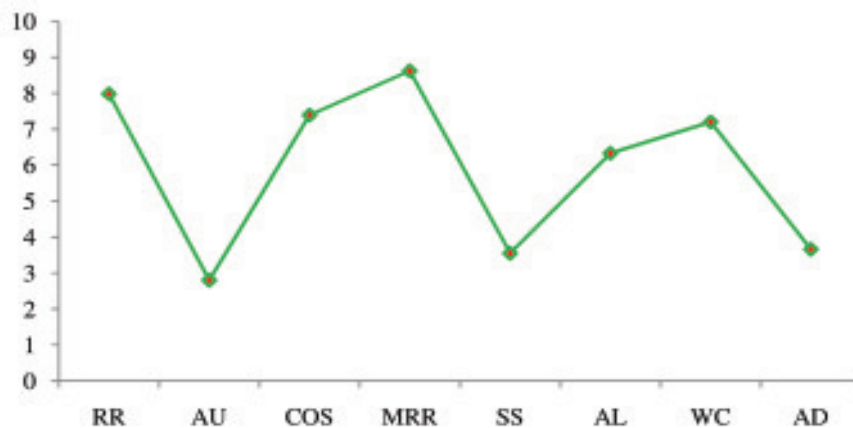


Figure 9. Eta squared for grade effect

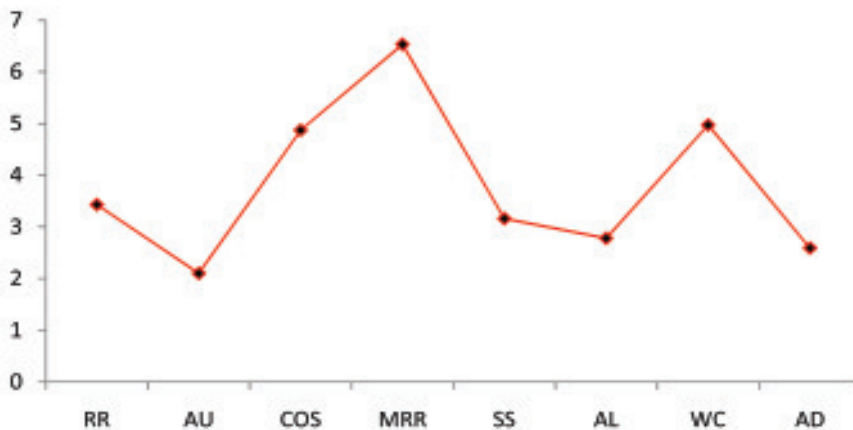


Figure 10. Eta squared for language status

## CONCLUSION AND IMPLICATIONS

The following conclusions are derived from the study.

1. Metalinguistic awareness is an important cognitive development among primary school children although the rate of development varies for different measures.
2. Bilingualism has an advantage in the development of metalinguistic skills, although its effects are not same for each of the skills.
3. Some of the skills best influenced by bilingualism are correction of other's speech, meaning and referent relationship, and word creation.
4. Bilinguals are at disadvantage with respect to appropriateness of utterances.

The findings of the study have significant implications for parents, teachers, and educational planners for implementation of bilingual education for children from early primary grades so they develop better metalinguistic skills and awareness to have advantage in their future cognitive functioning.

## REFERENCES

- Anastasi, A., & de Jesus, C. (1953). Language development and nonverbal IQ of Puerto Rican Preschool Children in New York City. *Journal of Abnormal and Social Psychology*, 48, 357-366.
- Arsenian, S. (1977). *Bilingualism and mental development*. New York: Culumbia University Press.
- Bialystok, E., & Barac, R. (2012). Emerging bilingualism: Dissociating advantages for metalinguistic awareness and executive control. *Cognition*, 122(1), 67-73
- Bialystok, E., Peets, K.F., & Moreno, S. (2014). Producing bilinguals immersion education: Development of metalinguistic awareness. *Applied Psycholinguistics*, 35(1), 177-191
- Balkan, L. (1970). *Les effects du bilingualism francais-ang-lais surles aptitudes intellectuels*. Brussels, Belgium:AIMAV
- Ben-zeev, S. (1977). Mechanism by which childhood bilingualism affects understanding of language and cognitive structures. In P.A. Hornby (Ed.), *Bilingualism: Psychological, Social, and Educational Implications*. New York: Academic Press
- Ben-zeev, S. (1972). *The influence of bilingualism on cognitive development and cognitive strategy*. Unpublished doctoral dissertation, University of Chicago.
- Bialystok, E., & Ryan, E.B. (1985). Metacognitive framework for the development of first and second language skills. In D. L. Forrest Pressley, G. E. Makinon; & T.G. Waller (Eds.), *Metacognition, Cognition, and Human Performance*. New York: Academic Press



- Bialystok, E. (1984). *Influence of bilingualism on metalinguistic development*. Paper presented at the symposium "Language awareness, reading development: Cause? Effect? Concomitance?" at the National Reading conference Meeting, St. Petersburg, Florida
- Carrow, M. A. (1957). Linguistic functioning of bilingual and monolingual children. *Journal of Speech and Hearing Disorders, 22*, 371-380.
- Cummins, J. and Gulutsan, M. (1974). Symbolic coding in bilinguals. In S. Carey (Ed.), *Bilingualism, biculturalism, and education*. Proceedings from the conference at College Universitaire Saint-Jean, The University of Alberta.
- Darcy, N. T. (1953). A review of literature on the effects of bilingualism upon the measurement of intelligence. *Journal of genetic Psychology, 32*, 21-52
- Huang, K.J. (2016). On bilinguals' development of metalinguistic awareness and its transfer to L3 learning: The role of language characteristics. *International Journal of Bilingualism, 22* (3), 330-349**
- Ianco-Worrall, A. (1972). Bilingualism and cognitive development. *Child Development, 43*, 1390-1400.
- Kuile, H., Veldhuis, M., Veen, V.S., & Wicherts, J. (2011). Bilingual education, metalinguistic awareness, and the understanding of an unknown language. *Bilingualism: Language and Cognition, 14*(2), 233-242.**
- Lambert, W. E., & Tucker, G. R. (1972). *The bilingual education of children: The St. Lambert Experiment*. Rowley, Mass: Newbury House
- Manuel, H.T., & Wright, C.E. (1929). The language difficulty of Mexican children. *Journal of Genetic Psychology, 36*, 458-466.
- McLaughlin, B. (1977). Second language learning in children. *Psychological Bulletin, 83* (3), 438-459.
- Mitchell, A.J. (1937). The effect of bilingualism in the measurement of intelligence. *Elementary School Journal, 38*, 29-37.
- Peal, E. & Lambert, W. E. (1962). The relation of bilingualism to intelligence. *Psychological Monograph, 76*, (27, Whole No. 546).
- Rigg, M. (1928). Some further data on language handicap. *Journal of Educational Psychology, 19*, 252-256.
- Sanz, C. (2019). Multilingualism and metalinguistic awareness. <https://doi.org/10.1002/9781405198431.wbeal0802.pub2>

Torrance, E. P., Wu, J., Gowan, J. C., & Aliotti, N. C. (1970). Creative functioning of monolingual and bilingual children in Singapore. *Journal of Educational Psychology*, 61, 72-75.

Vygotsky, L. S. (1962). *Thought and language*. New York: MIT Press.



# **PUSHED TO THE MARGINS: THE CRISIS AMONG TRIBAL OF INDIA AND ODISHA DUE TO COVID-19**

**\*Smt. Prachi Parimita Rout**

## ***Abstract***

This article is an attempt to analyse critically the impact of COVID-19 on tribal at national and state level. Tribal people experience poor access to education ,health , sanitation , safe water etc. Now due to the pandemic of COVID-19 tribal face extreme difficulties to overcome the situation of lack of healthcare facilities and alternative livelihood opportunities for survival. This pandemic has affected allsections of tribal population including men, women, children and elders too. The major issues and solutions to fight against the situation are very clearly explained in this article. Target intervention specific approach need to develop for tribal communities. Though secondary sources of data are used but it reflects the national and state level situation of tribal people in an expressive way.

## **INTRODUCTION**

The COVID-19 pandemic has globally changed people's life and livelihood. It has affected almost all the categories of people equally but in practice, the pandemic has affected mainly people having social backwardness, facing economic inequality and those who are geographically isolated and dispersed. Scheduled tribes are the one among them who are highly affected by the COVID-19 pandemic (Wakharde, 2021). India is home to around 104 million tribal population, concentrated mainly in 10 states of the country. They accounts for 8.6% of the total population of India. They are backward in all dimensions of development including health, education and social equities (Khanna, 2020). Odisha occupies a distinct place in India as it represents a unique combination of unity in diversity. There are 62 Scheduled Tribe communities in Odisha and each tribal community is different from other tribal group in terms of its culture, food, language and dressing etc. The State has the privilege of having highest number of Particularly Vulnerable Tribal Groups (PVTGs) which are 13 in numbers. Total Scheduled tribe population comprises 22.85% as per 2011 census. (ST&SC DEVELOPMENT, 2020). Lots of issues are discussed about tribals of odisha but in contemporary time the impact of covid-19 on tribals need to be explored. As all sections of people are affected by this pandemic, so the most marginalised and vulnerable tribals are also no exception to this. Still the effect is low on them still research on this need to betaken.

## **IMPACT OF COVID-19 AMONG TRIBES OF INDIA**

According to the report of Ministry of tribal affairs, the challenges imposed by the COVID-19 seems to be more dangerous for the tribal people as a whole as compared to rest of the population due to their close communities ties in rural areas, limited access to resources for livelihood , poor health and poverty etc. They face difficulties in getting access to COVID-19 testing and healthcare facilities , they struggle hard to get two meal per day and no earnings and alternative livelihood opportunities due to restriction of physical movement from one place to another . Their local markets are also closed and the Minor forest produces on which they rely heavily for their livelihood purpose due to lack of demand . It seems that the national model policy to eradicate the pandemic have no grip on tribal issues to solve as they need different intervention to look out their peculiar issues (NEWS 18). The tribal community people collect minor forest produces from forest those having medicinal value and sell them at market. Besides, some tribal people engage themselves in body massage service. But in present scenario, due to the pandemic situation of corona virus, tribal could not move to market to earn their livelihood as non tribal people fear to take services and commodities from them as there ia a chance to get affected by them. This has created problems for tribal people to continue their work for livelihood purpose (Hassan, 2020). The government need to make a holistic approach with the collaboration of all stakeholders to make the policies and programmes more effective for tribal development in this pandemic situation which will be sustainable in nature (NEWS 18). According to a study , the tribal women in Nanded district of Maharashtra suffered hard due to the COVID-19 pandemic. Due to lockdown the markets got closed and the tribal women of this area left with no earnings for their survival. An annual fair is organised during the month of April in Kandhartaluka of Nanded district that allows women from different nearby areas

to sell their traditional products like handmade toys, jewellerys, utensils, medicines, handicrafts, tattoo making and making ear and nose piercing. Some others entertain people by singing and dancing with animals. They use to continue this activities in all nearby fairs which are organised in their locality throughout the year(Wakharde, 2021).

## **IMPACT OF COVID-19 AMONG TRIBES OF ODISHA**

The tribal population in Odisha has largely not touched by the COVID-19 pandemic as they have a sync between their unique customary practices and traditions as found by Scheduled Castes and Scheduled Tribes Research and Training Institute (SCSTRTI), a premier government-run research institute on STs &SCs. The spread of covid-19 has encountered on a small scale in tribal areas due to— maintaining social distancing which is their traditional way of life and the government has taken proactive measures in spreading awareness about the pandemic of covid-19, as SCSTRTI director A. B. Ota said. According to the findings of the study: “By habit, the tribal people walk mostly in rows by maintaining social distancing, instead of in groups. Suresh Wadaka, a local Dongria Kondh boy from Khambesi village in Rayagada district said, when the tribal people walk, especially on slopes, they maintain a distance so that if someone slips, then the following person will not be affected and also can extend a helping hand.” Maintaining social distance and hygienic norms are the root cause which helped tribals to stay safe during the pandemic. (Barik, 2020).

A rapid assessment report on the impact of Covid -19 among tribals of Kalahandi working in Kerala shows how they are affected by the coronavirus and don't know the symptoms besides how to take preventive measures to save themselves from the tentacles of coronavirus. They mainly belongs to two tribal communities mainly Saura and Kondh. They are mainly migrant labourers. (Karunakaran, 2020). Sania Singh, 27, was struggling hard for the sale of minor forest produce (MFP) during the lockdown held for the COVID-19 pandemic. When Amphan hit Odisha, the hopes he had of procuring an income from the sale of the MFP items sank. Sal is their crucial source of livelihood. They could not sell what they had already collected and could not procure anything further because of the pandemic of Covid-19. They suffered huge losses. Also, arrival of Amphan, added fuel to their suffering. They were now wondering how will they survive? said Mansingh who belongs to the Kondh tribe from Odisha's Mayurbhanj district. According to the MoTA (Ministry of Tribal Affairs), tribal people get 20 to 40 per cent of their annual income from selling MFP. MFP comprises of wild honey, tamarind, Sal leaves, Sal seed, mahua seeds and others. But due to the lockdown, experts have repeatedly advised out the need of a COVID-19 response team for tribal peoples to ensure the protection of livelihood of them. Comparing the 2011 Census data, it was found that 40.6 percent of ST population lived below poverty line in the India whereas for the non-tribal population it is 20.5 per cent only. (Mitra, 2020)

In Odisha, the covid-19 affected those tribals who are mainly the migrant workers, who returned from different states to their native place due to lockdown and shutdown that took place in India. Local people of

tribal pockets are not affected by the corona virus, an Odisha health department official said, admitting that testing in hospitals for tribal population was much less as compared to non-tribal population(Mohanty, 2020).

## **THEORETICAL FRAMEWORK: TRIBAL COMMUNITY AND COVID-19**

The Scheduled tribe communities have their own unique identification consisting of different geographical location, ethnicity, language and social as well as economic subsistence. But the growth of development induced displacement which include capitalism, industrialism, globalisation and pollution has affected the unique lifestyle of tribal people in our country. After Independence mainly three approaches of development for tribal are taken into consideration. The first approach introduced by G.S.Ghurye known as “assimilation approach”. In this approach he suggested to assimilate the tribal community with the mainstream society that would help them to develop them along with non-tribal peoples but in reality tribal people are always discriminated and exploited. Verrier Elwin advocated “isolationist approach” in which he suggested to isolate the tribal people from mainstream society . So that no one can interfere in their day to day life and they can have full freedom to live a dignified and sustainable life forever. Jawarharlal Nehru advocated “Integration approach” where he advised to integrate all tribal people in the path of national development and growth. Nehru had also introduced “panchsheel” to promote and protect the tribal people in the footsteps of national mainstream. But the COVID-19 situation has proved that the tribal’s are used only as labourer required in capital and global market .They are thrown from the covering protective measures during the pandemic situation. Scheduled tribes are experiencing huge adverse effects of the pandemic. They are isolated and lack support from government including health checkups, proper health facilities and medicines. Their geographical isolation and different lifestyles lead to more danger for them in this pandemic situation(Wakharde, 2021).

## **BARRIERS FOR TRIBAL COMMUNITIES DUE TO COVID-19**

Tribal communities face lots of problems due to the pandemic of COVID-19. Some of the major issues are as follows(Khanna, 2020):

1. Lack of COVID-19 information, awareness, healthcare facilities and testing kits for tribal people which trigger the impact of COVID-19 for them.
2. The indigenous people go through food insecurity in addition to malnutrition. Besides access to Public distribution system(PDS) and Other Tribal Forest Dwellers(OTFD) are less as they are situated in remote areas.
3. Loss of livelihood due to lockdown and shutdown. Tribal depends on Minor forest produce and non timber forest produce to earn their livelihood which provide them 60% of the annual income. But in the time of selling all markets are closed due to the pandemic which create hard problems for them.

## **SUGGESTIONS**

The general measures for tribals don't fit enough to combat the challenges of the pandemic. So some specific and target intervention measures need to be taken into considerations keeping in mind the unique features of tribal . Some of the focal points are as follows(Khanna, 2020):

1. Ministry of tribal affairs need to make a comprehensive guidelines and COVID-19 response plan for the overall development of tribal community.
2. Adequate number of COVID-19 centres must be opened in tribal areas for testing and healthcare facilities using mobile health units and vans.
3. Proper production and selling of MTPs and non timber forest products must be looked after by both state and national government jointly.
4. During lockdown forest clearance decision must be withdrawn by environment ministry , so that tribal can collect MTPs .
5. Compensatory Afforestation Fund Management and Planning Authority(CAMPA) should release viable funds to gram sabhas of each tribal village for management of their livelihood using forest resources.

## **CONCLUSION**

Tribal's are the unique heritage of our country. It is their fundamental as well as constitutional rights to get all support from government for their overall development. In this COVID situation a proper support for healthcare facility, marketing facility and awareness about the symptoms and treatment must be known to them. Tribal are integral part of our country. They need to be preserved and served.

## **REFERENCES:**

- Barik, S. (2020, December 18). For Odisha tribals, physical distancing has been a way of life. Bhubaneswar, Odisha, India: THE HINDU.
- Hassan. (2020, July 16). The Hindu Impact : Tribals get help to face pandemic crisis. The Hindu Newspaper.
- Karunakaran, B. (2020, April 14). Rapid survey shows impact of covid on tribal migrant workers from Odisha. Times of India.
- Khanna, P. (2020, June 8). How The Impact Covid-19 Has Reached Tribal Communities In India. Youth kiAwaz.

Mitra, R. (2020, May 22). Tribal communities in Odisha left to fend for themselves during pandemic and cyclone. THE NEW INDIAN EXPRESS.

Mohanty, R. M. (2020, June 19). Tribal areas in Chhattisgarh and Odisha have less COVID-19 cases. Officials explain why. Raipur/Bhubaneswar: Hindustan Times.

ST&SC DEVELOPMENT, M. &. (2020). *ANNUAL ACTIVITY REPORT 2020-21*. BHUBANESWAR.

Tribals in India Need Firmer Hand - holding During and Following Covid-19 Pandemic. (2020, July 28). NEWS 18.

Wakharde, S. B. (2021). COVID-19 Pandemic and Tribal Women in Nanded District of Maharashtra. *Economic and Political Weekly*, 56 (11).





# **SPECIFIC LEARNING DISABILITY- ‘ DYSLEXIA’: ANALYSIS OF A CASE STUDY**

**\*Dr. Niharika Das**

**\*\*Ritwika**

## ***Abstract***

*Dyslexia, as a Specific Learning Disability (SLD) in reading and writing, requires adequate early intervention to prevent future school failure of the students. This paper describes the analysis of a case study on Dyslexia, in which the diagnostic assessment of a seven years old boy, named Swapnil Mishra, labeled as suffering from the disease is being assessed. The diagnostic evaluation revealed weaker performances in planning, attention, successive and simultaneous processing, in Cognitive Assessment System (CAS). Lack of language coinage, lack of accuracy in reading and spelling, reading fluency and making more mistakes are also found in the intelligence test. The intervention programme of PASS model and PREP for one year of thrice weekly session, Swapnil has achieved significant improvement in both reading and writing reducing the number of error in accuracy and fluency. This progress justifies the effectiveness of Programme and also has helped Swapnil in leading a normal and healthy life.*

**Key words –*Specific Learning Disability, Dyslexia, PREP, PASS, CAS***

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## INTRODUCTION

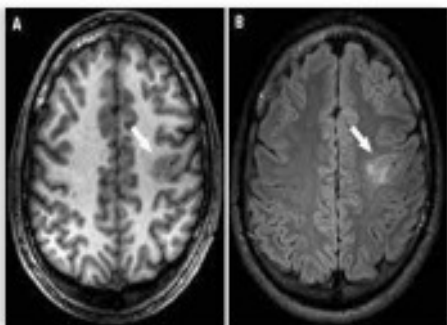
***“Logical thinking can lead you to truth but you can’t reach the truth by that way without faith”***

***Pandit Ravi Shankar***

Dyslexia is a mild mental sub-normality characterized by learning disability, generally neurobiological in its origin associated with some environmental factors. Its symptoms are observed throughout the world. Studies suggest that 1 in 10 adults in the US and UK has dyslexia, a learning difference that can impact on working memory, reading, writing and spelling skills. It affects 3% to 7% of the population. However, up to 20% of the general population may have some degree of symptoms. While dyslexia is more often diagnosed in men, still there is evidences that it affects both men and women equally. In 60% of cases the dyslexia may be mild to moderate, but the remaining 40% of people can struggle with a severe form that interrupts Literacy Skill Development (LSD) when early support is not put in place. Adults with dyslexia often have a wide range of nonspecific mental health, emotional imbalance, and work difficulties.

The term dyslexia is from the field of medicine. Dyslexia was clinically described by Oswald Berkhan in 1881, but the term dyslexia was coined in 1883 by Rudolf Berlin (Rudolf August Johann Ludwig Wilhelm Berlin), an ophthalmologist in Stuttgart. He used the term ‘Dyslexia’ to refer to the case of a young boy who had severe difficulty in learning, not only to read and write, but also showing typical intelligence and physical disabilities in all other respects. Subsequently in 1883, 1887, 1889, 1990, 1917, 1925, 1949, 1964, 1970, & 2000 to 2010, many more facts and evidences have emerged on Dyslexia.

In 1979, Galaburda and Kemper and Galaburda et al. 1985, reported observations from the examination of post autopsy brains of people with dyslexia. Observed anatomical differences in the language center in a dyslexic brain, showing microscopic cortical malformations known as ectopias and more rarely vascular micro-malformations and in some instances these cortical malformations appeared as a microgyrus. These studies suggested abnormal cortical development which was presumed to occur before or during the sixth month of foetal brain development.



Although there are no official subtypes of Dyslexia, but for identification it can be of several types, like *Acquired Dyslexia, Surface Dyslexia and Phonological Dyslexia* (Castles and Coltheart, 1993)

Cestnick and Jerger (2000) and Cestnick (2001) further demonstrated distinct processing differences between phonological and surface dyslexics. Manis et al. (1996) concluded that there were probably more than two subtypes of dyslexia, which would be related to multiple underlying deficits.

Recently, Indian researchers found a cluster of gene mutations which may give rise to dyslexia. The researchers, at the National Brain Research Centre, found a strong correlation between dyslexia and variations in the gene cluster called Protocadherin Gamma. The study was based on an analysis of a single family in Maharashtra.

In 2015, the National Brain Research Centre had launched India's first indigenously developed and standardized tool for screening and assessing dyslexia. The Dyslexia Assessment Languages of India (DALI) is a standardized assessment of around 4,840 children with tools in Hindi, Marathi, Kannada and English, are also being developed for the tests of dyslexia patient.

At the same time, the Department of Biotechnology, Ministry of Science and Technology, recognised that because of the absence of screening and assessment tools in Indian languages, the diagnosis of dyslexia in India was incomplete or even unavailable. It was critical that dyslexia be assessed in all languages in which a child is given instruction .

The Government of India has brought dyslexia as a disability under the Rights of Persons with Disabilities Act 2016, and hence whatever special provisions and concessions are available to other disabled people are extended to those with dyslexia too. In this way, these children are considered special. They are offered special provisions while they appear for public exams in the state and central boards, and also in a number of joint entrance exams, and so on.

In India, one of the most popular and well-known stories of dyslexia is the award-winning movie 'TaareZameen Par', which starred Bollywood megastar Amir Khan, has lifted a veil on an issue that has remained shrouded in private pain for many families in India. The film explores the life of Ishaan, a primary school student who struggles with dyslexia. The film is a good portrayal of the many relationships that play a key role in helping a student to overcome dyslexia . Many times, teachers are the first to recognize and respond to students' learning challenges. In the film, Ishaan's teacher provides both emotional and academic support to ensure his success.

Some famous people were dyslexic and their learning disability did not affect their achievements for knowledge and glamour in life. The examples are the great personalities like, Leonardo Da Vinci , Albert Einstein ,Steven Spielberg, George Washington ( The first President of US) , Tom Cruise, et.al., who are really the source of inspiration for common people .They proved that nothing can prohibit somebody from achieving success , even if some deficiencies are there with them.

## **RATIONALE**

Dyslexia, a learning disability is the most common form of learning disorder diagnosed in children. In this modern world also there are many people who are unaware of this problem. Even if there is a dyslexic child in a family, they hesitate to talk about it as they are afraid of being ashamed in the society. They assume dyslexia as a mental disorder instead it is just a reading and writing confusion. Hence this paper is an attempt to analyze a case study and through this discussion and interpretation to create awareness about the causal factors, symptoms and the treatment procedure of it among parents, patients and the people in general.

## **OBJECTIVE**

Thus the objective of this paper is to analyze the case study of a male dyslexic child named Swapnil Mishra (age 7) as an example of the learning disability to provide ideas about Dyslexia and to create awareness among the mass for its eradication.

## **Methods of Study**

## **SAMPLE**



### **Subject's detail : Personal and family history**

- √ Name of the subject- Swapnil Mishra
- √ Father's name- Prakash Mishra
- √ Mother's name- Amrita Das
- √ Age -7
- √ Gender- Male
- √ Native place- Bhubaneswar
- √ Mother tongue- Odia
- √ Hobbies- Drawing
- √ Diagnosis- Learning Disability
- √ Type- Dyslexia
- √ Duration of treatment- 1 year
- √ Physical health status- Normal
- √ Mental health status- confusion, difficulty in comprehension or lack of comprehending ability, low toned and self esteem, long reaction time
- √ Disturbance- Problem in reading English words, difficulty with identifying the individual sounds that make up a word, low self esteem
- √ Reason – Genetic

### ◆ Intervention programme Used :

- i. PASS model (Planning, Attention-Arousal, Simultaneous and Successive ) This theory of intelligence, first proposed in 1975 (Das, Kirby, and Jarman, 1975), and later elaborated by Das, Naglieri & Kirby (1994) and Das, Kar & Parrila, (1996) , that is the challenges of g-theory on the grounds that the brain is made up of interdependent but separate functional systems. Neuroimaging studies and clinical studies of individuals with brain lesions make it clear that the brain is modularized; for example, damage to a very specific area of the left temporal lobe will impair the production (but not the comprehension) of spoken and written language
- ii. CAS (Cognitive Assessment System) which is designed to provide an assessment of intellectual functioning redefined as four brain depth cognitive processes (planning, attention, simultaneous, successive) providing information about cognitive strength and weaknesses in each of the four processes.
- iii. PREP (PASS Remedial Enhancement Programme): A remedial Programme used for improving different reading and underlying cognitive processes.

### The symptoms

- The information about the subject's symptoms and intervention programme was given by the therapist under whom he's treated
- A small interview with his parents as well as his peer mates to have his personal details and to know his behavioral pattern with others
- Interview with the teacher to know about his academic performance

### ◆ **PROCEDURE**

The investigator along with the guide personally visited 'THE LEARNING CLINIC', located in Saheed Nagar, Bhubaneswar, Odisha, where the subject usually comes for therapeutic treatment. At first the investigator interacted with the therapist and discussed the requirements according to the objective of research paper. Then she collected information through interview with the parent and peer group regarding his physical, mental and behavioral state. The therapist helped a lot in collecting information about his diagnosis, intervention Programme and his recovery. All the information about the subject was collected from his parents and the therapist as well.

As the data collected from the interview and case study of Swapnil Mishra who is under therapeutic treatment of 'THE LEARNING CLINIC', Saheed Nagar, Bhubaneswar, it is found that he is a 7 years old boy diagnosed as a dyslexic. Swapnil was born by caesarean section with a foetal age of almost nine months, a weight of 3 kg. He began to walk at the age of 11 months, and was toilet trained by the age of 3 years. When he began to talk, at an age of 1 and a half years, only his parents could understand him. By the age of five, he

dressed and washed without help. At the time of investigation, he had received all the standard vaccines, and the only common disease of childhood was cold or influenza. Once he had only chicken pox. His mother recalled that until the age of about two years, he had difficulty in sleeping (having to be put to bed after asleep in his mother's arms, and often waking in the middle of the night), and had been very dependent on his mother. Always he was crying when left with strangers.

Swapnil's father works in a private company and his mother is a house wife. Swapnil started preschool at age of four. According to his mother his teachers used to complain about Swapnil's academic performances and wrong pronunciation of words initially. Somehow he managed to get promoted to grade one. His mother recalled that after a few days his teacher had informed that he did not understand the concept whatever he taught, showed confusion in reading words, also he often used to muddle letters, and that he might have some degree of dyslexia.

According to Swapnil's teacher, he was very hard-working but took longer than others to complete his tasks. He also failed to express himself clearly, had difficulty in reading comprehensions and difficulty with simple mathematical problems and found hard to learn basic concepts. Examination of his workbook (handwriting exercise book and language class book) showed that his most frequent writing errors were repetition of words, omission and replacement of letters, word splitting and ambiguous formation of small f, z, a and o. He showed immense interest in drawing and coloring. He, somehow, had lack of confidence and self-esteem and mostly remained silent.

Hence, his parents took him to The Learning Clinic for assistance. At baseline, certain tests were administered to gather information about functional activities through observation and a comprehensive caregiver questionnaire. With this profile, functional educational goals based upon parent's priorities and evidence based support were determined. There are very different sorts of methods and tools in use in the identification of dyslexia and in this case the therapist selected four tests- intelligence, perceptual- motor measure, achievement test and multi-causal measure.

Hence, various tests were administered by The Learning Clinic to assess his developmental status and to determine his dyslexic category, communication skill and reading ability. The therapist mostly used CAS (Cognitive Assessment System) which is designed to provide an assessment of intellectual functioning redefine as four brain depth cognitive processes(planning, attention, simultaneous, successive) providing information about cognitive strength and weaknesses in each of the four processes. The results were like this- Planning: 94; Attention: 77; Simultaneous: 117; Successive: 122. It's observed that he is Phonological Dyslexic. He showed difficulty with identifying the individual sounds that make up a word. It seemed like he had problem in decoding words especially in English comprehension. On analysis it is also revealed that in his case he is genetic to some extent and mostly attributed to environmental.

Now Swapnil is attending remedial classes in The Learning Clinic to develop his cognitive ability as well as reading and writing skill for the past 1 year. However several strategies were chosen to help Swapnil

in eradicating his dyslexic symptoms. The intervention Programme include- the PASS Model and PREP. The PREP is a remedial Programme for primary school children who are experiencing difficulty with reading, spelling and comprehension. Hence with this intervention Programme Swapnil performed significantly better than previous year.

Throughout the remediation process, Swapnil seemed to have difficulties in verbalizing his strategies. During the initial stages of the program some difficulties with global components of the successive tasks were evident. Although he appeared to have some strategies for completing these tasks, he had difficulties in applying the strategies and the amount of prompting, and his knowledge of letter names and sounds were extremely limited.

By the midpoint of the program he was independently reading most words from the preliminary level of difficulty of the bridging tasks. With the introduction of the next level of difficulty, he continued to read most words without prompting.

The clinical psychologist at the clinic has reported that before the training session Swapnil was under confident and by the time he has finished 16 sessions and has shown much improvement. The improvement could be marked not only in Swapnil's reading skill, but also in her cognitive functioning. In fact, he showed marked improvement in both word reading and reading comprehension, and jumped to the superior category in planning in which he was average before remediation.

## **CONCLUSION**

The case-study reveals that the children diagnosed as dyslexic are able to lead normal and productive lives usually with the help of therapist, parental care and social support. Despite the widespread misconception that ,the children with learning disabilities have no chance of recovery or improvement, the reality is much more hopeful.

Although dyslexia is a life-long neurological disorder that cannot be “outgrown”, there are many different strategies that can be used, especially early in academic life to help these individuals. The early focus (before fifth and sixth grades) is on “remediation.” This means that strategies are employed to assist the child in learning to improve deficits in the particular area of disability, for example reading decoding, reading comprehension, or speed of reading.

It is a life-long condition, which affect both children in school and adults in their vocational and social environments. Adults with dyslexia do exist and often are not recognized since they appear to function well in society and tend to mask their disability or gravitate toward occupations that do not emphasize their disability. Families and physicians must be aware of resources that exist in their communities and on the Internet for adults with dyslexia and allow access of these resources to enable them to best compensate for their disability.

As is the case with any disorder, society often makes an assessment based on incomplete information. Before the 1980s, dyslexia was thought to be a consequence of education, rather than a neurological disability. As a result, society often misjudges those with the disorder. There is also sometimes a workplace stigma and negative attitude towards those with dyslexia. If the instructors of a person with dyslexia lack the necessary training to support a child with the condition, there is often a negative effect on the student's learning participation.

It is important to recognize that behavioral difficulties in school may be a sign of dyslexia. Any sign of problems in learning to read, even very early in a child's school career, should be taken seriously and investigated. The common assumption that the child will grow out of the problem is not a valid one in most cases. It is known that early identification and early intervention can prevent most serious reading difficulties, or at least reduce the severity of them. Any school difficulties or behavioral problems should be investigated immediately.

## **SUGGESTIONS**

- One of the best ways to support a child with dyslexia is to encourage those activities that he / she likes whether it is music, joining a sports team or anything else that helps in building his / her confidence.
- To re-establish self-confidence provide the opportunity to succeed and give praise for small achievements.
- Encourage children to re-read their favorite stories with a loved one. Re-reading familiar texts will also build speed, accuracy and confidence, which add up to the perfect recipe for fluency.
- It should be kept in mind that children with dyslexia need more downtime to recharge them.
- An inclusive classroom also helps them for their improvement
- Apparently in spite of adversity the chances of success in dyslexic will be greatly increased if they can manage to find a community where they are accepted and receive support for their dyslexia.

## **REFERENCES**

Aaron, P.G, Wleklinski, M. and Wills, C. (1993) 'Developmental dyslexia as a cognitive style', in Joshi, R.M. and Leong, C.K. (eds) *Reading Disabilities: Diagnosis and Component Processes*, Dordrecht, Kluwer Academic Publishers.

Adams, M.J. (1990) *Beginning to Read: Thinking and Learning About Print*, Cambridge, MA, MIT Press.



- Anderson, R., Hiebert, E., Scott, J. and Wilkinson, I. (1985) *Becoming a Nation of Readers: The Report of the Commission on Reading*, Champaign, IL, Center for the Study of Reading.
- Bannatyne, A.D. (1971) *Language, Reading and Learning Disabilities*, Springfield, IL, Thomas.
- Bradley, L. and Bryant, P.E. (1978) 'Difficulties in auditory organization as a possible cause of reading backwardness', *Nature*, pp. 271 and 746–7.
- Catherine Christo, John M. Davis, and Stephen E. Brock, *Identifying, Assessing, and Treating Dyslexia at School* (New York: Springer Science + Business Media, 2009)
- Chall, J.S. (1996) *Learning to Read: The Great Debate* (3rd edn), Fort Worth, TX, Harcourt Brace College Publishers.
- Herman, A.E., Galaburda, A.M., Fitch, R.H., Carter, A.R. and Rosen, G.D. (1997) 'Cerebral microgyria, thalamic cell size and auditory temporal processing in male and female rats', *Cerebral Cortex*, vol. 7, pp. 453–64.
- Iversen, S. and Tunmer, W.E. (1993) 'Phonological processing skills and the reading recovery program', *Journal of Educational Psychology*, vol. 85, pp. 112–6.
- Lyytinen, Heikki, Erskine, Jane, Aro, Mikko, Richardson, Ulla (2007). "Reading and reading disorders".*
- Orton, Samuel (1925). "Word-blindness in school children". *Archives of Neurology and Psychiatry*.
- Riddick, B. (1996) *Living with Dyslexia: The Social and Emotional Consequences of Specific Learning Difficulties*, London, Routledge.
- Rolfes, Ellen (16 April 2014). "Portrait of a dyslexic artist, who transforms neurons into 'butterflies'". PBS Newshour. Retrieved 26 February 2015.

Westervelt, V.D., Johnson, D.C., Westervelt, M.D. and Murrill, S. (1998)  
'Changes in self-concept and academic skills during a multimodal summer

camp program', *Annals of Dyslexia*, vol. 48, pp. 191–212.

Snowling, Margaret J. *Dyslexia: A Very Short Introduction*. Oxford University Press, 2019.

Web site

<https://www.webmd.com/children/understanding-dyslexia-basics>

<https://en.wikipedia.org/wiki/Dyslexia>

<https://www.everydayhealth.com/dyslexia/types/>

<https://www.indiatoday.in/education-today/featurephilia/story/facts-about-dyslexia-and-key-terms-explained-by-expert-1654486-2020-03-11>

<https://www.ncbi.nlm.nih.gov/pmc/articles/PMC2812748/>

<https://www.medicalnewstoday.com/articles/186787>

[https://journals.lww.com/jrnldbpf/Fulltext/2019/09000/Diagnosis\\_and\\_Treatment\\_of\\_Developmental\\_Dyslexia.9.aspx](https://journals.lww.com/jrnldbpf/Fulltext/2019/09000/Diagnosis_and_Treatment_of_Developmental_Dyslexia.9.aspx)



## To Be Published In The Next Issue

### **LOCUS OF CONTROL, PROBLEM SOLVING AND DECISION MAKING SKILLS : RUDIMENTS TO SATISFACTION**

**\*MissBabinaKojiam**

**\*\* Dr.MamataMahapatra**

#### ***Abstract***

*A Happy Individual is a satisfied Individual – as happy and satisfied life is very important for all kinds of people to lead a healthy life. Young adults are an important segment in any kind of society. It is also the most critical stage of life as individuals go through major transitions and serious decision-makings like choosing life partner or a career which demands both logical and emotional reasoning. Adults must be competent in problem solving and making decisions every day and live with the consequences of those decisions which can impact on their overall life satisfaction.*

Aligned to the above view, the purpose of this study is to analyze the effect of locus of control and problem solving and decision-making skill with reference to life satisfaction in young adults of Manipur. 200 young adults of Manipur participated in the study that had a minimum graduate level education and age in between 21 years to 30 years. Purposive sampling was used to select the data from the participants. Psychological assessments to test the 'locus of control', 'problem solving and decision making' skills and 'life satisfaction' level were conducted on these young adults. The results of the study most importantly indicated that the 'locus of control' and 'problem solving and decision making' are not the significant predictors of 'life satisfaction' in young adults of Manipur.

Key words: Locus of Control, Life Satisfaction, Young Adults, Decision making, Problem solving skills etc.

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