Discovered Facts Related To Thought Process Quantification Of Persons Of High Blood Pressure And Statistical Analysis Of Human Dream

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Abstract: This study is focused on quantifying thought processes and mathematical modeling of high blood pressure individuals so as to facilitate medical diagnosis and treatment. The mathematical model proposed attempts to establish a relationship between high blood pressure and hypertension levels, irritation levels and limits of patient tolerance. The paper also presents a mathematical model of quantifying dreams with this study proposing certain facts for representing the unconscious mind.

Keywords : blood pressure, hypertension, dream, unconscious mind

1. INTRODUCTION AND LITERATURE REVIEW

There is a relative dearth of work in context to thought process quantification of persons with high blood pressure and statistical analysis of human dream. Hypertension plays a pivotal role in case of thought process analysis of persons of high blood pressure. In case of dream analysis, timing instant observations of event and corresponding correlation analysis has to be studied for effective mathematical representation.

The International Encyclopedia of Social Sciences [1] suggests that while quantification does serve to provide an appearance of professionalism and gain legitimacy to social research through injecting objectivity in a cost effective manner, it does lead to loss in the experiential aspect of social interactions for the sake of simplicity and calculability. The challenge for social scientists then designing appropriate measures for parameters of study. NCERT describes thoughtas a knowledge-based internal process that is not overtly observable but can only be inferred from subsequent actions. Such knowledge could include mental images, words or unique characteristics specific to the subject at hand[2]. Khatib Oussama MN and El-Guindy Mohamed Sayed [3] identify high blood pressure as causing one in every eight deaths in the world highlighting the need to study high blood pressure.

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are weight reduction along with reduction of dietary sodium and saturated fat intake and increased dietary fruit, vegetables and potassium intake. This study is focused on quantifying the thought process related aspects of high blood pressure patients. Quantification of dream in the light of neuro-associator has been first reported by Chakrabarti [4].

2. RESEARCH METHODOLOGY

In case of thought process analysis, at the very onset there has to be a study of finding the most significant factor that leads to high blood pressure. Once the factor is identified, then it should be observed with respect to time and then best model or curve fitting technique has to be framed. Tolerance limit in person is another important aspect. It has to be correlated to hypertension level and corresponding mathematical equation has to be proposed. Study has to be carried out to verify whether neural memory-type paradigm towards computation of probability of relevant information in futuristic speech prediction is feasible if previous patterns of mind and speech are retained and corresponding mind pattern of futuristic speech is sensed accurately. In case of dream analysis, timing instant observations of event and corresponding correlation analysis has to be studied for effective mathematical representation. Here the timing instants of observation are to be taken both as equi-distant and non equi-distant forms.The last timing instant can be represented in the form of a function of the first timing instant.

3. DISCOVERED FACTS RELATED TO THOUGHT ANALYSIS OF PERSONS WITH HIGH BLOOD PESSURE

We claim ,

1. Change in hypertension level is governed by exponential growth model [Independent claim 1]

Justification :

Increase in hypertension level at different times leads to an aggravation in the irritation level with the proposed mathematical relationship being as follows:

$$\ln (HT2 / HT1) = (LIR2 - LIR1). x$$

Where HT2 and HT1 denote the hypertension levels at time instants t2 and t1 respectively with t2 > t1;

LIR2, LIR1 denote the irritation levels at the same time instants t2 and t1 respectively; and

x denotes a parameter (eg. x = 1/T, T being a time constant) that provides a measure of the rate of change of HT with respect to time.

Solving this gives: $HT_T = LHP_0 . \exp (LIR/T)$ thereby indicating that changes in hypertension level is governed by an exponential growth model with irritation levels and time constant being important determining factors.

2. Reduction in tolerance limit of persons with high blood pressure is a function of hypertension level , level of cognitive intelligence and measure of normal tolerance limit. [Independent claim 2]

Justification :
Decrease in tolerance limits of a person with high blood pressure is a function of prevailing hypertension level. The other functions will be examined subsequently. The proposed mathematical relationship being as follows:

$\ln (TL2 / TL1) = (HT2 – HT1). y$

where HT2 and HT1 denote the hypertension levels at time instants t2 and t1 respectively with t2 > t1;

TL2 and TL1 denote the Tolerance levels at time instants t2 and t1 respectively; and

y is a parameter such that y = 1/T, T being a time constant which provides a measure of the rate of change of TL with respect to y=time.

Solving gives: $TL_T = TL_0 . \exp (HT/T)$ but it is also proposed that $HT_T = LHP_0 . \exp (LIR/T)$

Hence, change in hypertension level is governed by exponential growth model.

3. Neural memory-type paradigm towards computation of probability of relevant information in futuristic speech prediction is feasible if previous patterns of mind and speech are retained and corresponding mind pattern of futuristic speech is sensed accurately. [Independent claim 3]

Justification :
Speech symbolizes expression of thought. Mathematically, IS = f(IM) where IS be information content in speech, IM be information content in mind and f being the mapping function

Case 1:
Now, in extreme unconscious state, coordination between thought and speech degrades significantly.
Let M = { IM1,IM2,IM3….IMx} represents set of information elements of mind and
S= { IS1,IS2,IS3,……ISx} be the set of information element of speech.

Let f: M →S be a function from M to S. Distinct elements of M mapped to distinct element of S such that whenever f(IMi) ≠ f(IMj) i.e ISi ≠ ISj .
This signifies that f: M →S is an injective function.

Case 2:
If the hypertension level increases considerably, then redundancy in speech is noted.
Let IMi, IMj and IMk be the information element of mind at consecutive timing instants ti , tj, tk respectively.
Therefore, ISi=f(IMi) and due to speech redundancy ISj=f(IMi) , ISk=f(IMi) , whereby S denotes a multiset and the frequency of f(IMi) is its multiplicity.
Let {+1,-1} be the set of states of patterns based on present scenario where (+1) indicates validity of a relevant state while (-1) indicates that of irrelevant state.

In four timing instants , state of each of mind and speech has been observed for 2 iterations.

Let M1= (+1,-1,-1,+1), S1 = (+1,-1,+1,-1), M2= (-1,-1,+1,+1), S2= (+1,-1,+1,+1).

Therefore, $M1^T$ S1 =

$$\begin{bmatrix}+1\\-1\\-1\\+1\end{bmatrix}\begin{bmatrix}+1 & -1 & +1 & -1\end{bmatrix}$$

$$= \begin{bmatrix}-1 & +1 & -1 & -1\\-1 & +1 & -1 & -1\\+1 & -1 & +1 & +1\\+1 & -1 & +1 & +1\end{bmatrix}$$

Further, $M2^T$ S2 =

$$\begin{bmatrix}-1\\-1\\+1\\+1\end{bmatrix}\begin{bmatrix}+1 & -1 & +1 & +1\end{bmatrix}$$

=

=

$$\begin{bmatrix}-1 & +1 & -1 & -1\\-1 & +1 & -1 & -1\\+1 & -1 & +1 & +1\\+1 & -1 & +1 & +1\end{bmatrix}$$

Therefore, $M1^T$ S1 + $M2^T$ S2 =

$$\begin{bmatrix}0 & 0 & 0 & -2\\-2 & +2 & -2 & 0\\0 & 0 & 0 & +2\\+2 & -2 & +2 & 0\end{bmatrix}$$

This represents the Need Matrix, represented by N_M.

Now, next sensed mind pattern M_3= (-1,+1,-1,-1)
Accordingly, S_3 can be predicted on the basis of N_M (Need Matrix) as follows:-

S_3'= Product of

$$[-1 \quad +1 \quad -1 \quad -1]$$

and

$$\begin{bmatrix} 0 & 0 & 0 & -2 \\ -2 & +2 & -2 & 0 \\ 0 & 0 & 0 & +2 \\ +2 & -2 & +2 & 0 \end{bmatrix}$$

To give

$$\begin{bmatrix} 0 & 0 & 0 & -2 \\ -2 & +2 & -2 & 0 \\ 0 & 0 & 0 & +2 \\ +2 & -2 & +2 & 0 \end{bmatrix}$$

4. EVENT ANALYSIS IN DREAM

Dream signifies a response to neural processes during sleep-a transition from conscious to unconscious state of mind.

We claim ,

1. Approximate computation of timing instant of occurrence of an event in dream can be realized on the basis of radial interpolation of contribution factor and arrival time of related past sequences in conscious state as well as that of related future sequences in unconscious state(dream). [Independent claim 4]

Justification :
Let E be the event featured in a dream D ,
T1 be the timing instant of transition of a person from conscious state to unconscious state of mind(sleep) ,
T2 be the timing instant of transition of a person from unconscious state to conscious state of mind(wake up) ,
(T1+x) be the timing instant of occurrence of the event E in D,
S = {S1,S2,S3….Sn} be the set of past sequences related to E in conscious state ,
F = { F1,F2,F3,….Fm} be the set of future sequences related to E featured in D.

We assign a contribution factor value in each of the sequences featured in D such that summation of the values of both past and future equals to 1 (in probabilistic form).

Let CFS1 ,CFS2 ……CFSn be the contribution factors of past sequences,
CFF1 ,CFF2 ……CFFm be the contribution factors of future sequences,
CFE be the contribution factor of event E in D (which is obviously equal to 1) ,
TS1,TS2,….TSn be the timing instants of occurrence of S1,S2,…..Sn respectively
and TF1,TF2,….TFm be the predicted timing instants of occurrence of F1,F2,…..Fm respectively .

We apply radial based interpolation taking origin as event E and individual interpolated value of each sequence and event E denotes its contribution factor.

Therefore, on the basis of radial interpolation technique , we get

$[CF_{S1} / (T1+ x -TS1) + CF_{S2} / (T1+ x –TS2) + …… + CF_{Sn} / (T1+ x -TSn) +$
$CF_{F1} / (TF1 –(T1 + x)) + CF_{F2} / (TF2 –(T1 + x)) +…..+ CF_{Fm} / (TFm –(T1 + x))] /$
$[(1/ (T1+ x -TS1)) + (1/ (T1+ x –TS2)) +……..(1/ (T1+ x -TSn)) +$
$(1/ (TF1 –(T1 + x))+ (1/ (TF2 –(T1 + x))+ …+(1/ (TFm –(T1 + x))] = CF_E$ ….(1)

Substituting values of all the parameters (except x which is unknown) in Eq(1) we get a polynomial equation of degree (n + m - 1) and solution of that will yield the value of x and then we can easily compute (T1+x) which is the timing instant of occurrence of the event E in D.

2. The last timing instant of observation of incidence of event in dream in both equi-distant and non equi-distant analysis can be expressed as a function of first timing instant. [Independent claim 5]

Justification :
Dream Events have been broadly classified based on the time interval between subsequent dream events. These dream events are related to real world events and are a random combination of real world events or parts of it.

When the time intervals between each subsequent are equal, the relationship between dream-events can be represented as follows:
Dream = $E_1 + E_2 + E_3 + …… + E_n$ with E_i representing equidistant dream events on the time scale.
Hypotheses: $E_n = E_{n-1} + \Delta$
$E_{n-1} = E_{n-2} + \Delta$
$E_{n-2} = E_{n-3} + \Delta$
……
$E_2 = E_1 + \Delta$
Summing up: $E_n = E_1 + (n-1)\,\Delta$

While this has the benefit of simplicity, given the random nature of dream events, the approach may well turn out to be overly simplistic. A more realistic approach must assume differing time intervals for the dream events not being equal. The duration of the dream, then, takes the form as below :

Dream Duration= $t_1 + \Delta t_1 + \Delta t_2 + ……. \Delta t_{n-1}$ where $\Delta t_1 \neq \Delta t_2 \neq ……\neq \Delta t_{n-1}$ (a few being equal does not take away from the model) = $t_1 + \Sigma\, \Delta t_i$ for j ranging from 1 to (n-1)

Revised Hypotheses: $E_n = E_{n-1} + \Delta E_{n-1}$
$E_{n-1} = E_{n-2} + \Delta E_{n-2}$
$E_{n-2} = E_{n-3} + \Delta E_{n-3}$
……
$E_2 = E_1 + \Delta E_1$
Summing up gives: $E_n = \Sigma E_i + \Delta E_j$ where for j ranging

from 1 to (n-1)

5. RESULTS AND DISCUSSIONS

The results related to thought analysis of persons of high blood pressure reveal that exponential growth model can be applied in order to investigate change in hypertension level. Decrease in tolerance limits of a person with high blood pressure is a function of prevailing hypertension level. A mathematical relation has been proposed that entails reduction in tolerance limit of persons with high blood pressure as a function of hypertension level , level of cognitive intelligence and measure of normal tolerance limit. Another novel discovered fact has been depicted related to neural memory-type paradigm towards computation of probability of relevant information in futuristic speech prediction. The mathematical results further highlight how in human dream , a computational model can be sensed on the basis of event analysis as a transition from conscious state to unconscious state of mind. Dream Events have been broadly classified based on the time interval between subsequent dream events. These dream events are related to real world events and are a random combination of real world events or parts of it. While this has the benefit of simplicity, given the random nature of dream events, the approach may well turn out to be overly simplistic. A more realistic approach must assume differing time intervals for the dream events not being equal.

6. CONCLUSION

Change in hypertension level is governed by exponential growth model. Reduction in tolerance limit of persons with high blood pressure is a function of hypertension level , level of cognitive intelligence and measure of normal tolerance limit. Neural memory-type paradigm towards computation of probability of relevant information in futuristic speech prediction is feasible if previous patterns of mind and speech are retained and corresponding mind pattern of futuristic speech is sensed accurately. Approximate computation of timing instant of occurrence of an event in dream can be realized on the basis of radial interpolation of contribution factor and arrival time of related past sequences in conscious state as well as that of related future sequences in unconscious state(dream). The last timing instant of observation of incidence of event in dream in both equi-distant and non equi-distant analysis can be expressed as a function of first timing instant.

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