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Brad Victor Johnson
The word EMOTION starts in the 1570s, "a (social) moving, stirring, agitation," from Middle French émotion (16c.), from Old French emouvoir "stir up" (12c.), from Latin emovere "move out, remove, agitate," from assimilated form of ex "out" (see ex-) + movere "to move" (from PIE root *meue- "to push away"). Sense of "strong feeling" is first recorded 1650s; it was extended to any or all feelings by 1808. Now we use the word Emotion to reflect how we feel.

"Emotions can be defined as a positive or negative experience that is associated with a particular pattern of physiological activity." Emotions produce different physiological, behavioral and cognitive changes. The original role of emotions was to motivate adaptive behaviors that in the past would have contributed to the passing on of genes through survival, reproduction, and kin selection.

These emotions come from covert or overt thoughts. Like an iceberg most often the hidden factors generate the emotions. For most your unconscious rules you.

The Emotions can make disease and the body can make emotions.

We first started to discern diseases through a heart rate variability algorithm.

The emotions were cataloged and arranged in many ways.

Research has gone a long way towards understanding the effect of emotions on the body. As we will present in this journal.

When in an emotional state the body will react to certain vibrations and these vibrations will be different for the physical, astral or spiritual body. Below is a basic graph of frequency forms that the body reacts to in these emotional states.
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**Psycho-Somatic Dis-Ease**

*The Mind affects the Hormones that in turn affect the Organs first as a Functional disease developing into an Organic tissue disease*.

**Soma-Psychotic Dis-Ease**

*The Body affects the Mind, as dysfunction of the Organs leads to Imbalance of all Process+ Hormones leading to a spiral downward to illness*.

We first started to discern diseases through a heart rate variability algorithm.

**ECG = Electro Cardio Graph**

**Heart Rate Variability - Emotions**
The emotions were cataloged and arranged in many ways.
Real Time Emotion Display to Affect Reality

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<table>
<thead>
<tr>
<th>Emotional State</th>
<th>Physical</th>
<th>Astral</th>
<th>Spiritual</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Anger</td>
<td>3-4</td>
<td>316-318</td>
<td>550-560</td>
</tr>
<tr>
<td>2. Anxiety</td>
<td>6-7</td>
<td>219-221</td>
<td>777-888</td>
</tr>
<tr>
<td>3. Contempt</td>
<td>5-8</td>
<td>210-225</td>
<td>580-598</td>
</tr>
<tr>
<td>4. Confusion</td>
<td>1-10</td>
<td>200-250</td>
<td>717-737</td>
</tr>
<tr>
<td>5. Depression</td>
<td>5-8</td>
<td>170-189</td>
<td>600-700</td>
</tr>
<tr>
<td>6. Disgust</td>
<td>6-7</td>
<td>351-353</td>
<td>570-600</td>
</tr>
<tr>
<td>7. Envy</td>
<td>12-36</td>
<td>310-333</td>
<td>777-888</td>
</tr>
<tr>
<td>8. Fear</td>
<td>5-6</td>
<td>318-320</td>
<td>666-699</td>
</tr>
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<table>
<thead>
<tr>
<th></th>
<th>Emotion</th>
<th>9-12</th>
<th>390-400</th>
<th>799-803</th>
</tr>
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<tbody>
<tr>
<td>10</td>
<td>Happiness</td>
<td>9-12</td>
<td>390-400</td>
<td>799-803</td>
</tr>
<tr>
<td>11</td>
<td>Joy</td>
<td>6-15</td>
<td>130-140</td>
<td>790-820</td>
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<tr>
<td>12</td>
<td>Love</td>
<td>10-11</td>
<td>210-214</td>
<td>1110-1222</td>
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<tr>
<td>13</td>
<td>Laughter</td>
<td>8-11</td>
<td>333-444</td>
<td>777-1111</td>
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<tr>
<td>14</td>
<td>Neutral</td>
<td>12-13</td>
<td>209-215</td>
<td>1000-1111</td>
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<tr>
<td>15</td>
<td>Pride</td>
<td>10-11</td>
<td>140-150</td>
<td>1500-1555</td>
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<td>16</td>
<td>Sadness</td>
<td>12-36</td>
<td>120-180</td>
<td>1555-1777</td>
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<tr>
<td>17</td>
<td>Shame</td>
<td>17-19</td>
<td>125-130</td>
<td>999-1111</td>
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<tr>
<td>18</td>
<td>Stress</td>
<td>11-14</td>
<td>111-222</td>
<td>660-680</td>
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<tr>
<td>19</td>
<td>Surprise</td>
<td>12-35</td>
<td>206-208</td>
<td>1052-1077</td>
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<tr>
<td>20</td>
<td>Worry</td>
<td>13-30</td>
<td>145-149</td>
<td>490-500</td>
</tr>
</tbody>
</table>

From these base emotions we see there is similarities on emotion families.

And yes, color choice can reflect emotions states and even emotion patterns. The Lüscher color test is a psychological test invented by Dr. Max Lüscher in Basel, Switzerland. ... Lüscher believed that because the color selections are guided in an unconscious manner, they reveal the person as they really are, not as they perceive themselves or would like to be perceived.
We can extrapolate other emotions from harmonic reactions to get a more complex and total picture of the REAL TIME Emotions of our patient.

So, we have produced a REAL TIME EMOTION display with the Eductor that will allow you to see the emotions your patient is in as you talk and watch these emotions change. These emotions are from the body and most often under unconscious control. The more your patient struggles with the results is sometimes because the verbal conscious mind does not want deeper emotions revealed.

Time and research will allow us to update this journal and the progress of this test.
Psychological and Cognitive Sciences

Bodily maps of emotions

Lauri Nummenmaa, a,b,c Enrico Gierean, * Riitta Hari, b,1 and Jari K. Hietanen d

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Associated Data

Supplementary Materials

SIGNIFICANCE

ABSTRACT

We often experience emotions directly in the body. When strolling through the park to meet with our sweetheart we walk lightly with our hearts pounding with excitement, whereas anxiety might tighten our muscles and make our hands sweat and tremble before an important job interview. Numerous studies have established that emotion systems prepare us to meet challenges encountered in the environment by adjusting the activation of the cardiovascular, skeletomuscular, neuroendocrine, and autonomic nervous system (ANS) (1). This link between emotions and bodily states is also reflected in the way we speak of emotions (2): a young bride getting married next week may suddenly have “cold feet,” severely disappointed lovers may be “heartbroken,” and our favorite song may send “a shiver down our spine.”

Both classic (3) and more recent (4, 5) models of emotional processing assume that subjective emotional feelings are triggered by the perception of emotion-related bodily states that reflect changes in the skeletomuscular, neuroendocrine, and autonomic nervous systems (1). These conscious feelings help the individuals to voluntarily fine-tune their behavior to better match the challenges of the environment (6). Although emotions are associated with a broad range of physiological changes (1, 7), it is still hotly debated whether the bodily changes associated with different emotions are specific enough to serve as the basis for discrete emotional feelings, such
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as anger, fear, or happiness (8, 9), and the topographical distribution of the emotion-related bodily sensations has remained unknown.

Here we reveal maps of bodily sensations associated with different emotions using a unique computer-based, topographical self-report method (emBODY, Fig. 1). Participants (n = 701) were shown two silhouettes of bodies alongside emotional words, stories, movies, or facial expressions, and they were asked to color the bodily regions whose activity they felt to be increased or decreased during viewing of each stimulus. Different emotions were associated with statistically clearly separable bodily sensation maps (BSMs) that were consistent across West European (Finnish and Swedish) and East Asian (Taiwanese) samples, all speaking their respective languages. Statistical classifiers discriminated emotion-specific activation maps accurately, confirming independence of bodily topographies across emotions. We propose that consciously felt emotions are associated with culturally universal, topographically distinct bodily sensations that may support the categorical experience of different emotions.

Fig. 1.

The emBODY tool. Participants colored the initially blank body regions (A) whose activity they felt increasing (left body) and decreasing (right body) during emotions. Subjectwise activation–deactivation data (B) were stored as integers, with the whole body being represented by 50,364 data points. Activation and deactivation maps were subsequently combined (C) for statistical analysis.
RESULTS

We ran five experiments, with 36–302 participants in each. In experiment 1, participants reported bodily sensations associated with six “basic” and seven nonbasic (“complex”) emotions, as well as a neutral state, all described by the corresponding emotion words. Fig. 2 shows the bodily sensation maps associated with each emotion. One-out linear discriminant analysis (LDA) classified each of the basic emotions and the neutral state against all of the other emotions with a mean accuracy of 72% (chance level 50%), whereas complete classification (discriminating all emotions from each other) was accomplished with a mean accuracy of 38% (chance level 14%) (Fig. 3 and Table S1). For nonbasic emotions, the corresponding accuracies were 72% and 36%. When classifying all 13 emotions and a neutral emotional state, the accuracies were 72% and 24% against 50% and 7% chance levels, respectively. In cluster analysis (Fig. 4, Upper), the positive emotions (happiness, love, and pride) formed one cluster, whereas negative emotions diverged into four clusters (anger and fear; anxiety and shame; sadness and depression; and disgust, contempt, and envy). Surprise—neither a negative nor a positive emotion—belonged to the last cluster, whereas the neutral emotional state remained distinct from all other categories.
Bodily topography of basic (Upper) and nonbasic (Lower) emotions associated with words. The body maps show regions whose activation increased (warm colors) or decreased (cool colors) when feeling each emotion. \( P < 0.05 \) FDR corrected; \( t > 1.94 \). The colorbar indicates the \( t \)-statistic range.

**Fig. 3.**
Confusion matrices for the complete classification scheme across experiments.
Hierarchical structure of the similarity between bodily topographies associated with emotion words in experiment 1 (Upper) and basic emotions across experiments with word (W), story (S), movie (M), and Face (F) stimuli (Lower).

We controlled for linguistic confounds of figurative language associated with emotions (e.g., “heartache”) in a control experiment with native speakers of Swedish, which as a Germanic
language, belongs to a different family of languages than Finnish (a Uralic language). BSMs associated with each basic emotion word were similar across the Swedish- and Finnish-speaking samples (mean $r_s = 0.75$), and correlations between mismatched emotions across the two experiments (e.g., anger-Finnish vs. happiness-Swedish) were significantly lower (mean $r_s = 0.36$) than those for matching emotions.

To test whether the emotional bodily sensations reflect culturally universal sensation patterns vs. specific conceptual associations between emotions and corresponding bodily changes in West European cultures, we conducted another control experiment with Taiwanese individuals, who have a different cultural background (Finnish: West European; Taiwanese: East Asian) and speak a language belonging to a family of languages distant from Finnish (Taiwanese Hokkien: Chinese language). Supporting the cultural universality hypothesis, BSMs associated with each basic emotion were similar across the West European and East Asian samples (mean $r_s = 0.70$), and correlations between mismatched emotions across the two experiments (e.g., anger-Finnish vs. happiness-Taiwanese) were significantly lower (mean $r_s = 0.40$) than those for matching emotions.

When people recall bodily sensations associated with emotion categories described by words, they could just report stereotypes of bodily responses associated with emotions. To control for this possibility, we directly induced emotions in participants using two of the most powerful emotion induction techniques (10, 11)—guided mental imagery based on reading short stories (experiment 2) and viewing of movies (experiment 3)—and asked them to report their bodily sensations online during the emotion induction. We carefully controlled that emotion categories or specific bodily sensations were not directly mentioned in the stories or movies, and actual emotional content of the stories (Fig. S1) was evaluated by another group of 72 subjects (see ref. 12 for corresponding data on movies). BSMs were similar to those obtained in experiment 1 with emotion words (Figs. S2 and S3). The LDA accuracy was high (for stories 79% and 48% against 50% and 14% chance levels for one-out and complete classification and for movies, 76% and 50% against 50% and 20% chance levels, respectively). The BSMs were also highly concordant across emotion-induction conditions (stories vs. movies; mean $r_s = 0.79$; Table S2).

Models of embodied emotion posit that we understand others’ emotions by simulating them in our own bodies (13, 14), meaning that we should be able to construct bodily representations of others’ somatovisceral states when observing them expressing specific emotions. We tested this hypothesis in experiment 4 by presenting participants with pictures of six basic facial expressions without telling them what emotions (if any) the faces reflected and asking them to color BSMs for the persons shown in the pictures, rather than the sensations that viewing the expressions caused in themselves. Again, statistically separable BSMs were observed for the emotions (Fig. S4), and the classifier accuracy was high (70% and 31% against 50% and 14% chance levels for one-out and complete classification schemes, respectively; Fig. 3 and Table S1). Critically, the obtained BSMs were highly consistent (Table S2) with those elicited by emotional words (mean $r_s = 0.82$), stories (mean $r_s = 0.71$), and movies (mean $r_s = 0.78$).

If discrete emotional states were associated with distinct patterns of experienced bodily sensations, then one would expect that observers could also recognize emotions from the BSMs of others. In experiment 5, we presented 87 independent participants the BSMs of each basic emotion from experiment 1 in a paper-and-pencil forced-choice recognition test. The participants
performed at a similar level to the LDA, with a 46% mean accuracy (vs. 14% chance level). Anger (58%), disgust (43%), happiness (22%), sadness (38%), surprise (54%), and the neutral state (99%) were classified with high accuracy ($P < 0.05$ against chance level in $\chi^2$ test), whereas the performance did not exceed the chance level for fear (8%, NS).

Finally, we constructed a similarity matrix spanning the BSMs of experiments 1–4 for the six basic emotions plus the neutral emotional state (Fig. S5). BSMs were consistent across the experiments (mean $r = 0.83$) for each basic emotion. Even though there were significant correlations across mismatching emotions across the experiments (e.g., anger in experiment 1 and fear in experiment 2), these were significantly lower (mean $r = 0.52$) than those for the matching emotions. Clustering of the similarity matrix revealed a clear hierarchical structure in the data (Fig. 4, Lower). Sadness, disgust, fear, and neutral emotional state separated early on as their own clusters. Anger topographies in the word and face experiments clustered together, whereas those in the story experiments were initially combined with disgust. Two categories of surprise maps were clustered together, whereas the maps obtained in the word data were linked with disgust. Only happiness did not result in clear clustering across the experiments.

When LDA was applied to the dataset combined across experiments, the mean accuracy for complete classification was similar to that in the individual experiments (40% against 14% chance level). LDA using all possible pairs of the experiments as training and test datasets generally resulted in cross-experiment classification rates (Table S3) exceeding 50% for all of the tested experiment pairs, confirming the high concordance of the BSMs across the experiments.

**DISCUSSION**

Altogether our results reveal distinct BSMs associated with both basic and complex emotions. These maps constitute the most accurate description available to date of subjective emotion-related bodily sensations. Our data highlight that consistent patterns of bodily sensations are associated with each of the six basic emotions, and that these sensations are represented in a categorical manner in the body. The distinct BSMs are in line with the evidence from brain imaging and behavioral studies, highlighting categorical structure of emotion systems and neural circuits supporting emotional processing (15, 16) and suggest that information regarding different emotions is also represented in embodied somatotopic format.

The discernible sensation patterns associated with each emotion correspond well with the major changes in physiological functions associated with different emotions (17). Most basic emotions were associated with sensations of elevated activity in the upper chest area, likely corresponding to changes in breathing and heart rate (1). Similarly, sensations in the head area were shared across all emotions, reflecting probably both physiological changes in the facial area (i.e., facial musculature activation, skin temperature, lacrimation) as well as the felt changes in the contents of mind triggered by the emotional events. Sensations in the upper limbs were most prominent in approach-oriented emotions, anger and happiness, whereas sensations of decreased limb activity were a defining feature of sadness. Sensations in the digestive system and around the throat region were mainly found in disgust. In contrast with all of the other emotions, happiness was
associated with enhanced sensations all over the body. The nonbasic emotions showed a much smaller degree of bodily sensations and spatial independence, with the exception of a high degree of similarity across the emotional states of fear and sadness, and their respective prolonged, clinical variants of anxiety and depression.

All cultures have body-related expressions for describing emotional states. Many of these (e.g., having “butterflies in the stomach”) are metaphorical and do not describe actual physiological changes associated with the emotional response (18). It is thus possible that our findings reflect a purely conceptual association between semantic knowledge of language-based stereotypes associating emotions with bodily sensations (19). When activated, such a conceptual link—rather than actual underlying physiological changes—could thus guide the individual in constructing a mental representation of the associated bodily sensations (9). However, we do not subscribe to this argument. First, all four types of verbal and nonverbal stimuli brought about concordant BSMs, suggesting that the emotion semantics and stereotypes played a minor role. Second, consistent BSMs were obtained when participants were asked to report their actual online bodily sensations during actual emotions induced by viewing movies or reading stories (the emotional categories of which were not indicated), thus ruling out high-level cognitive inferences and stereotypes. Third, a validation study with participants speaking Swedish—a language distant from Finnish—replicated the original findings, suggesting that linguistic confounds such as figurative language associated with the emotions cannot explain the findings. Fourth, bodily sensation maps were also concordant across West European (Finland) and East Asian (Taiwan) cultures (mean $r = 0.70$), thus exceeding clearly the canonical limit for “strong” concordance. Thus, BSMs likely reflect universal sensation patterns triggered by activation of the emotion systems, rather than culturally specific conceptual predictions and associations between emotional semantics and bodily sensation patterns. Despite these considerations, the present study cannot completely rule out the possibility that the BSMs could nevertheless reflect conceptual associations between emotions and bodily sensations, which are independent of the culture. However, where then do these conceptual associations originate and why are they so similar across people with very different cultural and linguistic backgrounds? A plausible answer would again point in the direction of a biological basis for these associations.

Prior work suggests that voluntary reproduction of physiological states associated with emotions, such as breathing patterns (20) or facial expressions (21), induces subjective feelings of the corresponding emotion. Similarly, voluntary production of facial expressions of emotions produces differential changes in physiological parameters such as heart rate, skin conductance, finger temperature, and muscle tension, depending on the generated expression (22). However, individuals are poor at detecting specific physiological states beyond maybe heart beating and palm sweating. Moreover, emotional feelings are only modestly associated with specific changes in heart rate or skin conductance (23) and physiological data have not revealed consistent emotion-specific patterns of bodily activation, with some recent reviews pointing to high unspecificity (9) and others to high specificity (8). Our data reconcile these opposing views by revealing that even though changes in specific physiological systems would be difficult to access consciously, net sensations arising from multiple physiological systems during different emotions are topographically distinct. The obtained BSM results thus likely reflect a compound measure of skeletomuscular and visceral sensations, as well as the effects of autonomic nervous system, which the individuals cannot separate. As several subareas of the human cortical
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somatosensory network contain somatotopic representations of the body (24), specific combinations of somatosensory and visceral afferent inputs could play a central role in building up emotional feelings. It must nevertheless be emphasized that we do not argue that the BSMs highlighted in this series of experiments would be the only components underlying emotional experience. Rather, they could reflect the most reliable and systematic consciously accessible bodily states during emotional processing, even though they may not relate directly to specific physiological changes.

These topographically distinct bodily sensations of emotions may also support recognizing others’ emotional states: the BSMs associated with others’ facial expressions were significantly correlated with corresponding BSMs elicited by emotional words, text passages, and movies in independent participants. Participants also recognized emotions related to mean BSMs of other subjects. Functional brain imaging has established that the primary somatosensory cortices are engaged during emotional perception and emotional contagion (25, 26), and their damage (27) or inactivation by transcranial magnetic stimulation (28) impairs recognition of others’ emotions. Consequently, emotional perception could involve automatic activation of the sensorimotor representations of the observed emotions, which would subsequently be used for affective evaluation of the actual sensory input (13, 29). The present study cannot nevertheless establish a direct link between the BSMs and an underlying physiological activation pattern. Even though whole-body physiological responses cannot be mapped with conventional psychophysiological techniques, in the future, whole-body perfusion during induced emotions could be measured with whole-body 15O-H2O PET imaging. These maps could then be correlated with the BSMs to investigate the relationship between experienced regional bodily sensations and physiological activity during emotional episodes.

CONCLUSIONS

We conclude that emotional feelings are associated with discrete, yet partially overlapping maps of bodily sensations, which could be at the core of the emotional experience. These results thus support models assuming that somatosensation (25, 27) and embodiment (13, 14) play critical roles in emotional processing. Unraveling the subjective bodily sensations associated with human emotions may help us to better understand mood disorders such as depression and anxiety, which are accompanied by altered emotional processing (30), ANS activity (31, 32), and somatosensation (33). Topographical changes in emotion-triggered sensations in the body could thus provide a novel biomarker for emotional disorders.

MATERIALS AND METHODS

Participants.

A total of 773 individuals took part in the study (experiment 1a: n = 302, M_age = 27 y, 261 females; experiment 1b: n = 52, M_age = 27 y, 44 females; experiment 1c: n = 36, M_age = 27 y, 21 females; experiment 2: n = 108, M_age = 25 y, 97 females; experiment 3: n = 94, M_age = 25 y, 80 females; experiment 4: n = 109, M_age = 28 y, 92 females; and experiment 5: n = 72, M_age = 39 y,
53 females). All participants were Finnish speaking except those participating in experiment 1b who spoke Swedish and those participating in experiment 1c who spoke Taiwanese Hokkien as their native languages.

**Stimuli.**

**Experiment 1 a–c: emotion words.**

Participants evaluated their bodily sensations (BSMs) associated with six basic (anger, fear, disgust, happiness, sadness, and surprise) and seven nonbasic emotions (anxiety, love, depression, contempt, pride, shame, and envy) as well as a neutral state. Each word was presented once in random order. The participants’ task was to evaluate which bodily regions they typically felt becoming activated or deactivated when feeling each emotion; thus the task did not involve inducing actual emotions in the participants. Experiment 1a was conducted using Finnish words and Finnish-speaking participants, experiment 1b with corresponding Swedish words and Swedish-speaking participants, and experiment 1c with Taiwanese words and Taiwanese-speaking participants. For the Swedish and Taiwanese variants, the Finnish emotion words and instructions were first translated to Swedish/Taiwanese by a native speaker and then backtranslated to Finnish to ensure semantic correspondence.

**Experiment 2: guided emotional imagery.**

Participants rated bodily sensations triggered by reading short stories (vignettes) describing short emotional and nonemotional episodes. Each vignette elicited primarily one basic emotion (or a neutral emotional state), and five vignettes per emotion category were presented in random order. Such text-driven emotion induction triggers heightened responses in somatosensory and autonomic nervous system (34) as well as brain activation (35), consistent with affective engagement. The vignettes were generated in a separate pilot experiment. Following the approach of Matsumoto et al. (36), each emotional vignette described an antecedent event triggering prominently one emotional state. Importantly, none of the vignettes described the actual emotional feelings, behavior, or bodily actions of the protagonist, thus providing no direct clues about the emotion or bodily sensations being associated with the story [e.g., “It’s a beautiful summer day. You drive to the beach with your friends in a convertible and the music is blasting from the stereo” (happy). “You sit by the kitchen table. The dishwasher is turned on” (neutral). “While visiting the hospital, you see a dying child who can barely keep her eyes open.” (sad)].

Normative data were acquired from 72 individuals. In the vignette evaluation experiment, the vignettes were presented one at a time in random order on a computer screen. Participants were asked to read each vignette carefully and report on a scale ranging from 1 to 5 the experience of each basic emotion (and neutral emotional state) triggered by the vignette. Data revealed that the vignettes were successful in eliciting the targeted, discrete emotional states. For each vignette, rating of the target emotion category was higher than that of any other emotion category ($P < 0.001$; Fig. S1). K-means clustering also classified each vignette reliably to the a priori target category, $F$s (6, 28) > 36.54, $P < 0.001$. 

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Experiment 3: emotional movies.

The stimuli were short 10-s movies eliciting discrete emotional states. They were derived from an fMRI study assessing the brain basis of discrete emotions, where they were shown to trigger a reliable pattern of discrete emotional responses (12). Given the inherent difficulties associated with eliciting anger and surprise with movie stimuli (37), these emotions were excluded from the study. Five stimuli were chosen for each emotion category (fear, disgust, happiness, sadness, and neutral). Each film depicted humans involved in either emotional or nonemotional activities. The films were shown one at a time in random order without sound. Participants were able to replay each movie and they were encouraged to view each one as many times as was sufficient for them to decide what kind of responses it elicited in them.

Experiment 4: embodying emotions from facial expressions.

The stimuli were pictures of basic facial expressions (anger, fear, disgust, happiness, sadness, and surprise) and a neutral emotional state, each posed by two male and two female actors chosen from the Karolinska facial expressions set (38).

Experiment 5: recognizing emotions from emBODY BSMs.

The stimuli were unthresholded emBODY BSMs for each basic emotion averaged over the 302 participants in experiment 1a.

Data Acquisition.

Data were acquired online with the emBODY instrument (Fig. 1) developed for the purposes of this study. In this computerized tool, participants were shown two silhouettes of a human body and an emotional stimulus between them. The bodies were abstract and 2D to lower the cognitive load of the task and to encourage evaluating only the spatial pattern of sensations. The bodies did not contain pointers to internal organs to avoid triggering purely conceptual associations between emotions and specific body parts to (e.g., love–heart). Participants were asked to inspect the stimulus and use a mouse to paint the bodily regions they typically felt becoming activated (on the left body) or deactivated (on the right body) when viewing it. Painting was dynamic, thus successive strokes on a region increased the opacity of the paint, and the diameter of the painting tool was 12 pixels. Finished images were stored in matrices where the paint intensity ranged from 0 to 100. Both bodies were represented by 50,364 pixels. When multiple stimuli from one category were used (experiments 2–4), subjectwise data were averaged across the stimuli eliciting each emotional state before random effects analysis. In experiment 4, instead of evaluating emotions that the faces would trigger in themselves, the participants were asked to rate what the persons shown in the pictures would feel in their bodies.

In experiment 5, participants were asked to recognize the average heatmaps of basic emotions and the neutral emotional state based on 302 respondents in experiment 1. The heatmaps were color printed on a questionnaire sheet alongside instructions and six emotion words and the word “neutral.” The participants were asked to associate each heatmap with the word that described it best. Two different randomized orders of the heatmaps and words were used to avoid order effects.
Statistical Analysis.

Data were screened manually for anomalous painting behavior (e.g., drawing symbols on bodies or scribbling randomly). Moreover, participants leaving more than mean + 2.5 SDs of bodies untouched were removed from the sample. Next, subjectwise activation and deactivation maps for each emotion were combined into single BSMs representing both activations and deactivations and responses outside the body area were masked. In random effects analyses, mass univariate t tests were then used on the subjectwise BSMs to compare pixelwise activations and deactivations of the BSMs for each emotional state against zero. This resulted in statistical t-maps where pixel intensities reflect statistically significant experienced bodily changes associated with each emotional state. Finally, false discovery rate (FDR) correction with an alpha level of 0.05 was applied to the statistical maps to control for false positives due to multiple comparisons.

To test whether different emotions are associated with statistically different bodily patterns, we used statistical pattern recognition with LDA after first reducing the dimensionality of the dataset to 30 principal components with principal component analysis. To estimate generalization accuracy, we used stratified 50-fold cross-validation where we trained the classifier separately to recognize one emotion against all of the others (one-out classification), or all emotions against all of the other emotions (complete classification). To estimate SDs of classifier accuracy, the cross-validation scheme was run iteratively 100 times.

To assess the similarity of the BSMs associated with different emotion categories, we performed hierarchical clustering. First, for each subject we created a similarity matrix: for each pair of emotion categories we computed the Spearman correlation between the corresponding heatmaps. To avoid inflated correlations, zero values in the heatmaps (i.e., regions without paint) were filled with Gaussian noise. The Spearman correlation was chosen as the optimal similarity metric due to the high dimensionality of the data within each map: with high dimensionality, Euclidean metrics usually fail to assess similarity, as they are mainly based on the magnitude of the data. Furthermore, as a rank-based metric, independent of the actual data values, it is also less sensitive to outliers compared with Pearson’s correlation. We also evaluated cosine-based distance as a possible metric, but the normalization involved in the computation lowered the sensitivity of our final results, as cosine distance uses only the angle between the two vectors and not their magnitude. We averaged individual similarity matrices to produce a group similarity matrix that was then used as distance matrix between each pair of emotion categories for the hierarchical clustering with complete linkage. The similarity data were also used for assessing reliability of bodily topographies across languages and experiments.
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FOOTNOTES

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REFERENCES


Amazon Is Developing a Wristband That Tracks Your Emotions

I don’t know if we need a wearable device that can track emotions like joy, anger, fear, or sadness but Amazon seems to be thinking we need an emotion-reading wristband for “health and wellness purposes.”

Oh, and to better sell you more stuff, of course.

Internal documents reviewed by Bloomberg show that Amazon is working on such a device, a wristband that uses microphones and artificial intelligence to figure out what the wearer is feeling at any given time. In a 2017 patent, Amazon claims that
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the device and the accompanying AI software would be able to know if the wearer is feeling “joy, anger, sorrow, sadness, fear, disgust, boredom, stress, or other emotional states.”

MORE: Best Smartwatch - Top-Rated Watches for iPhone, Android

This device will communicate with a smartphone app and, logically, Amazon servers. The company will then use this knowledge to recommend potential health products, better target advertising, and give other product recommendations. Sources told Bloomberg that the code name of the project is Dylan and it is now in beta testing.

It’s not known yet if Amazon will turn the research project into a real product but, given the success of the Apple Watch, I wouldn’t be surprised to find this technology in a future health-tracking app that can not only monitor biometrics like heart rate but also psychological factors. That would be the sell, of course: buy this so you can be healthy in all fronts, physical and mental.

But what could go wrong with such a product? Just last month it was reported that there are thousands of Amazon workers who are listening to Alexa recordings and transcribing to improve Alexa’s voice recognition algorithm, which has raised privacy concerns. After giving Bezos & Co. full access to our conversations and shopping habits, is it really wise to give them our emotions, too?

Amazon is also reportedly working on wearable Alexa earbuds to rival Apple’s AirPods 2, but that gadget is focusing on audio quality and Alexa integration.
Three different recent studies, done by different teams of scientists proved something really extraordinary. But when a new research connected these 3 discoveries, something shocking was realized, something hiding in plain sight.

Human emotion literally effects the world around us. Not just our perception of the world, but reality itself.
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In the first experiment, human DNA, isolated in a sealed container, was placed near a test subject. Scientists gave the donor emotional stimulus and fascinatingly enough, the emotions affected their DNA in the other room.

In the presence of negative emotions the DNA tightened. In the presence of positive emotions the coils of the DNA relaxed.

The scientists concluded that “**Human emotion produces effects which defy conventional old laws of physics.**”
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In the second, similar but unrelated experiment, different group of scientists extracted Leukocytes (white blood cells) from donors and placed into chambers so they could measure electrical changes.

In this experiment, the donor was placed in one room and subjected to “emotional stimulation” consisting of video clips, which generated different emotions in the donor.

The DNA was placed in a different room in the same building. Both the donor and his DNA were monitored and as the donor exhibited emotional peaks or valleys (measured by electrical responses), the DNA exhibited the IDENTICAL RESPONSES AT THE EXACT SAME TIME.

There was no lag time, no transmission time. The DNA peaks and valleys EXACTLY MATCHED the peaks and valleys of the donor in time.

The scientists wanted to see how far away they could separate the donor from his DNA and still get this effect. They stopped testing after they separated the
DNA and the donor by 50 miles and STILL had the SAME result. No lag time; no transmission time.

**The DNA and the donor had the same identical responses in time. The conclusion was that the donor and the DNA can communicate beyond space and time.**

The third experiment proved something pretty shocking!

Scientists observed the effect of DNA on our physical world.

Light photons, which make up the world around us, were observed inside a vacuum. Their natural locations were completely random.

Human DNA was then inserted into the vacuum. Shockingly the photons were no longer acting random. They precisely followed the geometry of the DNA.
Scientists who were studying this, described the photons behaving “surprisingly and counter-intuitively”. They went on to say that “We are forced to accept the possibility of some new field of energy!”

They concluded that human DNA literally shape the behavior of light photons that make up the world around us!

So when a new research was done, and all of these 3 scientific claims were connected together, scientists were shocked.

They came to a stunning realization that if our emotions affect our DNA and our DNA shapes the world around us, than our emotions physically change the world around us.

And not just that, we are connected to our DNA beyond space and time.
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We create our reality by choosing it with our feelings.

Science has already proven some pretty MINDBLOWING facts about The Universe we live in. All we have to do is connect the dots.

- [https://www.youtube.com/watch?v=pq1q58wTolk](https://www.youtube.com/watch?v=pq1q58wTolk);
- [Science Alert](https://sciencealert.com);
- [Heart Math](https://www.heartmath.org);
- [Above Top Secret](https://www.abovetopsecret.com);
- [http://www.bibliotecapleyades.net/mistic/esp_greggbraden_11.htm](http://www.bibliotecapleyades.net/mistic/esp_greggbraden_11.htm);
Depression Can Physically Change Your DNA, Study Suggests

More evidence that the disease is much more than a mood disorder.

FIONA MACDONALD
29 APR 2015

Researchers from the UK have found evidence that depression doesn't just change our brains, it can also alter our DNA and the way our cells generate energy.

A team from the Wellcome Trust Centre for Human Genetics investigated the genomes of more than 11,500 women, with the hopes of finding genes that might contribute to the risk of depression. But instead, they stumbled across a signature of metabolic changes in their cells that appears to have been triggered by the disease.

The most notable discovery was that women who had stress-related depression - depression that's associated with some kind of adversity during childhood such as sexual abuse - had more mitochondrial DNA (mtDNA) than their peers. Mitochondria are the 'powerhouse organelles' that provide the energy for the rest of the cell, and an increase in mitochondrial DNA led the researchers to believe that the energy needs of their cells had changed in response to stress.

"We were surprised at the observation that there was a difference in mitochondrial DNA. So surprised it took us a long time to convince ourselves it was real, and not an artefact," said geneticist and one of the lead researchers, Jonathan Flint, in a press release.

After going back over their results, the researchers also found that the women with stress-related depression had shorter telomeres than the healthy women. Telomeres are the caps at the end of our chromosomes that naturally shorten as we age, and the team began to question whether this process had been sped up by stress.
But as we know, correlation doesn't equal causation, so the team decided to test their hypothesis further in mice. Over four weeks, the mice were put under stress, and the researchers monitored any genetic and cellular changes that occurred.

Their research, which was published in *Current Biology*, revealed that the stressed-out mice not only showed an increase in mtDNA, but they also had shorter telomeres than the normal lab mice. These changes seem to be triggered by the stress hormone corticosterone.

According to Flint, these molecular changes may well reflect the body's way of naturally coping with major stress. "Depression might in some sense be considered a metabolic reaction to perceived stress," he said.

The good news is that the research in mice showed that the effects of stress are also partly reversible. The team now hopes that the research will help point out biomarkers of stress and its consequences. It's still very early days, but in the future, looking at mitochondrial DNA levels could help to reveal whether someone has recovered from a trauma.

"We have only a snapshot of the relationship between the molecular markers and depression," said Flint. "We want to know how they change over time - before, during, and after a depressive illness. That information will tell us much about their clinical utility."

It's becoming increasingly clear that the things that affect us emotionally also affect us on a biological level. Earlier this year, a separate team of researchers showed that childhood trauma could alter cellular ageing, and in November 2014, scientists also revealed that meditation and yoga can actually help maintain telomere length. There's no evidence as yet that these types of changes are permanent or will be passed on to future generations.

While there's still a lot to understand, we hope this research will help reduce the stigma surrounding mental disorders and bring more acceptance and support for people suffering from them. It's definitely about time.
Major depression leaves a metabolic mark

Major depression comes with an unexpected metabolic signature, according to new evidence reported by Na Cai and Jonathan Flint of WTCHG, together with an international team of colleagues. Their findings in humans and mice offer new insight into the nature of depression. They may also yield new ways to measure and monitor mental health at the molecular level.

'Our most notable finding is that the amount of mitochondrial DNA changes in response to stress’, says Flint. Mitochondria are compartments in cells responsible for generating energy. An increase in mitochondrial DNA suggests a change in mitochondria and cellular energetics, he explains. In the latest issue of Current Biology, the team reports an unexpected link between cellular energetics and major depression, which has always been seen as a mood disorder.

Flint and his colleagues stumbled across this serendipitously, while in search of genes that increase the risk of depression among thousands of women with recurrent major depression and healthy controls. Many of the women with depression also had experienced adversity in childhood, including sexual abuse. The researchers noticed something rather unusual in the DNA. The samples taken from women with a history of stress-related depression contained more mitochondrial DNA than other samples.

'We were surprised at the observation that there was a difference in mitochondrial DNA—so surprised it took us a long time to convince ourselves it was real, and not an artifact', Flint says. The new discovery prompted the team to evaluate another molecular level phenomenon associated with depression in earlier studies. Telomeres, repeated DNA sequences that physically cap the ends of chromosomes, shorten with each cell division (and therefore with one’s age). Changes in metabolism have been shown to alter the rate of ageing, so the researchers wondered whether they might see a change in telomeres’ erosion too. And indeed they did.
To test these hypotheses further, Flint’s team looked to laboratory mice that were put through four weeks of stress. The studies in mice showed not only that stress caused both molecular changes, but also that the changes were partly reversible and elicited by administration of the stress hormone corticosterone.

Flint says the molecular changes they observed might reflect the body’s way of coping with major environmental stressors. As our brains perceive a threat—lack of food or a history of abuse, for example—it may initiate a series of protective metabolic changes. ‘Depression might in some sense be considered a metabolic reaction to perceived stress’, he says.

The researchers also hope that the molecular changes can serve as biomarkers of stress and its consequences. It is possible, for example, that a decline in mitochondrial DNA levels post-treatment could be used as an indicator of success. More work is still needed. ‘We have only a snapshot of the relationship between the molecular markers and depression’, Flint says. ‘We want to know how they change over time—before, during, and after a depressive illness. That information will tell us much about their clinical utility.’

Cai, Na et al., Molecular Signatures of Major Depression, Current Biology (2015), http://dx.doi.org/10.1016/j.cub.2015.03.008
INTRODUCTION

In this contribution I am going to describe some observations and interpretations of a recently discovered anomalous phenomenon which we are calling the DNA Phantom Effect in Vitro or the DNA Phantom for short.

We believe this discovery has tremendous significance for the explanation and deeper understandings of the mechanisms underlying subtle energy phenomena including many of the observed alternative healing phenomena [1,2]. This data also supports the heart intelligence concept and model developed by Doc Lew Childre [3,4] (see also contributions by Rollin McCraty and Glen Rein in this volume).

This new phenomenon - the DNA phantom effect - was first observed in Moscow at the Russian Academy of Sciences as a surprise effect during experiments measuring the vibrational modes of DNA in solution using a sophisticated and expensive "MALVERN" laser photon correlation spectrometer (LPCS) [5].

These effects were analyzed and interpreted by Gariaev and Poponin [6].

The new feature that makes this discovery distinctly different from many other previously undertaken attempts to measure and identify subtle energy fields [1] is that the field of the DNA phantom has the ability to be coupled to conventional electromagnetic fields of laser radiation and as a consequence, it can be reliably detected and positively identified using standard optical techniques.

Furthermore, it seems very plausible that the DNA phantom effect is an example of subtle energy manifestation in which direct human influence is not involved.

These experimental data provide us not only quantitative data concerning the coupling constant between the DNA phantom field and the electromagnetic field of the laser light but also provides qualitative and quantitative information about the nonlinear dynamics of the phantom DNA fields.

Note that both types of data are crucial for the development of a new unified nonlinear quantum field theory which must include the physical theory of consciousness and should be based on a precise quantitative background.
RESULTS

The background leading to the discovery of the DNA phantom and a description of the experimental set up and conditions will be helpful.

A block diagram of the laser photon correlation spectrometer used in these experiments is presented in Figure 1 below.

![Block Diagram of Laser Photon Correlation Spectrometer](image)

**Figure 1.** Illustrates a simplified block diagram of the laser photon correlation spectrometer used to detect the DNA phantom.

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In each set of experimental measurements with DNA samples, several double control measurements are performed.

These measurements are performed prior to the DNA being placed in the scattering chamber. When the scattering chamber of the LPCS is void of physical DNA, and neither are there any phantom DNA fields present, the autocorrelation function of scattered light looks like the one shown in Figure 2a.

This typical control plot represents only background random noise counts of the photomultiplier. Note that the intensity of the background noise counts is very small and the distribution of the number of counts per channel is close to random.

Figure 2b demonstrates a typical time autocorrelation function when a physical DNA sample is placed in the scattering chamber, and typically has the shape of an oscillatory and slowly exponentially decaying function.
When the DNA is removed from the scattering chamber, one anticipates that the autocorrelation function will be the same as before the DNA was placed in the scattering chamber.

Surprisingly and counter-intuitively it turns out that the autocorrelation function measured just after the removal of the DNA from the scattering chamber looks distinctly different from the one obtained before the DNA was placed in the chamber.

Two examples of the autocorrelation functions measured just after the removal of the physical DNA are shown in Figures 2c and d.
After duplicating this many times and checking the equipment in every conceivable way, we were forced to accept the working hypothesis that some new field structure is being excited from the physical vacuum.

We termed this the DNA phantom in order to emphasize that its origin is related with the physical DNA. We have not yet observed this effect with other substances in the chamber.

After the discovery of this effect we began a more rigorous and continuous study of this phenomena. We have found that, as long as the space in the scattering chamber is not disturbed, we are able to measure this effect for long periods of time. In several cases we have observed it for up to a month. It is important to emphasize that two conditions are necessary in order to observe the DNA phantoms.

The first is the presence of the DNA molecule and the second is the exposure of the DNA to weak coherent laser radiation. This last condition has been shown to work with two different frequencies of laser radiation.

Perhaps the most important finding of these experiments is that they provide an opportunity to study the vacuum substructure on strictly scientific and quantitative grounds. This is possible due to the phantom field's intrinsic ability to couple with conventional electromagnetic fields. The value of the coupling constant between the DNA phantom field and the electromagnetic field of the laser radiation can be estimated from the intensity of scattered light.

The first preliminary set of experiments carried out in Moscow and Stanford have allowed us to reliably detect the phantom effect.

However, more measurements of the light scattering from the DNA phantom fields are necessary for a more precise determination of the value of the EMF-DNA phantom field coupling constant.

**THEORY**

It is fortunate that the experimental data provides us with qualitative and quantitative information about the nonlinear dynamical properties of the phantom DNA fields.

Namely, these experimental data suggest that localized excitations of DNA phantom fields are long living and can exist in non-moving and slowly propagating states. This type of behavior is distinctly different from the behavior demonstrated by other well known nonlinear localized excitations such as solitons which are currently considered to be the best explanation of how vibrational energy propagates through the DNA.

It is a remarkable and striking coincidence that a new class of localized solutions to anharmonic Fermi-Pasta-Ulam lattice (FPU) - nonlinear localized excitations (NLE), which
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have been recently obtained\(^7\), demonstrate very similar dynamical features to those of the DNA phantom. Nonlinear localized excitations predicted by the FPU model also have unusually long life-times.

Furthermore, they can exist in both stationary or slowly propagating forms. In Figure 3, one example of a NLE is shown which illustrates three stationary localized excitations generated by numerical simulation using the FPU model\(^7\). It is worthy to note that this NLE has a surprisingly long life-time.

Here, we present only one of the many possible examples of the patterns for stationary excitations which are theoretically predicted.

Slowly propagating and long lived NLE are also predicted by this theory. Note that the FPU model can successfully explain the diversity and main features of the DNA phantom dynamical patterns. This model is suggested as the basis for a more general nonlinear quantum theory which may explain many of the observed subtle energy phenomena and eventually could provide a physical theory of consciousness.

According to our current hypothesis, the DNA phantom effect may be interpreted as a manifestation of a new physical vacuum substructure which has been previously overlooked. It appears that this substructure can be excited from the physical vacuum in a range of energies close to zero energy provided certain specific conditions are fulfilled which are specified above.

Furthermore, one can suggest that the DNA phantom effect is a specific example of a more general category of electromagnetic phantom effects\(^8\).

This suggests that the electromagnetic phantom effect is a more fundamental phenomenon which can be used to explain other observed phantom effects including the phantom leaf effect and the phantom limb\(^9\).

References
Local and Non-Local Effects of Coherent Heart Frequencies on Conformational Changes of DNA
by Glen Rein, PhD, Rollin McCraty, PhD
Institute of HeartMath
January 01, 2001
from AppreciativeInquiry Website

Annotation
Human placenta DNA (the most pristine form of DNA) was placed in a container from which they could measure changes in the DNA. Twenty-eight vials of DNA were given (one each) to 28 trained researchers. Each researcher had been trained how to generate and FEEL feelings, and they each had strong emotions.

What was discovered was that the DNA CHANGED ITS SHAPE according to the feelings of the researchers:

1. When the researchers FELT gratitude, love and appreciation, the DNA responded by RELAXING and the strands unwound. The length of the DNA became longer.

2. When the researchers FELT anger, fear, frustration, or stress, the DNA responded by TIGHTENING UP. It became shorter and SWITCHED OFF many of our DNA codes!

This experiment was later followed up by testing HIV positive patients, with similar results that can be viewed on the HeartMath web site.

- Online Resources: Institute of HeartMath - HeartMath LLC
- Resource Files: HeartMath Article

This is the experiment that relates directly to the anthrax situation. In this experiment, some human placenta DNA (the most pristine form of DNA) was placed in a container from which they could measure changes in the DNA.

Twenty-eight vials of DNA were given (one each) to 28 trained researchers. Each researcher had been trained how to generate and FEEL feelings, and they each had strong emotions.

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2. When the researchers FELT anger, fear, frustration, or stress, the DNA responded by TIGHTENING UP. It became shorter and SWITCHED OFF many of our DNA codes!

If you've ever felt "shut down" by negative emotions, now you know why your body was equally shut down too.
The shut down of the DNA codes was reversed and the codes were switched back on again when feelings of love, joy, gratitude and appreciation were felt by the researchers.

This experiment was later followed up by testing HIV positive patients.

They discovered that feelings of love, gratitude and appreciation created 300,000 TIMES the RESISTANCE they had without those feelings. So here's the answer to what can help you stay well, no matter what dreadful virus or bacteria may be floating around. Stay in feelings of joy, love, gratitude and appreciation!

These emotional changes went beyond the effects of electromagnetics.

Individuals trained in deep love were able to change the shape of their DNA. Gregg Braden says this illustrates a new recognized form of energy that connects all of creation. This energy appears to be a TIGHTLY WOVEN WEB that connects all matter.

Essentially we're able to influence this web of creation through our VIBRATION.

**SUMMARY**

What do the results of these experiments have to do with our present situation? This is the science behind how we can choose a timeline to stay safe, no matter what else is happening.

As Gregg explains in *The Isaiah Effect*, basically time is not just linear (past, present and future), but it also has depth. The depth of time consists of all the possible prayers and timelines that could ever be prayed or exist. Essentially, all our prayers have already been answered. We just activate the one we're living through our FEELINGS.

THIS is how we create our reality - by choosing it with our feelings. Our feelings are activating the timeline via the web of creation, which connects all of the energy and matter of the Universe.

Remember that the law of the Universe is that we attract what we focus on. If you are focused on fearing whatever may come, you are sending a strong message to the Universe to send you whatever you fear. Instead if you can get yourself into feelings of joy, love, appreciation or gratitude, and focus on bringing more of that into your life, you are going to avoid the negative stuff automatically.

You will be choosing a different TIMELINE with your feelings.

You can prevent getting anthrax or any other flu, virus, etc, by staying in these positive feelings, which maintains an incredibly strong immune system.

So here's your protection for whatever comes: Find something to be happy about every day, and every hour if possible, moment-to-moment, even if only for a few minutes. This is the easiest and best protection you can have.
When we are born, the deoxyribonucleic acid/DNA in our bodies contains the blueprints for who we are and instructions for who we will become. For example, it can tell our eyes to eventually turn from blue at birth to hazel later on, our length to grow from 20 inches to 70 and direct a multitude of other changes over the course of our lives.

Many people have mistakenly believed that the DNA with which we are born is the sole determinant for who we are and will become, but scientists have understood for decades that this *genetic determinism* is a flawed theory.

The field of *epigenetics* refers to the science that studies how the development, functioning and evolution of biological systems are influenced by forces operating outside the DNA sequence, including intracellular, environmental and energetic influences.

Since the 1950s scientists have accepted that epigenetic influence is critical in our development. *Epi* – Greek for “besides” – combines with the word, *genetics*, to
essentially mean “something more than genetics.” That “something more” is widely held today to refer to our environment – thus meaning that our genetic code and the environment in which we develop determine who and what we are.

Researchers have shown through studies that epigenetics entails even more than DNA and the places where we live, the climate around us and all the twists, turns and hard knocks of our lives.

HeartMath deems integral elements of the model for who we are and what we can be are the thoughts, feelings and intentions we have every day. After two decades of studies, HeartMath researchers say other factors such as the appreciation and love we have for someone or the anger and anxiety we feel also influence and can alter the outcomes of each individual’s DNA blueprint.

Stem cell biologist and bestselling author Bruce Lipton, Ph.D., says the distinction between genetic determinism and epigenetics is important.

“The difference between these two is significant because this fundamental belief called genetic determinism literally means that our lives, which are defined as our physical, physiological and emotional behavioral traits, are controlled by the genetic code,” Lipton said in an interview with the online magazine, Superconsciousness. “This kind of belief system provides a visual picture of people being victims: If the genes control our life function, then our lives are being controlled by things outside of our ability to change them. This leads to victimization that the illnesses and diseases that run in families are propagated through the passing of genes associated with those attributes. Laboratory evidence shows this is not true.”

A Steady Diet of Quantum Nutrients

“When we have negative emotions such as anger, anxiety and dislike or hate, or think negative thoughts such as ‘I hate my job,’ ‘I don’t like so and so’ or ‘Who does he think he is?’, we experience stress and our energy reserves are redirected,” an article on HMI’s website explains. This causes a portion of our energy reserves, which otherwise would be
put to work maintaining, repairing and regenerating our complex biological systems, to instead confront the stresses these negative thoughts and feelings create.

“In contrast,” the article continues, “when we activate the power of our hearts’ commitment and intentionally have sincere feelings such as appreciation, care and love, we allow our hearts’ electrical energy to work for us. Consciously choosing a core heart feeling over a negative one means instead of the drain and damage stress causes to our bodies’ systems, we are renewed mentally, physically and emotionally. The more we do this the better we’re able to ward off stress and energy drains in the future. Heartfelt positive feelings fortify our energy systems and nourish the body at the cellular level. At HeartMath we call these emotions quantum nutrients.”

In simple terms most people can relate to, what this means is that when we are having a bad day, going through a rough period such as dealing with the sickness of a loved one or coping with financial troubles, we can actually influence our bodies – all the way down to the cellular level – by intentionally thinking positive thoughts and focusing on positive emotions.

**Changing DNA Through Intention**

The power of intentional thoughts and emotions goes beyond theory at the HeartMath Institute. In a study, researchers have tested this idea and proven its veracity.

HeartMath researchers have gone so far as to show that physical aspects of DNA strands could be influenced by human intention. The article, Modulation of DNA Conformation by Heart-Focused Intention – McCraty, Atkinson, Tomasino, 2003 – describes experiments that achieved such results.

For example, an individual holding three DNA samples was directed to generate heart coherence – a beneficial state of mental, emotional and physical balance and harmony – with the aid of a HeartMath technique that utilizes heart breathing and intentional positive emotions. The individual succeeded, as instructed, to intentionally and simultaneously unwind two of the DNA samples to different extents and leave the third unchanged.
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“The results provide experimental evidence to support the hypothesis that aspects of the DNA molecule can be altered through intentionality,” the article states. “The data indicate that when individuals are in a heart-focused, loving state and in a more coherent mode of physiological functioning, they have a greater ability to alter the conformation of DNA.

“Individuals capable of generating high ratios of heart coherence were able to alter DNA conformation according to their intention. … Control group participants showed low ratios of heart coherence and were unable to intentionally alter the conformation of DNA.”

Heart Intelligence, the Unifying Factor

The influence or control individuals can have on their DNA – who and what they are and will become – is further illuminated in HeartMath founder Doc Childre’s theory of heart intelligence. Childre postulates that “an energetic connection or coupling of information” occurs between the DNA in cells and higher dimensional structures – the higher self or spirit.

Childre further postulates, “The heart serves as a key access point through which information originating in the higher dimensional structures is coupled into the physical human system (including DNA), and that states of heart coherence generated through experiencing heartfelt positive emotions increase this coupling.”

The heart, which generates a much stronger electromagnetic field than the brain’s, provides the energetic field that binds together the higher dimensional structures and the body’s many systems as well as its DNA.

Childre’s theory of heart intelligence proposes that “individuals who are able to maintain states of heart coherence have increased coupling to the higher dimensional structures and would thus be more able to produce changes in the DNA.”
Changing Our DNA through Mind Control?

A study finds meditating cancer patients are able to affect the makeup of their DNA

“I think, therefore I am” is perhaps the most familiar one-liner in western philosophy. Even if the stoners, philosophers and quantum mechanically-inclined skeptics who believe we’re living an illusion are right, few existential quips hit with such profound, approachable simplicity. The only catch is that in Descartes’ opinion, “we” – our thoughts, our personalities, our “minds” – are mostly divorced from our bodies. The polymathic Frenchman and other dualist philosophers proposed that while the mind exerts control over our physical interaction with the world, there is a clear delineation between body and mind; that our material forms are simply temporary housing for our immaterial souls. But centuries of
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Science argue against a corporeal crash pad. The body and mind appear inextricably linked. And findings from a new study published in Cancer by a Canadian group suggest that our mental state has measurable physical influence on us – more specifically on our DNA.

Lead investigator Dr. Linda E. Carlson and her colleagues found that in breast cancer patients, support group involvement and mindfulness meditation – an adapted form of Buddhist meditation in which practitioners focus on present thoughts and actions in a non-judgmental way, ignoring past grudges and future concerns -- are associated with preserved telomere length. Telomeres are stretches of DNA that cap our chromosomes and help prevent chromosomal deterioration -- biology professors often liken them to the plastic tips on shoelaces. Shortened telomeres aren't known to cause a specific disease per se, but they do whither with age and are shorter in people with cancer, diabetes, heart disease and high stress levels. We want our telomeres intact.

In Carlson’s study distressed breast cancer survivors were divided into three groups. The first group was randomly assigned to an 8-week cancer recovery program consisting of mindfulness meditation and yoga; the second to 12-weeks of group therapy in which they shared difficult emotions and fostered social support; and the third was a control group, receiving just a 6-hour stress management course. A total of 88 women completed the study and had their blood analyzed for telomere length before and after the interventions. Telomeres were maintained in both treatment groups but shortened in controls.

Previous work hinted at this association. A study led by diet and lifestyle guru Dr. Dean Ornish from 2008 reported that the combination of a vegan diet, stress management, aerobic exercise and participation in a support group for 3 months resulted in increased telomerase activity in men with prostate cancer, telomerase being the enzyme that maintains telomeres by adding DNA to the ends of our chromosomes. More recent work looking at meditation reported similar findings. And though small and un-randomized, a 2013 follow up study by Ornish, again looking at prostate cancer patients, found that lifestyle interventions are associated with longer telomeres.

The biologic benefits of meditation in particular extend well beyond telomere preservation. Earlier work by Carlson found that in cancer patients, mindfulness is associated with healthier levels of the stress hormone cortisol and a decrease in compounds that promote inflammation. Moreover, as she points out, “generally healthy people in a work-based mindfulness stress reduction program have been shown to produce higher antibody titers to the flu vaccine than controls, and there has been promising work looking at the
effects of mindfulness in HIV and diabetes.” Past findings also show that high stress increases the risk of viral infections – including the common cold – as well as depression and cardiovascular disease.

The therapeutic potential of the mind-body intersect is well-known. Biofeedback – in which sensor-clad patients learn awareness of and control over various physiologic functions – has been around for decades and is used to treat pain, headache, high blood pressure and sleep problems, among numerous other conditions. And of course there’s the placebo effect, the complicated yet very real psychobiological benefit achieved from a patient’s expectations of a treatment rather than the treatment itself.

Though optimistic that meditative and social approaches are mental means toward better physical, and not just psychologic well-being, Carlson rightly hedges. “The meaning of the maintenance of telomere length in this study is unknown. However, I think that processing difficult emotions is important for both emotional and physical health, and this can be done both through group support with emotional expression, and through mindfulness meditation practice,” she says.

Carlson wonders if mentally-rooted telomeric changes are long-lasting, if the same patterns would hold true in other cancers and conditions, and what the effects of mental intervention would be if offered at the time of diagnosis and treatment – all questions she hopes to pursue.

According to a report published by Harvard Medical School in 2011, 6.3 million Americans were using mind-body therapies at the advice of conventional doctors – a surprisingly high number that has surely since grown. Still, prescription meditation – especially in the interest of physical health -- is far from the norm in Western medicine. And it remains unclear whether or not preserved telomeres actually prolong survival in cancer patients; or in anyone for that matter. But stress reduction in the interest of chromosomal preservation, and other possible health benefits, seems like a pursuit even a 17th Century dualist philosopher could get behind.
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The Main Fact of Life is

You Do NOT Create the World or the Events Around You

But You Do Control Completely Your Interpretation of the World and Events Around You
Real Time Emotion Display to Affect Reality

PROOF of the Powers of the Human Mind

The Steps of the Proof are:

Step 1. The test of time: Humans have always felt the connection of mind and spirit. Every race of people and every tribe has had those who have greater abilities to use these powers of the mind. They know that there is a subtle but undeniable force of connection.

Step 2. Quantum Theory: Physicists were shocked when they found that a very small quantum experiment could be influenced by the observer. This was called the observer effect and thus the world of science was changed forever when the Observer Effect was PROVED!!!!!

Step 3. Medicine’s Paranoid need for Double Blind. Medicine was shocked when they discovered the placebo effect. The mind of the researcher was able to affect the results of an experiment. The mind of a doctor can affect the patient. The mind of a patient can effect himself. From then on a double blind experiment was required. Proof of the powers of the mind, but still the Geeks twist on.

Step 4. Fractal Complexity: What we do not know is so vast that it should be humbling. But it takes a lot to humble a Geek.

Step 5. Bell’s Theorem. This basic theorem of Quantum Electro Dynamics.

Step 6. PEAR = Princeton’s Engineering Anomalies Research

Step 7. The disbelievers always get test results that deny the proof: The hypothesis of our theory is that the mind can effect things. This means that those who disbelieve or scoff at the theory will only be able to get tests results that confirm their own disbelief.

Step 8. The resistance to accepting the powers of the mind is great, in fact it is too great. The resistance is so incredibly great that it becomes PROOF
Real Time Emotion Display to Affect Reality

Hormones and their Effect on Emotion

There is a synchronicity in the way hormones and emotions affect us in our everyday lives. The important role of shaping and motivating social interactions is influenced by our emotions (Gilam & Hendler, 2016). Our interactions with others in our environment not only make us passive observers but also allow us to convey our thoughts, feelings, and intended actions towards other people and their thoughts, feelings, and actions (Gilam & Hendler, 2016). Adapting our behaviours and cognitions within the unique dynamics of the situation also influences how we perceive not only our own emotions but of those around us (Gilam & Hendler, 2016). However, during these social interactions, people are aware of themselves with other people and may alter how they present themselves to influence the kind of impression that is being formed of them (Gilam & Hendler, 2016).

The Concept of Motivation

Did you know?

The term motivation is derived from a Latin term 'movere', which means 'movement of activity'.

The nature of motivation primarily pivots on describing what “moves” the behaviour. Nearly all our daily expressions and explanations of behaviour are stated concerning motives. Why do you go to school every day? You might have any reason for this behaviour, like as you want to educate yourself, to make your parents happy or you want to learn, and get a good job or you want to make friends, and so on. Depending on the combinations of these or another reason, you will decide to go for higher education as well. Hence, your motives are helping you to choose your next steps. They also help in making predictions about behaviour. You will automatically work hard in every situation if you have a very strong desire for achievement. Hence, motives are the states that helps us to make certain predictions about the behaviours in different situations. Putting differently, it can be said that motivation is one of the decisive factors of behaviour. The needs, goals, desires, incentives and instincts fall under the large clump of motivation.

The Cycle of Motivation

The cycle of motivation starts from the “needs” which is lack of some necessity. Needs further leads to “drive”, which is a state of tension and it leads to the arousal of a goal that is to be achieved. When a person achieves the thing they desire, they return to their balanced state. Is there any classification of motives? Is there any biological base that explains the different kinds of motives? What will happen if motives remain unachieved? How is motivation related to hormones? These few questions will be further discussed in the section below.

The Different Types of Motives

There are two types of motives. They are:

1. The psychosocial motives
2. The biological motives

The psychosocial motives are principally learned by the individual’s interaction and relation with different external factors (Gilam & Hendler, 2016). The biological motives, on the other hand, are lead mostly by the physiological mechanisms of the bodies. Biological motives are also known as physiological motives.

*Table 1.1* Difference between biological motives and psychosocial motives

<table>
<thead>
<tr>
<th>Biological motives</th>
<th>Psychosocial motives</th>
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<tbody>
<tr>
<td>The biological motives focus on the biological causes and innate of motivation, such as brain structures, hormones and neurotransmitters. For example, thirst, hunger and sex.</td>
<td>The psychosocial motives focus on the social, environmental and psychological factors. It emphasis on how these factors interact with each other in order to produce motivation. For example, desire for achievement, success, affiliation, curiosity and power.</td>
</tr>
</tbody>
</table>

However, both are interdependent on each other in terms of situations. For example, in some situations the psychosocial factors might trigger the motives in an organism and in other situations the motives might be triggered by the biological factors as well. Hence, no one is completely biological or completely psychosocial in nature - in fact, they are triggered in an individual by various combinations.

**Maslow’s Hierarchy of Needs**

*Figure 1. Maslow’s Hierarchy of Needs.*

Human motivation has long been considered as the most discussed subject by psychologists. Therefore, there are several views on human motivation but the most popular one is given by Abraham Maslow. He ventured to present a picture of various human behaviours by grouping their needs in an order or hierarchy. Maslow’s Hierarchy of Needs is so popular due to its theoretical value that is commonly known as “Theory of Self-actualization”.

Maslow’s model conceived as a pyramid. The bottom of this hierarchy consists of the basis biological or physiological needs that are basically necessary for survival, such as thirst and hunger. The need to become free from threatened danger arises when these needs are met. The next is the need to seek out others for love. When these needs are achieved, the individual struggles for developing a sense of self-worth. The top most need in this hierarchy is the need for self-
actualization. The term 'self-actualization' refers to socially responsive, self-awareness, creative, open to novelty, spontaneous, and challenge. The individual also has an awareness of humour and potential for extensive interpersonal relationships.

The physiological or the biological needs in this hierarchy are influenced until they are satisfied - once satisfied, the higher level needs i.e., the safety, belongingness, esteem and self-actualization needs tends to occupy attention and efforts. Nevertheless, it must be mentioned that only a few people reach the highest level of Maslow’s Hierarchy of Needs, as most people are mainly concerned with the needs of the lower levels.

The Concept of Emotions

Joy, sorrow, love, hope, anger, excitement, are all experienced by us. In psychology, the term 'emotion' refers to a conscious experience that is primarily characterized by biological reactions, psychophysiological expressions and mental conditions. It is often considered as the synonyms of ‘feeling’ and ‘mood’ (Scarantino, 2012). A feeling is the pain or pleasure feature of emotion and mood and represents the effective state of a period of time but it is of lesser intensity than emotion. It is mainly associated with mood, personality, temperament and motivation. Neurotransmitters and hormones such as serotonin, dopamine, GABA, cortisol, noradrenaline and oxytocin often affect emotion. Emotion is generally a driving force behind positive or negative motivation. It is a complicated model of cognitive interpretation, arousal and personal feeling. Emotions move an individual internally and this process requires the involvement of psychological and physiological reactions.
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Figure 2. Plutchik's wheel of emotions.

According to Scheff (2015), researchers use the word emotion as a vernacular word and assume the general public is clear about the meaning of emotion although there is no agreement over the term emotion itself. John Dewey, an American philosopher, psychologist, and educational reformer, made the proposition that emotion involves bodily preparations for internal actions that have been delayed (Scheff, 2015). To explore some theories surrounding emotion, see James-Lange theory or Richard Lazarus as a start.

Emotions are essential to survival – they are a complex chain of connected events that begin with a stimulus and involve feelings, psychological changes, and impulses to action and goal-directed behaviour (Plutchik, 2001). According to Robert Plutchik (2001), emotions are not simply linear events but feedback processes and additionally, defines emotion as a homeostatic process where behaviour mediates progress towards equilibrium. Plutchik developed a psychoevolutionary theory of emotion and curated a wheel of emotions which is a three-dimensional circumplex model.

The eight spokes seen in figure 2 represents the eight primary emotion dimensions defined by Plutchik and include anger, anticipation, joy, trust, fear, surprise, sadness, and disgust. There are three characteristics to this structural model (Plutchik, 2005):

1. there are intensity differences for each emotion – for example, admiration, trust, and acceptance represent different levels of intensity of the basic emotion of trust.
2. the degree of similarity among emotions whereby the clusters of emotional terms representative to the basic emotions appear close to one another.
3. the words used to describe emotions also express opposite feelings or actions – for example, joy and sadness are on opposite sides of the circumplex.

Thus, the three-dimensional circumplex model is made up of eight primary emotion dimensions and are arranged as four pairs of opposites. The degree of intensity is heightened in the center of the circle and disperses out with less intensity. The rings of circles represent the degrees of similarity among the emotions.

An emotion is an intuitive feeling and the practice of emotion differs from person to person (Scheff, 2015). Several attempts have been made in order identify basic emotions and it has been observed that about six types of emotions are experienced at any given time during the course of a day. These emotions are surprise, disgust, fear, anger, happiness, and sadness. However, Izard has stated that there a ten sets of basic emotions and they include happiness, anger, disgust, surprise, fear, guilt, shame, contempt, excitement and interest. The mixture or combinations of these emotions further results in other emotions (Izard, 2013).

Emotions differ in terms of their quality (fear, happiness and sadness) and their intensity (low or high). The circumstantial contexts and the intuitive factors have a great impact on the experience of emotions (Thompson, 2013). Such factors are personality, gender and psychopathology. There are several evidences that show that females experience almost every emotion but the feeling of anger is less intense in them than in males. The males are vulnerable to experience high frequency and intensity of anger than females. This kind of gender difference has led to the social roles that are attached to males (competitiveness) and females (caring and affiliation).
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Expression of Emotions

![Emotional expressions]

Figure 3. Emotional expressions.

Emotions are internal expressions and are not directly observable. They are mainly inferred by verbal and non-verbal cues. These expressions represent a way of communication and help people convey their own emotional state and also to understand another's emotional condition as well.

Verbal communication includes spoken words and other different vocal features such as loudness and pitch of the voice. While non-verbal communication includes proximal behaviour (physical distance at the time of interaction) and facial expression. However, facial expressions are the most usual way of emotional communication as it enables a person to convey the intensity of their emotional state.

It plays a very important part of our daily lives. Evolutionary psychologist Charles Darwin has stated that, for basic emotions, the facial expressions are inborn and there are various pieces of evidence in support of his view on this.

Roles of Hormones in Emotions

Watch this!
Check out this YouTube video to gain an insight or refresh your memory on what hormones are (CrashCourse, 2015) (YouTube video 10:24 minutes).

What Are Hormones?

Human beings are incorporated with several varieties of hormones that are primarily produced by a specific group of cells called the endocrine glands. The word “hormone” is derived from a Greek word, “homo”, meaning to ‘set in motion’. Hormones are the powerful chemical messengers that are released in small amounts by the endocrine glands and they are transported by the circulatory system. They are responsible for the regulation of normal functions of the different organs and tissues that are present inside the human body. They travel through the blood and transport sensory messages to our brain. They help maintain homeostasis by controlling the almost every function of the body. Hormones may affect both positive and negative emotions. The positive emotions include love, happiness, surprise etc (Tong & Jia, 2017). Whereas, the negative emotions are composed of hatred, sadness, anger and disgust. Positive behaviour may lead to rebellious behaviour or elated behaviour. On the other hand, the negative emotions may lead to be irritability, aggression or may consist of some other negative attributes (Todaro et al., 2013).
How Do Hormones Affect Emotion?

There are some hormones that are especially responsible for the regulation of emotions and controlling them. They are oxytocin, testosterone, oestrogen and thyroid hormones.

**Oxytocin**

Oxytocin is also known as love hormones. They are produced by the hypothalamus and are deposited by the pituitary gland. It is responsible for reproductive activities and emotional bonding. It influences the interpersonal bonding, psychosocial behaviour, and trust in relationships (Bernaerts et al., 2016). It has the ability to change the neurological "mirroring" of pain experienced by others. In addition to these, study has shown that oxytocin has led to more trusting behaviour in human beings. It is also involved in managing stress responses as well.

**Testosterone**

Testosterone is a very important sex hormone that plays a vital function in puberty. In the case of males, testosterone regulates the sex drive and helps in the management of fat distribution, bone and muscle mass, and strength. It also helps in the production of sperm and red blood cells. However, women also produce testosterone but in small quantities (Zilioli, Caldbick & Watson, 2014). Testosterone is an androgen hormone (responsible for regulating the development and maintenance of male characteristics), which is closely related to aggression in teenage males. Higher amounts of testosterone hormones lead to emotions like sadness, rage, fear or anxiety, which affects the vulnerability of aggressive behaviour in adolescents. According to some scholars, a particular situation may cause fear to have either an activating or inhibiting effect on aggression. In addition, there are some emotions, which can have resistant or inhibitory affects on aggression including happiness and exhilaration. These hormones affect negative emotions in aggression and are more likely to be expressed through rebellious and irritable behaviour more than physical attacks.

**Oestrogen**

Oestrogen are female hormones. These are sex hormones where low levels trigger sadness, which can further lead to depressive symptoms in women (Backes, 2015). The cause of this emotional variation increases other neurotransmitters such as serotonin, dopamine, and norepinephrine (Backes, 2015). The short-term mood changes affected through emotion are anger, sadness, and happiness (Backes, 2015). High levels of oestrogen has the ability to enhance or impair a female’s ability to recognise facial expressions (Olsson, Kopsida, Sorjonen, &Savic, 2016). Several studies have shown that oestrogen levels in men affect their emotional reactivity (Olsson, Kopsida, Sorjonen, &Savic, 2016). Too much oestrogen may lead to breast tenderness, water retention, anxiety and abdominal weight (Toffoltto et al. 2014).

**Thyroid hormones**

An individual is prone to depression in cases of missing or drastically reduced thyroid hormones, also resulting in a lack of energy in an individual. These hormones stimulate the cell function in body cells and is transported by hormone receptors. It is responsible for the irritating nature of a person (Falgarone et al. 2013). When the stimulation of thyroid hormone receptors is normal, symptoms reduce and the individual feels stability again.

**Case Study: Troubled Timmy**

Timmy is experiencing sadness when he is home alone but when he is amongst his peers he feels anxious.
What hormone is affecting his emotions? How?
Predict what may happen to Timmy’s behaviour if his emotions are left undealt with.

What Are Neurotransmitters?

The brain structures and neural circuits are involved in the emotions that are regulated by a myriad of neurotransmitters. They are the building blocks of emotions and moods of human beings and control every system of the human body (Hermans et al. 2014). There are several neurotransmitters that affect the human emotions. They are dopamine, noradrenaline and serotonin.

Serotonin

One of the most popularly studied neurotransmitter, the effects of serotonin on human emotions are generally involved in basic emotional arousal to secondary emotions. These hormones result in the feeling of guilt and shame (Terbeck, Savulescu, Chesterman, & Cowen, 2016). It is produced by the amino acid called tryptophan in the midbrain in a total of two bio-chemical process or steps. Such bio-chemical steps require vitamin B6 and B12, iron, niacin, magnesium and folic acids as co-factors.

Dopamine

Dopamine is a neurotransmitter processed in the frontal lobes of the brain. It is necessary for learning and are primarily involved in drive, attention, focus, clear thinking and memory (Prossin et al. 2016). Lack of dopamine may lead to difficulties with memory. It is synthesized and regulated by the brain.
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Noradrenaline

Noradrenaline belongs to the chemical class of catecholamines and mediates the "flight or fight" response when fearful stimuli has been elicited (Nicholson, Bryant & Felmingham, 2014). This response is caused by the activation of the sympathetic nervous system that facilitates the physiological responses of stress and acute anxiety (Terbeck, Savulescu, Chesterman, & Cowen, 2016). It is identified that noradrenaline is involved in stress responses, stress pathology, and consequences of stress exposure (Galvin, 1985). While stress may not be an emotion, it is a precursor for other emotions involved with stress (Lovallo, 2015). Additionally, it affects the basic primary emotional arousal such as fear and aggression within the limbic system. Noradrenaline has a mood-elevating and energizing action. It is also involved in long-term memory.

Hormones and Motivation

<table>
<thead>
<tr>
<th>Did you know?</th>
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<tbody>
<tr>
<td>Hormones play a very important role in verifying whether a person really feels motivated with something.</td>
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</table>

The two important areas with inborn motivation are sex and hunger. Sex and hunger are essential for human beings in order to reproduce and stay healthy.

Sex

Sex drive is one of the most powerful drives in human beings as well as animals. Motivation is needed in order to engage in sexual activities and this factor strongly influences human behaviour (Wallen, 2013). Although sex is not a biological motive, its importance is less than other primary motives such as hunger and thirst. The reason behind it is:

1. Sex is not mandatory for the survival of an individual.
2. Homeostasis is not the aim of sexual activities.
3. The sex drive is not in-born and it develops with the growing age.

In the case of animals, sex is dependent on physiological situations and in the case of humans, it takes place biologically but sometimes it becomes tough to categorize sex absolutely as a biological drive. Some psychologists have suggested that the potency of sexual urge or drive is dependable to chemical substances that are flowing in the blood stream, called sex hormones. There are several studies on both animals and human beings in relation to sex hormones and they have concluded that gonads are responsible for sexual motivation in human beings. Other endocrine glands like pituitary glands and the adrenal glands are also responsible for sexual motivation.

Hunger

Consuming food is important for the survival and existence of humans and animals. When a person is hungry, they dominate everything for food. The need for food or satiate hunger motivates the person to consume food. Psychologists have stated that there are several events taking place inside and outside of the body, which inhibits hunger (Rolls, 2016). Usually the stomach contraction signifies that the stomach is empty and needs food and there is a low concentration of protein, fats and glucose in the body. The liver also signifies that there is a lack of body fuel by transmitting nerve impulses in brain. Smell, taste and appearance of the food also results in an urge to eat. You may observe that none of the above alone will make you feel that you are hungry. All of these in
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combination give that feeling of hunger. Hence, it may be concluded that food consumption is regulated by the complex feeding satiety system that is located in the liver, hypothalamus and other parts of the body. Psychologists have also stated that several changes in metabolic functions in the body may also result in hunger. The two divisions of the hypothalamus involved in the feeling of hunger are the ventromedial hypothalamus and the lateral hypothalamus. The lateral hypothalamus is accounted as the excitatory part.

Conclusion

Emotions are essential to survival – they are a complex chain of connected events that begin with a stimulus and involve feelings, psychological changes, and impulses to action and goal-directed behaviour. Hormones affect emotions in order for us to convey our thoughts, feelings, and intended actions towards other people and also influences how we perceive not only our own emotions but of those around us. This chapter helps develop the understanding of hormones and emotions providing a brief insight of what hormones and emotions are, and also discusses the roles of hormones in different human emotions.

References


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