

# A Conceptual Model of Bi-Dimensional Development for Happiness Access by Biofeedback Process\*



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## Abstract

This paper presents the qualitative research consisting of three objectives, namely: - (1) to explore the concept of happiness access according to Buddhist principles and the concept of Gross National Happiness (GNH); (2) to examine the theory of biofeedback; and (3) to propose a conceptual model of bi-dimensional development for happiness access by biofeedback process. The data collections and in-depth interviews were carried out with 8 key-informants who are monks and Buddhist scholarly representatives with knowledge of Buddhism and sciences from 6 countries with the Item-Objective Congruence (IOC) examined by 3 experts.

The findings shown that Buddhism suggests “Access to Happiness above Happiness”, that is access to superior happiness by dealing with the *dukkha-sukha* dichotomy of dualism; while the practice of GNH constructed by the four pillars based on the middle path and contentment that deals with social engagement. The Biofeedback Process, using EEG the instruments for instance, when integrated with the Buddhist meditation, a practitioner can entrain the assessment of happiness in a tangible way. As for the Model created, it suggests the bi-dimensional development for happiness access. Firstly, the MENTAL Dimension implies the development of mind in order to access to the fivefold happiness in concentration, namely: - (1) Gladdening (*pāmojja*), (2) Happiness (*pīti*), (3) Tranquility (*passaddhi*), (4) Bliss (*sukha*), and (5) Concentration (*samādhi*). The 7-biofeedback means can be used harmoniously in the practice of Buddhist mental (*citta-bhāvanā*) training where such those happiness can be measured from

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the mind-body phenomena. Secondly, the WISDOM Dimension implies development of wisdom for perpetual happiness access, that is, Nibbāna, the supreme happiness.

**Keywords:** Biofeedback Process; Bi-Dimensional Development; Conceptual Model; Happiness Access.

## Introduction

Buddhism has mentioned the principle of holistic life development is the mechanism for the development of the physical body, behavior, mind and human intelligence. They are the 4 aspects of life-developers which cover the whole body of life's physical, moral, mental, and wisdom well-being. These 4 areas are a necessary mechanism to drive human self-development ability for both physical and mental happiness. In a smaller scale, the happiness of individuals is only limited within themselves. But in a larger scale, such happiness will extend to the society where every social member makes a quality co-existence. While the Gross National Happiness (GNH) is not only a national multidimensional development model for Bhutan but also a defining component of the image of the Bhutanese state itself, portraying an autonomous and coherent entity leading the pursuit of national happiness in partnership with Bhutanese society (Schroeder, 2018). Such society depicts a place where the stream of happiness among the coexistence of every social member flows constantly and uninterruptedly.

On the contrary, biofeedback is a process that enables an individual to learn how to change physiological activity for the purposes of improving health or performance. Precise instruments measure physiological activity such as brainwaves, heart function, breathing, muscle activity, and skin temperature. These instruments rapidly and accurately “feed-back” information to the user. The presentation of this information, often in conjunction with changes in thinking, emotions, and behavior, may support desired physiological changes. Over time, these changes can endure without continued use of an instrument (Dvorznak, 1997). Due to the fact that human beings are capable of developing their mind and wisdom which is closely related to the innate physical body, it therefore shows us the significant relationship between corporeality and mentality. Therefore, if we can apply the aforementioned bio-feedback tools in the meditation practice, we should be able to make the said relationship be processed into numerical data for practitioners to check their meditative awareness effectively.

The research team thus suggests that the research topic “A Conceptual Model of Bi-Dimensional Development for Happiness Access by Biofeedback Process” is an in-depth study of the

concept of bi-dimensional human development mechanisms in Buddhism. This is an urgent need to study the said matter in order to deepen our understanding towards the underlined concept of biofeedback process, the bi-dimensional development and the happiness access. They can be considered as helping state to prevent and solve public health problems that are urgent. Besides, it is a sustainable strengthening of the public health for the country's population. And finally it can be able to access to the happiness, the true need of mankind.

## Objectives of the Research

1. To explore the concept of happiness access according to Buddhist principles and the concept of Gross National Happiness (GNH).
2. To examine the theory of biofeedback.
3. To propose a conceptual model of bi-dimensional development for happiness access by biofeedback process.

## Research Methodology

This is a qualitative research. There are six stages in the research process conducted altogether respectively as follows:

1. Outline Construction / Problem Discussion: Outlining construction which signifies constructing the overall outline of the work in all related dimensions corresponding to the objectives. Then the problem discussion, among the research team led by the research adviser, is made by discussing the problems encountered according to the significance of the studies.
2. Data Collection: Starting by collecting data from the primary source and the secondary sources among Pāli, Thai and English languages.
3. In-depth interviews and development of Body of Knowledge: The in-depth interviews were carried out with 8 key-informants from 6 countries among the regional and international organizations around the world who are monks and Buddhist scholarly representatives with knowledge of Buddhism and sciences with the interview forms IOC were examined by 3 experts: - (1) Most Ven. Prof. Dr. Phra Rajapariyatkavi (Somjin Wanjan), Rector of MCU, Thailand; (2) Ven. Dr. Khenpo Karjung, Tango Dorden Tashithang Buddhist University, Bhutan; (3) Ven. Dr. Khenpo Phuntsho Gyaltsen, Director of Mahapanya Vidyalai (MPV), Songkhla Province, Thailand; (4) Em. Prof. Dr. Peter Harvey, University of Sunderland,



United Kingdom; (5) Prof. Dr. Phillip D. Stanley, Naropa University, Colorado, United States; and (6) Em. Prof. Dr. Pahalawattage Don Premasiri, University of Peradeniya, Sri Lanka; (7) Prof. Dr. Geeta Manaktala, Panjab University, Chandigarh, India; (8) Dr. Supriya Rai, Director, K. J. Somaiya Centre for Buddhist Studies, India.

4. Creation of Ground Knowledge: Ground knowledge relating to Buddhist happiness and biofeedback was created at this step.

5. Analysis, Synthesis, Interpretation, and Integration: They will be carried out carefully by using the ground level-knowledge obtained in the previous step.

6. Finalizing a Completed Version of the Research Report: Starting by identifying significant research findings; compilation of bodies of knowledge and insights. Then it is formulating conclusions, conducting discussions, as well as suggesting useful information for possible further researches.

## Research Findings

1. Buddhist Perspective: happiness is an English word can be literally translated from multiple Pali terms, such as, *it̐ha*, *nibbuti*, *pasādana*, *pāmuja*, *pāmojja*, *pīti*, *bhagga*, *vaḍḍhi*, *vitti*, *sampatti*, *sampadā*, *sampasādana*, *sātata*, *siva*, *sukha*, *sugati*, *suhatā*, *seyya*, *sokhya*, *somanassa*. Especially the term “*sukha*” refers to the idea of happiness of the world. When it accompanies with physical body, it is called bodily happiness. And when it accompanies with mind, it is called mental happiness. Happiness (*sukha*) has suffering (*dukkha*) as the opposite state. While “*pīti*” implies happy mindedness in the context of the fivefold absorption, is a pleasure of happiness [in the first and second absorption] or *pītisukha*. Nevertheless in this research, the happiness that is mentioned here will be a specific context of happiness in the dimension of the mental and wisdom development, for example, *pāmojja*, *pīti*, *sukha*, etc.

In Buddhism, happiness has been classified in a multidimensional and comprehensive way from home happiness (*gihi-sukha*) to happiness in concentration (*samādhi-sukha*), then eventually to the happiness of the noble people (*ariya-sukha*). They are exhibited in the following table named “The Thirteen Dyads of *sukha* based on *Sukha-vagga*” (A.I.80), Woodward, 1979).

Table 1: The Thirteen Dyads of *sukha* based on *Sukha-vagga*

Dyad	Pleasure ( <i>sukha</i> )			
1.	✗	Home ( <i>gihi-sukha</i> )	✓	Home-leaving ( <i>pabbajjā-sukha</i> )
2.	✗	Sensuality ( <i>kāma-sukha</i> )	✓	Renunciation ( <i>nekkhamma-sukha</i> )
3.	✗	Clinging to rebirth ( <i>upadhi-sukha</i> )	✓	Not clinging to rebirth ( <i>nirupadhi-sukha</i> )
4.	✗	Attends the <i>āsavas</i> ( <i>āsava-sukha</i> )	✓	Attends freedom from the <i>āsavas</i> ( <i>ānāsava-sukha</i> )
5.	✗	Carnal ( <i>sāmisa-sukha</i> )	✓	Non-carnal ( <i>nirāmisa-sukha</i> )
6.	✓	Ariyan ( <i>ariya-sukha</i> )	✗	Non-Ariyan ( <i>anariya-sukha</i> )
7.	✗	Bodily ( <i>kāyika-sukha</i> )	✓	Mental ( <i>cetasika-sukha</i> )
8.	✗	With zest ( <i>pīti-sukha</i> )	✓	Without zest ( <i>nippīti-sukha</i> )
9.	✗	Delight ( <i>sāta-sukha</i> )	✓	Indifference ( <i>epekkhā-sukha</i> )
10.	✓	Musing concentration ( <i>samādhi-sukha</i> )	✗	Without musing concentration ( <i>asamādhi-sukha</i> )
11.	✗	Object of meditation which arouses zest ( <i>sappītikārammaṇaṅ-sukha</i> )	✓	Object of meditation which does not arouses zest ( <i>nippītikārammaṇaṅ-sukha</i> )
12.	✗	Object which causes delight ( <i>sātīkārammaṇaṅ-sukha</i> )	✓	Object that causes indifference ( <i>upekkhārammaṇaṅ-sukha</i> )
13.	✗	Visible object for meditation ( <i>rūpārammaṇaṅ-sukha</i> )	✓	Formless for object of meditation ( <i>arūpārammaṇaṅ-sukha</i> )

**Note:** The symbol ✓ represents the superior pleasure, while the symbol ✗ marks the inferior pleasure.

The above table is divided into two columns. The left-side column shows each type of happiness. While the right-side column shows happiness in contrast to the left side. For example, Home-leaving happiness is in contrast to Home happiness. As for the rows, they represent the thirteen different classifications of happiness, from Home-happiness to Visible-object-for-meditation happiness. Lastly, the check signs (✓) represent the pleasure that are superior, while the cross signs (✗) mark the pleasure that are inferior.

GNH Perspective: Apart from such Theravāda Buddhist principles, the practices of Gross National Happiness are officially constructed under the four pillars (RGoB, 2005), Planning Commission, 1999) are described in the following way, namely: - 1) Sustainable and Equitable Social and Economic Development, 2) Environmental Conservation, 3) Cultural Preservation and Promotion, and 4) Good Governance. The four pillars of GNH and their nine domains act as a strategic framework that is rooted in Buddhist values. It guides the achievement of happiness as the end of development. A bridge over the both Buddhist sects alternatively leads to the same destination is happiness. The only difference is that

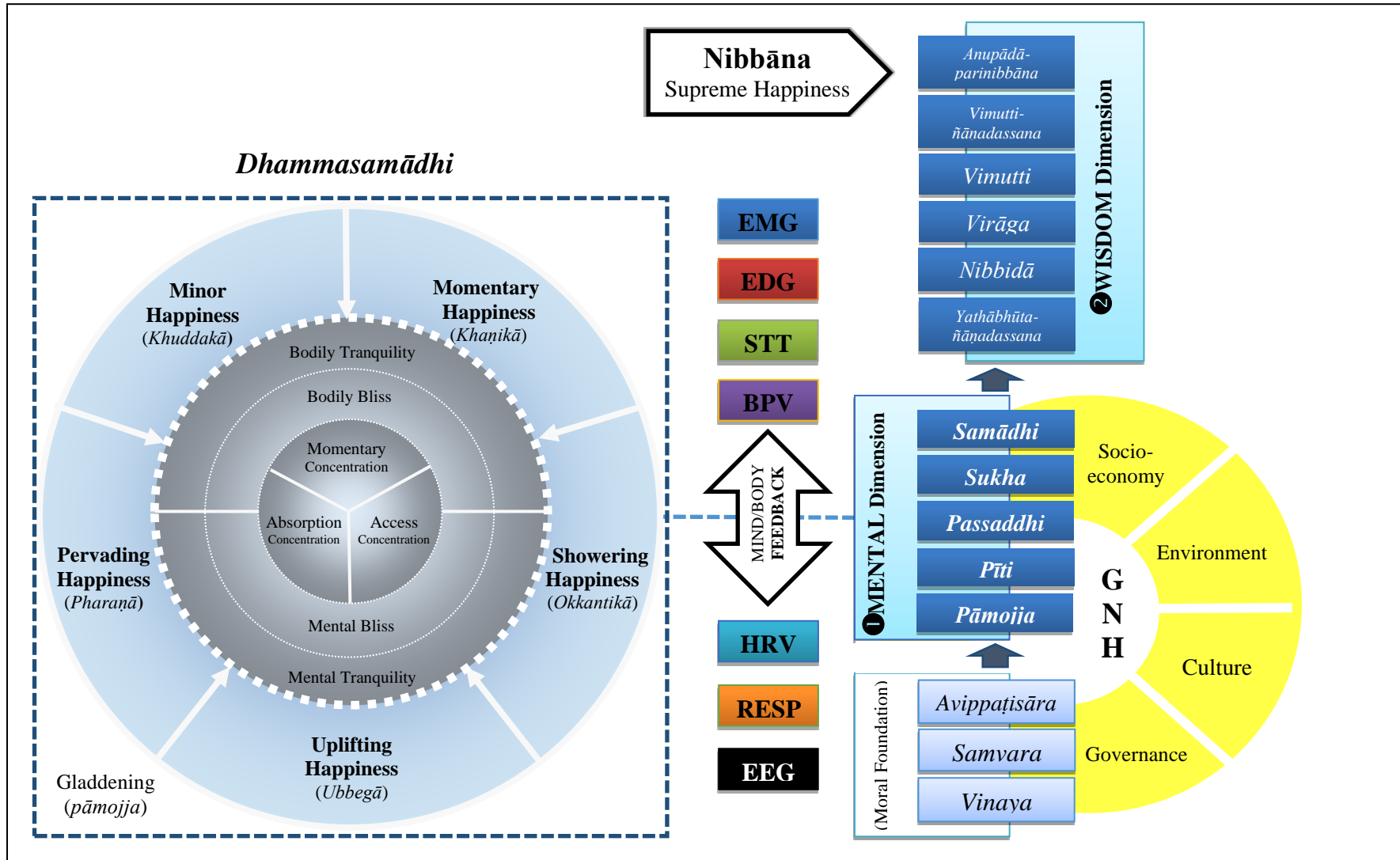


GNH in Vajrayana Buddhism focuses on the social happiness context. Besides, the GNH is judiciously used to strengthen social dimension of humankind.

2. Biofeedback implies to a therapeutic procedures or a patient-guided treatment in the Applied Psychophysiology that employs a physiological responses process technique whereby a subject's mind is trained to gain some element of voluntary control over certain bodily functions that are normally unconsciously regulated by the autonomic nervous system (ANS). Therefore the means of biofeedback that are usually founded available nowadays, may be classified into 7 types depending on psychophysically and biomechanically, they are 1) Electromyography (EMG), 2) Electrodermograph (EDG), 3) Skin Temperature Thermography, 4) Blood Pulse Variability (BPV), 5) Heart Rate Variability (HRV), 6) Respiratory Sensors (RESP), and 7) Electroencephalography (EEG). Biofeedback thus plays roles as a tool to help practitioners realize their happiness; and in processing the relationships between meditation progress and physiological responses in meditation phenomena.

3. Eventually, the research team has finally proposed A Conceptual Model of Bi-Dimensional Development for Happiness Access by Biofeedback Process. The details are as follows.

Figure 1: A Conceptual Model of Bi-Dimensional Development for Happiness Access by Biofeedback Process





From the presented Model named “A Conceptual Model of Bi-Dimensional Development for Happiness Access by Biofeedback Process”, It may be preliminary stated that “happiness access” defines both the individual happiness in concentration (*samādhisukkhā*) and the social happiness as in the GNH’s Socio-economic and environmental happiness for instance.

The column standing in the center of the model slightly towards to the right, demonstrates the 14 steps of attaining to the Nibbāna (Vin.V.164), Vism.13), Bhadantacariya Buddhaghosa, 2010) the supreme happiness. They are defined by the 14 rectangle geometric shapes, starting from discipline (*vinaya*) at the bottom of the model, and ending with the complete extinction of craving (*anupādā-parinibbāna*) which is located at the top of the model. When one attains to this fourteenth stage, one enters into the final deliverance or Nibbāna. Each element is a factor to another element. For example, discipline (*vinaya*) is a factor for restraint (*samvara*), And restraint itself is a factor for non-remorse (*avippaṭṭisāra*), etc. This reasoning and consequence proceeded throughout the process up to the attainment of Nibbāna. In this particular 14 rectangle shapes, it is further divided into 3 main groups: - (1) A Group at the Bottom, (2) A Group in the Middle, and (3) A Group at the Top.

Whereas in the bottom rightmost corner of the Model, is the space that conveys the concept of Gross National Happiness (GNH) of Vajrayāna School which is replaced by the geometric shape of a half circle. The boundary of this half circle covers 4 aspects of happiness, (RGoB, 2005) which are the results of success that comes from: - (1) Sustainable and Equitable Social and Economic Development, (2) Environmental Conservation, (3) Cultural Preservation and Promotion, and (4) Good Governance. Such Gross National Happiness is important as “Social Happiness” where majority of population in the society has perfectly developed an “Individual Happiness” through the bi-dimensional development, both mind and wisdom. The GNH thus plays a crucial role as a mirror reflecting another aspect of human happiness through socio-economic, environmental, cultural, and governance aspects.

In addition, the column standing at the center of the model represents the 7 major means (Gilbert, 2003), Culbert, 2016) implemented in the biofeedback process are ordered from top to bottom. In each element will be replaced with abbreviations instead of the unique name of each tool, they are: - (1) Electromyography (EMG), (2) Electrodermograph (EDG), (3) Skin Temperature Thermography (STT), (4) Blood Pulse Variability (BPV), (5) Heart Rate Variability (HRV), (6) Respiratory Sensors (RESP), and (7) Electroencephalography (EEG), respectively. They are separated by a two-way arrow marked with text “MIND/BODY FEEDBACK” which indicates the measurement of the reactions between mind and body. All of these scientific indicators are highly accurate and reliable. They are widely accepted in terms of





treatment, remedies, including medical therapies, etc. Thus there is no wonder that these 7 biofeedback means can be used harmoniously, as a skilfull means, in practicing Buddhist mental (*citta-bhāvanā*). (D.III.219), M.I.237), S.IV.111), A.III.106), Nett.91) But in terms of practicing wisdom meditation (*paññā-bhāvanā*), (D.III.225, 285, 291), S.I.48), Dh.73, 301) it is still a challenge to enhance the tool potential to measure advanced intellectual phenomena in the near future.

The Model suggests that there are only two dimensions of how a pratitioner can access to happiness. On one hand, the 1<sup>st</sup> dimension called **① MENTAL Dimension** implies the access to the fivefold happiness in concentration (*Dhammasamādhī*), namely: - (1) *pāmojja*, *pīti*, *passaddhi*, *sukha*, and *samādhī* through mental development described in the figure on the left. On the other hand, the 2<sup>nd</sup> dimension called **② WISDOM Dimension**, from “*yathābhūta-ñāṇadassana*” to “*anupāḍā-parinibbāna*”, implies the happiness access through wisdom development. In fact, the happiness access through wisdom development based on the principle of holistic development that consists of four dimensions, namely: - (1) physical development, (2) moral development, (3) mental development, and (4) wisdom development. It can be clearly seen that the dimension of human’s wisdom is an integrated vital part in augmenting human intelligence to the maximum extent, which is to intellectually understand the nature and the universal states of nature as they truly are. Therefore, the access to happiness through the human wisdom is the perpetual happiness that human beings worthy deserve. It is happiness at a level that is extremely discreet. Even though the Biofeedback tools have been implemented to measure the accessible happiness but unfortunately it may be limited in areas of happiness in concentration (*samādhisukha*) which dealing with only physiological responses. It is still necessary to conduct further researches with even deeper in order to be able to measure other higher levels of happiness.

In conclusion, the bi-dimensional development demonstrates that although the mind and wisdom are different in terms of dimensions but not different in their quintessence.

## Conclusion

Happiness in the Concentration implies various states of mind that appeared in the context of the concentration while the Thirteen Dyads of Happiness in the Sukha-vagga implies the thirteen different pairs of happiness (*sukha*). They are in line with the Buddhist practices, such as the *Dhammasamādhī* that signifies the five kinds of virtues that make one to be firmness in the Dhamma: accessing through wisdom development, or access to happiness above happiness.

The way that GNH practice as the four pillars focusing on the middle path and contentment for individual and the social happiness. While biofeedback has a strength character, that is its tools.



Biofeedback plays crucial roles as a tool to help practitioners realize happiness as well as to help increase an ability to assess the relationships between meditation progress and physiological responses in meditation phenomena. Finally, when all of the knowledge is integrated together, the Model named “A Conceptual Model of Bi-Dimensional Development for Happiness Access by Biofeedback Process” is the output from MENTAL and WISDOM of life. Where “happiness” can be tangibly reached, they are (1) individual happiness while staying in the phenomenon of concentration; and (2) social happiness, the 4 aspects of happiness as implied by Vajrayāna GNH.

## Suggestions

### 1. Operational Suggestions

1) Practitioners of Buddhist monks, laity, academics and general interests should aware of knowledge in understanding and practice especially through the *citta-paṇṇā* developing process in order to be able to access to the fivefold happiness in *Dhammasamā* using the biofeedback scientific tools.

2) Mahachulalongkornrajavidyalaya University, Buddhist Research Institute of MCU, educational institutes, and related Units should utilize the research’s finding for general Buddhist teaching activities particularly the course of Seminar on Buddhism and Modern Sciences.

3) Meditation centers both domestic and international should utilize the “Conceptual Model of Bi-Dimensional Development for Happiness Access by Biofeedback Process” to their daily routine practice. However, the biofeedback process may be implemented together for the maximum result.

### 2. Suggestions for Further Research

1) Biofeedback Training Course for Memory Improvement: A Case Study of International Buddhist Studies College (IBSC) of Mahachulalongkornrajavidyalaya University.

2) Mindfulness Learning: An Integrated Method between Buddhist Mindfulness and Biofeedback Process to Enhance the Learning Efficiency of the International Students in Thailand.

3) Bliss (*sukha*) Access: An Integrated Method between Buddhist Concentration and Biofeedback Training Program to Enhance the Meditation Progress of the Practitioners”.

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