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THE RITES OF PASSAGE: IMPREGNABLE BEHAVIOURAL EPIGENETICS IN STRENGTHENING PERSONAL HEALTHINESS, SPIRITUAL AND CULTURAL VALUES

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Behavioural epigenetics is defined as the study of how epigenetic alterations induced by experience and environmental stress may affect animal (human) behaviour, which describes the epigenetic alterations caused by environmental enrichments. Environmental enrichment generally relates to the provision of environmental stimuli that promotes the expression of species-appropriate behaviour and mental activities. Until today, there is no conclusive determination on what kind of experience and environmental stress that affect human behaviour, and what kind of environmental enrichments facticity that induces epigenetic alterations. Vast definition of environmental and experience stress forces us to observe more complex yet substantial in nature in addition to biological processes, that is culture. We specifically determine a well-known cultural behaviour having been consistently conducted generation after generation by almost all cultural communities the world over: the rites of passage. By using qualitative comparative analysis (QCA) approach, we shall determine the purpose and enactment of the rites generally, and compare them to the case-study research in genetic phenomena. The aim of this paper is to find the interwoven connection of the rites of passage to genetic events as to how such rites may induce epigenetic alterations influencing behavioural epigenetics hence affording to strengthen individual healthiness, spiritual and cultural values. We may propose that the rites of passage are necessarily beyond spiritual practises, yet more to healthiness especially that related to the harmonization of individual's genetic and epigenetic processes toward environment. Succinctly, using intersection study between social and life sciences, we expect to result in more comprehensive understanding about the subject matter observed.

Key words: Behavioural epigenetics, rites of passage, environment enrichments, epigenetic alteration, environmental stress, culture, spiritual, health.

Introduction

Several comprehensive studies have noted that environmental factors are closely associated with epigenetic regulations. Diet (Huypens *et al.*, 2016), toxicants (Anyway, & Skinner, 2006), pollutants (Tracey *et al.*, 2013), and irradiation (Barber *et al.*, 2006) are such factors that trigger alterations in epigenetic profiles. Furthermore, environment enrichments such as adverse experiences have also been proposed as factors that may affect the epigenetic profile (Powledge, 2011, p. 588-592). For instance, childhood abuse and maternal separation are linked to aberrant DNA methylation profiles in the hypothalamic-pituitary-adrenal (HPA) stress response axis (McGowan *et al.*, 2009; Franklin *et al.*, 2010). This type of epigenetic regulation induced by experience or enriched environment has attracted the attention of many epigenetic researchers (Yuan Pang *et al.*, 2018).

To address this interesting phenomenon, researchers have recently worked on the concept of "*behavioural epigenetics*." Behavioural epigenetics is defined as the study of how epigenetic alterations induced by experience and environmental stress may affect animal behaviour, which describes the epigenetic alterations caused by environmental enrichments (Barber *et al.*, 2006). Maple and Perdue (2013) underline that "environmental enrichment generally relates to the provision of environmental stimuli that promotes the expression of species-appropriate behaviour and mental activities."

The question now is what kind of environmental enrichment that relates to the provision of environmental stimuli that promotes the expression of species-appropriate behaviour and mental activities, especially in human? Moreover, the underlying mechanism of the transmission of epigenetic traits remains poorly understood. In other words, there is no conclusive determination on what kind of experience and environmental stress that affect human behaviour, and what kind of environmental enrichments as to how facticity induces epigenetic alterations that promote such appropriate behaviour and mental above.

As *experience-dependant epigenetics inheritance* (Yuan Pang *et al.*, 2018) studies showed that various psychological experiences such as childhood abuse, chronic stress, unpredictable maternal separation, paternal chronic stress exposure, adverse maternal care, parental olfactory experience, prenatal stress exposure afford to induce epigenetic alterations in species (Yuan Pang *et al.*, 2018, p. 3). In other words, these studies showed two important things. *Both behaviour of a species and mental or psychological state are factors that afford to induce epigenetic alteration to result in changes in behavioural epigenetics*. If the above experiences are mostly negative ones inducing abnormal or aberration events, what if we observed distinguishable experiences in terms of behavioural and psychological state yet affording to promote appropriate behaviour and mental and may also induce enhancement to epigenetic profile. Some researcher

says that most of the inducing stimuli lack of consistency as the biggest challenge in conducting epigenetic research study (Yuan Pang et al., 2018). Therefore, herein, we specifically study a well-known cultural behavioural having been consistently conducted generation after generation by almost all cultural communities the world over: *the rites of passage* (RoP). Epigenetically speaking, the said passage is indeed a behaviour that *mediated experience-dependent/non-germline transmission* (Sartika, 2017).

In this work, we refer to the concept of the rite of passage, to the concept of the life course which are directly connected to changes and life transformations, key life trajectories and the sequence of successive life-changing events (Giele and Elder, 1998; Shanahan and Elder, 2002). Both concepts above describe changes both in an individual's internal world and, parallelly, in the social world. Both are based in the temporal perspective, and both related to two opposing dimensions of human life — continuity and change, i.e., transformation (Janusz, & Walkiewicz, 2018, p. 152). Such transformation is highly related to the change of biological and psychological state of an individual. The rites are commonly conducted in designated or certain behaviours in order to strengthen individual's mental state in facing those transformations especially at the sequential and specific periods and events such as life course and life crisis.

Method

By using qualitative comparative analysis approach, we shall determine the purpose and enactment of the rites in general, and compare it to case-study research in genetic phenomena to find the interwoven connection of the rites of passage to genetic events as to how such rites may induce epigenetic alterations influencing behavioural epigenetics hence affording to strengthen individual healthiness, spiritual and cultural values.

Studying the rites of passage enactments in connection to behavioural epigenetics provides us with two crucial indicators of *what and when environmental enrichment* should be experienced by the individual in their life cycle in order to maintain the development of healthy mental or psychological state as the healthiness of such state is important to maintain healthiness of epigenetic profile. Those indicators are *life course (what) and life crisis (when)*. In the QCA method, these indicators serve as *causal contributions* of different condition to determine as to how the rites of passage are interconnecting with epigenetic regulation.

1. LIFE COURSE (What)

The life course becomes the causal contribution in this QCA method because this concept provides "*a sequence of socially defined events and roles that the individual enacts over time*" (Giele and Elder, 1998, p. 22). This sequence of social events and roles most of the time involves various

transformation in many aspects not to mention, developmental psychology and biological of individual. Therefore, life course suits to be served as *natural environmental enrichment* inducing epigenetic regulation within life span of an individual. As this is in accordance with the function of epigenetic itself in cellular differentiation and memory processes that is regulating developmental of a species (Tollefsbol, 2011). Epigenetic mechanism is also regulating developmental programs, stress responses and adaptation, senescence, disease, and various patterns of non-Mendelian inheritance (Tollefsbol, 2011). The main molecular mechanism operating in epigenetic phenomena is DNA methylation, histone modifications, and RNA-based mechanisms. DNA methylation is also associated with phenomena such as DNA repair, initiation of sexual dimorphism, progression through cell division checkpoints, and suppression of the huge number of transposable and retroviral elements in mammalian genome (Sartika, 2017; Tollefsbol, 2011). From such many functions of DNA methylation what important here is not only to study the structure of DNA methylation but also as to what kind of right environment which inducing DNA methylation to act normally or even being enhancer one. As epigenetic mechanism regulates developmental programs and stress responses, indeed, the explicit connection that some mental state such as strong mental of individual in responses to stress stimulation, and the one who is highly adaptable during the developmental of his/her life course may afford to induce DNA methylation positivity. Any how such mental state should be trained; some individual cannot just learn by themselves to have such strong mental states. Family, community, society and cultural values are the factors shaping individual self-mental state, direct or indirectly. Apparently, this is what fundamentally meant by the word what environmental enrichment should be experienced by individual above. Many ceremonies and rituals have been conducted by various societies around the world in order to train their children to have such strong mental in facing their life. Yet the first important thing in conducting such ceremonies or rites is introducing the social or communal *identity to a person*, not to mention cultural values of their community. For such ceremonies or rites usually involve whole community not only the individual or family who initiates.

The four stages of the life course are childhood, adolescence, adulthood, and old age, which socialization continues throughout all these stages in (Sociology: Understanding). Continuing action throughout all these stages usually is needed as strong reminder for individual of his/her recognition about self-identity, function and goal in life. In other words, as strong and powerful reminder in maintaining the mental state, some societies or religions or communities the world over usually instruct their community to do some *repetitive action in faith* in order to maintain right motivation and behaviour that usually be conducted steadily such as every day, every week not to mention some

five times a day and so on. Psychologically speaking, repetitive action is a good method to train the brain to form good habits (Train the brain). Hereby we present several examples of how repetitive action in faith is conducting in various communities. Firstly, in Bali, Indonesia, such as flower offerings (*sesajen*). The Balinese, who are predominantly Hindu, start the day with a prayer accompanied by flower offering to the Balinese Gods. Offerings have a sacred value for Balinese people. They believe with offerings, they will get good luck, as well as rejecting bad luck. Secondly, such daily or weekly rites alike are likely to be conducted by various religions around the world.

In addition to train the brain, conducting positive repetitive action in faith is also preparing individual mental state to resilience in facing accidental or spontaneous experiences such as illness, mourn, or say, life crisis. Epigenetically speaking, this repetitive action in faith may afford to maintain processes of various epigenetic agents including DNA methylation in regulating its function in DNA repair including suppression of the huge number of transposable and retroviral elements in mammalian genome, as the most adaptable individual necessarily has to have strong mental state and good habits, that may become powerful weapon in the body to activate DNA repair system.

In summary, life course serves as natural environmental enrichment experienced by every individual within his/her life span. It provides sequential developmental progress in life that has to be maintained in regards of all changes and transformation. Continuing designated repetitive action in faith usually becomes one of behaviours that afford to train the brain to result in a good habit by means of motivation and behaviour and more resilience mental state in preparing various transformation in life. Notably, this kind of behaviour has been applied by various communities the world over since very long time ago and endured until to date.

Nevertheless, during the life course there are several transition periods in a person's life, such as birth, puberty, marriage, having children, and death. Ceremonies that mark these important transitional periods usually involve ritual activities and teachings designed to strip individuals off their original roles and prepare them for new ones. This eventual transition period will serve as factor 'when' in the causal contribution of our QCA approach. We call it as Life Crisis factor for this transition period which is crucial to be overcome rightfully in continuing the new role in life well.

2. LIFE CRISIS (When)

Life course above provides the platform of what kind natural environmental enrichment are of, and what behaviour that has to be maintained to train the brain to have steadier mental. Meanwhile, the life crisis provides the eventual important moment in individual's life, as to when RoP as environmental enrichment should

be conducted along with particular (designated) ceremonies in accordance with natural environmental surround and local culture not to mention root of culture (Sartika, 2020). As Tollefsbol (2011) also remarks that epigenetic regulation has specific period and time for resetting DNA methylation.

In this QCA method we determined few points as to how RoP is important during life crisis of a person. Firstly, although those rites are diverse throughout many cultures around the world, but commonly, there are five stages of RoP, those are *birth rites*, *initiation rites*, *marriage rites*, *ancestor ship rites* and *death rites* (Sartika, 2020). The most commonly recurrent rites of passage are those connected with the normal but critical events in the human life span—birth, attainment of physical maturity, mating and reproduction, and death (Alexander and Norbeck). The five stages in the rites of passage above could be associated to the timing of DNA methylation occurrence which regulates the differentiation and maintenance of the cell type identity (Sartika, 2020). Biologically speaking, the said stages seemingly are the most susceptible period during life cycle. Therefore, RoP should be conducted exactly during this susceptible period by experiencing some environmental stress in form of designated rites or ceremonies in preparation to passage to a new role in life by biological, psychological and social means.

Secondly, rite or ceremonies are usually designed in accordance with cultural and communal values not to mention harmonization between the self and the environmental surround. As Bell (1997) pointed at the purpose of rite of passage seen from neo-functional perspective as having cathartic functions, affecting cognitive and neurophysiological processes within the body and alleviating anxiety. In addition, that the concept of the rite of passage offer a dynamic, processual structure that enables us to study transitions within life cycles and the institutions related to them (Forggatt 1997). In general, this concept is also highlighting the performative character of the ritual performance as a symbolic structure regulating emotion and shaping the self, on the foundation of the developmentally inbuilt intersubjective matrix of mental development (Janusz, & Walkiewicz, 2018). The full range of stages of passage rites is often followed in rituals at coming-of-age. Ordeals or other tests of manhood and womanhood are also common. Some of these practices in preliterate societies seem to be *incomprehensible* or *absurd* until their nature as evidence of qualification for the new social statuses is understood. Among the Bemba tribe of Africa, for example, girls were required to catch water insects with their mouths and to kill a tethered chicken by sitting on its head (Alexander and Norbeck), including vine bungee jumping.

Although, the example of the rites above look so extreme but usually such rites have been designed by the elder of the society, carefully auspice and have

been inherited from one generation to another. Such extreme initiation necessarily may serve as the *so-called experience and environmental stress in behavioural epigenetics* term above. Yet they are usually focusing to elevate inner abilities such as endurance, absorb and manoeuvring of the individual to strengthen their mental state in order to survive in their environment or harsh surround. Such doing is usually not only connected to individual mental and health but also to the sustainability of the community in general. Epigenetically speaking, this implies that the *non-germline mediated transgenerational effects* are re-established by rites, ceremonial or traditions in accordance with population's culture roots to the subsequent generation in upholding their culture origins and maintaining their threshold. (Sartika, 2018).

Thirdly is as repairing event. This is the most unique about the RoP. As stated, that RoP usually involves three phases those are *separation phase, liminal phase* and *incorporation phase* (Janusz, & Walkiewicz, 2018). As simple as we can analyses these phases are important because every phase recognition and normalization of temporary disintegration in the sphere of the self during a life crisis, leading to the co-existence of mutually contradictory mental content and inner conflicts that can later become integrated in the process of transformation or transition to a new state (Janusz, & Walkiewicz, 2018). In other words, in the separation phase, or say, temporary disintegration in the sphere of the self always occurs. Psychologically speaking, this phase is so hard yet individual should be brave enough to enter this separation phase, cause this phase when someone's has to separate themselves from their previous life stages. In other words, all the achievements and failures in previous stages have to be forgotten for a moment, it sounds like resetting. This resetting state is necessarily inducing biological realm, including epigenetics regulation. When individual in this resetting mental state, like it or not she/he will be in the state of anxiety and confusing called *liminal phase* (Janusz, & Walkiewicz, 2018). Nevertheless, implicitly, resetting state is suitable for repairing something. Yet, individual should be exposed to the right natural environmental enrichment in order to induce epigenetics profile including DNA repair system orderly. As Sartika (2020) remarks that the rites or ceremonial conducts should be in accordance with population's culture roots and values. In other words, exposure to the right cultural roots and values is important in the liminal phase. As Turner (1967) puts greater emphasis on the liminal period as a phase when conflicts are dramatized and dominant social values that hold the group together are transmitted, which introduces again the function of the performance. In other words, if the population back to the right custom and tradition in accordance with their culture origins then recurrent effects may possibly happen, in this case gene re-activation or even reprogrammed back cell fate to pluripotent states naturally (Sartika, 2018). Here, we can see that customs

or traditions are not merely interconnecting with spiritual life; rather, they are created based on a comprehensive and precise platform to maintain equilibrium of human in many aspects, including healthiness as well as for the goodness of subsequent generations.

In summary, life crisis provide timing as to when RoP should be conducted. Such RoP involves contextual experience and environmental stress behaviours, yet in order to strengthen mental and physical in continuing the new role in life well. Similar to repetitive actions above, this kind of behaviour has been applied by various communities the world over since very long time ago and endured until to date. In addition, RoP in five stages within life cycle is necessarily can be used as repairing moments. It means that if the first or second stage, such as birth or puberty rites were not done correctly, individual has still a chance to repair it in the next stage, for example in marriage rites, as long as the exposure of environmental stimuli is in accordance with the cultural roots and values.

Succinctly, as Janusz and Walkiewicz (2018) highlighted that "the concept of rite of passage and the construction of the life course together supply a structural, sequential, and processual framework for understanding and processing such challenges and dilemmas that is main function of rites of passage and some contemporary social institution which try to deal with life crisis," are surprisingly related or say, intertwined with the essence of behavioural epigenetics as presented in the Table 1 and Figure 1 below.

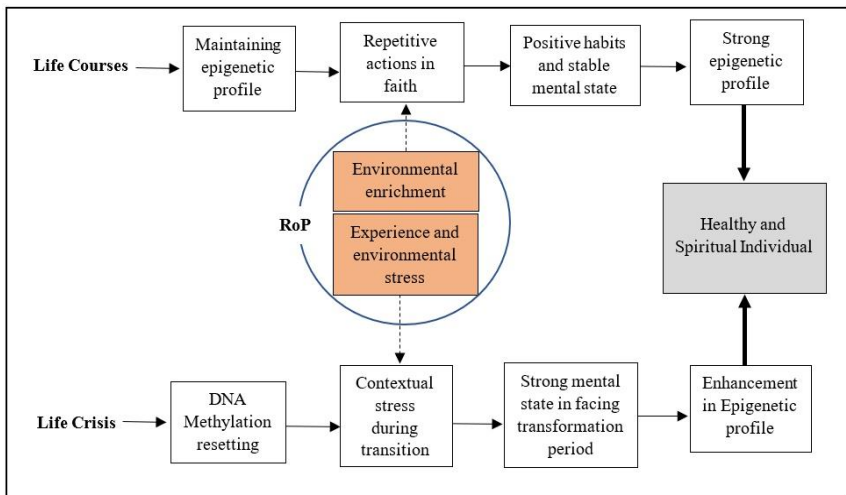


Fig. 1. QCA Diagram of RoP as Impregnable Behavioural Epigenetics

Table 1

QCA RoP and Epigenetics

RoP Enactments	RoP as environmental enrichment	Epigenetic Regulation
Life Course	<p>1. Sequential: continuing span during the life cycle from childhood, adolescent, adulthood and old age. Socialization continues throughout all these stages.</p> <p>2. Continual repetitive action in faith to maintain stable mental state by constantly exposure to the right motivation and behaviour of the self in accordance with their own identity as communal and cultural values.</p> <p>3. In accidental event: this means designated rites can be conducted if there are accidental experiences such as illness, mourn or achieve something in life</p>	<p>1. Stable mental state affords to maintain epigenetic profile in terms of DNA methylation pattern (motivation), histone modifications (behaviour toward environment) and Non-coding RNA (motivation).</p> <p>2. Stable mental state is expected afford in overcoming various of accidental event and life crisis stages during life cycle</p>
Life Crisis	<p>1. Eventual: There are specific periods to conduct RoP during life cycle, commonly those are rites upon:</p> <ul style="list-style-type: none"> a. birth b. puberty c. marriage d. ancestor ship e. death <p>2. Rites to involve <i>contextual</i> experience and environmental stress are usually being prepared by the elder in the community in accordance with their own cultural values. Focusing to elevate inner abilities of individual to strengthen mental state during changes or transformation overlaying:</p> <ul style="list-style-type: none"> 1) separation phase 2) liminal phase 3) incorporation phase <p>3. Repairing platform: this means if the first rites or next ones are not conducted correctly, there is a chance to repair in the following rites and so on</p>	<p>1. Eventual: the RoP is due conducted upon the timing of the change of biological state of an individual including the timing when DNA methylation is duly resetting.</p> <p>2. Involving such contextual stress to strengthen mental states is expected to enhance epigenetics profile.</p> <p>3. RoP conducted in five stages during life cycle provides repairing moments affords to alter epigenetic profile causing activation of DNA repair system, if exposure to the right natural environmental enrichment stimuli</p>

Individual Effect	<ol style="list-style-type: none"> 1. Exposure to clear community and cultural values rendering clear identity. 2. Exposure to contextual stress rendering strong mental state and healthiness upon transformation in life crisis period. 3. Repetitive action to render steady and to persistently maintain right motivation and behaviour. 4. Whole recognition of clear identity, strong mental state and persistent character awakening yet elevating spiritual and cultural values rendering act beyond the self
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Results

By using QCA method, deduced from the two causal conditions of RoP enactments which are life course and life crisis, we determine that the rites of passage are environmental enrichments affording to perform epigenetic alteration rendering contingent stress to individual by experiencing contextual trauma and doing repetitive actions in faith. Purpose of such actions is to promote the expression of individual-appropriate behaviour and mental activities. In general, the function of such rites is to re-establish the trait in order to persist to the subsequent generation, say behavioural epigenetics transmission, upholding their culture origins to strengthen individual healthiness, spiritual and cultural values of each. This observation shows that the rites of passage are apparently beyond common spiritual practises, they are more toward healthiness especially highly related to the harmonization of individual's genetic and epigenetic processes toward environment. This qualitative approach highlights that RoP is nothing but impregnable behaviour epigenetics that indeed have been conducted by humanity since the dawn of time and endured until today.

Conclusions

Conclusion of this paper is that by using intersectional studies of approach between social and life sciences we could result in more comprehensive analysis to the subject matter under observation. If we make close observation between the study of RoP and behaviour epigenetic, we will simply see that these two studies necessarily speak about the same subject matter yet in different terms. Thus, this kind of approach could become a new study model to enlighten various subject matters that still vague in mystery such as human evolution, pandemic, pathogenic diseases and many others. Such method is not only enriching epigenetics study but also increasing our understanding regarding the rituals, ceremonies and various human behaviours that are for long time known as just spiritual acts. At the same time, we could also analyse that if there are some rituals or ceremonies which are not in accordance with the above references, we should take close observation to prompt our awareness or make correction. As we

know, today a lot of fake ceremonials or rituals maybe raised true vigilance not only to individual but also to the society as toxic. Nevertheless, this paper summons inductive postulation of RoP to epigenetics, yet further and deeper investigation have to be conducted such as observation in details to particular rituals in particular community, to discover a suitable treatment and provide method of disease prevention to those particular community. This kind of observation may augment medical genetics practises rendering communal medicine rather than personalized medicine. Furthermore, investigation on how RoP transforms with time to current practice and making such transformations putatively unchanged the gist of RoP in this modern era yet in different nuance and nurturance would be also essential for future research.

References

1. Huypens, P., Sass, S., Wu, M., Dyckhoff, D., Tschöp, M., Theis, F., Marschall, S., de Angelis, M.H., Beckers, J. (2016). Epigenetic germline inheritance of diet-induced obesity and insulin resistance. *Nat. Genet.*, 48, 497–499. Retrieved from <https://pubmed.ncbi.nlm.nih.gov/26974008/> (date of appeal: 2.06.2021) (eng).
2. Anway, M.D., & Skinner, M.K. (2006) Epigenetic transgenerational actions of endocrine disruptors. *Endocrinology*, 147, s43–s49. Retrieved from <https://pubmed.ncbi.nlm.nih.gov/16690803/> (date of appeal: 2.06.2021) (eng).
3. Tracey, R., Manikkam, M., Guerrero-Bosagna, C., Skinner, M.K. (2013). Hydrocarbons (jet fuel JP-8) induce epigenetic transgenerational inheritance of obesity, reproductive disease and sperm epimutations. *Reprod. Toxicol.*, 36, 104–116. Retrieved from <https://pubmed.ncbi.nlm.nih.gov/23453003/> (date of appeal: 2.06.2021) (eng).
4. Barber, R.C., Hickenbotham, P., Hatch, T., Kelly, D., Topchuy, N., Almeida, G.M., Jones, G.D.D., Johnson, G.E., Parry, J.M., Rothkamm, K., et al. (2006). Radiation-induced transgenerational alterations in genome stability and DNA damage. *Oncogene*, 25, 7336. Retrieved from <https://pubmed.ncbi.nlm.nih.gov/16751800/> (date of appeal: 2.06.2021) (eng).
5. Powledge, T.M. (2011). Behavioral epigenetics: How nurture shapes nature. *BioScience*, 61, 588–592. Retrieved from <https://academic.oup.com/bioscience/article/61/8/588/336969> (date of appeal: 2.06.2021) (eng).
6. McGowan, P.O., Sasaki, A., D’Alessio, A.C., Dymov, S., Labonté, B., Szyf, M., Turecki, G., Meaney, M.J. (2009). Epigenetic regulation of the glucocorticoid receptor in human brain associates with childhood abuse. *Nat. Neurosci.*, 12, 342–348. Retrieved from <https://www.nature.com/articles/nn.2270> (date of appeal: 2.06.2021) (eng).
7. Franklin, T.B., Russig, H., Weiss, I.C., Gräff, J., Linder, N., Michalon, A., Vizi, S., Mansuy, I.M. (2010). Epigenetic transmission of the impact of early stress across generations. *Biol. Psychiatry*, 68, 408–415. Retrieved from [https://www.biologicalpsychiatryjournal.com/article/S0006-3223\(10\)00576-7/fulltext](https://www.biologicalpsychiatryjournal.com/article/S0006-3223(10)00576-7/fulltext) (date of appeal: 2.06.2021) (eng).

8. Maple, T.L., & Perdue, B.M. (2013). Environmental enrichment. In *Zoo Animal Welfare*; Springer: Heidelberg, Germany; pp. 95–117 (eng).
9. Froggatt, K. (1997). Rites of passage and the hospice culture. *Mortality*, 2(2), 123–136. Retrieved from <https://doi.org/10.1080/713685862> (date of appeal: 2.06.2021) (eng).
10. Bell, C. (1997). *Ritual. Perspectives and dimensions*. New York: Oxford University Press (eng).
11. Alexander, Bobby C., & Norbeck, Edward. "Rite of passage". Encyclopaedia Britannica. Retrieved from <https://www.britannica.com/topic/rite-of-passage> (date of appeal: 19.05.2021) (eng).
12. University of Warwick. (2019). "Train the brain to form good habits through repetition." ScienceDaily. Retrieved from www.sciencedaily.com/releases/2019/01/190128105227.htm. (date of appeal: 19.05.2021) (eng).
13. Giele, J., & Elder, G. (1998). Life course research. development of a field. In J. Giele & G. Elder (Eds.), *Methods of Life Course Research: Qualitative and Quantitative Approaches* (pp. 5–28): Thousand oaks: Sage Publications (eng).
14. Shanahan, M. J., & Elder, G. H. (2002). History, agency, and the life course. *Nebr Symp Motiv*, 48, 145–186 (eng).
15. *Sociology: Understanding and Changing the Social World*. Adapted from a work produced and distributed under a Creative Commons license (CC BY-NC-SA). Retrieved from <https://open.lib.umn.edu/sociology/front-matter/publisher-information/> (date of appeal: 19.05.2021) (eng).
16. Turner, V. (1967). *The Forest of Symbols*. New York: Cornell University Press (eng).
17. Tollefsbol, Trygve. (Ed.) (2011). *Handbook of Epigenetics: The New Molecular and Medical Genetics*, 1st ed. London: Elsevier Inc (eng).
18. Sartika, Mira. (2017). Case Study (pp. 28-35). Report Paper on Trygve Tollefsbol (ed.). *Handbook of Epigenetics: The New Molecular and Medical Genetics*, 1st ed. London: Elsevier Inc., 2011 (eng).
19. Sartika, Mira. (2018). *Cultural Genetics*. Jakarta (eng).
20. Sartika, Mira. (2020). On Diagnosing Causal and Effect by Apprehension of Culture in Medical Genetics. Article. Retrieved from https://www.researchgate.net/publication/333659941_ON_DIAGNOSING_CAUSAL_AND_EFFECT_BY_APPREHENSION_OF_CULTURE_IN_MEDICAL_GENETICS (date of appeal: 19.05.2021) (eng).

ОБРЯДИ ПЕРЕХОДУ: СТИЙКА ПОВЕДІНКОВА ЕПІГЕНЕТИКА У ЗМІЩЕННІ ЗДОРОВ'Я, ДУХОВНИХ І КУЛЬТУРНИХ ЦІННОСТЕЙ ОСОБИСТОСТІ

Міра Сартіка

Поведінкова епігенетика визначається як дослідження того, як епігенетичні зміни, викликані досвідом і стресом навколишнього середовища, можуть впливати на поведінку тварин (людини), яке описує епігенетичні зміни, викликані збагаченням навколишнього середовища. Збагачення навколишнього середовища зазвичай пов'язано з наданням стимулів навколишнього середовища, які сприяють

вираженню відповідного видам поведінки і розумової діяльності. До сих пір немає остаточного визначення того, який досвід і екологічний стрес впливають на поведінку людини, і яка фактичність збагачення навколишнього середовища викликає епігенетичні зміни. Широке визначення стресу навколишнього середовища і досвіду змушує нас спостерігати більш складну, але істотну природу, на додаток до біологічних процесів, тобто культури. Ми спеціально надаємо визначення добре відомому поняттю культурна поведінка, яке послідовно застосовувалося з покоління в покоління майже у всіх культурних спільнотах по всьому світу: обряди переходу. Використовуючи підхід якісного порівняльного аналізу (QSA), ми визначимо мету і проведення обрядів в цілому і порівняємо їх з тематичним дослідженням генетичних явищ. Мета даної статті – знайти взаємопов'язаний зв'язок обрядів переходу з генетичними подіями щодо того, як такі обряди можуть викликати епігенетичні зміни, що впливають на поведінкову епігенетику, що, таким чином, сприяє зміцненню індивідуального здоров'я, духовних і культурних цінностей. Ми можемо припустити, що обряди переходу обов'язково виходять за рамки духовних практик, але в більшій мірі відносяться до здоров'я, особливо в тому, що пов'язано з гармонізацією генетичних і епігенетичних процесів людини щодо навколишнього середовища. Якщо коротко, використовуючи дослідження перетину соціальних наук і наук про життя, ми очікуємо більш повного розуміння предмета спостереження.

Ключові слова: поведінкова епігенетика, обряди переходу, збагачення довкілля, епігенетичні зміни, екологічний стрес, культура, духовність, здоров'я.

ОБРЯДЫ ПЕРЕХОДА: УСТОЙЧИВАЯ ПОВЕДЕНЧЕСКАЯ ЭПИГЕНЕТИКА В УКРЕПЛЕНИИ ЗДОРОВЬЯ, ДУХОВНЫХ И КУЛЬТУРНЫХ ЦЕННОСТЕЙ ЛИЧНОСТИ

Мира Сартика

Поведенческая эпигенетика определяется как исследование того, как эпигенетические изменения, вызванные опытом и стрессом окружающей среды, могут влиять на поведение животных (человека), которое описывает эпигенетические изменения, вызванные обогащением окружающей среды. Обогащение окружающей среды обычно связано с представлением стимулов окружающей среды, которые способствуют выражению соответствующего вида поведения и умственной деятельности. До сих пор нет окончательного определения того, какой опыт и экологический стресс влияют на поведение человека, и какая фактичность обогащения окружающей среды вызывает эпигенетические изменения. Обширное определение стресса окружающей среды и опыта заставляет нас наблюдать более сложную, но существенную природу в дополнение к биологическим процессам, то есть культуре. Мы специально даем определение хорошо известному понятию культурное поведение, которое последовательно применялось из поколения в поколение почти во всех культурных сообществах по всему миру: обряды переходу. Используя подход качественного сравнительного анализа (QSA), мы определим цель и проведение обрядов в целом и сравним их с

тематическим исследованием генетических явлений. Цель данной статьи – найти взаимосвязь обрядов перехода с генетическими событиями в отношении того, как такие обряды могут вызывать эпигенетические изменения, влияющие на поведенческую эпигенетику, которая, таким образом, способствует укреплению индивидуального здоровья, духовных и культурных ценностей. Мы можем предположить, что обряды перехода обязательно выходят за рамки духовных практик, но в большей степени относятся к здоровью, особенно в том, что связано с гармонизацией генетических и эпигенетических процессов человека в отношении окружающей среды. Вкратце, используя исследование пересечения социальных наук и наук о жизни, мы ожидаем более полного понимания наблюдаемого предмета.

Ключевые слова: поведенческая эпигенетика, обряды перехода, обогащение окружающей среды, эпигенетические изменения, экологический стресс, культура, духовность, здоровье.

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