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Acculturation of Chinese Buddhism in Malaysia – A Critical Review from the Perspective of Cultural Neuroscience

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Abstract

The Chinese Buddhism is a group of ethnic minorities that has migrated to Malaya (Malaysia) decades ago. The migration of the first generation of the Chinese Buddhism ethnic community to Malaya marked the beginning of a cultural encounter between their original culture and that of the ethnic majority (Malay) in their new homeland. This review explores acculturation from a cultural neuroscience perspective, explaining the process of how acculturation occurs among the Chinese Buddhism ethnic minority based on the neuro-cultural interaction model. The cultural neuroscience perspective is discussed from the vienpoints of psychology, sociology, and cultural anthropology, drawing on previous cross-cultural neurological studies for reference. Chinese Buddhism from the east coast of Peninsular Malaysia serves as a reference model for developing the conceptual framework of cultural neuroscience. Chinese Buddhism community has shown the influence of Malay culture in various aspects of life such as food, clothes, and other social aspects.

Keywords: *Acculturation, Neuro-Culture Interaction Model, Ethnic Minority, Cultural Neuroscience.*

INTRODUCTION

Malaysia is a diverse country with multiple ethnic groups, including Malays, Chinese, Indians, natives of Sabah and Sarawak, and others. The Malay ethnicity is the largest group, followed by the Chinese, who are the second-largest ethnic minority, making up 23.4% of the total population (Department of Statistics Malaysia, 2023). Like other ethnic groups in Malaysia, the ethnic Chinese have rich traditions inherited from their ancestors, as well as influences from other ethnic groups, predominantly the ethnic Malay majority. This review explores the cultural phenomenon of acculturation among the Chinese ethnic minorities in Malaysia from the perspective of cultural neuroscience. The perspective of cultural neuroscience is debated in terms of its comparison with other fields and its advantages in producing cross-socio-cultural neurological data. The acculturation occurring among Chinese ethnic groups on the east coast of Peninsular Malaysia (specifically in Kelantan and Terengganu) serves as a psychosocial model for developing a conceptual framework of cultural neuroscience. This is discussed based on a neuro-cultural interaction model (Kitayama & Thompson, 2010; Kitayama & Uskul, 2011).

THE HISTORY OF THE CHINESE BUDDHISM ETHNIC MINORITY IN MALAYSIA

The migration of Chinese people to Malaysia (formerly known as Malaya) took place around the 19th century, driven by several key factors. One significant event was the marriage between Princess Hang Li Po, a Chinese princess, and the Sultan of Malacca, which led to many of the princess's followers migrating to Malacca. These migrants established marriages with the local population and gave rise to a community known today as the Straits Chinese or 'Baba and Nyonya'. This group is believed to be predominantly Hokkien-speaking individuals from the Zhangzhou and Quanzhou regions in Fujian, China.

The second factor contributing to the migration of Chinese people to Malaya was the impact of British colonization. Many Chinese were brought from China to work as labourers in tin mines (Othman, 2002; Rostam, 1984; Shafie & Zainudin, 2000). Additionally, the arrival of Chinese immigrants in large numbers was primarily due to the establishment of British settlements in Malaya and Borneo in the early 19th century. The opening of British settlements in Penang in 1786 and Singapore in 1819 further encouraged the migration of Chinese individuals, particularly those seeking to escape poverty in their homeland and take advantage of job

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opportunities provided by the British (Ching & McKenna, 1990; Hirschman, 1986). The British colonization extensively covered the states of Perak, Selangor, Negeri Sembilan, and Pahang, with approximately two million Chinese immigrants flocking to these states to engage in ore mining (Doran & Dixon, 1991; Kratoska, 2001; Yat, 1969). The Chinese community began to establish itself in major cities associated with ore mining activities, such as Ipoh, Taiping, Seremban, and the Klang Valley, around 1870 (Lin & Hill, 1979). Meanwhile, a group of Chinese from Fujian province entered Terengganu via the Marang and Kuala Terengganu River bases (Gosling, 1964). The history of the Chinese presence in Kelantan is similar to that in Terengganu, with the Han Chinese group originating from Fujian and Guangdong provinces in southern China. These were among the earliest groups of immigrants before a second wave of massive migration occurred towards the end of the 19th century (Tan, 2004; Wong, 2004).

This review acknowledges the assertion by Chiao, Hariri, Harada et al. (2010) that 'culture' should not be viewed as a stereotype that homogenizes the cultural experience of each member of a social group (based on race and color) without considering variations in socioeconomic and demographic factors. Similarly, according to Hofstede (2001), the culture of an ethnic group can be identified based on several characteristics, including individual-collective characteristics and period of orientation. As detailed in the documentation of Chinese ethnic history by Gabaccia & Hoerder (2011), there are at least nine sub-ethnic Chinese groups that migrated to Malaysia around the 19th century. The three largest groups are Hokkien, Cantonese, and Hakka. The remaining groups are Teochew, Foochow, Hainanese, Henghua (Puxian), San Jiang, and Kwongsai, each originating from different regions of China and speaking their distinct mother tongues. The Hokkien sub-ethnic group, which is the largest migration group, is believed to have originated from the Quanzhou, Xiamen, and Fujian (Zhangzhou) areas and established settlements that extend to the east coast of Peninsular Malaysia, including Kelantan and Terengganu. The Cantonese sub-ethnic group, the second largest migration group, is believed to have come from the Guangdong area and later concentrated in urban areas such as Kuala Lumpur, Petaling Jaya, and Ipoh. The Hakka sub-ethnic group, mostly from northern China and the third largest migration group, is found scattered throughout Malaysia in areas such as Selangor, Perak (especially Taiping and Ipoh), Negeri Sembilan, Sabah, Sarawak, Kedah, and Johor (especially Kulai and Kluang). It has been observed that sub-ethnic groups that establish settlements in urban areas are more involved in mining activities, while those in other regions tend to engage more in agricultural and business activities. Therefore, the cultural issues among the Chinese ethnic group in Malaysia require closer exploration, including socio-cultural differences such as dialects, settlements, and occupations, which have shaped their identity today.

ACCULTURATION PHENOMENA: THROUGH THE PERSPECTIVE OF CULTURAL NEUROSCIENCE

Acculturation is a socio-cultural phenomenon that refers to the process of cultural formation or identity development of a particular ethnic group, resulting from the influence of different cultures. It is a gradual and long-term evolution of sociocultural phenomena. Acculturation occurs when an individual from one cultural background experiences a new culture directly and continuously (Ben-Shalom & Horenczyk, 2003; Cote, 2006). Sociologists assert that acculturation involves a change in beliefs and practices when the cultural system of one ethnic group adopts the cultural system of another as a result of an encounter between two different cultures (Berry, 2005; Padilla & Perez, 2003; Sam & Berry, 2010).

Why Perspective Cultural Neuroscience in Acculturation? – Comparison between the Field and Advantages of Cultural Neuroscience

The phenomenon of acculturation has been explored through psychological, sociological, and anthropological approaches over the past few decades. However, according to Guarnaccia and Hausmann-Stabile (2016), there has been a decline in the focus on anthropological approaches to understanding acculturation, leading to increased attention on acculturation studies among psychologists and sociologists.

Despite the contributions of anthropology, psychology, and sociology to the study of acculturation, the field of cultural neuroscience offers unique insights that these fields cannot match. While anthropology, psychology, and sociology have their strengths in exploring acculturation, cultural neuroscience is considered more

advanced in addressing cultural questions. The sub-fields of anthropology, such as archaeological and biological anthropology, explain acculturation and cultural experience through tangible evidence like skulls and agricultural tools. In contrast, sub-fields like cultural and linguistic anthropology examine acculturation from intangible perspectives, including behaviour, beliefs, and norms, using methods like ethnography and qualitative and quantitative data collection (Guarnaccia & Hausmann-Stabile, 2016). Similarly, researchers in sociology and psychology employ approaches such as direct observation and qualitative and quantitative methods to collect acculturation data (Bulmer, 2017; Izaura, Mohamad & Abdullah, 2015; Jhangiani, Chiang, Cuttler et al., 2019; Lui & Zamboanga, 2018). Nonetheless, the limitations of these fields can be observed in two occasions as below:

Quantitative Measurement of Acculturation

The use of standard scales to quantitatively measure acculturation domains such as assimilation, isolation, integration, and marginalization (Berry, 1997) has its drawbacks. Many acculturation scales have been translated and validated by psychosocial researchers to address cultural and acculturation questions within the cultural context of their study sites, without considering cultural biases that may compromise the accuracy of the results. For instance, the Suinn-Lew Asian Self Identity Acculturation Scale was initially developed to assess the level of acculturation among Asians living in America and has been applied cross-culturally to measure acculturation among Asians in Singapore (Suinn, Khoo & Ahuna, 1995). Although this scale demonstrates acceptable validity in different sociocultural contexts, cultural biases still need to be addressed and controlled, particularly by considering the impact of socio-demographic factors (such as age, gender, religion, occupation, and sub-ethnicity) on sociocultural behaviour. As a result, qualitative approaches are often employed by researchers in this field to complement quantitative methods and mitigate sociocultural biases (e.g., Blanchet, Nana, Sanou et al., 2018; Fedi, Mannarini, Brodsky et al., 2019).

Social Cognitive Aspect in Culture and Acculturation

The 'social cognitive' aspect is not clearly articulated in the definitions of culture and acculturation. Researchers in this field have highlighted the importance of the 'social cognitive' aspect in these definitions, which is crucial in the system of interaction and social institutions. However, this aspect is not clearly conveyed. Generally, researchers in anthropology, sociology, and psychology tend to view 'culture' as a dimension related to the civilization of a nation, encompassing knowledge, beliefs, arts, morals, rules, and customs (Tylor, 1873). Little (2014) updated the definition of culture by dividing it into material aspects (such as symbols and buildings) and non-material aspects (ideas, attitudes, beliefs, etc.). However, a more comprehensive definition of culture can be found in Kitayama, Conway, Pietromonaco et al. (2010) and Macionis and Gerber (2011), which state that culture is a concept with various elements including attitudes, beliefs, and other social cognitive aspects, as well as social characteristics and social cohesion, covering specific cultural practices, interaction systems, and social institutions.

In the definition of acculturation, there is a varied emphasis on explaining the concept. Some social psychologists view acculturation as a dimension of cultural change that includes not only behavioural and emotional aspects but also cognitive aspects (Cuellar et al., 1995). Others highlight ethnic awareness and loyalty as key determinants in the acculturation process (Padilla, 1980). The pioneers of acculturation, Redfield, Linton, and Herskovits (1936) initially emphasized the element of 'continuous direct contact' as central to the acculturation process. 'Direct contact,' also understood as social interaction, requires cognitive abilities that involve the processing, storage, and application of information about other individuals and important social situations in social interactions (Von Eckardt, 1996; Fiske & Taylor, 2016). The social-cognitive aspects of cultural studies and acculturation need to be understood beyond psychosocial evidence, as one's cognitive capacity involves biological entities that are activated by transmission and cultural evolution (Tomasello, 1999).

Cultural neuroscience emerges amidst the rapid development of anthropology, psychology, and sociology, particularly in their fervent study of acculturation. This field is a multidisciplinary domain that integrates concepts from anthropology, cultural psychology, and cognitive neuroscience to understand the interaction between culture and neurobiological systems (Aggarwal, 2013; Bhui, 2018; Chiao, Cheon, Pornpattananangkul

et al., 2013; Kitayama & Tompson, 2010; Kim & Sasaki, 2014; Lorusso, Piccolino, Motta et al., 2018). Cultural neuroscience is not only concerned with psychological and cognitive (neurological) perspectives but also encompasses genetic processes (Chiao et al., 2010). In practice, it is an interdisciplinary field that investigates the relationships between culture, the mind, and the human brain system (Kitayama & Park, 2010). Therefore, cultural neuroscience bridges the gaps in anthropology, sociology, and psychology (particularly in the context of acculturation) by examining the interactions between the cultural environment and the neurobiological system.

Several advantages are offered by cultural neuroscience over the disciplines of anthropology, psychology, and sociology, especially in the investigation of acculturation and culture. Its primary advantages lie in addressing fundamental cultural issues (Ames & Fiske, 2010; Chiao et al., 2010; Kitayama & Thompson, 2010; Ng, Han, Mao et al., 2010; Zhou & Cacioppo, 2010). For instance, in the context of the Chinese community, an ethnic minority in Malaysia, questions like "How can acculturation among the ethnic Chinese minority in Malaysia be explained from a neurobiological perspective?" require a cultural neuroscience approach. The human brain is biologically predisposed to embrace the dimension of 'culture,' enabling it to coordinate thoughts and behaviors in social groups essential for survival. Without neurobiological capabilities, 'culture' cannot function. Therefore, biological factors underlie the formation, acquisition, and preservation of culture (Ames and Fiske, 2010). In this regards, technology plays an important role in cultural neuroscience, allowing researchers to explore fundamental questions more effectively than in the psychosocial field. Tools like Event-Related Potential (ERP) can reveal an individual's cognitive condition (including cultural cognitive issues) through electrophysiological waves recorded in response to stimuli (Luck, 2005). Functional magnetic resonance imaging (fMRI) uses scanning techniques to map neural activity in the brain, measuring changes in hemodynamic stimuli resulting from energy consumption by brain cells (Huettel, Song & McCarthy, 2009; Logothetis, Pauls, Auguth et al., 2001). These tools are widely used by cultural neuroscience researchers, especially in examining neurological differences between Asians migrating to Western countries and indigenous populations in Western countries (e.g., Ksander, Paige, Johndro et al., 2018; Liu, Rigoulot & Pell, 2015; Masuda, Russell, Chen et al., 2014; Ng, Han, Mao et al., 2010).

Thus, the fundamental theories of cultural neuroscience are considered a framework of the 'positivist' concept (where 'positivist' refers to a sociological study supported by scientific evidence (Calhoun, 2002; Macionis & Gerber 2010), characterized by empirical, practical, and meta-theoretical features (Kitayama & Thompson, 2010). These theories have the potential to contribute to the domain of knowledge on how cultural dimensions influence the human neurological system. Although research in the psychosocial field meets the 'positivist' characteristic by providing scientific evidence of cultural issues from a statistical perspective, the interpretation of cultural issues from such statistical analyses is still limited by external factors, such as individual differences in personality, emotional intelligence, knowledge, and more (e.g., Sackett, Lievens, Van Iddekinge et al., 2017).

The field of neurology cannot be fully explored through behavioural measurement approaches that rely on questionnaires and similar methods. In psychology, for instance, quantitative scales are often used to assess the extent of acculturation. These studies are typically conducted cross-sectionally, and their conclusions are drawn from statistical analyses. As a result, the findings may not accurately reflect the diversity and complexity of culture in the acculturation process. Similarly, cultural anthropology relies heavily on methods of direct involvement and observation (ethnography) to collect sociocultural behavior data, which is far removed from the domain of neurology. Additionally, a different perspective on gathering acculturation data can be found in biological anthropology, which examines cultural and ethnic issues from an evolutionary standpoint (Jurmain, 2015).

Cultural neuroscience views the human brain as an entity that requires cultural dimensions for optimal functioning. It aims to understand how behavior is shaped by routine acts known as cultural practices (Kitayama & Thompson, 2010). In the context of the Chinese ethnic minority in Malaysia, behavioral patterns aligned with local culture result from the influence of the dominant culture. Cultural neuroscience seeks to explain that cultural practices, over time, provide a medium that involves changes in the neural system governed by the brain.

Cultural neuroscience is also seen as a field that bridges natural sciences (or biological sciences) and social sciences, where culture is perceived as a dimension that enters the brain's control system through observations, hearing, and sight. The biological system is a natural system that is patterned from these 'lessons.' Therefore, the cultural encounters among ethnic groups in Malaysia represent natural 'lessons' that produce a culture dependent on local characteristics (Ames & Fiske, 2010; Kitayama & Thompson, 2010).

NEUROLOGICAL CHARACTERISTICS ACROSS DIFFERENCES OF SOCIO-CULTURAL AND GEOGRAPHY

Numerous studies have explored acculturation from a neurological perspective among different socio-cultural groups, with a tendency to focus more on comparisons between groups from different continents rather than those from the same continent. Table 1 provides descriptions and examples for the two categories.

Table 1. Comparisons between Socio-Cultural Groups in Acculturation Studies.

Category	Description	Examples
A	Comparisons between socio-cultural groups from different continents, involving ethnic minorities with a migration history who have settled in the same country/continent as the majority ethnicity.	Asian Americans (ethnic minorities from Asian countries) vs. European Americans (ethnic minorities from Western countries) living in America (see Han & Ma review, 2014).
B	Comparisons between socio-cultural groups from the same continent, involving ethnic minorities with a migration history who have settled in the same country/continent as the majority ethnicity. This type of comparison has received less attention in the literature.	Ethnic Chinese (an ethnic minority originating from China) vs. Malays (the ethnic majority) residing in Malaysia (e.g., Tan, 2011; Zainal Abidin, Habidin, Yusof et al., 2016).

In category A, research primarily focuses on the neurological differences between socio-cultural groups from different continents, specifically between America (or Western countries) and Asia. However, the neurological differences between socio-cultural groups from the same continent, such as ethnic Malays and ethnic Chinese in Asia, have not received much attention. Numerous studies in category A have been conducted without considering the potential for different neurological conditions in category B. For instance, a cross-cultural study by Park, Tsai, Chim et al. (2016) used fMRI to examine the emotional responses (visualization of calm and excited facial expressions) between European American and Asian American (ethnic Chinese) groups. The results showed that the European American group exhibited higher activation in neural areas associated with emotions and rewards (i.e., in the bilateral ventral striatum and left caudate areas), which was not observed in the Asian American group.

Similarly, a report by Han & Ma (2014) sought to understand the differences in behaviour and cognition between participants from East Asia and the West. A meta-analysis based on fMRI data revealed that these two groups exhibited different brain activation patterns. East Asians showed strong activation in the dorsal medial prefrontal cortex, lateral frontal cortex, and temporoparietal junction (areas of the brain associated with emotional regulation and mentalizing), while Westerners showed strong activation in the anterior cingulate, ventral medial prefrontal cortex, and bilateral insula (areas of the brain associated with self-reflection and emotional reactions).

In another study, participants from East Asia and the West were asked to provide feedback on facial expression images, revealing different analytical processing styles. Westerners showed activation in both sides of the fusiform face area (FFA), which is crucial for facial identification, while East Asians exhibited more activation on the right side of the FFA (Goh, Leshikar, Sutton et al., 2010). The neural differences between Asians and Westerners have been extensively reported in neuroscience journals (refer to Goto, Ando, Huang et al., 2010; Goto, Cho, Park et al., 2022; Goto, Yee, Lowenberg et al., 2013; Ksander et al., 2018; Liu et. al., 2015; Masuda et al., 2014; Mecklinger, Kriukova, Muhlmann et al., 2014; Luo, Ma, Liu et al., 2015; Liu, Rigoulot & Pell, 2015; Paige, Ksander, Johndro et al., 2017).

The studies mentioned above explore neurological questions among different socio-cultural groups from different continents. The researchers conclude that there are no neurological similarities between Asians living in Western countries and Westerners themselves. However, these neurological findings are still unclear in explaining some psychosocial changes that occur among ethnic minorities (e.g., Sukalakamala & Brittin, 2006;

Tong, 2013). This situation leads to unresolved questions such as: (1) Are the neurological aspects of an ethnic group unique and unaffected by the acculturation process? (2) What are the neurological domains associated with psychosocial change? These questions need to be addressed by revisiting the assertion that an ethnic group should not be viewed through a cultural stereotype (Chio et al., 2010; Mateo, Cabanis, de Echeverría Loebell et al., 2012) but should instead be based on biological facts, including genetics (Tang, Zhao, Lou et al., 2018; Deng, Hoh, Lu et al., 2015).

CHINESE BUDDHISM ETHNIC MINORITY IN THE EAST COAST OF PENINSULA MALAYSIA - A REFERENCE POPULATION TOWARDS THE DEVELOPMENT OF CULTURAL NEUROSCIENCE FRAMEWORKS

The study of neurological aspects in the context of acculturation remains unclear and necessitates more comprehensive research, including category B. According to the neuro-cultural interaction model shows in Figure 1 (Kitayama & Thompson, 2010; Kitayama & Uskul, 2011), the acculturation process between different ethnic groups should lead to the development of a robust neural system underlying their socio-cultural behavior (see Phase 4 - Neuro-cultural Interaction Model). Phase 4 is the most critical phase among the seven phases in the neuro-cultural interaction model. This phase is constructed as a result of the previous phases (Phases 1, 2, 3), and the subsequent phases (Phases 5, 6, 7) are the outcomes of the establishment of a strong cultural neural system.

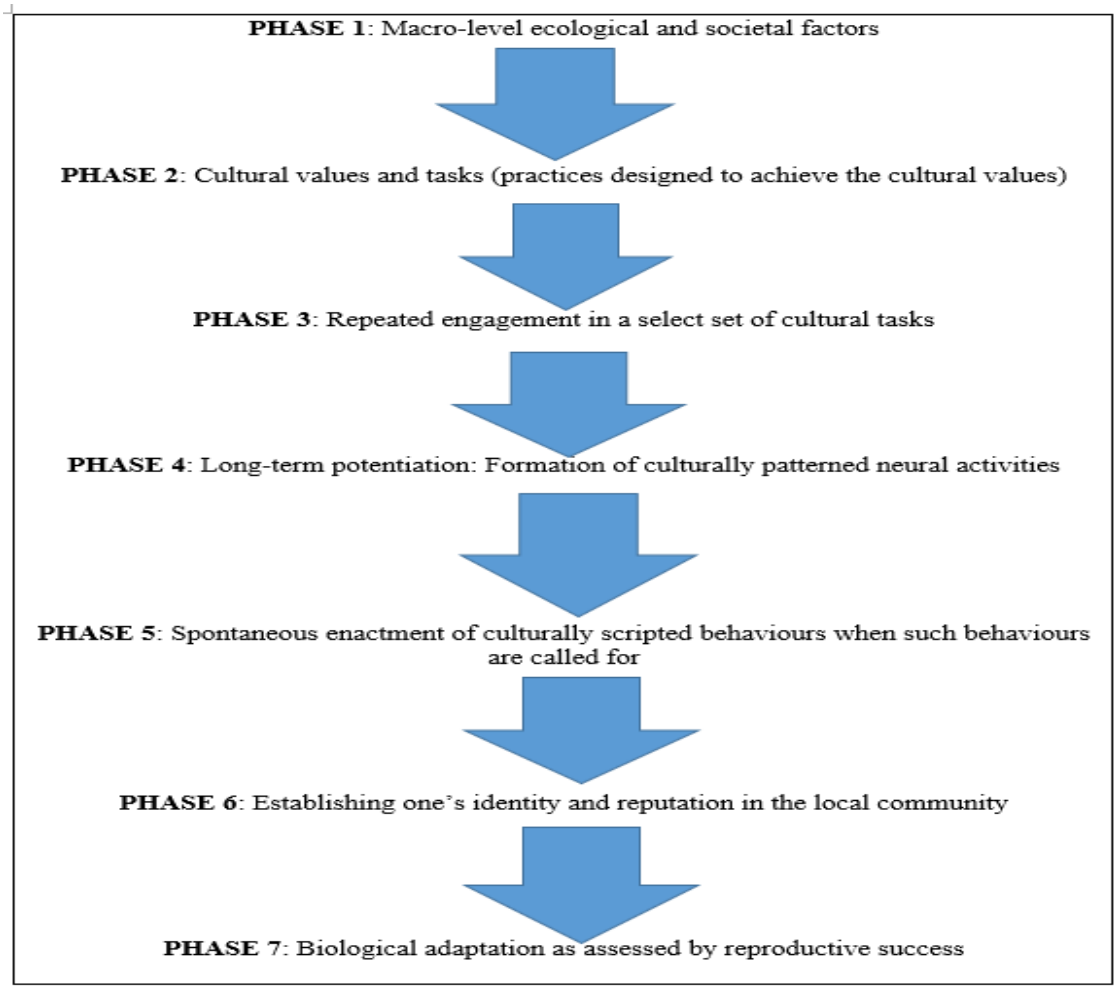

Figure 1. Neuro-culture Interaction Model (Kitayama & Tompson, 2010).

The Chinese ethnic minority on the east coast of Peninsular Malaysia (Kelantan and Terengganu) has been chosen as an example of Chinese ethnic acculturation in Malaysia in this review, as it considers cultural stereotypes as highlighted by Chiao et al. (2010) and Mateo et al. (2012). Furthermore, this Chinese ethnic group serves as a suitable example to explain category B acculturation based on Kitayama & Thompson's (2010) Neuro-Cultural Interaction Model, albeit with some limitations. The primary question that needs to be explored regarding the Chinese ethnic group is - How has the acculturation process occurred among the Chinese ethnic minority who have established settlements in the areas dominated by the Malay ethnic majority on the East Coast of Peninsular Malaysia?

Two groups of Chinese ethnics settled in the village of Tirok, Terengganu (Tan, 2011), and Kampung Pasir Parit, Chekok, Pasir Mas, Kelantan (Zainal Abidin et al., 2016), demonstrating a significant effect of acculturation from mixing with the Malay ethnic group. Historically, the Chinese who established settlements in Tirok, Terengganu, are believed to have migrated there around the 19th century, arriving in large numbers from Fujian province, China, to engage in agriculture. They entered Terengganu through various routes, including the Marang River base and the Kuala Terengganu River base, established new settlements, and expanded their generation through marriage among themselves at that time. Meanwhile, the Chinese ethnic group in Kampung Pasir Parit, Chekok, Pasir Mas, Kelantan, was among the earliest immigrant groups before a second wave of large-scale migration occurred around the end of the 19th century. They belong to the Han Chinese group from Fujian and Guangdong in southern China. Apart from Kelantan and Terengganu, they are also scattered in Sabah, Melaka, and Penang (Tan, 2004; Wong, 2004).

Tan (2011) and Zainal Abidin et al. (2016) employed a qualitative approach, collecting data through in-depth interviews and observations, to examine aspects of Chinese life in the two villages that were influenced by the acculturation process in the midst of the Malay ethnic majority population. Various aspects of Malay ethnic culture, including food, clothing, leisure activities, home architecture, and religious practices such as estate distribution, have been found to permeate every aspect of Chinese life.

However, these two acculturation models have some limitations. Firstly, acculturation is understood from the scientific perspectives of sociology and cultural anthropology, without evidence from a neurological or biological standpoint to explain the empirical, practical, and meta-theoretical aspects of acculturation. This gap hinders a comprehensive understanding of Chinese ethnic acculturation based on the neuro-cultural interaction model (see Phase 4 - Neuro-cultural Interaction Model). The models also do not encompass the domain of emotional acculturation, as highlighted by De Leersnyder (2017), and overlook Chiao's (2015) view that emotional patterns are cultural reflections. Studies on emotional acculturation in Malaysia are scarce. According to Yusoff, Samsuri, Ayob et al. (2019), who measured the emotional dimension of Malaysian Chinese and Malaysian Malays to cultural images of the ethnic Malay majority, there is an emotional 'similarity' between these two ethnic groups, suggesting that acculturation has led the ethnic Chinese (minority) to exhibit the same emotions as the ethnic Malays (majority).

The second limitation is that the acculturation model focuses only on material aspects (food, clothing, construction, language, etc.) without addressing socio-cultural changes holistically, including non-material aspects such as 'values' that underpin cultural choices and adoption (Schwartz, Unger, Zamboanga et al., 2010). The 'integration and rejection' perspective proposed by Padilla and Perez (2003) suggests that cultural involvement involves options such as engaging with one culture, both cultures, or none at all. Examples of studies in Malaysia focusing on non-material aspects include research among Iranian immigrants in Malaysia, who showed low creativity in dealing with cultural shocks and relied heavily on their cultural approaches (Falavarjani & Yeh, 2018). Another study examined the cultural behaviour of the Chinese minority and Malay majority in local universities in Malaysia (Mustapha, Azman, Karim et al. 2009), using a quantitative approach to assess intangible aspects (cultural behavior) through student feedback on ethnic integration issues. The study found matching scores between ethnic Chinese and Malays in important acculturation domains such as food, clothing, and socialization, indicating an acceptable level of acculturation within the context of ethnic integration. However, the study by Mustapha et al. (2009) did not control for cultural stereotyping. In summary, these two models of acculturation explain the phenomenon from psychosocial and cultural anthropology

perspectives but fail to address it from a neurobiological viewpoint. Nevertheless, these models are important references for the development of the conceptual framework of cultural neuroscience.

CONCLUSION

Cultural neuroscience stands out as an advanced field in studying acculturation due to its empirical, practical, and meta-theoretical nature, enabling it to address fundamental questions. However, research on neurological aspects among the Asian population, particularly in Malaysia, to explain acculturation among ethnic minorities is still lacking. Consequently, evidence of acculturation in terms of psychosocial and cultural anthropology predominates in Malaysian studies. The Chinese minority community in Malaysia, with its diverse socio-demographic background, has undergone a long process of acculturation within the ethnic Malay community since the 19th century. This community has developed its own identity as a result of centuries of Malay cultural influence, passing through several phases of acculturation and resulting in generational continuity. Although there is no neurobiological evidence to explain acculturation among these minority groups, it is crucial to recognize the existence of a neural system resulting from continuous cultural behaviour. This fact should be considered, as suggested by the neuro-cultural interaction model by Kitayama and Tompson (2010), alongside data from the fields of psychosocial and anthropology, to develop the conceptual framework of cultural neuroscience.

Acknowledgements

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