

## Neuroscience and Religion as the Basis for Character Education: Aisyah Dahlan's Perspective

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**Abstract:** This study analyses the integrative relationship between neuroscience, religion, and character typology as the foundation of character education from Aisah Dahlan's perspective. The method used is content analysis with a literature approach, utilising primary sources from video content on the YouTube account @Aisah Dahlan. The results indicate that these three elements form a complementary foundation for character development. Neuroscience explains the physiological relationship between the brain, nervous system, and behavioural formation, with brain development reaching 90% by the age of 5. Religion provides a moral foundation and ultimate goal to shape individuals with noble morals in accordance with human nature (fitrah). Meanwhile, the character typology of phlegmatic, melancholic, choleric, and sanguine, which has existed since conception, helps in understanding the diversity of children's personalities. The implication is that parents and educators need to understand the stages of a child's brain development and their unique character typology to apply character education methods tailored to each child's needs and conditions, thereby making the educational process more effective and optimal.

**Keywords:** Neuroscience, Religion, Aisah Dahlan, Character Typology, Character Education

**Abstrak:** Penelitian ini menganalisis hubungan integratif antara neurosains, agama, dan tipologi watak sebagai landasan pendidikan karakter menurut perspektif Aisah Dahlan. Metode yang digunakan adalah analisis konten dengan pendekatan kepustakaan, menggunakan sumber primer dari konten video akun YouTube @Aisah Dahlan. Hasil penelitian menunjukkan bahwa ketiga elemen tersebut membentuk fondasi yang saling melengkapi bagi pengembangan karakter. Neurosains menjelaskan hubungan fisiologis antara otak, sistem saraf, dan pembentukan perilaku, dengan perkembangan otak mencapai 90% pada usia 5 tahun. Agama memberikan landasan moral dan tujuan akhir untuk membentuk manusia yang berakhlak mulia sesuai fitrah. Sementara itu, tipologi watak phlegmatis, melankolis, koleris, dan sanguinis yang telah ada sejak dalam kandungan, membantu memahami keragaman kepribadian anak. Implikasinya, orang tua dan pendidik perlu memahami tahap perkembangan otak anak dan tipologi wataknya yang unik agar dapat menerapkan metode pendidikan karakter yang sesuai dengan kebutuhan dan kondisi masing-masing anak, sehingga proses pendidikan menjadi lebih efektif dan optimal.

**Kata Kunci:** Neurosains, Agama, Aisah Dahlan, Tipologi Watak, Pendidikan Karakter.

## INTRODUCTION

Character education has emerged as an urgent necessity in the era of globalisation, driven by observable phenomena such as moral crises and declining social values. The insufficiency of traditional education, which primarily focuses on cognitive skills, underscores the need for a more holistic approach that encompasses values, attitudes, and behaviours reflective of moral integrity. This need is particularly pressing as contemporary challenges, including youth violence, drug abuse, corruption, and intolerance, continue to proliferate<sup>1</sup>. At the global level, international institutions such as UNESCO emphasise the importance of education that goes beyond knowledge and skills to include values, attitudes, and behaviours that reflect moral integrity.

In the context of Indonesia, character education is a critical component of the national educational framework, underlined by Law No. 20 of 2003 regarding the National Education System and reinforced through Presidential Regulation No. 87 of 2017. These regulations emphasise that educational endeavour extends beyond merely achieving academic excellence; rather, it is fundamental in cultivating a generation imbued with values of faith, piety, virtue, and social responsibility. This dual approach to education, where character development is treated with the same importance as intellectual growth, reflects a holistic vision for the nation's youth. These policies also affirm that education in Indonesia should not be limited to academic achievement but must also foster a generation that is faithful, pious, virtuous, and socially responsible.

Character education in Indonesia operates through various strategies and multiple stakeholders, effectively embedding virtue and social attitudes within the curriculum. Educational policies have manifested in practices like Citizenship Education and Religion classes, which incorporate character-building themes and local wisdom<sup>2</sup>. These policies promote the idea that education should facilitate not only skill development but also moral and ethical

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<sup>1</sup> Y. Construyendo et al., "Building and Training a Community of Global Teachers. The Case of the International Baccalaureate. / Construyendo Y Formando Una Comunidad Global De Docentes. El Caso De Bachillerato Internacional.," *Journal of Supranational Policies of Education (JOSPOE)* 5 (2023), <https://doi.org/10.15366/jospoe2016.5.006>; Herman Herman et al., "The Role of Formal Education in Shaping Students' Character at SMK Swasta Teladan Tanah Jawa: A Case on Character Education," *Abdi Dosen : Jurnal Pengabdian Pada Masyarakat* 6, no. 3 (2022), <https://doi.org/10.32832/abdididos.v6i3.1329>.

<sup>2</sup> Fauziah, Roestamy, and Rusli, "Character Education on Primary Students Based on the Culture of Local Wisdom and Religion in Indonesia"; Nur Alfin Hidayati, Herman J. Waluyo, and Retno Winarni, "Exploring the Implementation of Local Wisdom-Based Character Education among Indonesian Higher Education Students.," *International Journal of Instruction* 13, no. 2 (2020): 179–98.

grounding in students, illustrated through programs such as the Pancasila Student Profile, aimed at producing individuals who embody faith, critical reasoning, and creativity<sup>3</sup>. Moreover, character education initiatives leverage local culture and customs, promoting an educational philosophy that resonates with Indonesian values while addressing both contemporary and traditional challenges<sup>4</sup>.

Neuroscience, as a rapidly developing scientific field, provides valuable insights into how the human brain functions in relation to learning, behaviour, and personality formation. Advances in neuroscience reveal that human emotions, thoughts, and actions are deeply interconnected with brain activity. For instance, areas such as the prefrontal cortex are responsible for decision-making and self-control, while the limbic system regulates emotions and motivation<sup>5</sup>. These discoveries indicate that the processes of moral judgment, empathy, and ethical behaviour are not merely abstract concepts but are also linked to concrete neurological mechanisms.

Recent studies underscore the importance of integrating neuroscience knowledge into educational practices, particularly in understanding how brain activity correlates with learning processes. For instance, brain-based learning models that engage students can enhance motivation and cognitive engagement, demonstrating the impact of aligning emotional and mental factors in educational contexts<sup>6</sup>. The concept of learning-induced neural efficiency suggests that as students practice and internalise skills, their neural networks become optimised for task execution. This neurodevelopmental perspective helps clarify how educational strategies can be designed to foster both cognitive and emotional growth, ultimately leading to more holistic development.

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<sup>3</sup> Susanti Susanti, Muaza Muaza, and Supian Supian, "Implementation Of The Pancasila Student Profile Strengthening Project (P5) As An Effort To Strengthen The Character Of Students," *Jurnal Indonesia Sosial Teknologi* 4, no. 10 (2023), <https://doi.org/10.59141/jist.v4i10.766>.

<sup>4</sup> Marthinus Marcel Lintong et al., "Character Education Management in SMA Kakaskasen Seminary Catholic and SMA Lokon St. Nikolaus Tomohon," *Asia Pacific Journal of Management and Education* 4, no. 2 (2021), <https://doi.org/10.32535/apjme.v4i2.1127>.

<sup>5</sup> Adam Turnbull et al., "Left Dorsolateral Prefrontal Cortex Supports Context-Dependent Prioritisation of off-Task Thought," *Nature Communications* 10, no. 1 (2019), <https://doi.org/10.1038/s41467-019-11764-y>.

<sup>6</sup> Matheus André Agnoletto and Lêda Maria Braga Tomitch, "The Impacts of Learning to Read on Brain Activity and a Sociocultural View on Human Cognitive Functioning: A Possible Relation," *Revista Educação E Linguagens* 10, no. 19 (2021), <https://doi.org/10.33871/22386084.2021.10.19.7-21>; Ni Kadek Ayu Mita Wulansari and Ni Ketut Suarni, "Animation in Science Learning with Brain Based Learning Models to Improve Student Learning Outcomes," *International Journal of Elementary Education* 4, no. 2 (2020), <https://doi.org/10.23887/ijee.v4i2.25244>.

In the context of character education, neuroscience offers a strong scientific foundation for understanding how character traits can be cultivated. Research has shown that repeated behaviours form neural pathways in the brain, meaning that positive habits—such as honesty, discipline, or compassion—can be strengthened through consistent practice and reinforcement. Similarly, emotional regulation, a critical aspect of moral behaviour, is influenced by brain development and can be trained through mindfulness, self-reflection, and guided learning. Thus, character is not something static or predetermined but can be shaped and nurtured through conscious educational interventions <sup>7</sup>.

Studying neuroscience to understand human character through the nervous system is intrinsically linked to the mission of the Prophet Muhammad SAW in guiding humanity to develop *akhlak* (moral character). Understanding the connection involves exploring how neural processes influence moral and ethical behaviour, aligning with the teachings of the Prophet. Neuroscience offers a biological basis for understanding human character, detailing how various neural systems in the brain guide moral decisions and behaviours. Huda and Widodo discuss the interplay between the nervous system and character development, indicating that the brain's structure significantly impacts one's moral framework<sup>8</sup>. So, integrating neuroscience with moral education provides a solid framework for understanding and fostering moral character, echoing the ethical imperatives proposed by the teachings of the Prophet Muhammad (SAW). By leveraging insights from brain function and character development, both educators and spiritual leaders can effectively guide individuals towards realising their moral potential, embodying the *akhlak* emphasised in Islam.

Aisyah Dahlan is recognised as a prominent figure who integrates applied neuroscience and clinical hypnotherapy with teachings from Islam. Her approach values both psychological dimensions and spiritual considerations, facilitating a holistic self-care regimen among her clients. This duality reflects the objectives of contemporary applied neuroscience, which emphasise understanding cognitive processes while acknowledging diverse cultural backgrounds, particularly in settings that embrace Islamic principles.

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<sup>7</sup> Neil McNaughton and Luke D. Smillie, "Some Metatheoretical Principles for Personality Neuroscience," *Personality Neuroscience* 1 (2018), <https://doi.org/10.1017/pen.2018.9>; Dilla Rifa Oktriani, Achmad Hufad, and Nindita Fajria Utami, "Overcoming the Character Crisis in Children: Strategies, Outcomes, and Evaluations of Bina Desa Program," *Utamax: Journal of Ultimate Research and Trends in Education* 5, no. 2 (2023), <https://doi.org/10.31849/utamax.v5i2.13758>.

<sup>8</sup> Fadkhulil Imad Haikal Huda and Hendro Widodo, "Teacher's Efforts in Forming Religious Character in Neuroscience-Based Pai (Islamic Education) Learning," *International Journal of Education Humanities and Social Science* 05, no. 06 (2022), <https://doi.org/10.54922/ijehss.2022.0463>.

One compelling aspect of Dr. Aisyah's work is her commitment to enhancing the quality of family life through educational initiatives focused on Islamic household principles. Her teachings assert that a household should foster peace (*sakinah*) and spiritual growth, aiming to alleviate the pitfalls of modernity that often disrupt family harmony<sup>9</sup>. This aligns with the understanding that moral and emotional support from family can enhance an individual's overall quality of life. Such insights emphasise the applied nature of her practice, where neuroscience meets community well-being—a concept supported by various studies highlighting the critical role of family dynamics in mental health and daily engagement.

Aisyah Dahlan's perspective affirms that Islamic acts of worship, when viewed through the lens of neuroscience, function not only as spiritual obligations but also as practical exercises that shape the brain through neuroplasticity. By fostering discipline, mindfulness, emotional regulation, and resilience, these practices contribute directly to character formation and cognitive well-being. This integration of science and religion offers a holistic foundation for character education that is both biologically grounded and spiritually meaningful.

Although numerous studies have examined character education from either a religious perspective or a neuroscientific perspective, few have attempted to integrate the two systematically and comprehensively. Research on neuroscience in education has generally emphasised brain-based learning strategies, cognitive development, and emotional regulation. In contrast, studies on religion in education have highlighted moral values, spiritual formation, and ethical behaviour. However, these two dimensions are often treated separately, resulting in a fragmented understanding of how character can be developed holistically.

Moreover, there is a scarcity of academic work that explicitly addresses the contributions of individual thinkers who seek to bridge these domains. Aisyah Dahlan's perspective—combining applied neuroscience with Islamic teachings—has gained popularity in public discourse but has not yet been thoroughly explored in scholarly research. This gap indicates the need for an academic study that not only documents her views but also evaluates their relevance and potential contribution to the development of integrative models of character education.

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<sup>9</sup> Mumu and Elis Lisna Khoerunnisa, "Analisis Konsep Pendidikan Rumah Tangga Dalam Islam Menurut Perspektif Dr. Aisyah Dahlan," *HASBUNA: Jurnal Pendidikan Islam* 5, no. 1 (2024), <https://doi.org/10.70143/hasbuna.v5i1.389>.

In line with this background and the identified research gap, the present study is directed toward three main objectives. First, it seeks to explore the stages of brain development and their implications for character education, providing a scientific foundation for understanding how neurological growth influences moral and behavioural formation. Second, it aims to analyse the interplay between neuroscience and religion in shaping character, highlighting the complementary roles of scientific insights and spiritual values in fostering holistic human development. Third, the study aims to investigate the importance of understanding typologies of character traits in informing effective character education. Together, these objectives emphasise the importance of integrating brain science, religious teachings, and personality typologies in constructing a comprehensive framework for character education that is both theoretically sound and practically relevant.

## LITERATUR REVIEW

Based on the literature review, neuroscience is defined as the science that studies the nervous system, neurons, and brain function<sup>10</sup>. The development of neuroscience in Indonesia is marked by the emergence of various experts and researchers in this field, although public awareness remains limited to academic circles. Neuroscience research has provided evidence of the inseparable connection between the human brain and behaviour (character), where neuroscience can explain the stages of character formation through brain development and the nervous system, facilitated by habituation, responses, and parenting styles<sup>11</sup>.

The study of neuroscience, which aims to understand human character through the nervous system, is closely related to the Prophet Muhammad SAW's mission to guide humanity in developing moral character (akhlak). Islam teaches that humans are created according to their nature (fitrah) and are commanded to become individuals of noble character based on the guidance of the Qur'an and Hadith<sup>12</sup>. Neuroscience findings support this concept, particularly through discoveries about the role of the heart (qolbu), which is

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<sup>10</sup> Asman Asman, Suyadi Suyadi, and Miftachul Huda, "Character Education as Brain Education: Spiritual Neuroscience Studies in Islamic Education," *Jurnal Tarbiyatuna* 12, no. 2 (December 2021): 77–86, <https://doi.org/10.31603/tarbiyatuna.v12i2.4278>.

<sup>11</sup> Fadkhulil Imad Haikal Huda and Hendro Widodo, "Teacher's Efforts in Forming Religious Character in Neuroscience-Based Pai (Islamic Education) Learning," *International Journal of Education Humanities and Social Science* 05, no. 06 (2022), <https://doi.org/10.54922/ijehss.2022.0463>.

<sup>12</sup> Fadkhulil Imad Haikal Huda and Hendro Widodo, "Teacher's Efforts in Forming Religious Character in Neuroscience-Based PAI (Islamic Education) Learning," *International Journal of Education Humanities and Social Science* 5, no. 06 (2022): 160–67.

connected to the brain and nerves, influencing human behaviour. The idea of "the power of Qolbu" or the Qur'an within the human heart affirms that neuroscience can serve as a foundation for character education supported by religious teachings<sup>13</sup>.

Thomas Lickona, a child development expert, emphasises that character formation begins with awareness, understanding, concern, and commitment until it becomes a habit. The success of character education requires participation from all educational environments, especially the family<sup>14</sup>. Humans, as Allah's most perfect creation, possess intellectual and emotional potential that needs to be developed through character education, which begins in the womb and is shaped through parental upbringing.

The main problem in character education today is the lack of parental knowledge about the stages of a child's brain development. Neuroscience shows that the fetal brain already develops 25% in the womb, with the hypothalamus, which plays a role in memory and emotion, already 40% formed. The golden period of brain development occurs from the womb to five years of age, where the child's brain reaches 90% of its development. Parents who do not understand this often miss this critical period, so that the child's brain can be filled with negative information and habits<sup>15</sup>.

The current character crisis is exacerbated by minimal parental knowledge about the processes and stages of character education<sup>16</sup>. The solution is based on understanding the stages of brain development and children's character typology. Dr. Aisah Dahlan, CHt., as one of Indonesia's neuroscience experts, emphasises the importance of understanding character

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<sup>13</sup> Zalik Nuryana and Anom Wahyu Asmorojati, "The Insertion of Anti-Corruption Education into Islamic Education Learning Based on Neuroscience.," *International Journal of Evaluation and Research in Education* 10, no. 4 (2021): 1417–25.

<sup>14</sup> Dodi Ilham, "Menggagas Pendidikan Nilai Dalam Sistem Pendidikan Nasional," *Didaktika: Jurnal Kependidikan* 8, no. 3 (August 2019): 109–22, <https://doi.org/10.58230/27454312.73>.

<sup>15</sup> Enco Mulyasa, *Menjadi Guru Profesional, Menciptakan Pembelajaran Kreatif Dan Menyenangkan* (Bandung: Remaja Rosdakarya, 2015); Muhammad Akil Musi and S. Nurjannah, *Neurosains: Menjinjwai Sistem Saraf Dan Otak* (Prenada Media, 2021), [https://books.google.com/books?hl=id&lr=&id=vNBEEAAAQBAJ&oi=fnd&pg=PA93&dq=Neurosains+Menjiwai+Sistem+Saraf+dan+Otak&ots=yH9aBeNCA&sig=9thSVnS2RvUgSyhW3UjaLpiqO\\_Y](https://books.google.com/books?hl=id&lr=&id=vNBEEAAAQBAJ&oi=fnd&pg=PA93&dq=Neurosains+Menjiwai+Sistem+Saraf+dan+Otak&ots=yH9aBeNCA&sig=9thSVnS2RvUgSyhW3UjaLpiqO_Y).

<sup>16</sup> Dwi Eka Adhariani, "Pengelolaan Kecerdasan Emosi Pendidik Tk Azhari Islamic School Jakarta" (PhD Thesis, Institut PTIQ Jakarta, 2023), <https://repository.ptiq.ac.id/id/eprint/1205/>; Dahuri Dahuri, "Pendidikan Karakter Sebagai Pendidikan Otak Perspektif Kajian Neurosains Spiritual," *Jurnal Ilmu Pendidikan Dan Sains Islam Interdisipliner*, 2023, 76–85.

typology (phlegmatic, melancholic, choleric, sanguine) and child brain development to apply appropriate parenting styles. Dr. Dahlan integrates neuroscience perspectives with Islamic teachings using language easily understood by the public. Her research on rehabilitating drug victims shows the significant impact of the nervous system on character formation, which begins with parental upbringing at each stage of brain development. Through this approach, parents can better understand their responsibilities in shaping children's character according to their nature and Islamic teachings<sup>17</sup>.

Thus, the integration of neuroscience and religion becomes an essential foundation for character education, where parents and educators need to understand child brain development and character typology to create a generation of noble character.

## RESEARCH METHODOLOGY

This study employs a qualitative approach with a content analysis method to examine character typology from the perspectives of neuroscience and religion according to Dr. Aisah Dahlan, CHt. The qualitative approach was chosen because it suits the characteristics of research that requires descriptive exposition through systematically arranged words or sentences, from data collection to interpretation and reporting of research findings<sup>18</sup>. The content analysis method, pioneered by Harold D. Lasswell, is used to analyse various forms of communication, including videos, audio recordings, and written documents, using symbol coding techniques to record and interpret messages systematically<sup>19</sup>.

The research data sources consist of primary and secondary data. Primary data were obtained directly from Dr. Aisah Dahlan's lecture content on the YouTube platform, which discusses topics of character typology, neuroscience, and religion. This data was collected through screenshot techniques and documentation for analysis purposes. Meanwhile, secondary data was obtained from indirect sources, such as books, journals, articles, and other

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<sup>17</sup> Dahuri, "Pendidikan Karakter Sebagai Pendidikan Otak Perspektif Kajian Neurosains Spiritual."

<sup>18</sup> John W. Creswell and J. David Creswell, *Research Design: Qualitative, Quantitative, and Mixed Methods Approaches* (Sage publications, 2017).

<sup>19</sup> Ulla Hällgren Graneheim, Britt-Marie Lindgren, and Berit Lundman, "Methodological Challenges in Qualitative Content Analysis: A Discussion Paper," *Nurse Education Today* 56 (2017), <https://doi.org/10.1016/j.nedt.2017.06.002>.



written documents relevant to the research topic<sup>20</sup>. The use of both types of data aims to strengthen the analysis and obtain a comprehensive understanding.

Data collection techniques were carried out through documentation studies by observing and analysing Dr. Aisah Dahlan, CHt's lecture videos as well as written sources such as books, magazines, and journals related to the research variables. The researcher acts as the main instrument (human instrument) who is directly involved in the data collection and analysis process, assisted by documentation tools such as recorders and data recorders<sup>21</sup>. This approach allows researchers to explore information in depth and contextually.

Data analysis was conducted using the interactive model of Miles and Huberman, which includes three stages: data reduction, data display, and conclusion drawing<sup>22</sup>. Data reduction is done by simplifying and classifying data according to the research focus. Data presentation is arranged in narrative form, tables, or graphs to facilitate understanding. Data validity was tested through source and technique triangulation to ensure consistency and accuracy of the data. The conclusion-drawing stage involves verifying the patterns of data presented to produce valid and reliable findings.

## RESULTS AND DISCUSSION

### Findings

The analysis of Aisah Dahlan's thoughts on neuroscience and religion demonstrates that both fields play a significant role in shaping character education. First, the findings emphasise that character education is not merely a matter of instructing children in good behaviour but is closely tied to the biological, psychological, and spiritual development of the individual. Neuroscience explains the stages of brain development and identifies the critical periods when character formation should begin. This finding highlights that the process of education does not start only after birth but begins during the prenatal stage, where parental habits, emotions, and spiritual practices influence the fetus. For instance, the hypothalamus of a baby develops to around 25%

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<sup>20</sup> Hsiu-Fang Hsieh and Sarah E. Shannon, "Three Approaches to Qualitative Content Analysis," *Qualitative Health Research* 15, no. 9 (2005), <https://doi.org/10.1177/1049732305276687>.

<sup>21</sup> Elizabeth G. Creamer, *Visual Displays in Qualitative and Mixed Method Research: A Comprehensive Guide* (Routledge, 2024), <https://www.taylorfrancis.com/books/mono/10.4324/9781003303602/visual-displays-qualitative-mixed-method-research-elizabeth-creamer>.

<sup>22</sup> Matthew B. Miles, A. M. Huberman, and Johnny Saldaña, *Qualitative Data Analysis: A Methods Sourcebook*, Third edition (Thousand Oaks, California: SAGE Publications, Inc, 2014).

while still in the womb, meaning the brain is already active in recording and responding to stimuli, which has implications for later behaviour and character.

The findings also reveal that neuroscience underlines the profound role of the heart in human development. Research conducted by McCraty, Bradley, and Tomasino at the Institute of HeartMath demonstrates that the electromagnetic vibrations of the heart are more potent than those of the brain and can be transmitted between individuals, particularly between a mother and her child. This discovery corresponds with real-life cases where infants respond more calmly when held by caregivers with peaceful and loving hearts compared to those who are anxious or harsh. The implication is that parental emotions, whether positive or negative, are transferred to the child through unseen but powerful vibrations, which directly shape the child's emotional and moral growth.

Another significant finding is the correlation between neuroscience and Islamic teachings. Long before modern science articulated the power of the heart's electromagnetic field, Islamic scholars such as Al-Ghazali had already described the concept of *the power of the qolbu*. He emphasised that the heart is not only a biological organ but also a spiritual centre containing divine guidance, Qur'anic values, and innate goodness. This aligns with the belief that every child is born with *fitrah*, or natural purity, which needs to be nurtured and preserved through education and parental guidance. Neuroscience further supports this by identifying the existence of over 40,000 neurons in the heart, indicating that it functions as a secondary brain capable of recording and processing information.

Furthermore, the findings highlight the role of the prefrontal cortex in long-term memory and principle formation. Neuroscience shows that values or principles encoded in this area of the brain are difficult to change once established. Therefore, if parents fail to instill Qur'anic values and positive principles during the golden age of brain development, children may internalise negative beliefs that persist throughout life. The research suggests that both parents are responsible for this task: fathers as vision givers who instil religious principles, and mothers as implementers who apply these visions in daily practice. This synergy between father and mother in raising children is emphasised as crucial for holistic character education.

The final finding is related to the typology of temperament, which serves as a foundation for character education. Aisah Dahlan adopts the classical Hippocratic model, identifying four temperaments: phlegmatic, melancholic, choleric, and sanguine, and interprets them within an Islamic framework. The Qur'an, particularly in Surah Ash-Shams, acknowledges that humans are created with both positive and negative tendencies, but true success lies in those who

purify their souls. This highlights that although temperament is inherited through genetics and biological predispositions, education has the capacity to transform natural tendencies into positive character traits. Each temperament has its strengths, and recognising these helps educators and parents tailor character education strategies to suit individual differences among children.

## Discussion

The findings above suggest that neuroscience and religion together offer a comprehensive framework for understanding and implementing character education. Neuroscience provides the empirical and biological explanations for how character is formed through brain development, parental influence, and physiological processes. In contrast, religion provides the moral, spiritual, and ethical framework that directs these processes towards positive values. This integration is crucial because character education, if based solely on science, risks being reduced to mechanistic conditioning without moral orientation. In contrast, religion alone, without the insights of science, may lack the practical strategies needed to engage effectively with child development stages<sup>23</sup>.

The emphasis on prenatal education is significant. Neuroscience reveals that character formation begins as early as the embryonic stage, with parental emotions and behaviours significantly impacting the unborn child. Religion supports this through Islamic teachings that life and consciousness begin in the womb, with the soul being breathed into the fetus at around 40 days of conception. This shared perspective underscores the responsibility of parents to cultivate positive habits, emotional stability, and spiritual practices during pregnancy<sup>24</sup>. For instance, mothers who engage in reciting the Qur'an, practising patience, and avoiding stress not only benefit themselves but also contribute directly to the development of their child's character<sup>25</sup>.

The discussion also highlights the role of the heart as both a scientific and spiritual organ. While modern research frames this through electromagnetic resonance and neurocardiology, Islamic tradition has long affirmed the centrality of the heart (qalb) as the seat of moral consciousness. The convergence of these

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<sup>23</sup> Heri Gunawan, *Pendidikan Karakter: Konsep Dan Implementasi*, vol. 1 (Cv. Alfabeta, 2022), [https://digilib.uinsgd.ac.id/69084/1/Pendidikan\\_Karakter-Heri%20Gunawan.pdf](https://digilib.uinsgd.ac.id/69084/1/Pendidikan_Karakter-Heri%20Gunawan.pdf).

<sup>24</sup> Asman, Suyadi, and Huda, "Character Education as Brain Education"; Fadkhulil Imad Haikal Huda, "Pembentukan Karakter Religius Berbasis Neurosains: Konstruksi Upaya Guru Dalam Pembelajaran Pendidikan Agama Islam," *Jurnal Pendidikan Agama Islam Al-Thariqah* 7, no. 2 (2022): 491–502.

<sup>25</sup> Hanifa Listia Yusuf, "Perbedaan Otak Laki-Laki Dan Otak Perempuan Dalam Membentuk Keluarga Sakinah: Studi Terhadap Konsep Neurosains Aisah Dahlan" (PhD Thesis, UIN SUNAN KALIJAGA YOGYAKARTA, 2020), <https://digilib.uin-suka.ac.id/id/eprint/44938/>.

two perspectives strengthens the argument that education should focus not only on intellectual development but also on cultivating emotional and spiritual intelligence<sup>26</sup>. By managing emotions and transmitting positive vibrations of love and sincerity, parents can nurture children who are empathetic, resilient, and morally grounded.

Another critical point of discussion is the function of the prefrontal cortex as a repository of principles and long-term memory. Neuroscience suggests that early childhood is the golden period for instilling values that are likely to remain stable throughout life. Religion complements this by emphasising early moral training, Qur'anic recitation, and the cultivation of *taqwa* (piety) during childhood<sup>27</sup>. The overlap between science and religion here reinforces the importance of aligning educational practices with both biological readiness and spiritual imperatives. If parents neglect this critical period, children may internalise destructive patterns that are difficult to reverse later in life<sup>28</sup>.

The shared responsibility between fathers and mothers is another essential theme. Neuroscience emphasises the impact of both parents' behaviours and emotional states on a child's development. At the same time, Islamic teachings explicitly command fathers to serve as guides in religious principles and mothers as nurturers in daily implementation. This complementarity suggests that successful character education requires cooperation and consistency between parents<sup>29</sup>. Without this synergy, children may receive conflicting messages that hinder their character development.

Finally, the typology of temperament provides a bridge between biology and morality. While neuroscience acknowledges that temperament is shaped by genetic inheritance and neurological patterns, Islam asserts that human beings are not bound by their natural tendencies but are capable of transformation

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<sup>26</sup> Hana Rizayanti and Suyadi Suyadi, "Concept of Nafs and Qalb From the Perspective of Neuroscience: A Study of Al-Ghazali's Thoughts," *Kontemplasi: Jurnal Ilmu-Ilmu Ushuluddin* 11, no. 1 (2023), <https://doi.org/10.21274/kontem.2023.11.1.49-66>.

<sup>27</sup> Gunawan, *Pendidikan Karakter*, vol. 1; Rukiyati Rukiyati, Dwi Siswoyo, and Lorensius Hendrowibowo, "Pendidikan Nilai-Nilai Moral Anak Usia Dini Di Taman Kanak-Kanak Berbasis Islam," *Jurnal Obsesi: Jurnal Pendidikan Anak Usia Dini* 7, no. 4 (2023), <https://doi.org/10.31004/obsesi.v7i4.4680>.

<sup>28</sup> Mulyasa, *Menjadi Guru Profesional, Menciptakan Pembelajaran Kreatif Dan Menyenangkan*.

<sup>29</sup> Dwi Siswoyo, Rukiyati Rukiyati, and Lorensius Hendrowibowo, "Nilai-Nilai Dan Metode Pendidikan Karakter Di Taman Kanak-Kanak Di Banjarmasin," *Foundasia* 11, no. 1 (2020), <https://doi.org/10.21831/foundasia.v11i1.32485>.

through education and spiritual purification<sup>30</sup>. A naturally melancholic child may be nurtured into a thoughtful and empathetic individual, while a choleric child can be guided into becoming a confident and just leader<sup>31</sup>. This integration of science and religion ensures that character education is both realistic in acknowledging human diversity and hopeful in its vision of transformation.

In conclusion, the findings and discussion illustrate that the integration of neuroscience and religion offers a holistic and practical model for character education. Neuroscience contributes knowledge of brain development, emotional transmission, and temperament, while religion provides moral direction, spiritual meaning, and the call to purify the soul. Together, they affirm that character education is not only a pedagogical activity but a lifelong and holistic process that begins before birth, involves both parents, and integrates scientific understanding with divine guidance<sup>32</sup>.

## CONCLUSION

The analysis of Aisah Dahlan's thoughts demonstrates that ideal character education cannot be separated from the collaboration between neuroscience and religious values. Neuroscience provides an in-depth explanation of how brain development, parental emotional influence, and biological factors such as temperament contribute to the formation of character. Meanwhile, religion functions as a normative and spiritual guide that offers moral orientation, ensuring that character education does not merely remain within the cognitive domain but also shapes integrity and holistic personality.

The findings further emphasise that character education begins at the prenatal stage, when the fetus starts to absorb stimulation from the parents' emotional and spiritual environment. In this context, the heart (qalb) is understood not only as a biological organ but also as the centre of moral consciousness that plays a central role in shaping human behaviour. The golden period of brain development provides a strategic opportunity to instil Qur'anic values and ethical principles, which can become deeply internalised and persist into adulthood, ensuring long-lasting positive effects on a child's life.

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<sup>30</sup> SHI Dr Muhammad Syaikhon et al., "Empowerment Of Educators And Parents In Increasing The Value Of Religious Moderation In Early Childhood," *Community Development Journal* 7, no. 3 (2023), <https://doi.org/10.33086/cdj.v7i3.5362>.

<sup>31</sup> Alexandra Diamond and Victoria Whittington, "Studying Early Brain Development: Educators' Reports about Their Learning and Its Applications to Early Childhood Policies and Practices," *Australasian Journal of Early Childhood* 40, no. 3 (2015), <https://doi.org/10.1177/183693911504000303>.

<sup>32</sup> Dr. Suyadi, *Pendidikan Islam dan Neurosains: Menelusuri Jejak Akal dan Otak dalam Al-Qur'an Hingga Pengembangan Neurosains dalam Pendidikan Islam* (Prenada Media, 2020).

Moreover, the success of character education greatly depends on the involvement of both parents. The father serves as the bearer of religious vision, while the mother implements this vision in everyday practices. Additionally, understanding a child's temperament typology provides the basis for more contextual educational strategies, enabling innate tendencies to be directed into constructive strengths. Thus, character education should be perceived as a holistic and continuous process, beginning from the prenatal stage, involving parental roles, and integrating scientific insights with divine guidance.

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