
International Journal of Creative Multimedia

Big Five Personality Traits in AI-Generated Avatars: Digital Self Representation Among Malaysian Gen-Z

Su-Ann Lew
lewsuann@raffles-university.edu.my
Raffles University, Malaysia
ORCID iD: 0009-0008-3419-4268
(Corresponding Author)

Wei Kian Tan
alextanwk@raffles-university.edu.my
Raffles University, Malaysia
ORCID iD: 0000-0003-1850-7523

Abstract

Generative artificial intelligence has transformed how individuals construct digital self-representations, especially with personalised AI-generated avatars. However, little is known on how these avatars align with users' personality traits in non-Western contexts, in particular among Malaysian Gen-Z undergraduates as they are highly immersed in social media and virtual environments. This study examines the relationship between Big Five personality traits and the selection, perceived accuracy and attitudes toward AI-generated avatars for this demographic. A mixed-methods design was employed: 97 undergraduates completed a validated Big Five personality assessment and, using a custom-built online platform ("Gensona"), selected from a set of AI-generated avatars tailored to their dominant traits, followed by a post-selection survey. Semi-structured interviews with a small group of participants provided deeper insight into the meanings they attached to their avatar choices and evaluations. Quantitative findings indicate that Agreeableness and Extraversion are most strongly associated with personality-driven avatar selection and more positive attitudes toward AI-generated avatars, while overall acceptance and perceived accuracy are moderate across the sample. The qualitative findings also show that students use avatars to represent who they perceived they are, and also to explore ideal or context-specific versions of themselves. This reveals tension between authentic, personal aesthetic choices and expectations set by different digital platforms. Furthermore, the study highlights the potential and limitations of AI-generated avatars in representing genuine digital self. It also points out the importance of design and ethical considerations for future AI-driven visual identity systems aimed at Malaysian Gen-Z users.

Keywords Personality traits; AI-generated avatars; Digital self-representation; Digital identity; Malaysian Gen-Z

Received: 11 June 2026, **Accepted:** 18 August 2026, **Published:** 30 September 2026

Introduction

The recent advancement of generative artificial intelligence (AI) has transformed how digital avatars are created and understood. Unlike traditional methods of relying on static images like photographs, or preset templates, AI-driven systems can now have more dynamic and flexible way of creating avatars. This makes digital self-representation more personalised and accessible across digital environments.

Digital avatars are not new. They have long become important tools for self-representation in digital spaces, such as social media and gaming (Mazlan & Bakar, 2013; Nowak & Fox, 2018). They are more than just visual stand-ins. Users are able to shape how they are perceived and explore different aspects of their online identity through customising avatars' visual features (Mazlan & Bakar, 2013; Zimmermann et al., 2023). This function is significant for Malaysian Gen-Z undergraduates. Being digital natives, Gen-Z spends substantial amount of time online, therefore avatars are not just visual representations but also part of communication and self-presentation (Mazlan & Bakar, 2013; Butt et al., 2021).

Building on this, generative AI provided a more flexible approach to creating avatars. Traditional methods are limited by templates or manual design processes, while AI-generated avatars can be created through prompts and symbolic inputs that align with users' preferences and psychological traits (Salminen et al., 2024; Taylor et al., 2024, Zimmermann et al., 2023). This opens up new possibilities for exploring how digital identity can be visually expressed through AI-generated content.

To understand the dynamics better, the Big Five Personality Traits framework provides a useful theoretical lens. It is a widely accepted and cross-culturally validated model that explains how individual differences influence preferences, behaviour, and self-presentation (McCrae & Costa, 2004; Soto & John, 2017). Prior research suggests that personality traits can shape choices related to avatar such as preferences for creative, sociable, structured, or emotionally expressive designs (Lin & Wang, 2014; Fong & Mar, 2015; Zimmermann et al., 2023). However, such existing research focused on traditional avatar customisation or Western population, while limited attention has been given to AI-generated avatars in non-Western contexts such as Malaysia (Mazlan & Bakar, 2013).

As Malaysian Gen-Z undergraduates navigate between global digital and local values, this may influence how they interpret and select AI-generated avatars (Azmi et al., 2023). Therefore, this gap is important because digital self-representation is shaped by cultural context. However, there are still questions whether these AI-generated avatars can accurately reflect users' personality traits and be perceived as meaningful representation of themselves (Salminen et al., 2024). If such avatars fail to

reflect with how users see themselves, then their effectiveness as tools for authentic digital identity may be limited (Nowak & Fox, 2018; Salminen et al., 2024).

Therefore, this study aims to address this gap by examining how Big Five Personality Traits influence the selection of AI-generated avatars among Malaysian Gen-Z undergraduates. It also assesses the extent to which these avatars reflect users' personality traits and investigate their attitudes toward using these avatars for digital self-representation in digital environments. In line with these objectives, the study addresses three key questions which are: how personality traits shape avatar selection, how effective AI-generated avatars represent users' traits, and how users perceive their role in digital self-representation.

Literature Review

This section reviews relevant concepts and studies on digital avatars and self-representation, traditional and AI-generated avatar creation, the Big Five Personality Traits framework, Gen-Z attitudes toward avatars and AI-generated content and the research gaps addressed by this study.

Digital Avatars and Self-Representation

Digital avatars are widely used as forms of self-representation in online environments such as social media, gaming platforms, and virtual spaces (Nowak & Fox, 2018; Mazlan & Bakar, 2013). The term “avatar” has evolved from its religious origin in the Sanskrit word *avatara* to refer to a digital representation of a user in mediated environments (Ratan & Pandita, 2023). Avatars allow users to communicate aspects of identity, personality, and social presence in ways that extend beyond verbal interaction through visual elements (Nowak & Fox, 2018; Zimmermann et al., 2023).

Avatars reflect how users look and how users want to be seen. In this sense, avatars can represent the actual self, an idealised self, or an experimental self that is shaped by platform context and audience expectations (Mazlan & Bakar, 2013; Procter, 2020). This aligns with self-presentation theory that explains how individuals actively manage impressions in social interaction including in digital contexts (Goffman, 1959). For Gen-Z users, digital self-representation is closely tied to online participation, creativity, and impression management across multiple platforms (Qiu et al., 2024).

Traditional vs. AI-Generated Avatar Creation

Traditional avatar creation usually relies on preset customization systems, uploaded personal images, or manually designed characters (Mazlan & Bakar, 2013). These methods allow users to make choices about appearance and style, but they are often constrained by limited options and may not capture more complex aspects of identity and personality (Procter, 2020). In gaming and virtual-world environments,

traditional avatar systems have long been used for identity exploration, but they still require users to work within pre-designed templates and interface limitations.

AI-generated avatar creation offers a different approach because it uses generative systems to produce visual outputs based on textual prompts, symbolic cues, and other forms of input (Salminen et al., 2024; Taylor et al., 2024). Compared to traditional systems, AI-generated avatars provide greater flexibility and may support more personalized visual outcomes with less technical effort from users (Fink et al., 2024; Zimmermann et al., 2023). This makes avatar creation more accessible and opens up new possibilities for creating representations that align with users' preferences and psychological traits (Salminen et al., 2024).

However, AI-generated avatars also raise important concerns. While they may appear more tailored and visually sophisticated, they are still dependent on training data, prompt interpretation, and system assumptions, which can introduce mismatch, bias, or superficial representations of identity (Weidinger et al., 2021; Salminen et al., 2024). In this study, static AI-generated avatars are especially relevant because they allow the researcher to focus on visual design and personality alignment without the additional complexity of animation or interaction (Fysh et al., 2021; Salminen et al., 2024).

Big Five Personality Traits Framework

The Big Five Personality Traits framework, as shown in Figure 1, provides the theoretical foundation for this study because it is one of the most widely used and empirically supported models for understanding personality (McCrae & Costa, 2004; Soto & John, 2017). The framework consists of five broad dimensions: Openness, Conscientiousness, Extraversion, Agreeableness, and Neuroticism, each of which captures patterns in behaviour, attitudes, and preferences (John et al., 2008; Soto & John, 2017). The framework has also been validated across different cultural contexts, making it suitable for examining personality among Malaysian undergraduates (McCrae & Costa, 2004; Soto & John, 2017).

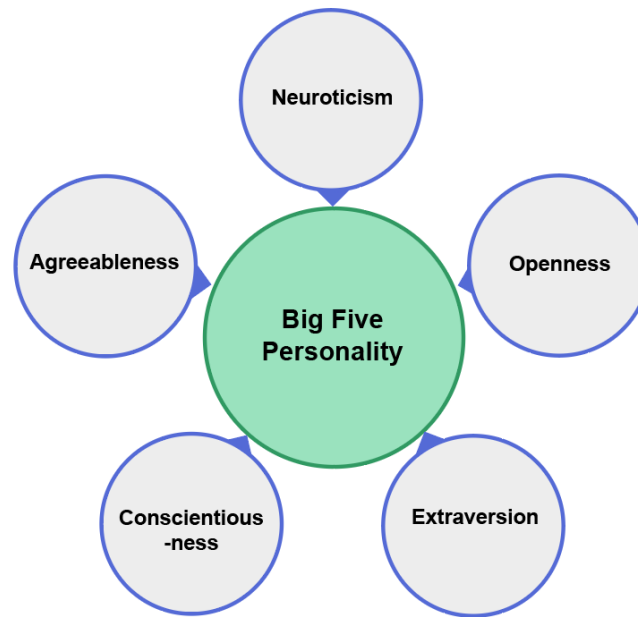


Figure 1. Big Five Personality Traits Diagram

Previous studies suggest that personality traits can influence avatar preference and design choices. For example, individuals high in Openness may prefer more imaginative or unconventional avatars, while those high in Extraversion may prefer more vibrant, sociable, or expressive avatars (Fong & Mar, 2015). Other traits may also shape preferences for warmth, emotional subtlety, structure, or visual restraint, although these relationships are not always direct or equally easy to represent through visual means (Mazlan & Bakar, 2013; Zimmermann et al., 2023).

By using NEO sub-facets as prompts for avatar generation, the narrowed down facets such as Fantasy, Gregariousness, Altruism, or Anxiety can provide more specific cues for visual design than broad trait labels alone (Costa & McCrae, 1992; Soto & John, 2017). For the context of generative AI, these facets could help translate personality characteristics into prompt language that produces different avatar outcomes.

Gen-Z Attitudes Toward Avatars and AI-Generated Content

Gen-Z users are an especially relevant population for studying avatars because they are highly active in digital environments and are familiar with visual self-presentation across platforms (Mazlan & Bakar, 2013; Butt et al., 2021). In social media settings, avatars and profile images often function as carefully selected markers of identity while in gaming and virtual environments they may also serve playful, experimental, or role-based purposes (Qiu et al., 2024). This means that avatar choice is not only aesthetic but also social and psychological.

Research on Gen-Z attitudes toward AI-generated content suggests a mixed response. On one hand, Gen-Z users often appreciate the creativity, speed, and personalization made possible by generative AI (Dewalska-Opitek et al., 2024; Bosch, 2024). On the other hand, concerns remain about authenticity, trust, ethical use, and whether AI-generated content genuinely reflects human intention or identity (Bosch, 2024; Dewalska-Opitek et al., 2024). In the Malaysian context, these responses may also be influenced by cultural values and forms of self-presentation associated with collectivist social norms, which shape how users negotiate identity and social acceptance online (Azmi et al., 2023).

Gaps in Existing Research

Although research on avatars, personality, and digital identity has grown, several important gaps remain. First, many studies on avatar creation and self-representation focus on Western users, while limited attention has been given to Malaysian users and other non-Western populations (Salminen et al., 2024). This matters because digital self-representation is shaped by culture, and findings from Western contexts may not fully explain how Malaysian Gen-Z undergraduates interpret and use avatars (Azmi et al., 2023).

Second, there is still limited research on static AI-generated avatars as tools for self-representation. Much of the existing work focuses on gaming avatars, virtual worlds, or broader AI-generated personas, rather than static avatars used in everyday digital environments such as social media or online profiles (Zimmermann et al., 2023; Salminen et al., 2024). Yet static avatars are highly relevant because they are among the most common forms of visual self-representation online (Mazlan & Bakar, 2013).

Third, there is a lack of integration between personality theory and AI-generated avatar design. While previous research has examined how personality influences avatar preferences, fewer studies have explored how generative AI can create avatars based on personality-informed prompts, especially using NEO sub-facets to guide design (Soto & John, 2017; Salminen et al., 2024; Zimmermann et al., 2023). Therefore, this study addresses an important gap by examining how Big Five Personality Traits influence Malaysian Gen-Z undergraduates' selection of AI-generated avatars, how accurately those avatars reflect personality traits, and how users perceive them as tools for digital self-representation.

Methodology

This study employed a mixed-methods approach to investigate how Big Five Personality Traits influence the selection of AI-generated avatars among Malaysian Gen-Z undergraduates, how accurately those avatars reflect personality traits, and how participants perceived them as tools for digital self-representation. The quantitative component was used for identifying patterns in personality,

avatar selection, perceived accuracy and attitudes while the qualitative component provided deeper insight into participants' reasoning, especially when avatar choice did not align with dominant personality traits.

Research Design

The study adopted a mixed-methods research design combining descriptive quantitative analysis with qualitative follow-up interviews. The quantitative phase consisted of a personality assessment, an AI-generated avatar selection task, and a post-selection survey which were analysed using descriptive statistics to explore patterns between personality traits and avatar choices. The qualitative phase explored how selected participants explained their choices and interpretations of self-representation in greater detail. This design was appropriate because the research sought both measurable patterns and interpretive insight into how personality and digital identity intersect in avatar selection (Alkharusi, 2022; Creswell & Creswell, 2018).

Research Instruments

Three principal instruments were used in the study: the 50-item International Personality Item Pool (IPIP) Big Five Personality Test, a set of static AI-generated avatars created via Bing Image Creator, and a 14-item post-selection survey. The IPIP instrument measured participants' Big Five traits using a five-point Likert scale and was selected because it is a validated and widely used personality measure in psychological research (Goldberg et al., 1999; Soto & John, 2017). The avatar selection task required participants to choose one avatar from a prepared set of ten static AI-generated avatars that were designed using standardised prompts. The post-selection survey assessed perceived links between personality and avatar choice, perceived personality accuracy, and participants' attitudes toward using AI-generated avatars for self-representation.

To strengthen the validity of the content, post-selection survey items were reviewed by two experts in Psychology and Human-Computer Interaction. Their feedback was used to refine item wording, response options, and questionnaire structure prior to data collection.

Avatar Design Process

The avatars used in this study were created through a structured four-step process, as shown in Figure 2, to translate personality theory into AI-generated visual outputs. Bing Image Creator was used as the generative image model as it is built on the DALL-E model used in AI systems and was readily accessible at the time of the study. Other platforms such as Midjourney and Stable Diffusion, either required additional accounts or were technically complex to configure. These practical constraints made Bing Image Creator the more feasible option for producing the avatar set at the time of the study.

First, NEO sub-facets associated with each Big Five trait were identified as keywords to guide prompt construction, as these provide more specific personality cues than the broader trait categories alone (Costa & McCrae, 1992; Soto & John, 2017).

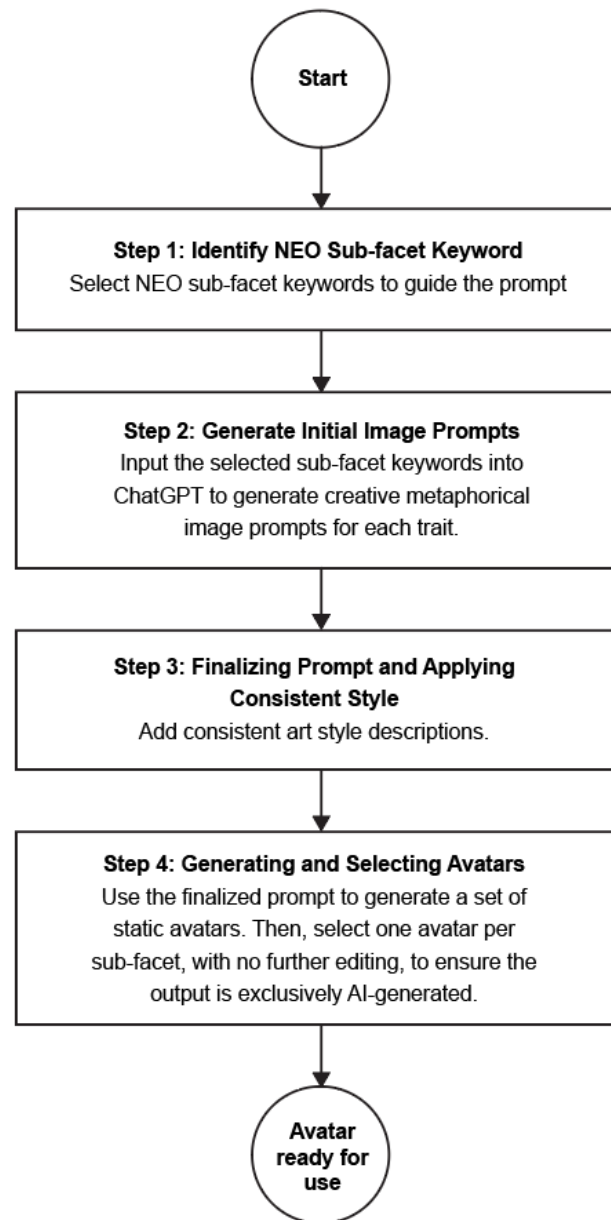


Figure 2. Avatar Design Process Flowchart

Second, the selected sub-facets were entered into ChatGPT to generate initial image prompts (Figure 3), with explicit instructions to avoid human subjects and instead produce non-human, symbolic, or metaphorical forms. This decision was intended to reduce participant bias associated with gender, ethnicity, and physical attractiveness.

Here's a table with brief image prompts for the **Openness to Experience** NEO sub-facets:

Sub-Facet	Image Prompt 1	Image Prompt 2
Fantasy (Imagination)	"A medium shot of a humanoid figure with glowing eyes and swirling patterns on their skin, surrounded by floating dream-like objects."	"A whimsical non-human character with vibrant, abstract features, holding a glowing orb in an ethereal landscape."
Aesthetics (Artistic Interests)	"A medium shot of a human-like figure adorned with intricate, colorful patterns and holding a paintbrush, surrounded by canvases."	"An elegant humanoid character wearing flowing, textured clothing inspired by nature and art, standing in a gallery-like space."

Figure 3. Screenshot of Initial Image Prompt Generated via ChatGPT

Third, the prompts were refined into a standardised format by adding a consistent style description, shortening prompt length where needed, and removing unnecessary background details so that the resulting avatars would resemble isolated static profile-like images.

Fourth, the final prompts were entered into Bing Image Creator to generate sets of images from which one AI-generated avatar was selected for each sub-facet, for use in the study. No post-generation editing was applied, ensuring that the final avatars remained fully AI-generated. This process was repeated across all selected NEO sub-facets to develop the avatar pool used in the study.

To ensure consistency across the generated avatars, all prompts followed a standardised format of “Style description + Sub-facet keyword + refined image prompt” and were applied using the same generation settings in Bing Image Creator (Figure 4). The resulting images were reviewed to ensure comparable visual style, level of detail, and framing. Avatars that deviated from the intended sub-facet or showed noticeable differences in style were excluded and regenerated, so that the final set presented participants with visually coherent options.

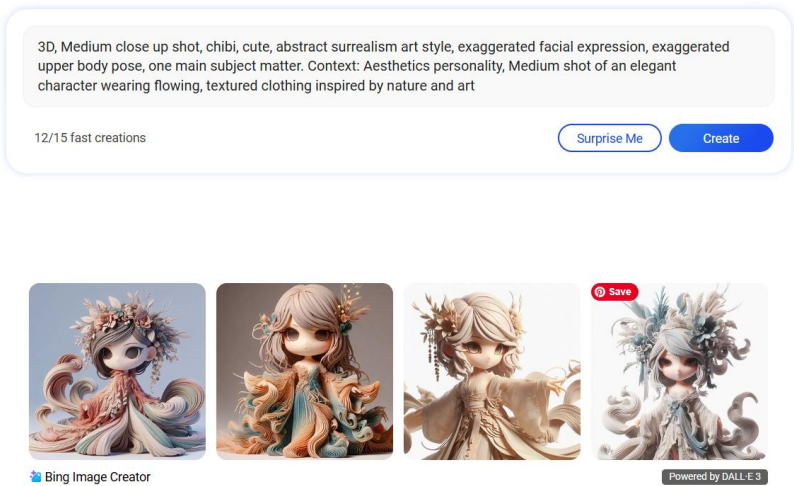


Figure 4. Screenshot of Generating Image using Bing Image Creator

AI-Generated Avatar Mapping Process

The AI-generated avatar mapping process was developed to translate personality theory into a structured visual design procedure. In this process, each dominant Big Five personality trait was associated with selected NEO sub-facets, which were then converted into text-based prompt concepts for image generation. These prompts were refined iteratively and entered into Bing Image Creator to generate the final avatar outputs. As a result, each avatar represented a systematic mapping between a dominant trait, its corresponding sub-facet, a refined prompt description, and a selected AI-generated visual outcome.

Table 1 presents an example of this mapping process to show how personality-informed keywords were translated into prompt concepts and final static avatars. The table is intended to show the consistency of the design logic across the avatar set and to show how psychological constructs were made into visual representations for use.

Table 1. A sample of AI-Generated Avatar mapping

Dominant Personality Trait	NEO facet (Keyword)	Sub-	Initial Image Prompts	Finalised Image Prompt (With added style for consistency)	AI-Generated Avatar
Conscientiousness	Competence		Prompt 1: A bright, wide-eyed character holding a sculpting tool, with colourful pencils and gears bursting from its head in a radiant display of creativity. Prompt 2: An orange cartoon figure with oversized eyes, surrounded by a vibrant explosion of art supplies and ideas, symbolizing imagination and innovation.	Style: 3D, Medium close up shot, chibi, abstract surrealism art style, exaggerated facial expression. Context: In your own interpretation of competency, A stylized orange character holding many tools like pen, scissors, brushes; solving a problem. Its large, focused eyes reflect determination, while floating lightbulbs and gears orbit its head. The surreal backdrop pulses with neon gradients, emphasizing versatility and problem-solving prowess in a single frame.	

Data Collection System: Gensona

A custom-built online platform, Gensona, was developed to support the full data collection process of the study. The platform guided participants through a fixed sequence consisting of the participation information and consent form, study instructions, the Big Five Personality Test, a dominant trait result page, an AI-generated avatar selection task (Figure 5), and a post-selection survey. The survey comprised 14 Likert-scale items designed to assess the extent to which personality influenced avatar choice, how accurately the selected avatar reflected the participant's personality, and participants' attitudes toward using AI-generated avatars for self-representation. Using a single integrated system improved data collection consistency and ensured that all participants completed the same stages under comparable conditions.

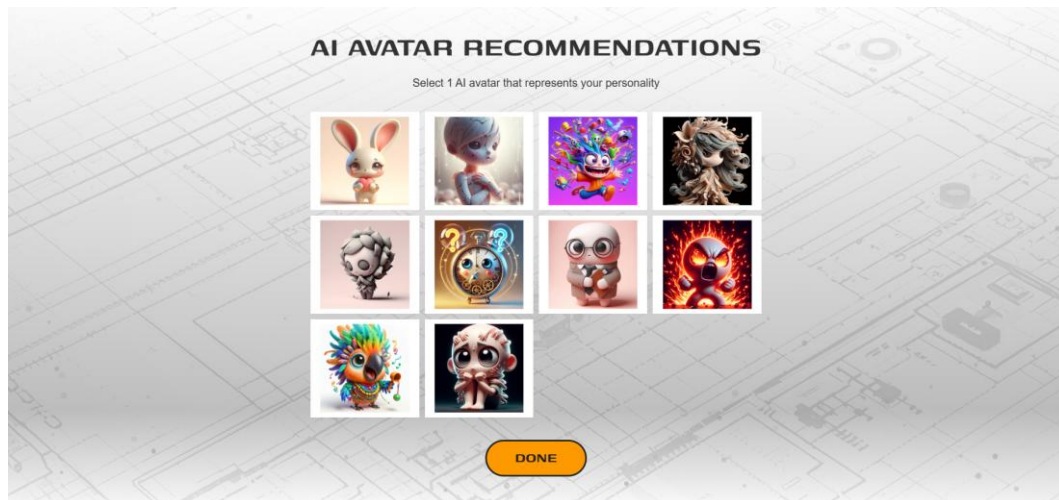


Figure 5. Gensona System – AI-generated Avatar Selection Page

A small pilot test was conducted with ten participants to ensure that the Gensona system functioned properly and that the avatar selection procedure was clear. Feedback from the pilot testing was used to confirm system stability and refine minor interface elements before the platform was distributed for the full study.

Sampling Strategy

The target population consisted of Malaysian undergraduates aged 18 to 23 years, corresponding to the Gen-Z cohort and a life stage strongly associated with active digital identity exploration. This group was selected because it is highly engaged with social media, gaming, and digital communication, making it appropriate for studying AI-generated avatars and self-representation (Aseeri et al., 2021; Tjiptono et al., 2020).

A convenience sampling approach was employed, and the study link was distributed through online university-related channels, including WhatsApp and Microsoft Teams, to recruit accessible and willing participants (Etikan et al., 2016). Although the target sample was 100 participants, 102 responses were collected, and 97 cases were retained for final analysis after excluding participants with tied dominant trait scores.

Ethical Considerations

Ethical principles of informed consent, voluntary participation, and confidentiality were maintained throughout the study. Participants were informed of the study purpose, procedures, and their right to withdraw without penalty before providing electronic consent through the Gensona system. No incentives were offered which helped reduce coercion. This aligned the study with accepted ethical practice in online research (Etikan et al., 2016). Participants' privacy was also protected during the

interview phase through the use of participant codes rather than identifying personal details. The system enabled response tracking for follow-up interview, but these details were used only for research purposes and were handled confidentially.

Data Analysis Technique

Quantitative and qualitative data were analysed using complementary approaches. For the survey data, descriptive statistics were used, with mean scores calculated for overall responses and for each dominant personality trait group in order to explore patterns in avatar selection, perceived avatar accuracy, and attitudes toward AI-generated avatars (Alkharusi, 2022). Composite mean scores were then interpreted using the descriptive levels: low (1.00–2.33), moderate (2.34–3.66), and high (3.67–5.00). No inferential statistical tests were conducted and the quantitative findings are therefore treated as patterns rather than statistically confirmed relationships.

The qualitative interview data were analysed using thematic analysis, which enabled the identification of recurring themes in participants' explanations of avatar choice and self-representation (Braun & Clarke, 2021). This approach was particularly useful for examining cases in which selected avatars did not directly match participants' dominant Big Five traits, thereby enriching the interpretation of the quantitative findings.

Results and Discussion

A total of 102 participants completed the study, but 5 cases with tied dominant personality scores were excluded to avoid ambiguity which left 97 valid responses for analysis. The sample was dominated by participants with Openness ($n = 33$), followed by Neuroticism ($n = 23$), Conscientiousness ($n = 18$), Agreeableness ($n = 17$), and Extraversion ($n = 6$). Overall, the findings indicated that personality traits influenced AI-generated avatar selection to a moderate extent, while perceived accuracy and attitudes toward use were also generally moderate.

Personality and AI-Generated Avatar Selection

The findings as shown in Table 2 below show that personality traits played a meaningful role in avatar selection, although the strength of this influence varied across groups. Extraversion recorded the highest composite mean for avatar selection influence ($M = 3.833$), followed by Agreeableness ($M = 3.765$), while Conscientiousness ($M = 3.431$), Neuroticism ($M = 3.424$), and Openness ($M = 3.402$) remained within the moderate range. Participants high in Extraversion and Agreeableness were more likely to report that their personality traits shaped their choices, suggesting that socially oriented traits are more readily translated into avatar preferences.

Results further show that Extraversion had the highest mean for the statement that personality influenced avatar choice (SQ1, $M = 4.167$), while Agreeableness scored highest for choosing an avatar that matched social personality (SQ2, $M = 3.706$). At the same time, Extraversion ($M = 4.167$) and Agreeableness ($M = 3.941$) also scored highest on appearance-driven selection (SQ3), indicating that personality and visual appeal worked together rather than separately in the selection process. Impression management was moderate across all traits, with Agreeableness showing the highest mean for choosing an avatar based on how participants wanted others to perceive them online (SQ4, $M = 3.353$).

Table 2. Mean Scores for AI-Generated Avatar selection by dominant personality trait

Dominant Personality Trait	SQ1	SQ2	SQ3	SQ4	Composite Mean
Conscientiousness	3.667	3.333	3.667	3.056	3.431
Agreeableness	4.059	3.706	3.941	3.353	3.765
Neuroticism	3.609	3.609	3.435	3.043	3.424
Openness	3.697	3.545	3.303	3.061	3.402
Extraversion	4.167	3.667	4.167	3.333	3.833
Overall	3.840	3.572	3.702	3.169	3.571

SQ1: My personality traits influenced my selection of the AI-generated avatar.

SQ2: I chose this avatar because it matches my social personality.

SQ3: I selected this avatar because of how it looked, instead of how well it matched my personality.

SQ4: I selected this avatar because it represents how I want others to perceive me online.

The interview findings support this pattern by showing that avatar selection was not always based on strict personality matching. One Agreeableness participant selected a Conscientiousness-Competence avatar because it reflected qualities she aspired to project, while another participant with Extraversion selected a Conscientiousness avatar mainly because it felt visually comfortable and less conspicuous. The responses suggest that avatar choice reflects not only actual personality, but also ideal self-presentation, mood and aesthetic preference which is consistent with digital self-representation being both expressive and aspirational.

Accuracy of AI-Generated Avatars in Reflecting Personality Traits

The findings for RQ2 as shown in Table 3, indicated that the perceived accuracy of AI-generated avatars in reflecting personality traits was moderate overall (composite mean = 3.519). Agreeableness reported the highest perceived accuracy ($M = 3.765$), followed by Openness ($M = 3.588$), Extraversion ($M = 3.500$), Neuroticism ($M = 3.409$), and Conscientiousness ($M = 3.333$). This suggests that AI-generated avatars were seen as somewhat effective in representing personality, but not with strong consistency across all traits.

Among the accuracy items, the highest overall mean was for creativity and imagination (SQ5, $M = 3.718$), with Openness recording the highest score on this item ($M = 4.121$). Emotional expression was also rated relatively highly, especially by Agreeableness (SQ6, $M = 4.000$) and Neuroticism (SQ6,

M = 3.957). In contrast, the representation of organised nature remained only moderate across all groups (overall SQ7, M = 3.334), and participants were also less convinced that the AI system truly understood their personality (overall SQ9, M = 3.294).

Table 3. Mean scores for perceived accuracy of AI-Generated Avatars by dominant personality trait

Dominant Personality Trait	SQ5	SQ6	SQ7	SQ8	SQ9	Composite Mean
Conscientiousness	3.389	3.444	3.500	3.167	3.167	3.333
Agreeableness	3.941	4.000	3.471	3.824	3.588	3.765
Neuroticism	3.304	3.957	3.000	3.565	3.217	3.409
Openness	4.121	3.636	3.364	3.485	3.333	3.588
Extraversion	3.833	3.667	3.333	3.500	3.167	3.500
Overall	3.718	3.741	3.334	3.508	3.294	3.519

SQ5: The avatar reflects my creativity and imagination.

SQ6: The avatar captures my feelings and emotions.

SQ7: The avatar represents my organised nature well.

SQ8: Overall, the avatar reflects my dominant personality trait effectively.

SQ9: I feel that the AI system understood my personality well when generating this avatar.

The interviews help explain these moderate scores. One Openness participant reported that the selected avatar did not fit either her personality or self-image, while a Neuroticism participant felt the avatar captured only a temporary mood rather than her broader personality. Another participant described the avatar as reflecting some aspects of herself but not all, pointing to a recurring limitation which is the avatars often captured a single dominant impression, but not the full complexity of their identity.

Attitudes Toward AI-Generated Avatars in Digital Self-Representation

The findings as shown in Table 4 show that attitudes toward AI-generated avatars for digital self-representation were generally positive but still moderate overall (composite mean = 3.486). Agreeableness recorded the most positive attitude (M = 3.894), followed by Conscientiousness (M = 3.478), Extraversion (M = 3.467), Openness (M = 3.442), and Neuroticism (M = 3.148). This indicates that while participants were open to the idea of AI-generated avatars, their enthusiasm was cautious rather than strong.

Table 4. Mean scores for attitudes toward AI-Generated Avatars by dominant personality trait

Trait	SQ10	SQ11	SQ12	SQ13	SQ14	Composite Mean
Conscientiousness	3.389	2.833	3.778	3.778	3.611	3.478
Agreeableness	3.824	3.471	4.118	4.059	4.000	3.894
Neuroticism	3.043	2.435	3.217	3.609	3.435	3.148
Openness	3.515	2.848	3.636	3.788	3.424	3.442
Extraversion	3.333	2.667	3.833	3.667	3.833	3.467
Overall	3.421	2.851	3.717	3.780	3.661	3.486

SQ10: I am satisfied with how accurately the AI-generated avatar reflects my personality traits.

SQ11: I would use this avatar on social media or gaming platforms to represent myself.

SQ12: I find the selection of AI-generated avatars enjoyable.

SQ13: I find the process of selecting AI-generated avatar intuitive and easy to use.

SQ14: AI-generated avatars are a useful tool for expressing my identity in digital environments.

The most positively rated aspect was enjoyment of the selection process (SQ12, overall $M = 3.717$), followed by ease of use (SQ13, overall $M = 3.780$). Agreeableness scored highest on both enjoyment ($M = 4.118$) and ease of use ($M = 4.059$), while willingness to actually use the avatar on social media or gaming platforms received the lowest overall score (SQ11, $M = 2.851$). This pattern suggests that participants generally liked the process of interacting with AI-generated avatars, but were less certain about adopting them as public representations of self.

The interview findings reinforce this distinction between appreciation and adoption. Some participants saw avatar selection as a useful way to experiment with identity and express aspirational traits, but others rejected public use because the avatars felt too expressive, too childish or not aligned with their preferred online image. These responses indicate that acceptance of AI-generated avatars depends not only on usability but also on whether the output feels authentic, socially appropriate and personally representative.

Discussion

Taken together, the results show that Agreeableness and Extraversion were the most influential traits in AI-generated avatar selection and were also associated with more favourable perceptions of AI-generated avatars. This may be because these traits are more outwardly expressed through warmth, sociability, and emotional tone, making them easier to translate into symbolic visual forms. By contrast, traits such as Conscientiousness and aspects of Neuroticism appear harder to visualise clearly, which may explain the lower ratings for accuracy and confidence in AI interpretation.

The findings also suggest that digital self-representation is not limited to mirroring the actual self. Participants often selected avatars based on how they wished to be seen, how the avatar felt emotionally, or whether its style matched their preferences. This is important as it shows that AI-generated avatars function not only as representations of personality, but also as tools for identity exploration, impression management, and aesthetic negotiation in virtual environments.

For design implications, the study suggests that future avatar-generation systems should move beyond single-trait matching and allow for more nuanced, flexible and customisable outputs. Systems that incorporate multiple traits, preferred visual style, mood and intended platform context may better support authentic digital self-representation among Gen-Z users.

Conclusion

This study examined how Big Five personality traits relate to the selection, perceived accuracy, and acceptance of AI-generated avatars among Malaysian Gen-Z undergraduates. Based on 97 valid responses, the descriptive findings show that personality traits are moderately reflected in avatar selection with Extraversion and Agreeableness showing the clearest pattern of personality-driven choice and more positive responses toward AI-generated avatars. The findings also indicated that the perceived accuracy of the selected avatars is moderate. This suggests that AI-generated avatars were able to reflect some personality but not the full complexity of users' identities.

Participants' attitudes toward AI-generated avatars for digital self-representation were generally positive, especially in relation to enjoyment and ease of use, but willingness to adopt these avatars on social media or gaming platforms remained more cautious. The interview findings further showed that participants often balanced actual personality, ideal self-presentation, and visual preference when choosing avatars, which suggests that digital self-representation is both expressive and aspirational. Overall, the study concluded that AI-generated avatars have potential as tools for digital self-representation among Malaysian Gen-Z undergraduates, but current systems still require refinement to better support authenticity, nuance, and personality complexity.

Implications of the Study

This study contributes to research on digital self-representation by suggesting that personality traits remain an important factor in how users select and interpret AI-generated avatars. The clearer patterns observed among Agreeableness and Extraversion groups suggest that socially expressive traits may be easier for AI systems to translate into visual forms, while more internalised traits may require more sophisticated design strategies. In this way, the study extends the application of the Big Five framework into AI-assisted avatar generation within a Malaysian and non-Western context.

The findings also have practical implications for educators, designers and developers of avatar-generation systems. For educators, personality-informed AI-generated avatars could be incorporated into learning activities that prompt students to reflect on their digital identities. For designers and AI developers, the results suggest that users respond more positively when avatars appear meaningful, usable and emotionally aligned. Therefore, future systems should move beyond simple one-trait matching and allow users to shape outputs through multiple personality traits, preferred styles and intended platform context. This is especially relevant for social media, gaming, and educational platforms that seek to offer more personalised and culturally responsive digital identity tools for Gen-Z users.

Limitations

This study has several limitations. Using convenience sampling among Malaysian Gen-Z undergraduates and a relatively small sample size restricts the generalisability of the findings beyond similar contexts. In addition, the quantitative results are based on descriptive statistics without inferential testing, so the observed patterns should be interpreted as exploratory rather than statistically confirmed relationships. Next, the use of a single generative platform, Bing Image Creator, also means that avatar preferences may differ when other AI image models are used.

A further limitation is that the study relied on a pre-set pool of AI-generated images rather than a dynamic system that could generate avatars directly from individual personality results. Therefore, this reliance constrained the level of personalisation and limited the alignment between trait profiles and avatar outputs.

Recommendations and Future Research

Several recommendations emerge from this study. First, future research should include larger and more diverse samples beyond Malaysian Gen-Z undergraduates in order to test whether the same patterns hold across different age groups, cultures, and levels of digital familiarity. Second, future studies should examine animated or interactive AI-generated avatars in addition to static ones, as movement, expression, and interactivity may offer richer cues for personality representation and self-presentation.

Third, future research should incorporate additional variables such as gender, prior experience with AI tools, visual style preference and frequency of AI-generated avatar use, as these factors may also shape AI-generated avatar selection and acceptance. Finally, future AI-generated avatar systems should provide greater user control such as customisable stylistic preferences, multi-trait inputs, and iterative feedback mechanisms so that the resulting AI-generated avatars can better reflect both authentic self-representation and aspirational identity expression.

Summary

In conclusion, this study shows that AI-generated avatars have meaningful potential for digital self-representation among Malaysian Gen-Z undergraduates, particularly when personality traits are considered in the design process. However, the findings also show that effective avatar-based self-representation depends not only on personality alignment but also on authenticity, visual preference and users' aspirational self-image. Therefore, future AI-generated avatar systems should move toward more nuanced, flexible and culturally responsive approaches to better support the complexity of digital identity.

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Acknowledgment

I would like to thank Dr. Tan Wei Kian for his guidance and supervision throughout this study, as well as the undergraduate participants whose willing participation made this study possible.

Funding Information

This research did not receive any funding.

AI and LLM Disclosure (Limited Use)

Limited use of generative AI/LLMs supported language clarity and formatting. All AI-assisted content was critically reviewed, edited for originality, and validated by the author, who assume full responsibility for the submission.

Authors’ Bio

Lew Su-Ann is a graphic design educator specializing in graphic and multimedia education. With a background in professional design practice, she is committed to developing students’ creative skills and preparing them for industry careers.

Associate Professor Dr. Tan Wei Kian (Alex) is a Computer Science PhD holder specializing in UI/UX, gamification, HCI, and new media. An experienced educator, researcher, and industry practitioner, he champions innovative, industry-linked teaching and learning.