Annual Methodological Archive Research Review
http://amresearchreview.com/index.php/Journal/about
Volume 4, Issue 4 (2026)

Online ISSN 3007-3197
Print ISSN 3007-3189

http://amresearchreview.com/index.php/Journal/about

Digital Mirrors: Avatar Customization, Identity Expression, and Virtual Fashion Branding Among Children and Teenagers in Pakistan

Nazish Basir
Department of Information Technology, FET, University of Sindh, Jamshoro

Mumtaz Qabulio*
Department of Software Engineering, FET, University of Sindh, Jamshoro

Muhammad Suleman Memon
Department of Information Technology, Dadu Campus University of Sindh

Danish Nazir Aarain
Dr. A. H. S. Bukhari Postgraduate Centre Of ICT, FET, University of Sindh, Jamshoro

Sarwat Nizamani
Department of Computer Science, The University of Mirpurkhas, Mirpurkhas

ABSTRACT

Younger generations increasingly interact with virtual spaces where they can express and experiment with identities through their customizable avatars. With growing usage of virtual spaces, fashion and lifestyle companies have started using avatar based marketing to reach a younger audience and raise the question of how young users perceive virtual fashion and how perceptions of virtual fashion correlate with their emerging real-world fashion interests. Previous studies demonstrate that an individual's perception of themselves (the Proteus Effect) and/or an individual's identity can be inferred from an individual's own actions (self-perception theory), but there is limited knowledge regarding how these processes apply to younger users and how they connect with cultural identity and social influence. To fill this void, we conducted qualitative interviews with 12 dyad groups consisting of parents and their children (children aged 5-18 years) to identify how young users describe relationships between customizing their avatars, expressing themselves, and branding across both virtual and physical environments. Instead of hypothesizing causal links between avatar appearance, identity expression, cultural representation, and social influence, our study focuses on how participants interpreted their experiences. Our findings show that younger children were influenced by their avatars' clothing and accessory items while teenagers expressed similarities between their avatars and real world aesthetics. Both sets of parents also reported cases of children's virtual fashion preferences influencing household discussions regarding fashion and purchasing. Based on these findings, we

Annual Methodological Archive Research Review
http://amresearchreview.com/index.php/Journal/about
Volume 4, Issue 4 (2026)

Online ISSN 3007-3197
Print ISSN 3007-3189

http://amresearchreview.com/index.php/Journal/about

developed a conceptual framework illustrating how avatar appearance, identity expression, cultural representation, and social dynamics interconnect in order to create a perceived interest in real-world fashion among younger users of virtual platforms. This research makes contributions to child-computer interactions, digital fashion, and consumer psychology by demonstrating how virtual identity expressions may influence the fashion exploration and brand awareness of young users. We conclude with a discussion of design considerations for creating inclusive avatar customization systems and marketing campaigns by fashion and lifestyle companies targeting youth in a way that is culturally relevant and appropriate for their developmental stage.

Keywords— avatar customization, identity expression, Proteus effect, branding; digital fashion, virtual environments

1. Introduction

As digital platforms continue to affect the way children and teenagers are exposed to and interpret brands in their daily routines[1] ; virtual worlds that utilize avatars (Roblox, ZEPETO, Minecraft & snapchat) are becoming an integral part of how young people engage in play; interact socially; and explore creativity [2], [3]. The virtual world experience has evolved and created new ways to create immersive and socially relevant environments for young people to explore and present themselves [4]. Avatars provide young people a flexible and malleable representation of themselves through which they can demonstrate preference; try out different looks; and be engaged with various digital cultures [5]. Users of avatars can customize their avatars using hairstyle options; clothing; facial features; and accessories; thus creating an emotional connection to the avatar; which creates continued user engagement within the virtual environment [6]. Brands such as fashion and lifestyle have also taken advantage of the avatars ability to express themselves and have developed virtual products and experiences (Nike's Nikeland in Roblox; Ralph Lauren's Bitmoji collection on snapchat); To attract and engage young people [7]. There is a growing commercial presence in the virtual world; however, there is little research on how young people perceive virtual fashion; how young people relate the appearance of their avatars to their developing sense of identity; and how parents view the interactions of young people in the virtual world [8]. Research on avatar based self-expression suggests that avatar based choices could lead to changes in user attitudes or perceptions of themselves (Proteus effect and self perception theory [9], [10]); However, it appears that results from various platforms are variable, especially outside of Immersive VR. Based on the gap in previous research we will examine how young users interpret avatar customization and how they view avatar customization as related to their preferences off-line. Specifically, we will investigate how identity expression occurs through digital self presentation and how young people see the relationship between their virtual and physical styles. Our research is guided by the following research questions:

RQ1: How do children and teenagers interpret avatar customization as a method of identity expression in virtual environments?

RQ2: How do young users correlate their avatar's appearance to their off-line tastes, hobbies and evolving sense of style?

Annual Methodological Archive Research Review
http://amresearchreview.com/index.php/Journal/about
Volume 4, Issue 4 (2026)

Online ISSN 3007-3197
Print ISSN 3007-3189
http://amresearchreview.com/index.php/Journal/about

By focusing on young users, a relatively unexplored population within research on avatar-based platforms, this work makes contributions to both scholarship on Child-Computer Interaction and Digital Fashion; and explores the relationship between virtual self-expression and developing consumer behaviors.

2. Literature Review

2.1 Avatar Customization and Digital Self-Presentation

Children and adolescents are now using social media and gaming apps more frequently as everyday spaces for communication, social interaction, and self-expression [11]. The use of avatars in these applications enables youth to navigate through spaces while simultaneously providing an opportunity for self-expression and representing themselves and others in digital form. Also youth have extensive opportunities to express themselves through various customization options available in these applications; such options include modifying features like skin tone, hairstyle, facial structure and clothing [12]. Many of these customization systems provide flexibility and/or are open-ended allowing youth to create a digital version of themselves that reflects different aspects of their personality, identity, or creative interests. Prior research has shown that avatar customization provides youth with agency, ownership and meaningful participation in virtual communities. Additionally, prior research indicates that many youth consider avatars as experimental spaces to test out different identity-related expressions [13]. While it is true that technical affordance's do influence how youth present themselves digitally, there is evidence to suggest that social norms and expectations also influence digital self-presentation. Kang et al. [14] demonstrate that perceptions regarding acceptable avatar modification will be influenced by context (for example, when presenting oneself professionally, socially etc.), attribute type (the ability to modify a feature versus the inability to modify it) and personality characteristics. Therefore, youth avatars represent negotiated social identities as opposed to merely being aesthetically pleasing objects. Additionally, parallel research in the areas of digital fashion and virtual influencer development further supports the notion that avatars are becoming increasingly used as aspirational and affective identity anchors for youth [15]. Research has demonstrated that youthful users may experience feelings of belonging, authenticity and expressive freedom in virtual environments when they are provided with playful, stylized, and creatively curated avatars, which are similar to those found in traditional identity practices [16]. In addition, research in this area illustrates the importance of understanding how youth interpret and utilize customization systems, especially in game-based environments where brand and fashion related signals are integrated into gameplay.

2.2 Proteus Effect and Self-Perception Theory

The Proteus Effect has been a well-documented theoretical account of why the physical attributes of an avatar may affect the way users perceive or behave. As stated by Yee et al. [17], when a user chooses an avatar based upon specific characteristics they may internalize those characteristics and develop attitudes or behaviors consistent with those expectations. This internalization process is supported by Self-Perception Theory [9]; where an individual infers aspects of their identity by observing their own choices and

Online ISSN 3007-3197
Print ISSN 3007-3189
http://amresearchreview.com/index.php/Journal/about

actions. Therefore, in the case of avatars, decision-making regarding customizations could provide the user with reflective cues about who they think they are.

Ratan et al. [18] conducted a meta-analyses of 46 experimental studies demonstrating that the Proteus Effect exists, and demonstrated a moderate relationship between avatar characteristics and user perceptions across many different types of contexts. The results from their study and Praetorius and Gorlich [10] that have identified the mechanisms by which avatar characteristics contribute to self-perception (e.g., self-similarity, wishful identification, and embodiment). Additional research [19], [20] that have examined how avatar characteristics affect user's emotional response, confidence, performance, and social behavior, demonstrate that there is significant agreement that avatar characteristics will impact user perceptions under specific circumstances.

Much of the existing research examining the Proteus Effect has focused on adult populations and or reality based environments. Research examining the Proteus Effect in the context of mobile or social gaming platforms, however, demonstrates less consistency. Mobile and social gaming environments represent two of the most popular forms of gaming among youth. Consequently, it is essential to study the Proteus Effect in younger populations because the identity development and aesthetic exploration of youth may create a unique context for (and by) avatar systems [21]. In order to gain a better understanding of how youth interpret avatar-based self-presentations, it is necessary to consider both the theoretical explanations of self-presentation and the developmental context of the population being studied.

2.3 Personality, Motivation, and Digital Engagement

The researchers point out that emerging evidence supports the contention that users' different personalities impact their experience using the internet as a virtual environment. Shamim et al., [22] who conducted a study on personality types and satisfaction with the metaverse, showed that certain personality traits (e.g., extroversion, openness) and the tendency for people to "monitor" themselves had a significant effect on both whether or not people enjoyed using a digital platform and how engaged they were; as well as how willing they were to use identity-related features (i.e., customize avatars).

Children and adolescents will be developing their self-presentation strategies and social identities when they begin to use avatar customization tools, therefore the differences based upon the personality of the child/adolescent may have a meaningful effect on how they interact with those tools [23]. Kang et al.'s [14] results suggest that youth perceive avatar modifications differently depending upon their personality type and/or the context in which they modify them; further suggesting that youth may approach the process of expressing their digital identity through varying degrees of social sensitivity, confidence, and creativity.

Collectively, this work suggests that the engagement with avatars should be considered as a dynamic interaction between the affordances of the platform used, the social norms surrounding it and the motivational factors of the individual. It is important to understand how children and adolescents make sense of these interactions to provide insight into the diverse ways that identity-related practices can occur in avatar-based environments.

Online ISSN 3007-3197
Print ISSN 3007-3189
http://amresearchreview.com/index.php/Journal/about

2.4 Branding, Fashion Orientation, and Digital Fashion Aspirations

The following statement reflects how fashion and branding influence identity during a child's and adolescent's developmental stages. The research on fashion orientation [24] and [25] indicate that young people use their clothing and accessories to establish identity, express belongingness, and define aesthetics. These studies demonstrate how early interests in clothing, self-concept and social meanings may form the basis for developing consumer behavior and purchasing intentions. Young people have been able to expand upon these practices using digital platforms. Research on digital fashion has shown that virtual products are used by youth as low-cost methods to experiment with different aesthetic possibilities and/or try out styles they aspire to or styles which could be classified as playful without the cost associated with actual product purchases [26]. Styling avatars provide two primary uses; it is a method for creating self-expression and it is also a method for symbolic identity work. Brands such as Nike and Ralph Lauren have developed their own brand of clothing, accessories and experiences and embedded them into avatar systems [27]. Research regarding avatar based virtual influencers has indicated that branded digital persons can create perceptions of being trendy, authentic, and having social value [28], thus indicating that branding in virtual platforms are viewed through the lens of identity and style and not just viewed as marketing messages.

As such, these studies demonstrate that virtual clothing and branded items are not only aesthetically pleasing but also symbolically represent identity development for youth, and at times, encourage youth to pursue offline fashion-related preferences or stimulate fashion related imagination.

2.5 Gaps in Current Research

Although there has been an increasing number of studies regarding avatars, identity and digital fashion, many areas continue to be unexplored. The majority of the current research concerning avatars and digital fashion have focused on adults and virtual reality (VR)-based experiences; as a result, children and adolescents are greatly underrepresented in this area of study. Therefore, the majority of the available research concerning how youth interpret avatar customization through their daily digital lives has little to no basis for comparison to their offline preferences, cultural identities or attempts at experimenting with different styles. Specifically, cultural representation in avatar systems is one of the most under-researched areas of study, although there is substantial evidence supporting the premise that culturally-relevant assets (i.e., traditional clothing, skin tones, hairstyles etc.) will both aid in creating identification with an avatar system and provide a sense of inclusion among users [29], [30]. Furthermore, few studies have included the perspectives of caregivers, who serve as mediators for children's digital access, in-game purchases and brand interpretation in the context of avatar systems. Given the continued growth in the number of youth using avatar-rich platforms such as Roblox and Snapchat, it is increasingly important to gain insight into how youth use avatar customization as a method for expressing their identity (RQ1), and how they correlate their virtual styling to their offline preferences, interests and developing sense of style (RQ2). This study addresses some of these

Annual Methodological Archive Research Review
http://amresearchreview.com/index.php/Journal/about
Volume 4, Issue 4 (2026)

Online ISSN 3007-3197
Print ISSN 3007-3189
http://amresearchreview.com/index.php/Journal/about

research gaps by investigating children's and adolescent's experiences within virtual and physical environments.

3 Conceptual Model

To direct our investigation, we have created a conceptual model (see Fig. 1), and this conceptual model combines theoretical perspectives on virtual self-representations with the first impressions we saw in the early stages of data collection. The conceptual model will provide us with an organized manner of understanding how children and adolescents create meaning from their experiences of interacting with avatars and how these meanings relate to their developing preferences.

The conceptual model locates avatar appearance as a point of departure at which processes of self-expression and self-representation occur. These processes are studied through two related but different theoretical viewpoints commonly used in research on digital identities; namely, the Proteus Effect examines how users' behavior or attitudes can be shaped by the characteristics of the self-presented avatars [18], whereas self-perception theory demonstrates how people identify aspects of identity by thinking about the choices they made and the actions they took [9]. In contrast to assuming that there is an automatic effect on young users from their choice of avatar customization, the theories above aid us in our understanding of how young users interpret the choices they make when creating avatars.

Fig. 1 Conceptual model illustrating the relationships among avatar appearance, identity expression, and the cultural and social factors that contribute to young virtual platform users' perceptions of their real-world fashion interests. In addition to these theoretical underpinnings, the conceptual model includes two contextual elements that appear consistently in both earlier research and our current study: cultural representation and social influence. Cultural representation addresses the degree to which the avatar system supports or constrains identity expression through the various customization options provided. Social influence addresses how young users' perceptions of their avatars are influenced by peer relationships, game-play norms, and social interaction on the platforms. These concepts combine in what we refer to as "perceived real-world fashion interest," i.e., the relationships that participants identified between avatar aesthetics and their off-line fashion preferences. The conceptual model represents the participants' perceptions and not causal linkages.

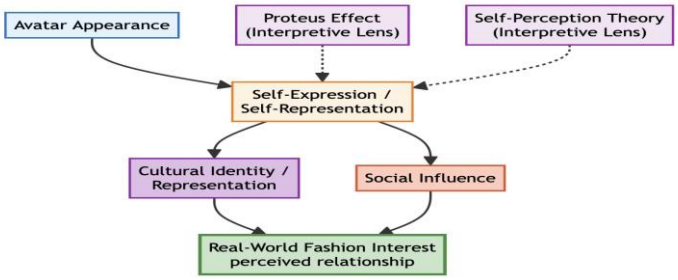

Figure 1: Conceptual model

The conceptual model is consistent with the qualitative nature of our exploration, as it situates avatar customization in relation to the intersecting theoretical and contextual

Annual Methodological Archive Research Review
http://amresearchreview.com/index.php/Journal/about
Volume 4, Issue 4 (2026)

Online ISSN 3007-3197
Print ISSN 3007-3189
http://amresearchreview.com/index.php/Journal/about

domains. Therefore, the conceptual model serves as a foundation for understanding how young users engage in virtual self-presentation and how they perceive branding in digital contexts.

4 Methodologies and Techniques

This qualitative study, utilizing semi-structured interviews, examines how children and teenagers describe their personal experiences with avatars, customizing their avatars on platforms such as Roblox and Snapchat, and the branding associated with these platforms. As shown in Fig. 2, this study follows the general outline of qualitative data collection and analysis.

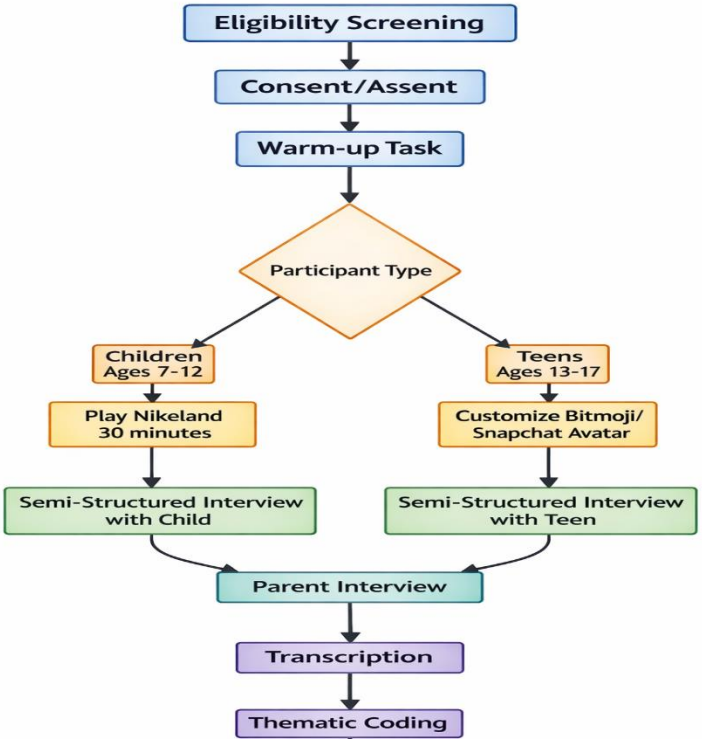

Figure 2: Data collection workflow from recruitment to thematic analysis.

Due to its applicability to obtaining the subjective perceptions, preferences, and interpretive schemes of children's interactions with computers, semi-structured interviews were used in this study. Semi-structured interviews allow for a structured interview format, but also provide flexibility for in-depth examination of predefined constructs while allowing for additional exploration of emerging themes [16], [31]. Interviews were conducted by the first author to create a culturally sensitive and comfortable environment for participants' interactions. The first author has experience in Human Computer Interaction and experience in working with children who are engaged in digital media contexts. Additionally, the researchers have multiple languages (Urdu, Sindhi, English) so children and parents could communicate in the language they preferred. The researchers believe that linguistically and culturally aligning themselves with the participants helped avoid potential miscommunications and provided more detailed and contextually relevant descriptions of the participants'

Annual Methodological Archive Research Review
http://amresearchreview.com/index.php/Journal/about
Volume 4, Issue 4 (2026)

Online ISSN 3007-3197
Print ISSN 3007-3189
http://amresearchreview.com/index.php/Journal/about

experiences than would be possible without this alignment.

The participant pool included 24 participants consisting of 12 children (ages 4 – 12; M = 9; SD = 2.52) and 12 adolescent participants (ages 13 – 17; M = 15.5; SD = 1.58); all were accompanied by a primary caregiver. The participant pool was determined through a convenience sampling technique; the eligibility criteria required that the child have been an active member of Roblox or Snapchat for at least 2 years. By requiring the children to meet this criteria, it was assumed that there would be enough familiarity with avatar based environments and related digital activities for them to comment on. A summary of demographic information about the participants can be found in Table I, which lists the demographics of both the child participants and their caregivers.

Table 1: Demographics of the participants.

Name	Age	Pronouns	Parent
K1	4	She/her	P1
K2	7	She/her	P2
K3	7	She/her	P1
K4	7	He/him/his	P3
K5	8	She/her	P4
K6	9	He/him/his	P5
K7	9	He/him/his	P6
K8	10	He/him/his	P7
K9	11	He/him/his	P4
K10	12	She/her	P8
K11	12	He/him/his	P6
K12	12	He/him/his	P9
T1	13	He/him/his	P9
T2	13	He/him/his	P8
T3	14	She/her	P7
T4	14	She/her	P3
T5	17	He/him/his	P2
T6	16	He/him/his	P10
T7	16	He/him/his	P10
T8	16	She/her	P11
T9	16	She/her	P12
T10	17	He/him/his	P12
T11	17	She/her	P13
T12	17	He/him/his	P14

5 Data Collection

Children, Adolescents and their Parents, were interviewed using a semi-structured interview format that used a combination of open ended story telling prompts to obtain

Online ISSN 3007-3197
Print ISSN 3007-3189
http://amresearchreview.com/index.php/Journal/about

rich qualitative accounts of their experience with avatars and brand related content. The method allowed participants to express their thoughts and experiences about avatars and brands through their own words, and allowed the Interviewer to have enough flexibility to ask follow-up questions when new themes emerged. All youth participants had to meet the study's eligibility criterion of having been actively engaged on Roblox or Snapchat for at least Two Years; therefore, all youth Participants were familiar with avatar customization options and platform specific norms of interaction. Caregivers were given informed consent before data collection began. Children and adolescents provided assent prior to data collection. Caregivers were given a brief description of the study's objectives, Procedures and topics to be discussed during the interviews, were told participation was voluntary and could withdraw at any time without penalty. To aid youth participants' ability to recall their digital experiences, Children were asked to play Nikeland on Roblox for approximately thirty minutes and adolescents were asked to change their Bitmoji (Snapchat Avatar) to reflect their personal style preferences. Both of these activities served as conversational warm-ups. Following these activities, individual semi-structured interviews were conducted with each child/adolescent participant. Some examples of sample prompts are:

- "What online games or social media platforms do you use, and how long?"
- "Do you enjoy changing your avatar? why?"
- "How much do you think your avatar represents you?"
- "Would you like to have any of the clothing or accessories on your avatar in real life?"
- "Are there any brands featured on the platform?"

In addition to the sample prompts above, children who participated in the Nikeland game, had additional sample prompts focused on their experience with branded content in the game:

- "Did you enjoy the mini-games?"
- "Did you try any of the Nike sportswear items in the game?"

Parent interviews examined household digital media practices and how caregivers interpreted the relationship between children's engagement on virtual platforms and their developing preferences. Some examples of sample questions are:

- "How much time does your child spend online, and which platforms do they use?"
- "Has your child requested any in-game purchases?"
- "Are you aware of any brands that are advertised in roblox or snapchat?"
- "Has your child expressed interest in any real-world items based on their avatar?"

Interviews were conducted in either English, Urdu or Sindhi, depending on participant preference. each session was approximately twenty to thirty minutes in duration. Transcripts conducted in Urdu and Sindhi were translated into English by bilingual members of the research team prior to analysis. To ensure conceptual equivalence and preserve cultural nuance, translations were reviewed by a second bilingual researcher, and discrepancies were resolved through discussion.

6 Thematic Coding and Analysis

Annual Methodological Archive Research Review
http://amresearchreview.com/index.php/Journal/about
Volume 4, Issue 4 (2026)

Online ISSN 3007-3197
Print ISSN 3007-3189

http://amresearchreview.com/index.php/Journal/about

Data analysis followed a three-phase thematic coding procedure (Fig. 3). At the outset of this project, three coders, coded the interviews independently to generate preliminary codes as part of an open coding of salient concepts contained within the participants' accounts of their experiences. The second phase involved meeting to discuss and reconcile differences in how the participants' narratives were interpreted by the researchers through discussions and iterative refinement of a common code book; this resulted in enhanced definitional clarity and conceptual alignment among the codes. In the third and final stage, the research team worked together to aggregate related codes into higher order thematic categories and systematically validate those thematic categories against the entire data set to ensure consistency with the participants' narratives. We used reflexive approach follows established guidance for thematic analysis and team coding [32]. Consistent with reflexive thematic analysis, we prioritized coder reflexivity and analytic interpretation over quantification of interrater agreement, while using team discussion and audit checks to enhance credibility [33]. Through the use of an iterative team-based approach to analyzing qualitative data, we were able to demonstrate our commitment to methodological rigor and promote consistency in the interpretation of the results of this qualitative study.

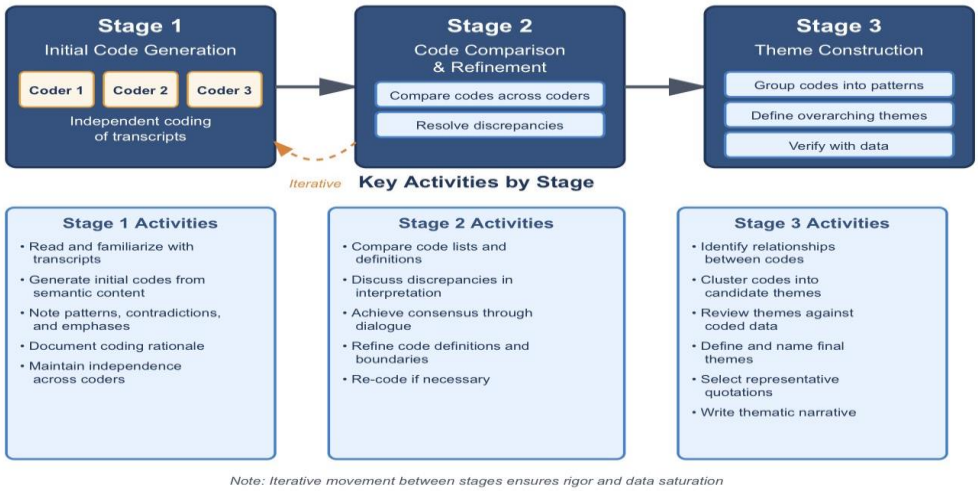

Figure 3: Three-phase thematic coding workflow illustrating how initial codes were independently generated by three coders, refined collaboratively through comparison and consensus-building, and then organized into overarching themes.

Table 2 illustrates the final thematic structure developed in the course of this study and identifies the specific codes used to develop each theme.

Table 2: Overview of Themes and Associated Codes Derived from Thematic Analysis.

Theme	Thematic Description	Example Codes
Theme 1: Digital Spaces as Emotional and Social Ecosystems	Participants described digital environments as meaningful social spaces that support communication, play, learning, and emotional regulation. These platforms	Enjoyment of digital play; sense of freedom in virtual spaces; digital environments as escape; online friendships and communication; parental concerns about screen time;

Online ISSN 3007-3197
Print ISSN 3007-3189
http://amresearchreview.com/index.php/Journal/about

Theme	Thematic Description	Example Codes
	function as extensions of everyday life, offering connection and escape while also raising concerns about parental monitoring and screen time.	learning through digital platforms; social media as part of daily life
Theme 2: Avatars as Sites of Identity Exploration	Avatar customization enabled participants to represent their real selves, experiment with aspirational identities, and negotiate how they wished to be perceived. Emotional attachment to avatars reflects their role as symbolic extensions of the self.	Avatars resembling real self; idealized/aspirational identities; experimenting with appearance; difficulty creating ethnic/Asian features; assistance from family members; frequency of avatar changes; avatars reflecting personality; emotional attachment to avatars
Theme 3: Virtual Goods as Social Capital and Self-Expression	Digital purchases functioned as symbolic resources that shaped peer perception, confidence, and identity signaling within virtual communities. Spending on virtual goods reflects shifting consumption from physical to digital contexts.	Purchasing avatar clothing; peer visibility of avatar appearance; virtual fashion as self-expression; parental approval of digital spending; transition to digital consumption; emotional attachment to purchases; confidence linked to avatar appearance
Theme 4: Virtual-to-Physical Influence on Aesthetic Preferences	Virtual styling experiences influenced participants' real-world fashion interests and creativity, positioning digital environments as low-risk spaces for experimenting with styles before adopting them offline.	Desire for real-life versions of avatar items; buying outfits inspired by avatars; experimenting with hairstyles digitally; virtual closet as inspiration; resistance to translating virtual style offline; parental observation of style interests; virtual "try-before-buy" experiences
Theme 5: Cultural Representation and Identity Constraints	Limited cultural representation in avatar customization restricted participants' ability to authentically express cultural identities, highlighting feelings of exclusion and the importance of inclusive	Lack of culturally representative clothing; desire for traditional attire (e.g., Ajrak, Shalwar Qameez); belonging tied to representation; cultural mismatch in available styles; desire for culturally relevant hairstyles; awareness of cultural

Online ISSN 3007-3197
Print ISSN 3007-3189

Theme	Thematic Description	Example Codes
	design in digital platforms.	inclusion/exclusion in design
Theme 6: Brand Presence and Commercial Socialization	Embedded brand content shaped participants' awareness of consumer culture, linking branded virtual goods to identity expression and influencing perceptions of brand value and desirability.	Recognition of real-world brands in games; engagement with branded mini-games; awareness of brand presence; curiosity toward branded items; associating brand value with avatar identity; perception that brands influence self-expression

7 Results

Six themes were identified through reflexive thematic analysis, which provide information on how young people's experiences of using digital platforms, customizing avatars, and engaging in virtual styling were expressed. The themes (Themes 7.1 to 7.3) relate to RQ1 and represent how young users' interpretations of the practice of avatar customization as an element of self-expression. The themes (Themes 7.4 to 7.6) relate to RQ2 and examine how participants associated avatar appearance to offline preferences, interests and developing fashion style sensitivities.

7.1 Digital Life as a Social and Emotional Space

Participants indicated that they viewed digital environments as well-known and meaningful parts of daily life also reported in prior research [11], [32]. Both children and adults moved easily between playing, messaging, and completing school related activities in many digital spaces, often describing online areas as fun, enjoyable, free and liberating. The two younger participants (K9 & K6) stated that gaming was "fun" and "free," noting they had more control over how they navigated virtual worlds than they did in other less structured offline routines. Similarly, K12 noted that he turned to his games when he had leisure time, indicating that these digital spaces are accessible and continue to be appealing to him.

While parents confirmed their child's positive feelings toward using digital media, they also expressed concern about the amount of time their children spent on screens, engaging in physical activity, and the difficulty they experienced in regulating their child's participation in online communities within the home environment. In contrast to the negative views held by some of the adult participants, adolescents described digital platforms as being integrated into their social and academic routines. Specifically, adolescents used apps like Snapchat and Instagram to maintain friendships, coordinate school assignments, and casually browse social content. For these teens, online communication is not an extraordinary occurrence but rather it is an embedded feature of their daily lives.

The overall digital landscape provides the framework of interpretation for why avatar customization has become meaningful to express themselves, explore, and engage in identity work as discussed in the themes that follow.

Online ISSN 3007-3197
Print ISSN 3007-3189
http://amresearchreview.com/index.php/Journal/about

7.2 Avatar Customization as Identity Work

Children experimented with their avatars by trying on different looks, clothes and accessories to create their own personalized avatars. K5 described customization as "fun", while other children experienced limitations when trying to represent themselves in a self-selected way. For example, K9 saw his avatar as "weird" when it was made to look like him, so he made adjustments until the avatar felt "right". Younger children like K4 often asked for help from older family members or cousins when navigating the customization interfaces, showcasing how social support can impact this process. Adolescents described how they connected their avatars to their real-life identities in more intentional ways than children did. T3 said she "mostly" tried to make her avatar look like her, even if it didn't perfectly match her appearance. T6 said he used his avatar both as a partial reflection of himself and as a space to explore styles he hesitated to try in real life. Some teens such as T5 developed long-term avatar identities that they modified over time. Most teens (with the exception of T9) reported they wanted their avatars to reflect who they were or who they wanted to become. These descriptions position avatar customization as an important expressive practice which is consistent with prior work that frames avatars as flexible social representations [5], [12]. For some, the avatar extended the self, while for others, the avatar provided a safe environment for exploring alternative or idealized versions of the self. These interpretations are consistent with theory about self-presentation including the Proteus Effect and Self-Perception Theory; however, they view these issues perceptually rather than causally.

7.3 Digital Purchases as Social Expression

Parents stated that young users view virtual apparel (e.g., skins, accessories) as a key aspect of digital self-expression; however, many parents reported that their young user's first preference for spending in-game funds was on virtual apparel. A parent of K5 and K9 stated "children will always want to buy clothing once they receive in-game currency," which illustrates the relationship between virtual fashion and young users' daily experience with the gaming platform. Young users also attributed emotional and social value to their purchases of virtual goods. A parent of K12 and T1 stated, "If digital purchases make our children happy and confident among their peers then I am OK spending money here," which shows how young users use digital purchases as a means to develop confidence, belong to groups of their peers and be accepted by their peers. Thus, digital purchases operate as symbols to show identity, facilitate participation in virtual peer cultures and serve as an additional form of social expression beyond aesthetics. However, these quotes do not describe specific behavioral results but illustrate how young users perceive virtual goods as significant objects in digital ecosystems that contribute to larger patterns of expressive involvement.

7.4 Virtual-to-Physical Style Inspiration

Children were particularly drawn to accessories: K7 liked wearing avatars' headphones and headwear, K8 liked hats, crowns, and glasses, and K6 wore his avatars' hoodies and styled his hair after them. K5 was fascinated by the color options available for hair that he could not get in his everyday world. K2 simply said, "I love to create my avatar

Online ISSN 3007-3197
Print ISSN 3007-3189
http://amresearchreview.com/index.php/Journal/about

in pink... Yes I would like to wear the same in real life. "
Teenagers displayed a range of relationships with virtual and real-life styles. For some teens (T4) their digital wardrobe served as an aspirational one, "My digital wardrobe is going to be my physical wardrobe," while others (T3), found the style on their avatar's "perfect" trousers. Other teens, such as T6 and T12, found that they enjoyed creating outfits on their avatars but never gave a moment of thought about purchasing the products in the real world. T8 enjoyed the creative expression that digital fashion allowed, but felt no obligation to recreate it in the real world. The statements above provide evidence that customizing avatars provides opportunities for youth to engage in imaginative ways with fashion and identity, providing an opportunity for youth to experiment with styles they may or may not choose to adopt in the physical world.

7.5 Cultural Representation and Limitations

The lens of cultural identity was found to be an important factor by which many participants viewed avatar customization. A number of participants mentioned being frustrated about the lack of available culturally representative clothing items and accessories for avatars, as well as hair styles. T10 stated this clearly when he said, "I wish my avatar could wear Ajrak and Topi to represent me digitally." Parents were also aware of the limitations of avatar customization systems as they reported that their children were unable to create avatars that "looked like" them because there were no familiar cultural representations available in the system. These examples show where there are currently significant gaps in the systems that exist for avatar creation and support the idea that culturally inclusive design is important so that young users of different cultures can express themselves in meaningful ways.

7.6 Branding Awareness and Interpretation

Children and youth were aware of branded content that they watch on their social media platforms. Youth participants identified brands present in virtual goods, mini-games, and virtual clothing stores. When interacting with branded digital products, youth participants articulated that these experiences were both aesthetically pleasing and symbolically meaningful; many teens described branded clothing as being "cool", a visual representation of their style. Parents reported that kids would at times express interest in branded products they saw on-line and connect this virtual interest with subsequent conversations about those products in the real life. The interpretation is that for young users, brands are meaningful when they are tied to identity work (expressive) vs. when they are simply commercial messages.

8 Discussion

The study demonstrates how avatar customization served as a meaningful avenue for identity expression by children and adolescents. Participants used avatars to experience different personality characteristics, try on various forms of appearance, and reflect how they wanted to be perceived by other people in the virtual community. These forms of expression took place in a larger context of online spaces which are embedded in daily life, providing a sense of belonging, autonomy, and creative agency. Children and adolescents interpreted avatar customization as a significant method of expressing

Online ISSN 3007-3197
Print ISSN 3007-3189
http://amresearchreview.com/index.php/Journal/about

identity, using avatars to express aspects of themselves, explore alternative identities, and express their desire for social connection. Participants also explored the varying and complex relationships between the visual presentation of their avatars and their offline preferences. Many participants drew upon their avatars' style for ideas about how accessories, clothes, or hairstyles could be translated to their physical-world self-expression. Other participants saw avatar customization as being separate from their offline identity, viewing the customization process as an opportunity to experiment with aesthetics virtually and not to replicate those styles. Participants reported diverse connections between their avatars and their preferences offline, ranging from aspirations and inspiration to aesthetic experimentation. Youth's cultural identity and branding also influenced how youth connected virtual style to their developing offline senses of self. Culturally represented styles had a significant impact on how youth constructed these interpretations. Participants emphasized that clothing and features that reflected their culture were necessary to create authentic self-expression. Both research questions demonstrate that avatar customization is not simply a technical capability, but rather an area where youth can negotiate identity, imagine new ways of being, and create aesthetic meaning.

These interpretations support theoretical perspectives such as the Proteus Effect and Self-Perception Theory; however, they accomplish this through perceived, as opposed to actual pathways. Avatars did not automatically influence the behavior of participants; instead, they provided participants the opportunity to describe identity, explore possibilities, and connect virtual preference development to their perceptions of the world around them.

Below, we discuss implications for designing avatar systems and branded digital content that will allow young users to express identity and meet their cultural needs.

8.1 Accurate Representation of Physical Products in Digital Spaces

Younger users often relied on virtual goods to be a visual starting point for thinking about their offline fashion style, even when there wasn't a direct correlation between the two. Thus, high-quality and very realistic digital representations of clothing, shoes, handbags, jewelry etc., can help users think more creatively about how they would like to see the products presented in an exploratory manner. The current study did not evaluate consumer purchase behavior; however, the interpretations made from participants' responses indicate potential opportunities for developing more cohesive cross platform brand experiences.

8.2 Enhancing Cultural Inclusivity in Avatar Design

The cultural representation has become a major focus for the community; the majority of the respondents have stated that there was a lack of traditional clothing, ethnic characteristics, and regional styles. Designers and brands will be required to include more options for users to express their diversity through customization if they are going to support young users expressing their identities in virtual environments through use of culturally relevant assets.

8.3 Supporting Positive Online Social Interaction

Online ISSN 3007-3197
Print ISSN 3007-3189

Digital environments were used by young people as social venues, and avatars were key to both communication and their ability to be seen as peers. Young users' social experience on-line may be enhanced if tools are developed that provide for social collaboration, that allow recognition of creative expression and that can accommodate culturally relevant styling.

8.4 Designing Youth-Friendly Digital Customer Support

Branded content was experienced by participants at many touch points including but not limited to virtual goods and social interactions. Communication about digital products, explanation of branded elements that are appropriate for the age group, and systems that respond to customer inquiries will help create trust between digitally native youth and brands.

8.5 Theoretical Implications for Identity and Self-Presentation

Findings support other theoretical accounts which suggest that digital representations of the self, hold interpretative significance. While avatars allowed users to explore identity and experiment with appearance, this process reflected symbolic meaning making and did not have behavioral effects. How youth understand the styling of avatars provides insight into the initial phases of identity formation occurring within digital and physical spaces.

9 Discussion

This study looked at how kids and teens see a connection between customizing an avatar on a computer and what they like about themselves and others in the "real" world. Participants described avatars as meaningful places where they can express themselves through style and creativity, and many participants drew inspiration from virtual clothing or accessories when creating their avatars. The ways participants interpreted their avatars demonstrates how virtual environments may inspire new interests among young people, without suggesting that there is a cause-and-effect relationship.

These findings suggest potential avenues for future studies focusing on the social, developmental, and cultural factors that contribute to young users' engagement with digital fashion and branded content. In addition, the fact that there are relatively few examples of culturally representative options available to customize avatars indicates a need for greater diversity in the design of virtual fashion and branding content.

In total, this study adds to the body of work on Child-Computer Interaction by providing insight into how young users interpret and engage with virtual representations of themselves and how these interactions relate to developing identities in the physical world. Additionally, these findings offer practical guidance for developing youth-centered and culturally responsive metaverse experiences that support both diverse forms of identity expression and developmentally-appropriate means of expressing those identities.

Acknowledgment

The authors would like to express their sincere gratitude to all individuals who contributed to the successful completion of this research. The authors especially

Online ISSN 3007-3197
Print ISSN 3007-3189
http://amresearchreview.com/index.php/Journal/about

appreciate the academic and technical support provided by colleagues and reviewers whose valuable suggestions helped improve the quality of this work. The authors are also thankful to their respective institutions for providing the necessary research environment and resources to conduct this study. Their support and encouragement played an important role in the completion of this research on avatar customization and digital identity representation.

Conflict Of Interest

There is no conflict of interest between all the authors

Data Availability Statement

The data used and analyzed during this study are available from the corresponding author upon reasonable request. No publicly archived datasets were generated during this research. Any supporting materials related to the study can be provided to interested researchers for academic and research purposes.

References

[1] R. Jabbar, M. Kharbeche, K. Al-Khalifa, M. Krichen, and A. K. Barkaoui, "Blockchain for the internet of vehicles: A decentralized IoT solution for vehicles communication using ethereum," *Sensors (Switzerland)*, vol. 20, no. 14, pp. 1–27, 2020, doi: 10.3390/s20143928.

[2] Y. Li, K. Ouyang, N. Li, R. Rahmani, H. Yang, and Y. Pei, "A blockchain-assisted intelligent transportation system promoting data services with privacy protection," *Sensors (Switzerland)*, vol. 20, no. 9, 2020, doi: 10.3390/s20092483.

[3] X. Du, Y. Gao, C. H. Wu, R. Wang, and D. Bi, "Blockchain-Based Intelligent Transportation: A Sustainable GCU Application System," *J. Adv. Transp.*, vol. 2020, 2020, doi: 10.1155/2020/5036792.

[4] M. Waseem, K. A. Ahmed, and M. T. Azeem, "Blockchain Based Intelligent Transport System," *Mod. Innov. Syst. Technol.*, vol. 1, no. 3, pp. 70–88, 2021, doi: 10.47813/2782-2818-2021-1-3-70-88.

[5] F. Casino, T. K. Dasaklis, and C. Patsakis, "A systematic literature review of blockchain-based applications: Current status, classification and open issues," *Telemat. Informatics*, vol. 36, no. May 2018, pp. 55–81, 2019, doi: 10.1016/j.tele.2018.11.006.

[6] C. Wang, X. Cheng, J. Li, Y. He, and K. Xiao, "A survey: applications of blockchain in the Internet of Vehicles," *Eurasip J. Wirel. Commun. Netw.*, vol. 2021, no. 1, 2021, doi: 10.1186/s13638-021-01958-8.

[7] V. R. Kebande, F. M. Awaysheh, R. A. Ikuesan, S. A. Alawadi, and M. D. Alshehri, "A blockchain-based multi-factor authentication model for a cloud-enabled internet of vehicles," *Sensors*, vol. 21, no. 18, pp. 1–20, 2021, doi: 10.3390/s21186018.

[8] V. Elagin, A. Spirkina, M. Buinevich, and A. Vladyko, "Technological aspects of blockchain application for vehicle-to-network," *Inf.*, vol. 11, no. 10, pp. 1–19, 2020, doi: 10.3390/info11100465.

[9] Y. Yuan and F. Y. Wang, "Towards blockchain-based intelligent transportation

Online ISSN 3007-3197
Print ISSN 3007-3189
http://amresearchreview.com/index.php/Journal/about

systems," *IEEE Conf. Intell. Transp. Syst. Proceedings, ITSC*, no. November 2016, pp. 2663–2668, 2016, doi: 10.1109/ITSC.2016.7795984.

[10] M. E. Student, "A Review on Improvement of Power Quality by Shunt Active Power Filter," vol. 5, no. 09, pp. 181–184, 2017.

[11] Q. Ejaz Ali *et al.*, "SPATA: Strong pseudonym-based authentication in intelligent transport system," *IEEE Access*, vol. 6, pp. 79114–79128, 2018, doi: 10.1109/ACCESS.2018.2883134.

[12] M. B. Mollah *et al.*, "Blockchain for the Internet of Vehicles towards Intelligent Transportation Systems: A Survey," *IEEE Internet Things J.*, vol. 8, no. 6, pp. 4157–4185, 2021, doi: 10.1109/JIOT.2020.3028368.

[13] P. Wang, Y. Liu, and S. Lv, "An improved lightweight identity authentication protocol for VANET," *J. Internet Technol.*, vol. 20, no. 5, pp. 1491–1504, 2019, doi: 10.3966/160792642019092005015.

[14] S. O. Ogundoyin, "An autonomous lightweight conditional privacy-preserving authentication scheme with provable security for vehicular ad-hoc networks," *Int. J. Comput. Appl.*, vol. 42, no. 2, pp. 196–211, 2020, doi: 10.1080/1206212X.2018.1477320.

[15] C. Xu, X. Huang, M. Ma, and H. Bao, "A privacy-preserving and cross-domain group authentication scheme for vehicular in LTE-A networks," *J. Commun.*, vol. 12, no. 11, pp. 604–610, 2017, doi: 10.12720/jcm.12.11.604-610.

[16] F. Li, "Vehicular Ad Hoc Network," *Encycl. Wirel. Networks*, pp. 1443–1447, 2020, doi: 10.1007/978-3-319-78262-1_308.

[17] L. Wu *et al.*, "An efficient privacy-preserving mutual authentication scheme for secure V2V communication in vehicular Ad Hoc network," *IEEE Access*, vol. 7, pp. 55050–55063, 2019, doi: 10.1109/ACCESS.2019.2911924.

[18] S. Tangade and S. S. Manvi, "Scalable and privacy-preserving authentication protocol for secure vehicular communications," *2016 IEEE Int. Conf. Adv. Networks Telecommun. Syst. ANTS 2016*, 2017, doi: 10.1109/ANTS.2016.7947800.

[19] S. J. Yu *et al.*, "Privacy-preserving lightweight authentication protocol for demand response management in smart grid environment," *Appl. Sci.*, vol. 10, no. 5, 2020, doi: 10.3390/app10051758.

[20] S. Ansari, J. Ahmad, S. Aziz Shah, A. Kashif Bashir, T. Boutaleb, and S. Sinanovic, "Chaos-based privacy preserving vehicle safety protocol for 5G Connected Autonomous Vehicle networks," *Trans. Emerg. Telecommun. Technol.*, vol. 31, no. 5, pp. 1–16, 2020, doi: 10.1002/ett.3966.

[21] M. N. Aman, U. Javaid, and B. Sikdar, "A Privacy-Preserving and Scalable Authentication Protocol for the Internet of Vehicles," *IEEE Internet Things J.*, vol. 8, no. 2, pp. 1123–1139, 2021, doi: 10.1109/JIOT.2020.3010893.

[22] D. Manivannan, S. S. Moni, and S. Zeadally, "Secure authentication and privacy-preserving techniques in Vehicular Ad-hoc NETworks (VANETs)," *Veh. Commun.*, vol. 25, p. 100247, 2020, doi: 10.1016/j.vehcom.2020.100247.

[23] H. H. Nie, Y. P. Li, and Q. H. Wu, "A privacy-preserving V2I authentication scheme without certificates," *J. Inf. Sci. Eng.*, vol. 33, no. 4, pp. 1025–1040, 2017, doi: 10.6688/JISE.2017.33.4.11.

Online ISSN 3007-3197
Print ISSN 3007-3189
http://amresearchreview.com/index.php/Journal/about

[24] Z. Liu *et al.*, "LPPTE: A lightweight privacy-preserving trust evaluation scheme for facilitating distributed data fusion in cooperative vehicular safety applications," *Inf. Fusion*, vol. 73, no. March, pp. 144–156, 2021, doi: 10.1016/j.inffus.2021.03.003.

[25] S. A. A. Hakeem, "(MAPP) Based on the Bilinear Pairing Cryptography for 5G-V2X," 2021.

[26] F. Alanazi, "Secure Efficient Identity-Based Conditional Privacy-Preserving Authentication Protocol for Vehicular Status Message Broadcasting without Bilinear Pairing," 2018.

[27] T. M. Mohamed, I. Z. Ahmed, and R. A. Sadek, "Efficient VANET safety message delivery and authenticity with privacy preservation," *PeerJ Comput. Sci.*, vol. 7, pp. 1–21, 2021, doi: 10.7717/PEERJ-CS.519.

[28] M. A. Rezazadeh Baee, L. Simpson, X. Boyen, E. Foo, and J. Pieprzyk, "Authentication strategies in vehicular communications: a taxonomy and framework," *Eurasip J. Wirel. Commun. Netw.*, vol. 2021, no. 1, 2021, doi: 10.1186/s13638-021-01968-6.

[29] P. C. Science, "Conditional Privacy-Preserving Authentication Protocols for Vehicular Ad Hoc Networks Dissertation," 2019.

[30] W. Xu, Wu, Daneshmand, Liu, "A data privacy protective mechanism for WBAN," *Wirel. Commun. Mob. Comput.*, no. February 2015, pp. 421–430, 2015, doi: 10.1002/wcm.

[31] Y. Zhang and F. Wen, "A Lightweight Secure and Efficient Authentication and Key Agreement Protocol for VANET," *IOP Conf. Ser. Earth Environ. Sci.*, vol. 234, no. 1, 2019, doi: 10.1088/1755-1315/234/1/012069.

[32] Y. Zhou, S. Liu, M. Xiao, S. Deng, and X. Wang, "An Efficient V2I Authentication Scheme for VANETs," *Mob. Inf. Syst.*, vol. 2018, 2018, doi: 10.1155/2018/4070283.

[33] Y. Liu, W. Guo, Q. Zhong, and G. Yao, "LVAP: Lightweight V2I authentication protocol using group communication in VANETs," *Int. J. Commun. Syst.*, vol. 30, no. 16, pp. 1–11, 2017, doi: 10.1002/dac.3317.

[34] J. S. Li and K. H. Liu, "A lightweight identity authentication protocol for vehicular networks," *Telecommun. Syst.*, vol. 53, no. 4, pp. 425–438, 2013, doi: 10.1007/s11235-013-9706-1.

[35] H. Vasudev, V. Deshpande, D. Das, and S. K. Das, "A lightweight mutual authentication protocol for V2V communication in internet of vehicles," *IEEE Trans. Veh. Technol.*, vol. 69, no. 6, pp. 6709–6717, 2020, doi: 10.1109/TVT.2020.2986585.

[36] L. F. Arias Roman, P. R. L. Gondim, and J. Lloret, "A lightweight authentication protocol for V2G networks in smart grid," *Proc. 8th Int. Jt. Conf. Pervasive Embed. Comput. Commun. Syst. PECCS 2018*, no. Peccs 2018, pp. 67–74, 2018, doi: 10.5220/0007231702050212.

[37] J. S. Alshudukhi, Z. G. Al-Mekhlafi, and B. A. Mohammed, "A lightweight authentication with privacy-preserving scheme for vehicular ad hoc networks based on elliptic curve cryptography," *IEEE Access*, vol. 9, pp. 15633–15642, 2021, doi: 10.1109/ACCESS.2021.3053043.

Online ISSN 3007-3197
Print ISSN 3007-3189

[38] Q. E. Ali, N. Ahmad, A. H. Malik, W. U. Rehman, A. U. Din, and G. Ali, "ASPA: Advanced Strong Pseudonym based Authentication in Intelligent Transport System," *PLoS One*, vol. 14, no. 8, pp. 1–26, 2019, doi: 10.1371/journal.pone.0221213.