

Measuring Psychometric Analysis of Sexting Prevention Competencies among Social Media Users in Malaysia

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ABSTRACT

The surge in the utilisation of social media has brought about new challenges, with one of the most critical concerns being the rise of sexting behaviours among social media users. The skills necessary to use social media programs effectively are the subject of various questions and concerns. Therefore, it is crucial for social media users to possess sexting prevention competencies in navigating the online world responsibly. The objective of this article is to develop and validate a psychometric scale to measure sexting prevention competencies among social media users in Malaysia. The results of the analysis based on a survey conducted among 412 social media users from five states in Malaysia which are Perlis, Selangor, Melaka, Pahang, and Sarawak. The Sexting Prevention Competencies scale instruments are developed from the digital citizenship framework by Ribble (2015) to test the value of sexting prevention competencies of social media users through Exploratory Factor Analysis (EFA) and the establishment of the Confirmatory Factor Analysis (CFA) Model of Sexting Prevention Competencies Scale. Factor analysis solves the challenge of determining the number of constructs needed to explain a set of measures' relationships. Findings show that multi-dimensional model of sexting prevention competencies has achieved convergence validity based on significant relationship variables. These extracted factors also have good discriminant validity. Therefore, in the context of Malaysian social media users, the instruments that were constructed were valid and trustworthy for accessing the targeted variables.

Keywords: *Social media, sexting prevention competencies, ethical communication, responsibility, etiquette.*

INTRODUCTION

The rapid evolution of social media platforms has brought about substantial changes to the communication environment, providing individuals with unprecedented opportunities for establishing connections and expressing themselves. As stated by Arfan et al. (2023) and Ramadani et al. (2014), social media technology has created the era of social connection through mobile application which allows people not only connect to Internet just for searching information needed but the most interesting part is they may communicate with others and share their ideas. Social media possesses the inherent quality of facilitating interactive communication similar to face-to-face interactions, allowing individuals to establish connections with people worldwide (Ahmad et al., 2020).

Recent statistic by Data Reportal (Kemp, 2023), until January 2023, there were reported that 4.76 billion of social media users in the world. Like several other countries, Malaysia has experienced a notable surge in the utilisation of social media platforms

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throughout a wide range of demographic segments. This can be proven with the data from Data Reportal (Kemp, 2023), in January 2023, there were 26.8 million or 78.5 percent of active social media users in Malaysia. According to the Malaysian Communications and Multimedia Commission (MCMC) (2023), the Internet Users Survey 2022 (IUS 2022) report reveals that 38.5 percent of internet users in Malaysia spend at least nine (9) hours per day online, primarily for social purposes like texting and visiting social media platforms. Hence, social media has become an indispensable part of how people communicate with one another.

While social media can provide positive outcomes, multiple studies indicate that there can also be adverse repercussions, especially when it is utilised improperly (Taibi et al., 2023; Bou-Hamad, 2020). According to Ojeda and Del Rey (2021) and Thang et al. (2020), the introduction of digital communication through social media use has been associated to a global increase in sexually explicit texts which is known as sexting. Supported by Bhat (2017), social media platforms are occasionally abused, resulting in the practice of sexting. According to the assumptions made in the current study, social media abuse refers to any form of violence that occurs between users whether in the form of verbal, informational, physical, or sexual in nature. Additionally, it includes any psychological or emotional abuse that takes place online with the intention of intimidating, harassing, stalking, or bullying targets through methods such as texting, depressive symptoms, sexting, or other means (Shahzalal & Adnan, 2022).

The term sexting can be defined as sending, exchanging, or forwarding of sexual explicitness content in a form of text, video, or image using any technological devices (Del Rey et al., 2019). According to Mori et al. (2020), sexting involves the transmission of explicit or nearly explicit photographs or videos, as well as personal, sexually suggestive text messages, through electronic devices. Similarly to Wilson et al. (2021) in their study, sexting refers to the act of exchanging sexually suggestive messages or images with people using mobile phones or electronic devices. To conclude the definition in this context of study, sexting is referring to the transaction of picture, video, audio, or text (word) that contain sexual content which involves two parties, sender, and receiver which occur in social media context.

There is growing public concern regarding the potential adverse effects of social media, leading to increased interest in media literacy as a potential remedy (Cho et al., 2024). Additionally, there are a number of questions and concerns regarding the skills needed to use social media properly. The requirement to use social media responsibly relates to social media literacy or being able to handle contents in the platforms with competencies (Oducado et al., 2019). Ojeda and Del Rey (2021) identified several strategies for effectively addressing the issue of sexting based on previous research. These include the development of specialised sexting programmes, promoting safe and healthy internet and social media use, raising awareness about the consequences and risks of sexting, integrating information about sexting into sex education programmes, and incorporating sexting into preventive programmes that address other related risks.

In Malaysia, the growing concern over this issue has prompted researchers and educators to explore preventive strategies. Yet, limited attention has been given to the competencies required to prevent sexting, especially among active social media users. Moreover, these competencies empower users, especially young people, to navigate social media more effectively and mitigate associated risks, including sexting. Developing a reliable and culturally relevant measurement tool is essential to assess users' readiness to engage in safe and responsible digital behaviour. Thus, this study aims to develop and validate a psychometric scale to measure sexting prevention

competencies among social media users in Malaysia. Drawing upon the theoretical dimensions of ethical communication, responsibility, and etiquette, this research employs both Exploratory Factor Analysis (EFA) and Confirmatory Factor Analysis (CFA) to establish the construct validity and reliability of the proposed scale. The findings are expected to contribute to both theoretical advancement and practical interventions in the field of digital behavior and online risk prevention.

Moreover, to guide this effort, the study is grounded in the Digital Citizenship Framework by Ribble (2015), which outlines a set of norms and behaviours expected in responsible technology use. Among its nine elements, ethical communication, digital etiquette, and online responsibility are emphasized as core competencies for safe and respectful online engagement especially in facing sexting. These constructs align closely with the dimensions explored in this study. By developing and validating a scale to measure sexting prevention competencies through the lens of these dimensions, this research operationalizes key theoretical elements of digital citizenship in a culturally specific context. Furthermore, the study contributes to the theory by providing empirical evidence for the distinctiveness and interrelationship of these constructs among social media users in Malaysia, thereby extending its applicability in the domain of digital sexual risk prevention such as sexting prevention competencies.

In light of the growing concerns around sexting behaviours on social media, especially among youth in Malaysia, there is a critical need for a validated instrument to evaluate individuals' competencies to mitigate such dangers. Specifically, this research seeks to develop a valid and reliable scale to measure sexting prevention competencies, to explore its factor structure using Exploratory Factor Analysis (EFA), to confirm the structure through Confirmatory Factor Analysis (CFA) and to evaluate the reliability, convergent validity, and discriminant validity of the scale. The subsequent research questions were formulated to direct this study; what is the fundamental factor structure of sexting prevention competencies? Does the proposed three-factor model adequately fit the data? Does the scale demonstrate reliability and construct validity?

LITERATURE REVIEW

a. Digital Citizenship as a Framework for Sexting Prevention Competencies

The components of sexting prevention competencies are adapted and modified from nine (9) elements of digital citizenship by Ribble (2015) which provides a thorough framework for responsible and ethical participation in digital environment especially in social media context. Ribble (2015) identified nine fundamental components of digital citizenship which are digital access, commerce, communication, literacy, etiquette, law, rights and responsibilities, health and wellness, and security. This study operationalizes three specific elements which are Digital Communication, Digital Etiquette, and Digital Rights and Responsibilities as the fundamental constructs of Sexting Prevention Competencies (SPC). This study expands Ribble's theoretical framework by concentrating on three interconnected components, specifically addressing the increasingly pertinent issue of sexting behaviour among children and young adults. This study empirically applies Ribble's normative model of digital behaviour in educational settings to a context of risk behaviour, demonstrating its preventive utility in digital sexual communication situations.

The term digital citizen has become a critical component of citizenship education and refers to people who use the Internet regularly and efficiently, teaches users to be aware of both positive and negative digital contributions (Isman & Gungoren, 2014; Ghamrawi, 2018). Meanwhile, according to Milenkova and Lendzhova (2021), digital citizenship is a terminology that refers to the amount of education and skills required to participate actively in social, professional, and civic life about digital use. Digital citizenship responsibilities ought to be taught and developed in a clear manner in order to maintain ethical standards in both physical and digital environments (Kaluarachchi & Trieu, 2022).

A digital citizen must exhibit several qualities, including the following: an understanding of human, cultural, and societal issues relating to technology and a commitment to legal and ethical behaviour; advocacy for and practice of safe, legal, and responsible information and technology use; a positive attitude toward the use of technology that facilitates collaboration, learning, and productivity; personal responsibility for lifelong learning; and leadership for digital citizenship (Isman & Gungoren, 2014). While digital citizenship addresses the negative parts of the Internet world, it also highlights the advantages of Internet interaction and collaboration, transforming it from a notion that addresses problematic behaviours to a stimulator of positive repertoires of practice (Ghamrawi, 2018). The digital citizenship research aims to guarantee that users are able to engage in online interactions in a secure manner, highlighting the necessity of implementing safeguarding and security measures as a requirement rather than a choice (Mahadir et al., 2021). Universities and colleges should teach young adults on the cognitive processes, dissemination, and consumption of information on social media platforms, in order to equip them as informed and active citizens (Tagg & Seargeant, 2021).

Research has shown that persons who have a higher level of social media competency, experience with social media or its tools, positive assessments of social media use, or technical help are more likely to engage in digital citizenship activities (Gu et al., 2023). Moreover, a good digital citizen is one who performs responsibly in his or her digital community (Nordin et al., 2016). The effectiveness of being a proactive digital citizen can be achieved through digital citizenship education (Mahadir et al., 2021). The elements of digital citizenship were believed to solve a few problems regarding risky behaviour (Nordin et al., 2016). In this context of study, researchers focus only on 3 elements out of the 9 elements, which are etiquette (digital etiquette), ethical communication (digital communication), and responsibility (digital rights and responsibilities).

b. Sexting Prevention Competencies

A competency encompasses more than simply knowledge and abilities. It entails the ability to manage complicated demands in a given setting by drawing on and mobilising psychological resources, including skills and attitudes (Ilomäki et al., 2011). Competencies are the knowledge, abilities, and skills necessary to demonstrate social media literacy (Cho et al., 2022). To conclude the definition of the term, it means the abilities, skills, and attitudes of using social media prudently and effectively which in turn may shield or protect oneself from risky behaviours such as sexting. Social media users who are equipped with the skills and abilities to use social media will be more careful and vigilant when online and they know what to do if faced with sexting behaviour. In addition, they themselves will not initiate sexting behaviour to others because they are aware that the matter can bring harm to them in turn violate the rights of other users to feel safe online. Moreover, those who have these skills and abilities are also very ethical when communicating online and do their best to avoid sexting.

According to Ortega-Barón et al. (2021), scientific literature does not have recorded evidence of comprehensive programs that effectively handle the diverse risks linked with the Internet.

As stated by Kaluarachchi and Trieu (2022) in their study, it is critical to educate individuals on the ethical and responsible use of technology, as laws cannot suffice to regulate immoral conduct. In fact, Suryanto et al. (2024) added that neglecting guidance and supervision for adolescents in their use of social media will result in each individual becoming directionless and susceptible to selfishness, indifference, racism, intolerance, and deviant sexual and criminal behaviours. Internationally, initiatives to educate about sexting have mostly taken an anti-sexting approach, aiming to discourage young people from engaging in sexting by raising awareness about the risks, especially for girls (Dobson & Ringrose, 2016). Albury et al. (2017) found that students require specific abilities and practice to effectively recognise and manage consent within digitally mediated sexual relationships, including sexting and other forms of sexual interactions. Mori et al. (2020) suggest that in order to decrease the potentially damaging and criminal conduct of non-consensual sext forwarding, it is important to focus awareness raising activities on digital citizenship and the psychological effects of this behaviour specifically towards teenagers and emerging adults.

Within the scope of this study, employing social media in a suitable manner would aid in the prevention of sexting and its adverse repercussions. Promoting the secure and useful use of social media is crucial due to the high likelihood of adolescents, who predominantly use their cell phones as Internet connections and spend a significant amount of time online, receiving sexting requests (Ojeda & Del Rey, 2022). According to Bhat (2017), the manner in which young people use social media and other forms of information and communication technology (ICT) will continue to develop and change. Thus, it is imperative for individuals to possess sufficient preventive measures in order to effectively battle cybercrime through the management of their digital information and devices (Huda et al., 2017). It is also imperative for schools to educate students about digital citizenship, aiming to enhance their literacy skills and ensuring they comprehend the appropriate ways to connect and engage with others online, which includes understanding what is considered acceptable and unacceptable behaviour, as well as cultivating a positive mindset and conduct when using the Internet (Chong & Pao, 2019).

c. Ethical Digital Communication and Sexting Behaviour

Digital communication has emerged as the predominant way of interaction among both youth and adults, especially through social media platforms. Ribble's (2011) idea of digital communication underscores the necessity of responsible and acceptable online expression, a value that is particularly pertinent in the realm of sexting—a risky digital behaviour involving the exchange of sexually explicit texts or photographs. Benson (2023) emphasises that the increase in digital immediacy has resulted in a decrease in reflective communication, especially among adolescents, where impulsivity and peer reinforcement frequently override ethical judgement. In Malaysia, Mahadir et al. (2021) discovered that undergraduate students frequently lacked the competencies required to evaluate the suitability and implications of their digital communications. The absence of communication filtering increases the probability of participating in or tolerating sexting behaviour. The findings support the incorporation of ethical communication skills into sexting prevention frameworks, providing a theoretical rationale for their assessment as a component of a psychometric instrument.

Digital Communication is characterised as the effective transmission of information inside digital environments (Ribble, 2015). This study pertains to the capacity to discern appropriate from inappropriate sexual expressions and to manage peer pressures on platforms such as messaging applications or social media. In this context of study, ethical communication or communication ethics are the principles governing a certain form of communication that are influenced by the preconceived notions of an individual or group (Mukherjee, 2016). It places its focus on the goals of human morality as they pertain to interpersonal interactions (Fourie, 2017). It is commonly observed that when an individual engages in communication with another person, their primary objective is to convey positive moral principles (Mukherjee, 2016). Individuals must practice self-control, demonstrate courtesy, and respect the privacy of others when conversing (Batoebara & Lubis, 2022). Besides, ethical communication is predicated on the notion that communication is inherently beneficial to the moral well-being of individuals and consistently aims to enhance the virtue and moral standing of those engaging in the discourse (Fourie, 2017). Contrary to conventional wisdom, the National Communication Association (NCA, n.d.) challenges the notion that ethical communication promotes qualities such as honesty, fairness, truth, self-respect, and regard for others, all of which contribute to the enhancement of human worth and dignity. According to Batoebara and Lubis (2022), social media conversation should be respectful and free of aggressive, provocative, pornographic, or racial words and avoid posting nothing inappropriate for the public.

d. Digital Responsibility and Online Sexual Risk

Digital responsibility is a comprehension of the long-term impacts of online conduct, encompassing legal, social, and psychological ramifications. Sexting, a behaviour frequently characterised by the dissemination of private material without adequate comprehension of its consequences, signifies a notable lack of digital responsibility. Ahmad et al. (2021) assert that the Malaysian digital environment suffers from inconsistent enforcement and teaching on digital responsibility, potentially facilitating the normalisation of risky online behaviours among adolescents. Liverpool-Morrisa (2023) also discovered that teenagers often underestimate the importance of digital activities, such as disseminating explicit content, due to an insufficient comprehension of digital rights and responsibilities. These patterns demonstrate the urgency to develop digital responsibility as an essential preventive skill in educational and behavioural interventions. Integrating this concept within a validated psychometric framework enables researchers and educators to more effectively identify and address susceptibility to sexting behaviour.

According to Ribble (2015), digital rights and responsibilities encompass the privileges and duties associated with digital engagement. In this context of study, responsible social media use means using social media ethically and responsibly, understanding the purposes of digital use, communicated content, and the impact of one's social media interactions to avoid problematic or addictive use or abuse (harm), and being proactively involved in prosocial usage (Shahzalal & Adnan, 2022). According to Nordin et al. (2016), users of digital technology who follow the law are accountable for their online acts and conduct and they understand what acceptable and unacceptable behaviour is when engaged in online activities. Additionally, they are aware of the legal ramifications of breaching pertinent regulations and laws (Nordin et al., 2016). Even at a young age, it is easy for users to search and obtain material from the social media but they have not learnt what is acceptable or unacceptable, legal or illegal. It is of utmost importance to promote socially responsible engagement and

positive user involvement in online platforms, aligning with widely recognised ethical norms (Wendt et al., 2023).

e. Digital Etiquette and Online Peer Influence

Digital etiquette encompasses respectful, culturally appropriate, and considerate conduct in online interactions. In the realm of sexting, digital etiquette is especially pertinent when examining peer influence and the social normalisation of sexually suggestive communication. Ribble highlighted the importance of understanding digital etiquette for fostering respectful online environments, particularly in platforms frequented by youth, such as Instagram and TikTok. Ismail et al. (2023) observes that Malaysian youths are increasingly affected by peer behaviours that diminish the significance of boundaries and consent, creating contexts where sexting is regarded as normative or anticipated. Hassan et al. (2023) demonstrated a positive correlation between emotional well-being and adherence to digital etiquette, indicating that individuals with strong emotional grounding are more likely to respect digital boundaries. The findings support the importance of incorporating digital etiquette into the proposed model of sexting prevention competencies, particularly in relation to resisting inappropriate peer expectations.

Digital Etiquette pertains to the accepted norms of behaviour within digital contexts (Ribble, 2015). This measures the extent to which individuals comprehend and comply with ethical and courteous conduct in sharing photographs, messages, or participating in online interactions. In this context of study, etiquette refers to appropriate rules of behaviour or procedure that govern people's use of digital technology, online involvement, and socialising with others in the online world (Abulibdeh, 2019). In short, it is a code of behaviour that governs conduct. According to Ausawasowan et al. (2021), etiquette refers to established behavioural standards in digital context. Furthermore, etiquette also can be defined as a guideline to teach users to respect and be polite to other internet users and to avoid violating privacy and infringement restrictions (Abulibdeh, 2019). Respected behaviour on social media constitutes proper etiquette. Undoubtedly, there are proper and improper methods of utilising social media. When they are online, cultured digital citizens exhibit proper etiquette, adhere to the virtual world's usual rules, standards, and expectations, the majority of which are unwritten (Nordin et al., 2016). Sensible digital citizens communicate and interact politely to the point where they are likely to clarify their reasons for disagreeing with something online, avoid encouraging online fights when they come across one, and adhere to mobile phone bans (Nordin et al., 2016). According to Taibi et al. (2023), it is crucial to comprehend the intricacies of social media, including matters of etiquette.

f. Research Gap and Justification for the Current Study

The digital citizenship framework proposed by Ribble is frequently referenced in digital education literature, however, there is a scarcity of studies that have sought to modify it into psychometric tools aimed at enhancing preventive competencies related to sexting (Ahmad et al., 2021). Furthermore, current instruments frequently evaluate knowledge or general attitudes instead of specific, quantifiable competencies related to digital behaviour. Dalim et al. (2023) assert that although frameworks like Ribble's are frequently addressed in academic courses, there is an absence of validated psychometric instruments particularly assessing digital risk prevention competencies among Malaysian youth. This research aims to fill existing gaps by incorporating three essential constructs—ethical digital communication,

digital responsibility, and digital etiquette—into a psychometrically robust framework designed for the Malaysian sociocultural context. This approach offers a new perspective on comprehending and improving digital behaviour via validated preventive metrics.

METHODOLOGY

The respondents of this study were 412 social media users comprising five states in Malaysia which are Perlis, Selangor, Melaka, Pahang, and Sarawak. Respondent selection was based on random sampling. A survey of a large geographic area, such as the one described in this study, required a more complex sampling design than simple random sampling (Taheerdoost, 2021).

According to Okechi et al. (2024), multistage sampling is a more complex version of cluster sampling in which larger clusters are subdivided into smaller, more focused groups for surveying purposes. It is frequently used in national surveys to collect data from a big, geographically dispersed group of people.

Therefore, this study utilised a multistage cluster sampling method to ensure geographic representation throughout Malaysia while maintaining logistical feasibility. The initial phase involved the division of the country into five major regional clusters, utilising recognised geographic classifications frequently employed in Malaysian demographic research which are Northern, Central, Southern, East Coast, and East Malaysia. This regional stratification enabled the population to be categorised regionally, mirroring national variety in social media usage habits and cultural norms.

During the second phase, simple random sampling was utilised to choose one state from each region. Table 1 indicates the chosen states were: Perlis (Northern), Selangor (Central), Melaka (Southern), Pahang (East Coast), and Sarawak (East Malaysia). This methodology was created to guarantee extensive national representation while reducing sample bias and preserving practicality. The selection method conforms to established multistage cluster sampling procedures recommended in social science research (Creswell & Creswell, 2018; Sekaran & Bougie, 2016), especially when addressing extensive and geographically dispersed populations. This approach is also consistent with previous Malaysian studies that employed multistage cluster sampling and regional stratification to ensure national coverage (Raji et al., 2019).

Table 1: Table summarizing regional clusters and selected states

Region	States in Region	Selected State
Northern	Perlis, Kedah, Penang, Perak	Perlis
Central	Selangor, Kuala Lumpur	Selangor
Southern	Melaka, Negeri Sembilan, Johor	Melaka
East Coast	Kelantan, Terengganu, Pahang	Pahang
East Malaysia	Sabah, Sarawak	Sarawak

This study uses questionnaires as a means of collecting data. This study employed a sample of 412 respondents, which is considered sufficient for conducting Structural Equation Modelling (SEM). The measuring model consists of three latent constructs which are Ethical Communication, Responsibility, and Etiquette with 17 observable indicators. Hair et al. (2016) assert that a minimum sample size of 200 is adequate for models of moderate complexity, with a recommended participant-to-parameter ratio of at least 10:1. A minimum of 5 to 10 participants per item is recommended for Confirmatory Factor Analysis (CFA), indicating a

necessary sample size of 170 to 340 for a 17-item scale. The sample of 412 respondents surpasses these limits, ensuring adequate statistical power for reliable model estimation, parameter stability, and validity evaluation.

The reliability of the instrument was conducted to ensure the consistency of the questionnaire. Cronbach Alpha's reliability coefficient for all three variables, above 0.70, shows a good internal consistency (Hair et al., 2010). The Composite reliability meets the same acceptable threshold as Cronbach's alpha (>0.70). The composite reliability values are larger than 0.70, indicating that the variables possess convergent validity (Hair et al., 2018). The study's objective is to find indicators of sexting prevention competencies scale using Exploratory Factor Analysis (EFA) and Confirmatory Factor Analysis (CFA) to identify structural measurement model.

The questionnaire of this study consists of two parts. Part A consists of general information on demographic variables. Meanwhile, Part B consists of sexting prevention competencies scale which were adapted and modified from Ribble (2015) and Abulibdeh (2019). This scale contains 20 items and is measured using a five-level interval scale of 1 = strongly disagree to 5 = strongly agree. This measurement scale measures ethical communication, responsibility, and etiquette.

Table 2 below presents the three fundamental constructs employed to assess sexting prevention competencies in this research. Each construct is adapted from Ribble's Digital Citizenship framework, highlighting key elements of responsible digital behaviour. The table provides an operational definition for each construct, outlining the conceptualisation and measurement of the competencies via the research instrument.

Table 2: Dimension of Sexting Prevention Competencies

Constructs	Research Instrument	Operational Definition
Ethical Communication	Digital Citizenship framework	A form of communication that is based on values such as being accurate, succinct, and accountable for one's words and the actions that follow.
Responsibility	Digital Citizenship framework	Law-abiding social media users are responsible for their actions and behaviour on social media. They understand acceptable and unacceptable behaviour when engaging in activities on social media.
Etiquette	Digital Citizenship framework	Appropriate rules of behaviour or procedure that govern people use of social media, online involvement, and socialising with others in the online world.

The data were examined with exploratory factor analysis (EFA) and descriptive statistics to characterise the study's respondent profile using IBM SPSS 28 software. EFA examines the data and notifies the researcher about the number of items required to adequately represent it. An EFA was conducted by using a principal component analysis and varimax rotation. The criterion for minimum factor loading was established at 0.50. In addition, adequate levels of explanation were verified by evaluating the communality of the scale, which represents the variance in each dimension.

AMOS 28 was used for the CFA analysis. CFA is a method for evaluating the degree to which measured variables accurately represent a smaller number of constructs. The primary objectives of factor analysis are to reduce the number of variables and to identify the structure in the relationships between variables, for example to classify variables. To ascertain the accuracy of the CFA model matching, a minimum of one Absolute Fit Indices and one Incremental Fit Indices are combined (Hu & Bentler, 1999; Hair et al., 2010) and Parsimony Fit Indices (PFI) (Hair et al., 2010). The CFA test is utilised to ascertain the acceptability or rejection of the model being evaluated. It is adequate to establish a model fit using three or more compatibility indices; it is not necessary to disclose every current fit index (Hair et al., 2010).

RESULTS

a. *Exploratory Factor Analysis (EFA), Sexting Prevention Competencies*

The Sexting Prevention Competencies Scale tested consists of three constructs: Ethical Communication; Responsibility; Etiquette (20 items). The Kaiser-Meyer-Olkin (KMO) measure of sampling adequacy (MSA), which indicates the appropriateness of the data for factor analysis, was 0.934, above the value of > 0.6 (Hair et al., 2010; Pallant, 2020). The results of Bartlett test of sphericity were significant, $\chi^2(n = 412) = 7323.428$ ($p < 0.05$), which indicates its suitability for factor analysis. This demonstrates that the items utilised in this study exhibit strong intercorrelation. Table 3 displays the factor loadings associated with each construct measured using EFA. It should be noted that loadings below 0.50 are omitted from all tables.

Table 3: Factor loading associated with the Sexting Prevention Competencies Factors scale following principal component analysis

Sexting Prevention Competencies Factors Measure	Component		
	1	2	3
Kaiser-Meyer-Olkin measure of sampling adequacy=0.948			
Bartlett test of sphericity =9221.077, p=0.000			
DR1		.760	
DR2		.734	
DR3		.741	
DR4		.783	
DR5			.818
DR6			.796
DR7			.869
DR8			.856
DR9		.622	
DR10		.552	.556
DE1	.608		
DE2	.560	.500	
DE3		.614	
DE4	.900		
DE5	.904		
DE6	.911		
DE7	.910		
DE8	.611		
DE9	.632		
Eigenvalues	11.770	1.944	1.119
Percentage of Variance Explained	61.947	10.230	5.888

EFA of 20 sexting prevention competencies items identified 3 components (Table 4). As shown in the table 2, 2 items (DR10 and DE2) indicated cross loading. Refer to table 4 below, 2 items (DR10 and DE2) were deleted because of cross loadings. However, after deleted those items, items (DR9 and DE3) did not load on their respective construct.

Table 4: Factor loading associated with the Sexting Prevention Competencies Factors scale following principal component analysis (after items DR10 and DE2 deleted)

Sexting Prevention Competencies Factors Measure Kaiser-Meyer-Olkin measure of sampling adequacy=0.941 Bartlett test of sphericity =8103.469, p=0.000	Component		
	1	2	3
DR1		.765	
DR2		.736	
DR3		.753	
DR4		.787	
DR5			.821
DR6			.795
DR7			.869
DR8			.857
DR9		.624	
DE1	.600		
DE3		.609	
DE4	.904		
DE5	.908		
DE6	.915		
DE7	.913		
DE8	.605		
DE9	.629		
Eigenvalues	10.388	1.910	1.115
Percentage of Variance Explained	61.105	11.237	6.560

Referring to table 5 below, 2 items (DR9 and DE3) were deleted because they did not load on their respective construct. All items loaded on their respective constructs. As previously mentioned, an objective of EFA is to determine whether items fit within theoretical factor structures.

Table 5: Factor loading associated with the Sexting Prevention Competencies Factors scale following principal component analysis (after items DR9 and DE3 deleted)

Sexting Prevention Competencies Factors Measure Kaiser-Meyer-Olkin measure of sampling adequacy=0.934 Bartlett test of sphericity =7323.428, p=0.000	Component		
	1	2	3
DR1			.783
DR2			.752
DR3			.766
DR4			.776
DR5		.820	
DR6		.802	
DR7		.878	
DR8		.867	
DE1	.609		
DE4	.911		
DE5	.913		
DE6	.920		

DE7	.918		
DE8	.618		
DE9	.639		
Eigenvalues	9.319	1.875	1.064
Percentage of Variance Explained	62.129	12.500	7.091

b. Reliability

Two criteria must be applied when assessing a measurement instrument: validity and reliability (Hair et al., 2010). To ascertain the accuracy of the modified instrument, its validity and reliability were evaluated. Consistency is linked to the concept of reliability, whereas validity is associated with accuracy. The extent to which a test accurately measures the construct it claims to assess is its validity. The establishment of validity will be achieved by the submission of the data for factor analysis. The outcome of factor analysis will validate the presence or absence of the proposed dimensions (Sekaran, 2016).

The internal consistency of the scale of sexting prevention competencies is shown in table 5. The columns of the table display the Cronbach's Alpha values obtained in this study's survey. As indicated in table 5, Cronbach's Alpha coefficients could be calculated for sexting prevention competencies. In this study, the Cronbach's alpha values for the Responsibility ($\alpha = 0.960$) and Etiquette ($\alpha = 0.954$) subscales above the widely acknowledged threshold of 0.95. Although high values may occasionally indicate item redundancy (Tavakol & Dennick, 2011), this can be suitable in specific contexts.

Table 5: A summary of Cronbach's Alpha coefficient values to determine the internal consistency of the sexting prevention competencies components

Construct	Cronbach's Alpha Coefficient Values
Ethical Communication (EC)	0.869
Responsibility (R)	0.960
Etiquette (E)	0.954

A series of multiple regression studies were undertaken using SPSS to evaluate the possible impact of multicollinearity among the three fundamental constructs of sexting prevention competencies: Ethical Communication, Responsibility, and Etiquette. Each construct was alternately designated as a dependent variable, with the remaining two served as predictors, allowing the computation of collinearity diagnostics across all constructs. Table 6 indicates that the Variance Inflation Factor (VIF) values ranged from [1.667 to 1.813], and Tolerance values exceeded 0.50 in all models. The results are within acceptable limits ($VIF < 5.0$; $Tolerance > 0.20$), indicating the absence of multicollinearity and that the high reliability coefficients are not attributable to item redundancy (Sarstedt et al., 2014).

Table 6: Multicollinearity diagnostics using VIF and tolerance for construct-level regressions

Model	Dependant Variable	Predictor Variable	VIF	Tolerance
1	Ethical Communication (EC)	Responsibility (R)	1.803	0.555
		Etiquette (E)	1.803	0.555
2	Responsibility (R)	Ethical Communication (EC)	1.667	0.600
		Etiquette (E)	1.667	0.600
3	Etiquette (E)	Ethical Communication (EC)	1.813	0.552
		Responsibility (R)	1.813	0.552

Composite reliability is a measurement of the overall reliability of a group of dissimilar but related items. Composite reliability is a measure of scale reliability that evaluates the internal consistency of a measure (Fornell & Larcker, 1981). The Composite reliability meets the same acceptable threshold as Cronbach's alpha (>0.70). The composite reliability values are larger than 0.70, indicating that the variables possess convergent validity (Hair et al., 2018). The composite reliability of all variables in the study is summarised in Table 7 below. According to Hair et al. (2018), a coefficient of less than 0.6 shows the low of internal consistency.

Table 7: Composite reliability

Variables/Indicators	Number of Items	CR
Ethical Communication	4	0.863
Responsibility	4	0.96
Etiquette	8	0.944

From Table 7 at the above, it was determined that the composite reliability values of all variables are considerably over the 0.70 threshold (0.863 - 0.96). This indicates that all variables in the study were consistent.

c. Convergent Validity – Average Variance Extracted

The convergence validity of scale items was assessed using the Average Variance Extracted (Fornell & Larcker, 1981). The average variance-extracted values were more than the criterion value 0.50 (Fornell & Larcker, 1981). Therefore, the scales utilised in this study provide the necessary convergent validity.

The Table 8 below displays the Average Variance Extracted (AVE) for each item/construct in the model. Each measure's average variance extracted (AVE) exceeded the recommended value of 0.50 as suggested by Fornell and Larcker (1981). In conclusion, the discussed values demonstrate that convergent validity was achieved, indicating that the employed measures are reliable.

Table 8: Convergent validity

Construct/Label	AVE (>0.5)
Ethical Communication	0.62
Responsibility	0.86
Etiquette	0.69

d. Discriminant Validity – Fornell-Larcker criterion

Convergent validity refers to a set of indicators that is supposed to measure a particular construct (Kline, 2016; Awang et al., 2019). Discriminant validity was assessed utilising the Fornell–Larcker criterion, which compares the square root of the Average Variance Extracted (AVE) for each construct with its correlations to other constructs. Table 9 illustrates that the square root of the Average Variance Extracted (AVE) for each construct—Ethical Communication (0.787), Responsibility (0.927), and Etiquette (0.830)—exceeds the corresponding inter-construct correlations. This demonstrates that each construct has greater variance with its indicators than with other constructs, so satisfying the discriminant validity criterion as proposed by Fornell and Larcker (1981). When the square root of AVE for a construct is greater than its correlation with the other constructs in the study, the Fornell and Larcker criterion states that discriminant validity has been proven (Fithri et al., 2024).

Consequently, the findings support the discriminant validity of the sexting prevention competencies measure across its three dimensions.

Table 9: Discriminant validity

	EC	R	E
EC	0.787	0.718	0.551
R	0.718	0.927	0.596
E	0.551	0.596	0.83

e. Confirmatory Factor Analysis (CFA) Sexting Prevention Competencies

After went through EFA process, model specifications include 16 items, four items for ethical communication, four items for responsibility, and eight items for etiquette. Nevertheless, this model ought to be adjusted so that it more accurately depicts the sample data or actual data. By referring to the modification index, modifications are executed. Consequently, items with strong correlation between the two items and high Modification Indices (MI) were changed. Hair et al. (2015) state that to establish a model fit, two items might be merged if they have a strong association. Meanwhile, if the item lacks theoretical support, it becomes necessary to adjust the model by eliminating items that have lower factor loadings (Hair et al. 2015). Based on modification indices and high conceptual similarity between items E9 and E10, E11 and E12, E13 and E14, E15 and E16, E10 and E15, E10 and E16, E9 and E15, E10 and E16, correlated residuals were allowed, consistent with recommendations by Byrne (2013) and Kline (2016) that allow such adjustments when theoretically justified.

Figure 1 presents the CFA model for Sexting Prevention Competencies. Based on the result shown in the table 10 below, the model fit indices reported that the overall fit indices for CFA with $\chi^2/df = 4.813$, RMSEA = 0.096, GFI = 0.895, NFI = 0.943, IFI = 0.954, TLI = 0.940, CFI = 0.954, AGFI = 0.844. The assessment of the CFA model's validity revealed that the model fit was satisfactory.

Table 10: Summary of model fit for measurement model – Sexting prevention competencies

Model	Chi-Square (χ^2)	df	χ^2/df	RMSEA	GFI	NFI	IFI	TLI	CFI	AGFI
Model CFA	442.824	92	4.813	.096	.895	.943	.954	.940	.954	.844

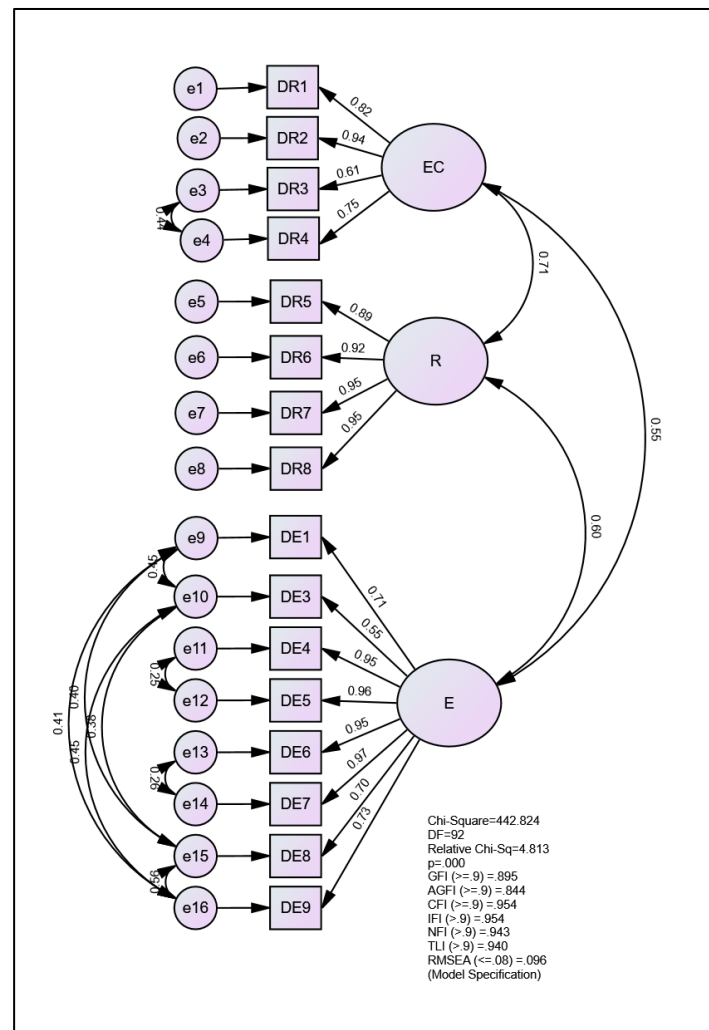


Figure 1: CFA model for sexting prevention competencies

The validated three constructs which are Ethical Communication, Responsibility, and Etiquette emphasises the multidimensional character of sexting prevention competencies. These findings correspond with Ribble's (2015) digital citizenship model, which conceptualizes appropriate online conduct as a synthesis of respect, ethics, and awareness. The robust internal consistency and model fit indices validate these measures as stable and dependable, thereby contributing to the psychometric literature in digital behaviour research. From a theoretical perspective, this research offers two significant contributions.

Initially, it connects comprehensive digital literacy frameworks with targeted risk-prevention skills pertinent to sexting. Secondly, it offers a culturally contextualised instrument for assessing these competences among Malaysian users, providing novel insights into the manifestation of ethical norms and social responsibility in digital interactions. This enhancement facilitates the development of future theoretical models that consider culture differences in digital risk behaviour.

DISCUSSION

This study aimed to assess sexting prevention competencies among Malaysian social media users by adapting three fundamental components from Ribble's digital citizenship framework: ethical digital communication, digital responsibility, and digital etiquette. The

findings offer significant insights into the relationship between these competences and users' capacity to resist and manage sexting-related risks.

The study indicated that respondents with high scores in ethical digital communication demonstrated greater awareness and assertiveness in dismissing improper or coercive online messages. This finding aligns to Benson (2023), who highlighted the significance of self-regulation and deliberate expression in mitigating risky online interactions. This is consistent with Mahadir et al. (2021), who discovered that insufficient communicative boundaries among Malaysian youth frequently resulted in ambiguous digital intimacy. The findings confirm that those possessing communication skills that prioritise respect, tone, and topic sensitivity are more effectively able to avoid from participating in sexting.

Individuals with high scores in digital responsibility exhibited a markedly greater awareness of the legal, social, and emotional implications of sexting. This supports the findings of Liverpool-Morrisa (2023) that digital risk perception is fundamental to teenage online behaviour. The evidence indicates that incorporating consequence-based awareness (e.g., content permanence, legal repercussions) into educational frameworks may serve as a significant deterrent to sexting. This study illustrates how responsibility and foresight in online environments, as adapted from Ribble's conceptualisation of responsibility, serve as crucial protective aspects.

A notable finding was the correlation between high digital etiquette and resistance to peer-induced sexting behaviours. Individuals who indicated engagement in respectful internet communication were more inclined to dismiss inappropriate requests or content. This supports Throuvala et al. (2021), who stated that digital etiquette serves as a social filter, promoting user politeness and personal boundaries. Furthermore, Ojeda and Del Rey (2022) illustrate that peer pressure associated with sexting is frequently alleviated by moral awareness and emotional self-regulation capabilities. Moreover, the emotional management and empathy inherent in digital etiquette norms seem to promote healthy decision-making in socially pressurised situations.

The research confirms the efficacy of Ribble's digital citizenship model as both an instructional instrument and a predictive framework for the prevention of online sexual risks. This study enhances the psychometric precision of the three dimensions most pertinent to sexting prevention, in contrast to other research such as in Ahmad et al. (2021) that examined digital citizenship in broad behavioural terms. The findings indicate that emphasising these factors can aid in organising preventive interventions, especially within Malaysian digital literacy initiatives.

CONCLUSION

This study sought to assess sexting prevention competencies among Malaysian social media users by adapting and psychometrically validating three essential components of Ribble's digital citizenship framework: ethical digital communication, digital responsibility, and digital etiquette. These constructs align closely with the dimensions explored in this study which are ethical communication, responsibility and etiquette. The findings confirm that these constructs are both conceptually pertinent and practically quantifiable, demonstrating statistical significance in predicting users' capacity to prevent sexting behaviours.

Participants exhibiting higher levels of ethical communication were more inclined to assertively dismiss inappropriate online interactions, whereas individuals with a robust sense of responsibility displayed greater awareness of the legal and emotional consequences of sexting. Furthermore, etiquette was strongly linked to the ability to uphold personal

boundaries amid peer pressure, underscoring its essential function in fostering respectful and secure online interactions. This study enhances the expanding research on quantifying digital citizenship through measurable competencies, especially in the Southeast Asian setting. This research diverges from prior studies that predominantly concentrated on general digital literacy.

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