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Cyber Risk among High School Students: A Thematic Review

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ABSTRACT

Technology Industrial Revolution 4.0, such as the internet, continues to develop in surprising ways where today, our life, education, and business rely on it. People, specifically high school students, are the majority using the internet in all countries, which means they have a higher risk of being exposed to cyber risk. However, some academic research has been done on cyber risk among high school students in Malaysia. Therefore, this thematic review (TR) aims to synthesise literature from 2018 to 2022 on the cyber risk among high school students using ATLAS.ti 22. A keyword search, followed by a filter using inclusion criteria from SCOPUS and Science Direct, identified 179 peer-reviewed journal articles. Yet, after the inclusion and exclusion process, only 33 articles were used as the final articles to be reviewed. A thematic review identified four clusters: cyber risk types, cyber risk effects, victim characteristics, and cyber risk prevention. Hence, this paper incorporates the latest information on cyber risk examples that high school students usually face. The findings will help future research on eliminating the cyber risk for high school students. They can serve as a directive and a remedy for the education sectors and policymakers to address the cyber threat.

Contribution/Originality: This study uses a new methodology using the thematic review technique and ATLAS.ti software to find patterns and trends, specifically, themes related to the cyber risk high school students face today. The result could be a guide and reference for teachers, the government, and policymakers in discovering mitigation solutions to control cyber risk.

1. Introduction

High school students are among the age groups that use the internet the most, according to International Telecommunication Union [ITU] (2021), which increases their

vulnerability to cyber risk. According to Cybersecurity (2022), the amount of cyber risk rose by 10,016 cases, or nearly 127%, in 2021 compared to 2020. All sectors were urged to resolve the Cybersecurity Malaysia issue to stop cyber risk targeting Malaysians, particularly the youth, primarily secondary school students (Cybersecurity, 2022). As a result, students need to practice cyber security. Cyber security is the defense against the cyber risk of internet-connected systems, including hardware, software, and data. Examples include setting up and maintaining firewalls and antivirus software. Most high school students, especially teenagers, are reluctant to discuss the issues they have had with cyber risk. Some students feel talking to their teachers and parents is a taboo. They felt that because they consider the cyber risk issue to be "their problem," teachers and parents are unable to assist them with their problems. They do not want "their secret" to be revealed to others. They also do not want to lose the freedom to access the internet whenever they want and without their parents' supervision (Adorjan & Ricciardelli, 2019). These days, kids enjoy using the internet.

The ability to use digital devices and the internet has significantly increased, as shown by the rise in ethical transgressions resulting from severe cyber threats, cybercrime, or any other cyber risk in Malaysia (Cybersecurity, 2020). Teenagers frequently use the internet for academic purposes and friendship-making, most of whom are secondary school students (Rahim et al., 2019). Children now make up the majority of those who use the internet, according to MCMC (2020), a 155% increase from 2016 to 2020. As a result, they are more vulnerable to cyber risk exposure while online.

Cyber security is now required to address cyber risk issues, such as cybercrime and cyber threats. Due to a lack of guidelines regarding how students should use the internet, cybersecurity is growing in importance. Understanding cybersecurity's technological and human aspects are essential (Rahman et al., 2020). Before encouraging students to practice cyber security, it is necessary to categorise the different types of cyber risks they face.

This paper aims to identify the tendencies, patterns, and trends related to cyber risk among high school students that have been covered in publications from 2018 to 2022. It is based on the following research question:

RQ: What are the current patterns and trends on cyber risk related to high school students' studies found in the literature from 2018 to 2022?

2. Materials and Methods

The term thematic review using ATLAS.ti 8 as the tool as being introduced by Zairul (2020) and later in Zairul (2021) and ATLAS.ti 9 by Zairul (2021) is implemented because the method of this study applies the thematic analysis procedure in a literature review. Clarke and Braun (2013) define thematic analysis as identifying patterns and developing themes through extensive reading on the subject. The following step is to identify the cyber risk phenomena among high school students in a recent publication from 2018 to 2022. The research's tenets are to analyse and interpret the findings to recommend the risk among secondary school students or youths in cyberspace. The selection of literature was performed according to several selection criteria: (1) Publication from 2018- 2022, (2) Have at least keyword(s) cyber risk studies, high school students, (3) Focusing on risk among high school students in the cyber

environment, (4) Not limiting the nation to find the risk of the cyber environment both inside and outside Malaysia and (5) Limiting the search to only articles and open access.

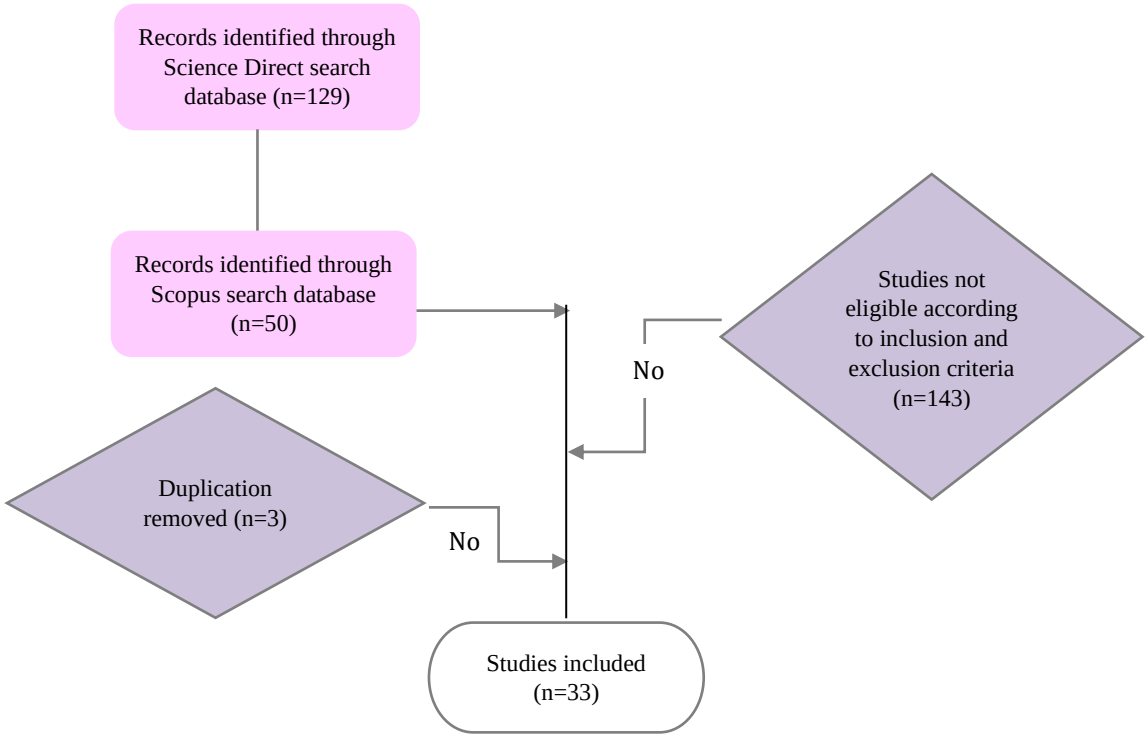
The literature search was performed in the Scopus and Science Direct search, with the first filter limiting the results to open-access article journals only. The initial search yielded 50 articles from (SCOPUS) and 129 (Science Direct) articles. However, 146 papers were removed due to their premature results and anecdotes or were not discussing cyber risk phenomena among high school students. Some of the articles were also discovered to be incomplete, or the complete reports are not accessible, have a broken link, are overlapped, or have incomplete metadata. Therefore, the final paper that will be reviewed is 33 articles (Table 1).

Table 1: Search strings from Scopus and Science Direct

SCOPUS	TITLE-ABS-KEY (*high* AND *school* AND *students* AND *studies* AND *cyber* AND *risk*) AND PUBYEAR > *2017* AND PUBYEAR > *2017*	50 results
Science Direct	high school students studies AND cyber risk	129 results
	Total	179 results

The articles were uploaded in the ATLAS.ti 22 as primary documents, and then each report was grouped into 1) author, 2) issue number, 3) periodical, 4) publisher, 5) volume and 6) year of publication. In doing so, the articles can be analysed according to the year it was published. Furthermore, the papers also will be analysed based on the discussion pattern according to the year. The total number of reports finalised into the final documents in the ATLAS.ti 22 is 33 documents (See Figure 1).

Figure 1: Inclusion and exclusion criteria in the thematic review



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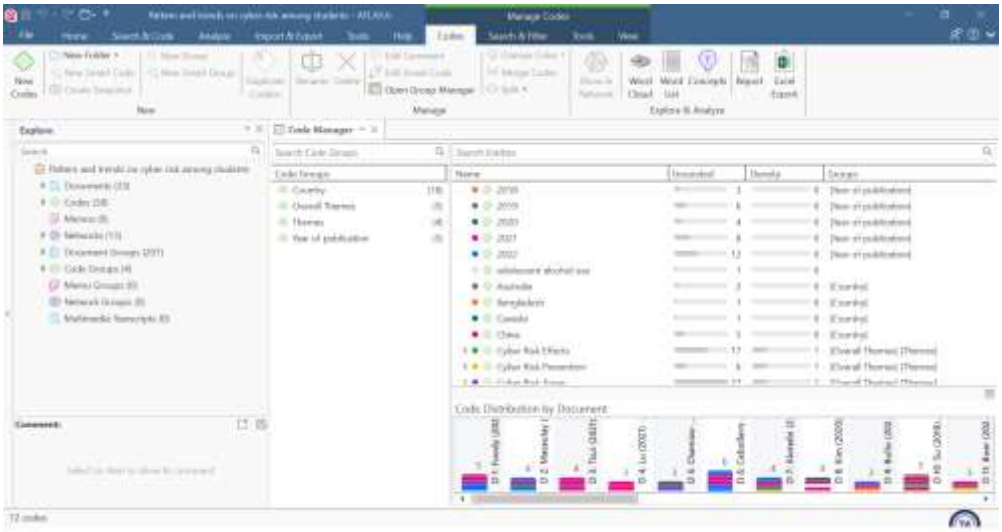
The remaining 33 metadata were transferred to ATLAS.ti 22 and created as primary documents. As shown in Figure 2, several groupings were initiated automatically in the code group based on the metadata established in Mendeley. The classification in ATLAS.ti 22 has made the organising more superficial and organised. In the first round of coding, 33 were formed. Later, the codes were organised into several themes to answer the research question, "What are the current patterns and trends on cyber risk that relate to high school students' studies found in the literature from 2018 to 2022?" provided to a final of four main themes to answer the research question. This review's findings will be split into two categories: quantitative and qualitative findings.

Figure 2: Mendeley metadata is used to create the code group



3. Results and Discussion

3.1. Quantitative results

The main conclusions of the thematic review are reported in this section. From Table 2, the trend of publishing is seen to be increasing from year to year, except in the year 2020, the direction indicated that the publishing is gradually decreased, which are three publications. Table 2 shows publications found according to journal and year. Some journals are Aggressive Behavior, BMC Psychiatry, Children and Youth Services Review, Comprehensive Psychiatry, Computers and Education, Computers in Human Behavior, and so on. Most articles published were in Computers in Human Behavior.

Table 2: Publications found according to journal and year

No	Journal	2018	2019	2020	2021	2022	Total
1	*Aggressive Behavior*	1	-	-	-	-	1
2	*BMC Psychiatry*	-	2	-	-	-	2
3	*Children and Youth Services Review*	-	1	-	-	1	2
4	*Comprehensive Psychiatry*	-	-	-	1	-	1
5	*Computers and Education*	-	-	-	-	2	2
6	*Computers in Human Behavior*	-	-	-	3	3	6
7	*Cyberpsychology*	-	-	-	-	1	1

8	*Frontiers in Psychiatry*	-	-	-	1	-	1
9	*Health Psychology Open*	-	-	1	-	-	1
10	*Heliyon*	-	1	-	-	-	1
11	*International Journal of Child-Computer Interaction*	-	-	-	-	1	1
12	*International Journal of Environmental Research and Public Health*	1	-	1	-	-	2
13	*Iranian Journal of Psychiatry and Behavioral Sciences*	-	-	1	-	-	1
14	*Journal of Adolescence*	-	1	-	1	-	2
15	*Journal of Adolescent Health*	-	-	-	1	-	1
16	*Journal of Interpersonal Violence*	1	-	-	-	-	1
17	*Journal of Research in Special Educational Needs*	-	1	-	-	-	1
18	*Journal of Social and Personal Relationships*	-	-	-	1	-	1
19	*Personality and Individual Differences*	-	-	-	-	1	1
20	*Technology in Society*	-	-	-	-	1	1
21	*Telecommunications Policy*	-	-	-	-	1	1
22	*The Lancet*	1	-	-	-	-	1
23	*Traffic Injury Prevention*	-	1	-	-	-	1
	Total	4	7	3	8	11	33

The 33 research articles were reviewed iteratively, with comparisons for similarities and differences. The process is done to achieve consistency in the result of subcategories. Table 2 contains a list of publications and their classification into subcategories. Furthermore, the various perspectives from which cyber risk patterns and trends have been studied thus far have been identified. The research articles have been categorised according to the terms used to present cyber risk among high school students. The initial coding of 24 codes was divided into four major themes: cyber risk types, cyber risk effects, victim characteristics, and cyber risk prevention. Table 3 and Table 4 show the four previously mentioned themes.

Table 3: Authors according to themes

	Cyber risk types	**Cyber risk effects**	**Victim characteristics**	**Cyber risk preventi**
Foody et al. (2021)	/		/	
Macaulay et al. (2022)	/			
Tsui & Cheng (2021)	/	/		
Lu et al. (2021)	/			
Chamizo-Nieto et al. (2020)	/			
Cebollero-Salinas et al. (2022a)	/	/	/	
Alotaibi & Mukred (2022)	/	/	/	
Kim & Faith (2020)	/			
Bullo & Schulz (2022)	/			
Su et al. (2019)	/	/		
Boer et al. (2021)		/		
Martínez-Domínguez & Fierros-González (2022)	/	/		
Bonell et al. (2018)				/

Ashburner et al. (2019)		/		
Uddin & Rahman (2022)	/			
Kapitány-Fövény et al. (2022)				/
Pichel et al. (2022)	/			
Werling et al. (2021)	/	/		
Cebollero-Salinaset et al. (2022b)	/			/
Moon & Mello (2021)		/		
Peng et al. (2019)	/			
Gámez-Guadix & Incera (2021)		/		
Exner-Cortens et al. (2021)	/			
Li et al. (2019)		/	/	
Gogus & Saygın (2019)			/	
Witsenboer et al. (2022)	/			
Leemis et al. (2019)	/			
Chi et al. (2020)	/			
Gómez-Ortiz et al. (2018)	/			/
Mohseny et al. (2021)	/	/	/	/
Chan et al. (2019)	/			
Lian et al. (2022)			/	

Table 4: The themes according to year

	2018	2019	2020	2021	2022
Cyber risk types	1	4	3	6	13
Cyber risk effects	-	3	-	8	3
Victim characteristic	-	2	-	2	3
Cyber risk prevention	2	-	-	1	2

The pattern was analysed using the year of the study conducted versus themes, as shown in Figure 1 and Figure 2. The paper found the trends in the cyber risk types that had begun in 2018, and no article discussed the cyber risk effect and victim characteristics in 2018. In addition, 13 publications found cyber risk types were the most popular theme in 2022, as indicated in Table 4. Figure 3 and Figure 4 demonstrate the most popular year discussing cyber risk is 2022.

Figure 3: Year of publications versus themes

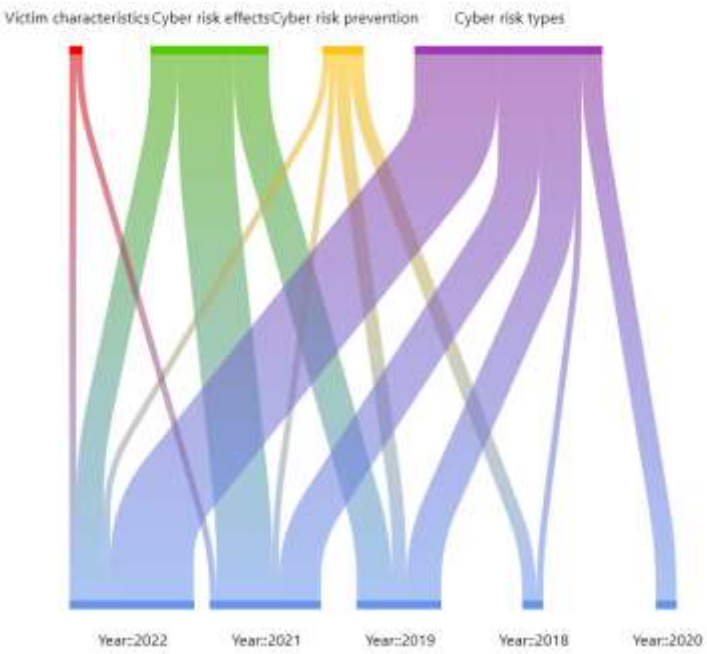
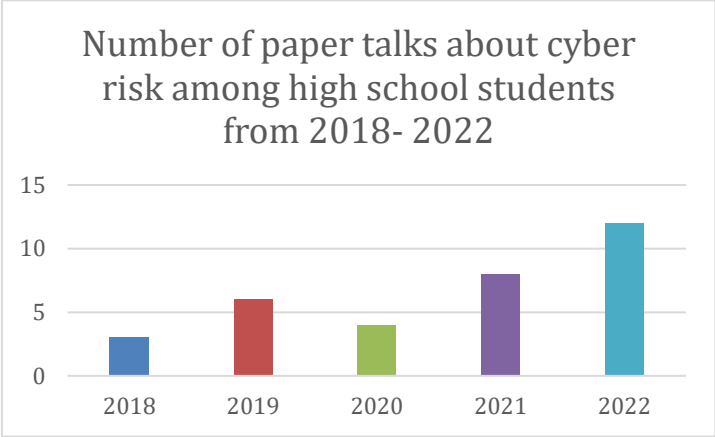


Figure 4: Number of publications versus year



The Word Cloud portrayed in Figure 5 indicates the most mentioned word from 33 articles are school and bullying, followed by cyber. Then, the terms students, victimisation, adolescents, study, the internet, and other words could be found and referred to in Figure 5.

Figure 5: Word Cloud generated from 33 articles

The findings of this research indicate an increasing trend in 2022. Results show that the most popular country discussing cyber risk is Spain, which has six publications, followed by China, with five publications. The third most publication found in the country is the States of America, which has four publications. Other countries are Australia, Netherlands, and Switzerland, which had two publications. Then the following country is Bangladesh, England, Georgia, Hungary, Iran, Ireland, Mexico, Saudi Arabia, Turkey, United Kingdom and Vietnam, with one publication for each country. Nonetheless, no study on cyber risk has been found in Malaysia, and this evidence can be referred to in Table 5 and Figure 6.

Table 5: The distribution of articles according to country and year

Country	2018	2019	2020	2021	2022	Total
Australia	-	1	-	-	1	2
Bangladesh	-	-	-	-	1	1
Canada	-	-	-	1	-	1
China	-	3	-	1	1	5
England	1	-	-	-	-	1
Georgia	-	1	-	-	-	1
Hungary	-	-	-	-	1	1
Iran	-	-	-	1	-	1
Ireland	-	-	-	1	-	1
Mexico	-	-	-	-	1	1
Netherlands	-	-	-	1	1	2
Saudi Arabia	-	-	-	-	1	1
Spain	1	-	1	1	3	6
Switzerland	-	-	-	1	1	2
Turkey	-	1	-	-	-	1
United Kingdom	-	-	-	-	1	1
United States of America	-	1	1	2	-	4
Vietnam	-	-	1	-	-	1

Figure 6: Articles based on country published

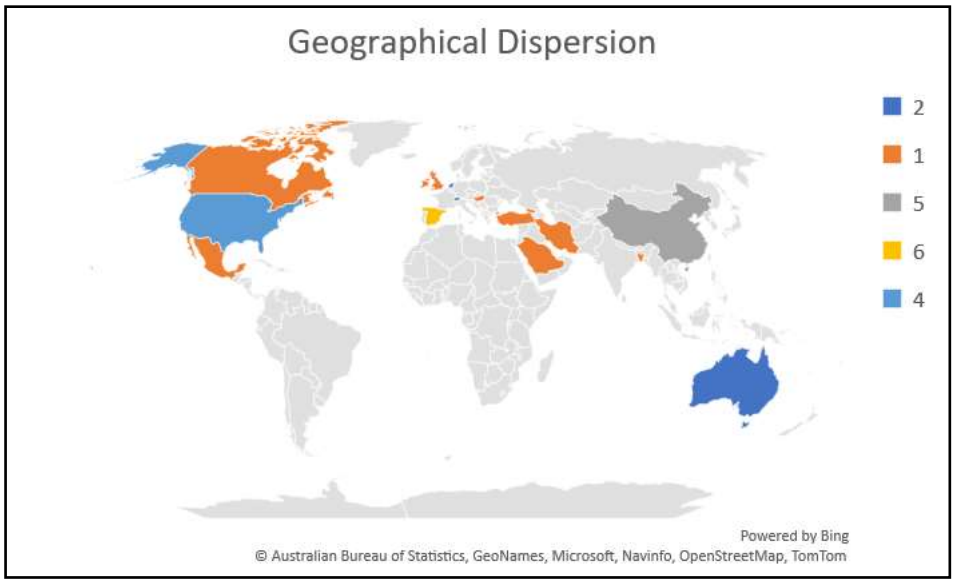
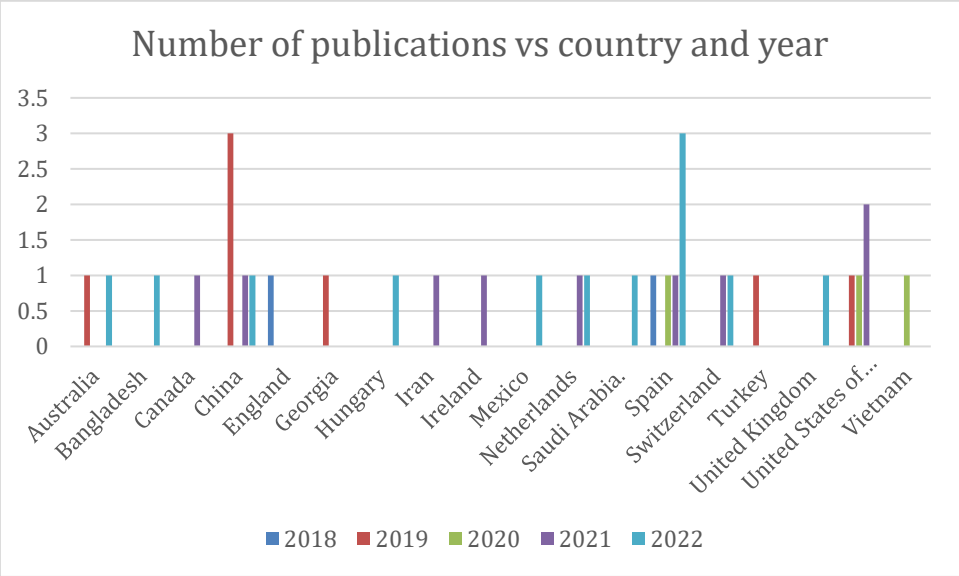


Figure 7 shows the number of publications versus country and year. Spain and China were the two countries leading the most journals. However, Spain is the country that published articles most in 2022, while China was, in 2019, issued the highest.

Figure 7: Number of publications vs country and year



3.2. Qualitative findings

Figure 8 portrays a network containing four themes extracted from the 33 articles: cyber risk types, cyber risk effects, victim characteristics and cyber risk prevention.

Figure 8: An overall network of how thematic reviews are used to answer the Research Question (RQ)

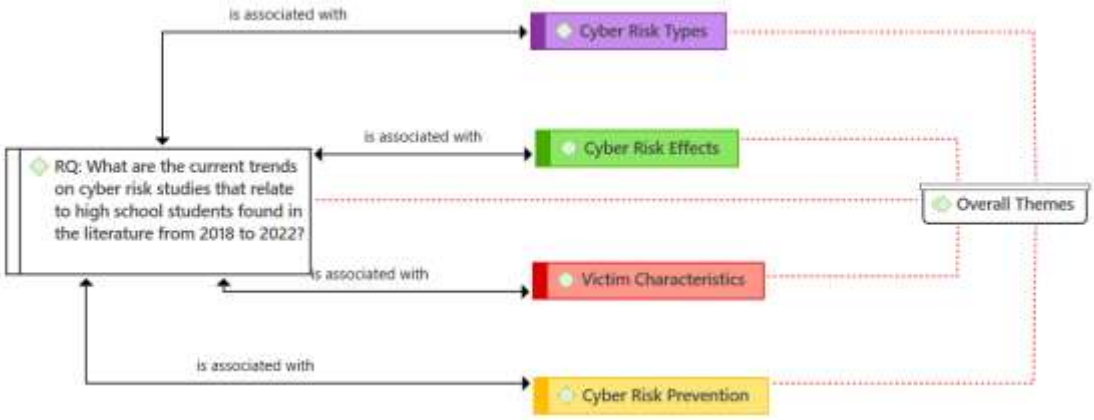
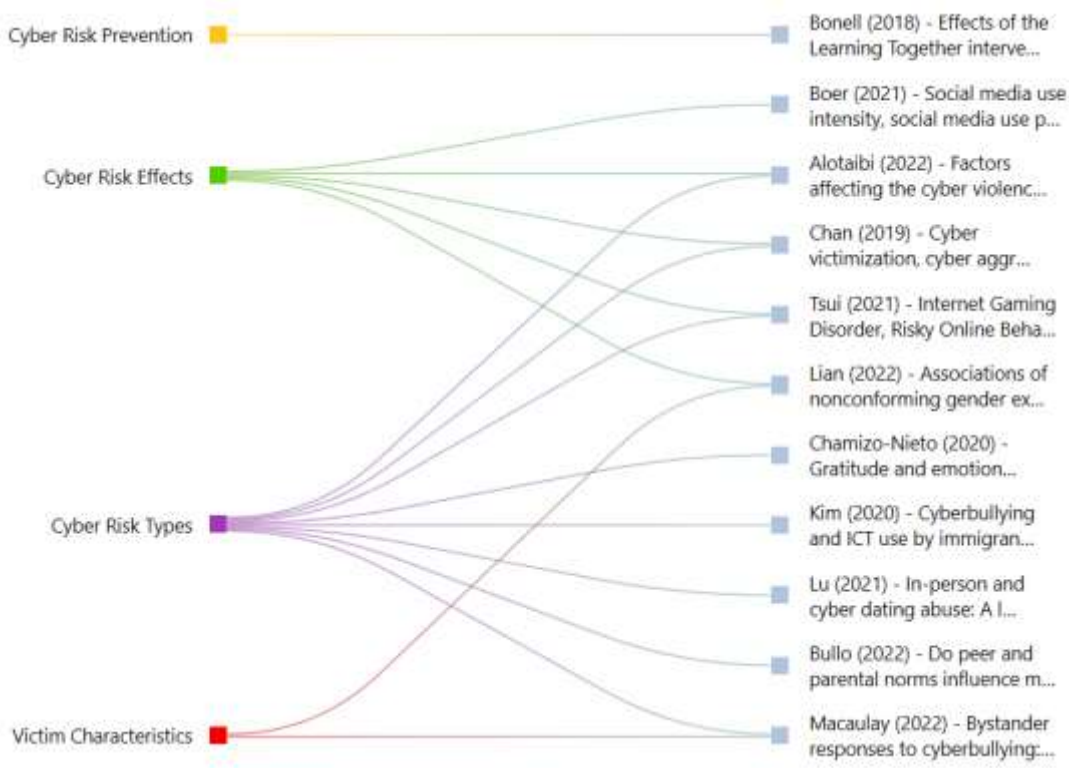


Figure 9 Indicates the four themes related to particular articles in the literature.

Figure 9: Sankey Diagram on four themes that correlate with specific articles



4. What current patterns and trends on cyber risk relate to high school students' studies found in the literature from 2018 to 2022?

In the first round, the initial coding resulted in cyber risk types.

4.1. Theme 1: Cyber Risk Types

A cyber risk is something bad that could happen to someone while they are online. Cyber risk can affect high school students in terms of mentally or physically damage since they are exposed to many types of cyber risk (Gogus & Saygın, 2019). There are many types of cyber risk among high school students, namely cyberbullying (Macaulay et al., 2022), sexting behaviour (Foody et al., 2021), internet gaming disorder, risky online behaviour (Tsui & Cheng, 2021), cyber dating abuse (Lu et al., 2021), cyber-aggression (Chamizo-Nieto et al., 2020), and cyber gossip (Cebollero-Salinas et al., 2022a).

One of the cyber risk types, cyberbullying, seems to be the most popular cited of all 33 articles. Students face cyberbullying when exposed to mean people in their surroundings, such as using harsh words, body shaming and making fun of victims' names. However, few studies showed that specific victim characteristics might tend to be bullied by people in the cyber world. Thus, these potential victims could be given more awareness and knowledge about cyberbully protection than non-potential victims to reduce cyberbullying cases.

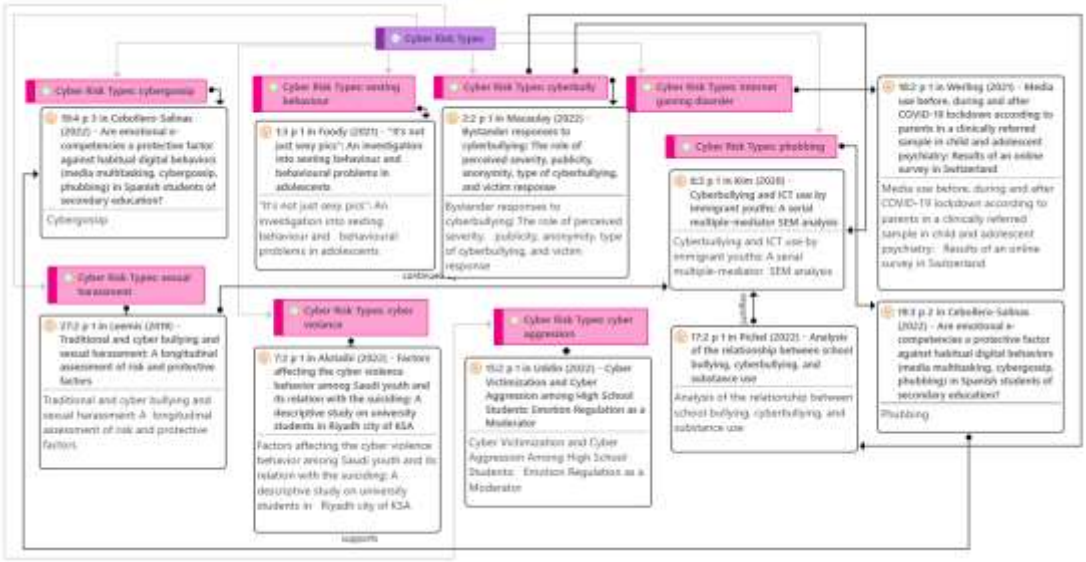
Nonetheless, Foody et al. (2021) explain that sexting behaviour has become a norm among youths, specifically gender among boys and LGBTQ children. Meanwhile, Tsui

and Cheng (2021) focus on internet gaming disorder and risky online behaviour prevalent, which is very popular among youths today. The cyber risk may result in psychological health such as body aches due to stress.

On the other hand, Lu et al. (2021) portray cyber dating abuse and relate it with the risk of physical and psychological matters. Chamizo-Nieto et al. (2020) explain that youths high in emotional intelligence are less aggressive from cyberbullying perspective. Finally, Cebollero-Salinas et al. (2022a) state that students who own smartphones before they are 11 years old are prone to cyberaggression. The alarming phenomena of emerging cyber risk are so severe that all parties in government and non-government must work together to solve the cyber threat issues.

To conclude, various cyber risks can be found in the cyber environment. Thus, cyber risks must be prevented by finding solutions to eliminate cyber threats. As a result, it will help the students to feel secure when they use the internet throughout the cyber world. Figure 10 shows a network diagram related to the Cyber Risk Types theme.

Figure 10: Network diagram from ATLAS.ti 22 about theme Cyber Risk Types



In the second round, the coding resulted in cyber risk effects.

4.2. Theme 2: Cyber Risk Effects

Since people are depending on the internet to do most of the activity daily, they may get the harmful effects of the cyber risk experience. Cyber risk effects can be defined as dire consequences resulting from cyber risk itself.

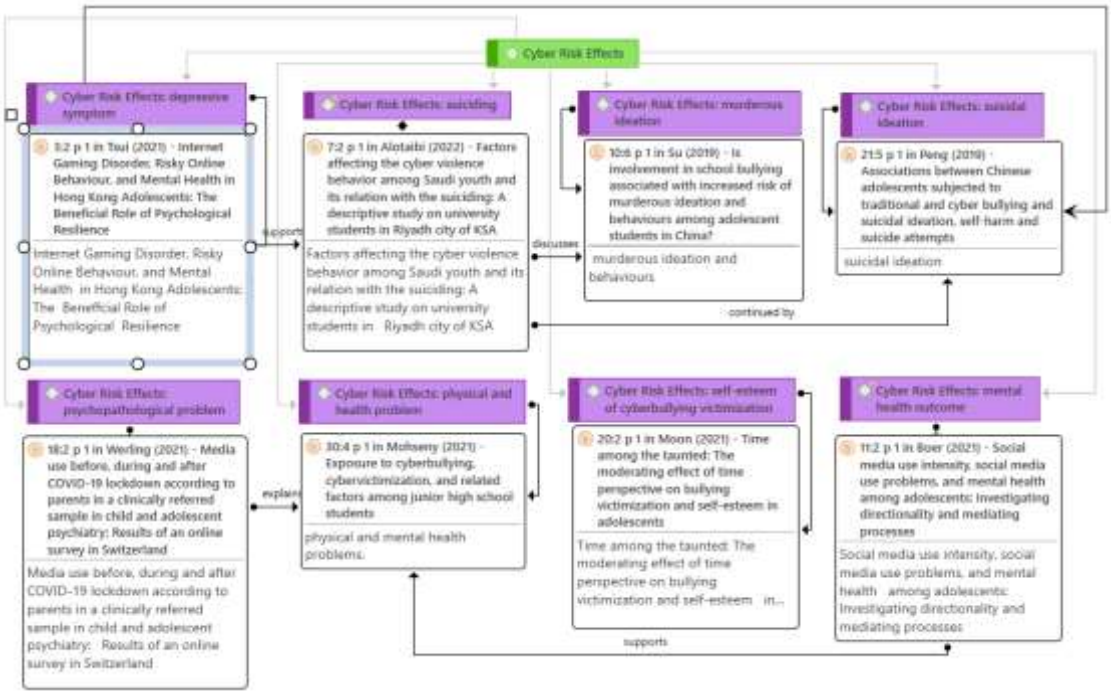
There are some cyber risk effects, such as mental health (Boer et al., 2021; Gámez-Guadix & Incera, 2021; Tsui & Cheng, 2021) as well as physical (Mohseny et al., 2021), suiciding (Alotaibi & Mukred, 2022), suicidal ideation (Peng et al., 2019), homicidal ideation and behaviours (Su et al., 2019), psychological harm (Ashburner et al., 2019), unstable emotion (Uddin & Rahman, 2022), psychiatry problem (Li et al., 2019; Werling et al., 2021) and low self-esteem (Moon & Mello, 2021).

The cyber risk effect can be categorised into two main groups: physical and mental health. Mohseny et al. (2021) say the cyber risk effect can affect high school students physically. In contrast, other authors relate to mental health. For example, Boer et al. (2021) reveal that the intensity of using social media may lead to depressive symptoms, life satisfaction and mental health among youths. On the other hand, Gámez-Guadix and Incera (2021) state that depression and anxiety become a norm mental health outcome among sexual minorities such as LGBTQ. They tend to involve in sexting, sextortion, and revenge porn.

The statement from Boer et al. (2021) is very distressing because they should be encouraged to defend themselves from becoming victims. Unfortunately, these young minorities tend to be involved in suicidal ideation, as mentioned by Peng et al. (2019) and end up their life suiciding themselves (Alotaibi & Mukred, 2022). Peng et al. (2019) focus on Chinese youths, while Alotaibi and Mukred (2022) aim at Saudi children. Moon and Mello (2021) assert that youths' self-esteem could be decreased to a deficient level. Nonetheless, time can help to moderate their self-esteem. Thus, cyber risk effects are severe because it could change someone to be negative in thoughts and lead to the loss of people's lives.

In a nutshell, the effects of cyber risk affect high school students severely that might involve the death of innocent people. Therefore, action must be taken to mitigate their impacts, such as prevention plans by various parties like schools, parents, ministries, and other stakeholders. A network diagram for the Cyber Risk Effects theme is shown in Figure 11.

Figure 11: Network diagram from ATLAS.ti 22 about theme Cyber Risk Effects



In the third round, the coding resulted in victim characteristics.

4.3. Theme 3: Victim Characteristics

By extracting codes and, later, themes from the 33 articles cited in this article, victim characteristics could be identified and predicted. Most victims are between 11 and 20 years old, and high school students are among them. It means they are more likely to become cyber victims if they are not cautious in using the internet.

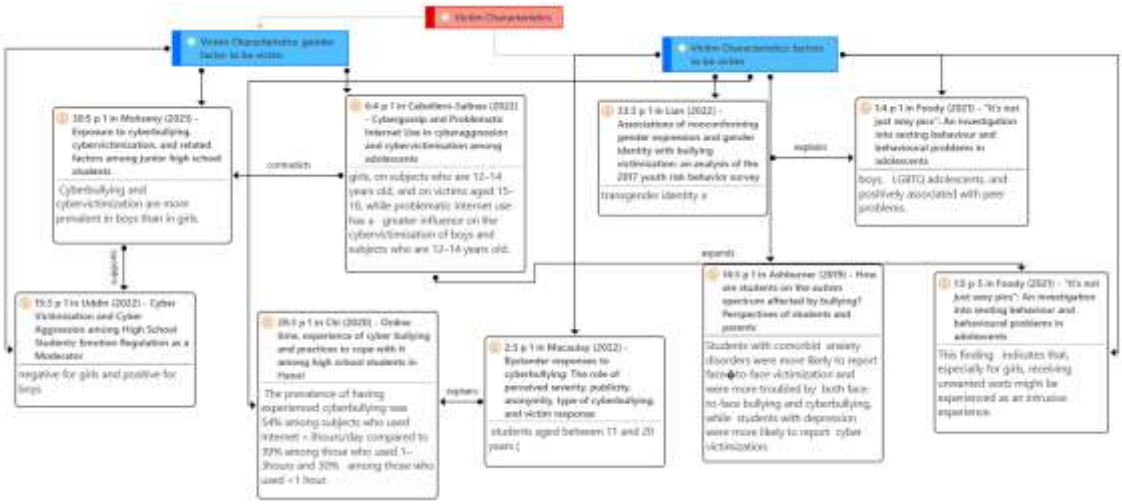
Looking through and analysing these 33 papers allowed us to identify victim characteristics. Understanding the types of people prone to becoming victims of cyber risk requires an understanding of victim characteristics. It is vital to locate the characteristics to make them involved in mitigation plans and solutions in the future.

Some of the authors discovered the personalities of cyber victims. Regarding gender, boys are more likely than girls to be exposed as cyber victims (Cebollero-Salinas et al., 2022a; Foody et al., 2021; Mohseny et al., 2021; Uddin & Rahman, 2022).

However, on the contrary, girls who are 15-18 years old and have problematic internet use will be cyber risk victims (Cebollero-Salinas et al., 2022a). LGBT youths are also always related to being victimised and typically have issues with their peers. The statement was mentioned by Foody et al. (2021) and Lian et al. (2022). On the other hand, students who already have depression also have been reported to be cyber victims (Ashburner et al., 2019). Thus, prevention plans should focus on these victim characteristics to keep them safe from cyber risk.

In conclusion, those students with mentioned characteristics could be identified as potential victims. They will be the focus in school to be given some awareness of cyber risks and steps to avoid the issue. It is for the reason to get rid of the cyber risk consequences by youths such as depression, anxiety, and suicidal ideation as mentioned in theme two discussions, which are cyber risk effects. A network diagram associated with the Victim Characteristics subject may be seen in Figure 12.

Figure 12: Network diagram from ATLAS.ti 22 about theme Victim Characteristics



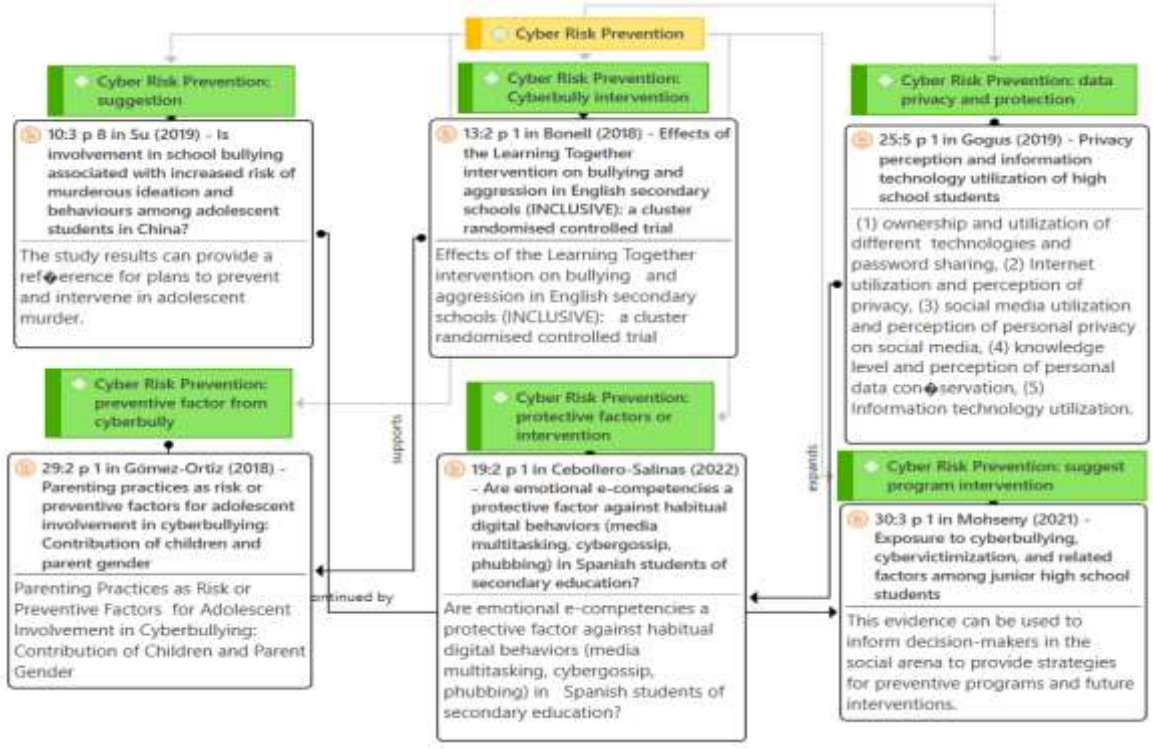
In the fourth round, the coding developed in cyber risk prevention.

4.4. Theme 4: Cyber Risk Prevention

Cyber risk prevention is essential because the strategy can protect high school students from the destructive effects of cyber risk that could be happened to anyone. Cyber risk prevention means a strategic approach to avoid cyber threats. Bonell et al. (2018) suggested applying the Learning Together intervention to control cyberbullying among high school students would be a good plan. While Cebollero-Salinas et al. (2022b) said emotional e-competencies are a system that can help cater to cyber risk types like cyber gossip. On the other hand, privacy utilisation has to be done, for instance, setting personal privacy on social media (Gogus & Saygın, 2019). In addition, parental control is crucial as part of cyber risk prevention among high school students especially cyberbullying (Gómez-Ortiz et al., 2018). Finally, decision-makers should have their role to provide preventive programs to mitigate cyber risk as a solution to reduce the risk.

An intervention involving the whole school environment using restorative procedure leads to the most efficient approaches to the students avoid cyber risk (Bonell et al., 2018). Nonetheless, Su et al. (2019) and Mohseny et al. (2021) suggest a plan to prevent youth cyber risks like murderous issues and cyber victimisation among high school students. Emotional e-competencies education is suggested to be exposed to the students to eliminate media multitasking, cyber gossip and phubbing. Furthermore, Gogus and Saygin (2019) say that students must be aware of their privacy in sharing personal data. Parental guidance is also essential and should be part of the intervention plan for defending against cyber risk among students (Gómez-Ortiz et al., 2018). Cyber risk prevention must be well-planned so that students will be happy browsing the internet in the cyber environment without concerning about the cyber-attacks. To recapitulate, stakeholders must make crucial plans and should play their roles to cater to this kind of cyber risk that is becoming more prominent daily in most countries worldwide. Figure 13 depicts a network diagram relevant to the theme of Cyber Risk Prevention.

Figure 13: Network diagram from ATLAS.ti 22 about the theme Cyber Risk Prevention



5. Conclusion

This review paper highlights the most common patterns and trends in cyber risk related to high school students' studies in the world. The results of ATLAS.ti version 22's analysis revealed patterns and trends in cyber risk that highlighted cyber risk types, cyber risk effects, victim characteristics, and cyber risk prevention. The cyber environment contains a variety of cyber dangers. Therefore, identifying ways to eliminate cyber hazards is necessary to prevent cyber risks. Thus, it will benefit the high school students by making them feel comfortable in using the internet in the virtual world.

High school pupils are particularly vulnerable to the effects of cyber danger, which could even result in innocent lives being lost. Therefore, action must be taken to lessen their impacts, such as prevention plans by numerous parties, such as schools, parents, ministries, and other stakeholders. Students that exhibit the traits mentioned earlier may be considered as potential victims. They will be concentrating on their cyber risk awareness education so that they may learn about cyber hazards and how to mitigate them. As discussed in theme two discussions, which is cyber risk effects, it aims to eradicate the youth-related consequences of cyber risk, such as depression, anxiety, and suicide ideation.

On the other hand, numerous issues are raised regarding cyber risk involving secondary school students and the cyber risk phenomenon among students. Several discussions have been presented that could benefit everyone, specifically high school students. However, few debates focus on a mitigation plan to spread awareness among high school students to apply cyber security behaviour protections. Thus, this is the gap that someone could do some research study about in the future.

To summarise, stakeholders from government or non-government sectors must develop critical plans and fulfil their responsibilities to address these types of cyber risk, which is becoming more prevalent daily in most nations. Eventually, the programs will help improve the quality of people's lives and education, specifically among high school students.

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Conflict of Interest

The authors declare no conflict of Interest.

References

Adorjan, M., & Ricciardelli, R. (2019). *Cyber-risk and youth: Digital citizenship, privacy and surveillance* (1st ed.). Routledge. https://doi.org/10.4324/9781315158686

Alotaibi, N. B., & Mukred, M. (2022). Factors affecting the cyber violence behavior among Saudi youth and its relation with the suiciding: A descriptive study on university students in Riyadh city of KSA. *Technology in Society, 68*(1), 1-13. https://doi.org/10.1016/j.techsoc.2022.101863

Ashburner, J., Saggers, B., Campbell, M. A., Dillon-Wallace, J. A., Hwang, Y.-S., Carrington, S., & Bobir, N. (2019). How are students on the autism spectrum affected by bullying? Perspectives of students and parents. *Journal of Research in Special Educational Needs, 19*(1), 27–44. https://doi.org/10.1111/1471-3802.12421

Boer, M., Stevens, G. W. J. M., Finkenauer, C., de Looze, M. E., & van den Eijnden, R. J. J. M. (2021). Social media use intensity, social media use problems, and mental health among adolescents: Investigating directionality and mediating processes. *Computers in Human Behavior. 116*(11), 1-17. https://doi.org/10.1016/j.chb.2020.106645

Bonell, C., Allen, E., Warren, E., McGowan, J., Bevilacqua, L., Jamal, F., Legood, R., Wiggins, M., Opondo, C., Mathiot, A., Sturgess, J., Fletcher, A., Sadique, Z., Elbourne, D., Christie, D., Bond, L., Scott, S., & Viner, R. M. (2018). Effects of the Learning Together intervention on bullying and aggression in English secondary schools (INCLUSIVE): a cluster randomised controlled trial. *The Lancet, 392*(11), 2452–2464. https://doi.org/10.1016/S0140-6736(18)31782-3

Bullo, A., & Schulz, P. J. (2022). Do peer and parental norms influence media content-induced cyber aggression? *Computers in Human Behavior. 129*(12), 1-12. https://doi.org/10.1016/j.chb.2021.107136

Cebollero-Salinas, A., Cano-Escoriaza, J., & Orejudo, S. (2022a). Are emotional e-competencies a protective factor against habitual digital behaviors (media multitasking, cybergossip, phubbing) in Spanish students of secondary education? *Computers and Education. 181*(1), 1-13. https://doi.org/10.1016/j.compedu.2022.104464

Cebollero-Salinas, A., Orejudo, S., Cano-Escoriaza, J., & Íñiguez-Berrozpe, T. (2022b). Cybergossip and Problematic Internet Use in cyberaggression and cybervictimisation among adolescents. *Computers in Human Behavior. 131*(2), 1-11. https://doi.org/10.1016/j.chb.2022.107230

Chamizo-Nieto, M. T., Rey, L., & Pellitteri, J. (2020). Gratitude and emotional intelligence as protective factors against cyber-aggression: Analysis of a mediation model. *International Journal of Environmental Research and Public Health, 17*(12), 1–10. https://doi.org/10.3390/ijerph17124475

Chan, S. F., La Greca, A. M., & Peugh, J. L. (2019). Cyber victimisation, cyber aggression, and adolescent alcohol use: Short-term prospective and reciprocal associations. *Journal of Adolescence, 74*(1), 13–23. https://doi.org/10.1016/j.adolescence.2019.05.003

Chi, P. T. L., Lan, V. T. H., Ngan, N. H., & Linh, N. T. (2020). Online time, experience of cyber bullying and practices to cope with it among high school students in Hanoi. *Health Psychology Open, 7*(1), 1-6. https://doi.org/10.1177/2055102920935747

Clarke, V., & Braun, V. (2013). Successful Qualitative Research: A Practical Guide for Beginners (1st ed.). *SAGE Publications. https://books.google.com/books?id=EV_Q06CUsXsC&pgis=1*

Cybersecurity, M. (2022). *MyCERT.* https://www.mycert.org.my/portal/statistics-content?menu=b75e037d-6ee3-4d11-8169-66677d694932&id=77be547e-7a17-

444b-9698-8c267427936c

Exner-Cortens, D., Baker, E., & Craig, W. (2021). The National Prevalence of Adolescent Dating Violence in Canada. *Journal of Adolescent Health, 69*(3), 495–502. https://doi.org/10.1016/j.jadohealth.2021.01.032

Foody, M., Mazzone, A., Laffan, D. A., Loftsson, M., & O'Higgins Norman, J. (2021). "It's not just sexy pics": An investigation into sexting behaviour and behavioural problems in adolescents. *Computers in Human Behavior. 117*(5), 1-8. https://doi.org/10.1016/j.chb.2020.106662

Gámez-Guadix, M., & Incera, D. (2021). Homophobia is online: Sexual victimisation and risks on the internet and mental health among bisexual, homosexual, pansexual, asexual, and queer adolescents. *Computers in Human Behavior. 119*(1), 1-10. https://doi.org/10.1016/j.chb.2021.106728

Gogus, A., & Saygın, Y. (2019). Privacy perception and information technology utilisation of high school students. *Heliyon. 5*(4), 1-9. https://doi.org/10.1016/j.heliyon.2019.e01614

Gómez-Ortiz, O., Romera, E. M., Ortega-Ruiz, R., & Del Rey, R. (2018). Parenting practices as risk or preventive factors for adolescent involvement in cyberbullying: Contribution of children and parent gender. *International Journal of Environmental Research and Public Health, 15*(11), 1-23. https://doi.org/10.3390/ijerph15122664

ITU. (2021). *Measuring digital development: Facts and figures.* ITU Publications. https://www.itu.int/en/mediacentre/Documents/MediaRelations/ITU Facts and Figures 2019 - Embargoed 5 November 1200 CET.pdf%0Ahttps://www.itu.int/en/ITU-D/Statistics/Pages/facts/default.aspx

Kapitány-Fövény, M., Lukács, J. Á., Takács, J., Kitzinger, I., Soósné Kiss, Z., Szabó, G., Falus, A., & Feith, H. J. (2022). Gender-specific pathways regarding the outcomes of a cyberbullying youth education program. *Personality and Individual Differences. 186*(10), 1-6. https://doi.org/10.1016/j.paid.2021.111338

Kim, S., & Faith, M. S. (2020). Cyberbullying and ICT use by immigrant youths: A serial multiple-mediator SEM analysis. *Children and Youth Services Review, 110*(11), 1-11. https://doi.org/10.1016/j.childyouth.2019.104621

Leemis, R. W., Espelage, D. L., Basile, K. C., Mercer Kollar, L. M., & Davis, J. P. (2019). Traditional and cyber bullying and sexual harassment: A longitudinal assessment of risk and protective factors. *Aggressive Behavior, 45*(2), 181–192. https://doi.org/10.1002/ab.21808

Li, J., Sidibe, A. M., Shen, X., & Hesketh, T. (2019). Incidence, risk factors and psychosomatic symptoms for traditional bullying and cyberbullying in Chinese adolescents. *Children and Youth Services Review. 107*(10). 1-8. https://doi.org/10.1016/j.childyouth.2019.104511

Lian, Q., Li, R., Liu, Z., Li, X., Su, Q., & Zheng, D. (2022). Associations of nonconforming gender expression and gender identity with bullying victimisation: An analysis of the 2017 youth risk behavior survey. *BMC Public Health, 22*(4), 1-7. https://doi.org/10.1186/s12889-022-13071-6

Lu, Y., Van Ouytsel, J., & Temple, J. R. (2021). In-person and cyber dating abuse: A longitudinal investigation. *Journal of Social and Personal Relationships, 38*(12), 3713–3731. https://doi.org/10.1177/02654075211065202

Macaulay, P. J. R., Betts, L. R., Stiller, J., & Kellezi, B. (2022). Bystander responses to cyberbullying: The role of perceived severity, publicity, anonymity, type of cyberbullying, and victim response. *Computers in Human Behavior. 131*(6), 1-13. https://doi.org/10.1016/j.chb.2022.107238

Martínez-Domínguez, M., & Fierros-González, I. (2022). Determinants of internet use by

school-age children: The challenges for Mexico during the COVID-19 pandemic. *Telecommunications Policy, 46*(1), 1-18. https://doi.org/10.1016/j.telpol.2021.102241

MCMC. (2020). *Internet users survey 2020.* Malaysian Communications And Multimedia Commission. https://www.mcmc.gov.my/skmmgovmy/media/General/pdf/Internet-Users-Survey-2018-(Infographic).pdf

Mohseny, M., Zamani, Z., Basti, S. A., Sohrabi, M.-R., Najafi, A., & Tajdini, F. (2021). Exposure to cyberbullying, cybervictimization, and related factors among junior high school students. *Iranian Journal of Psychiatry and Behavioral Sciences, 14*(4), 1-8. https://doi.org/10.5812/ijpbs.99357

Moon, J., & Mello, Z. R. (2021). Time among the taunted: The moderating effect of time perspective on bullying victimisation and self-esteem in adolescents. *Journal of Adolescence, 89*(1), 170–182. https://doi.org/10.1016/j.adolescence.2021.05.002

Peng, Z., Klomek, A. B., Li, L., Su, X., Sillanmäki, L., Chudal, R., & Sourander, A. (2019). Associations between Chinese adolescents subjected to traditional and cyber bullying and suicidal ideation, self-harm and suicide attempts. *BMC Psychiatry, 19*(1), 1-8. https://doi.org/10.1186/s12888-019-2319-9

Pichel, R., Feijóo, S., Isorna, M., Varela, J., & Rial, A. (2022). Analysis of the relationship between school bullying, cyberbullying, and substance use. *Children and Youth 134*(5), 1-8. *Services Review.* https://doi.org/10.1016/j.childyouth.2022.106369

Rahim, N. H. A., Hamid, S., & Kiah, M. L. M. (2019). Enhancement of cybersecurity awareness program on personal data. *Malaysian Journal of Computer Science, 32*(3), 221–245. https://doi.org/https://doi.org/10.22452/mjcs.vol32no3.4

Rahman, N. A. A., Sairi, I. H., Zizi, N. A. M., & Khalid, F. (2020). The importance of cybersecurity education in school. *International Journal of Information and Education Technology, 10*(5). 378-382. https://doi.org/10.18178/ijiet.2020.10.5.1393

Su, P.-Y., Wang, G.-F., He, H., Han, A.-Z., Zhang, G.-B., & Xu, N. (2019). Is involvement in school bullying associated with increased risk of murderous ideation and behaviours among adolescent students in China? *BMC Psychiatry, 19*(1), 1-10. https://doi.org/10.1186/s12888-019-2108-5

Tsui, Y. Y.-Y., & Cheng, C. (2021). Internet Gaming Disorder, Risky Online Behaviour, and Mental Health in Hong Kong Adolescents: The Beneficial Role of Psychological Resilience. *Frontiers in Psychiatry, 12*(10), 1-10. https://doi.org/10.3389/fpsyt.2021.722353

Uddin, M. K., & Rahman, J. (2022). Cyber Victimization and Cyber Aggression among High School Students: Emotion Regulation as a Moderator. *Cyberpsychology, 16*(2), 1-14. https://doi.org/10.5817/CP2022-2-4

Werling, A. M., Walitza, S., Grünblatt, E., & Drechsler, R. (2021). Media use before, during and after COVID-19 lockdown according to parents in a clinically referred sample in child and adolescent psychiatry: Results of an online survey in Switzerland. *Comprehensive Psychiatry, 109*(7), 1-10. https://doi.org/10.1016/j.comppsych.2021.152260

Witsenboer, J. W. A., Sijtsma, K., & Scheele, F. (2022). Measuring cyber secure behavior of elementary and high school students in the Netherlands. *Computers and Education, 186*(4), 1-11. https://doi.org/10.1016/j.compedu.2022.104536

Zairul, M. (2020). A thematic review on student-centred learning in the studio education. *Journal of Critical Reviews, 7*(2), 504–511. https://doi.org/10.31838/jcr.07.02.95

Zairul, M. (2021). A thematic review on Industrialised Building System (IBS) publications from 2015-2019: Analysis of patterns and trends for future studies of

IBS in Malaysia. *Pertanika Journal of Social Sciences and Humanities, 29*(1), 635–652. https://doi.org/10.47836/PJSSH.29.1.35