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Influence of Parental Mediation, Adolescents' Characteristics and Behaviours on Internet Risk Exposure

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Abstract— Increase in the use of the Internet by adolescents, though beneficial, has become an ample means to their risk exposure. There is a dearth of information on how parental mediation and children's risky Internet behaviours jointly influence adolescent Internet risk exposure, particularly in Africa. The present study, therefore, investigates the influence of parental mediation and adolescents' Internet behaviors on Internet risk exposure of students in selected private, state and federal secondary schools in Oyo State, Nigeria. Using the survey research method, a structured questionnaire adapted from three previous studies was constructed and used for data collection. Three hundred copies of the questionnaire were administered among students, out of which two hundred and thirty nine (239) were retrieved. Using the Statistical Package for the Social Sciences Version 23, descriptive and inferential analyses were performed. It was found that none of the parental mediation strategies had a significant negative effect on children's Internet risk exposure while some students' behaviours and characteristics had significant positive effects on risk exposure. The study recommends, among others, that stakeholders in education and technology sectors should attend to Internet safety needs of these secondary school students.

Keywords/Index Terms—Adolescents Internet Use, Internet Risk Exposure, Parental Mediation, Adolescents Vulnerability, Internet Risky Behaviours

1. Introduction

The pervasiveness and use of the Internet and its associated technologies are continuously on the increase among children, adolescents and young adults. These categories of people, also called the digital natives, frequently access the Internet for numerous beneficial purposes that cut across different aspects of their lives (Khurana et al., 2015; Holloway et al., 2013). These Information and Communication Technology tools have therefore, become important instruments for learning and development either in the formal or informal environment (Iroaganachi et al., 2020). The Internet, however, being an open and uncontrolled medium, has also become a suitable platform for unscrupulous beings to carry out their onslaughts. Pervasiveness of cybercrime is continually on the increase in direct proportion to Internet adoption in all facets of human endeavour (Onyekpeze et al., 2021; Azeez & Anochirionye, 2017). This therefore, has made the Internet a possible meeting point for cybercrime perpetrators, their contents, activities and the young and unsuspecting children and adolescents (Çankaya & Odabasi, 2009). Furthermore, the exuberance, pleasure-seeking and inquisitive tendencies of these young ones could foster problematic Internet use behaviours among them; making them to become vulnerable in their use of the Internet.

Various risks to which a young mind can easily fall as a prey exist on the Internet, among which are cyber bullying, sexual harassment, provocative content, misinformation, privacy risk, Internet and media addiction, among others. Gasser et al. (2010) classified these various risks into three, namely, the contact, content and conduct risks while Valcke et al. (2011), based on the synopsis of De Moor et al (2008), classified them into contact, content and commercial risks. It could also be found that new forms of risky behaviours keep growing among children and adolescents depending on their environment (Opesade & Adetona, 2021). All these external and internal threats, if uncontrolled, could result in unpleasant experiences that might have devastating impacts on youngsters' physical, social and emotional well-beings (Valcke et al., 2011; Road & Nsw, 2016; Volpi et al., 2018).

To curb the menace of these risks, demands have been placed on parents to mediate their children's Internet use (James & Kur, 2020). Based on the assumptions of the Parental Mediation Theory, and considering the traditional role of parents as primary agents of socialisation, a number of studies have reported on different strategies employed by parents to mediate their children's Internet use. These strategies include the instructive, restrictive, co-use, supervision, monitoring and technical controls and their variants (Livingstone & Helsper, 2008; Shin & Li, 2017; Kirwil, 2009; Livingstone & Helsper, 2010; James & Kur, 2020; Kur, Kolo, & Iorpagher, 2019). Parents, however, are faced with a lot of challenges while regulating their children's media use. This has particularly been attributed to disparity in Internet usage skills of parents and children, in favour of the latter. Other than this, proliferation of media devices in the home, particularly in children's bedrooms, growing complexity of media and communication technologies, children's attitude (reservation) to parental mediation, youngsters' risky behavior and excessive usage have also been identified as hindrances to successful outcome of parental mediation of children's media usage (Shin & Li, 2017; Çankaya & Odabasi, 2009).

Routine Activity Theory, as proposed by Cohen and Felson in 1979, specified three elements that must be present for a crime to occur; these are a motivated offender who has criminal intentions combined with the capacity to act on the intended goal, a suitable victim or target, and the absence of a capable guardian who could help to avert the occurrence of the crime. Cyber criminals are motivated offenders with criminal intentions and the ability to act on these inclinations and they are always present in the Internet space. Parental mediation is targeted at providing guardianship to children while children's Internet behaviours and attitude can determine their levels of suitability as victims of online harm. How effective has parental mediation of children's Internet use been in

safeguarding them from Internet risk exposure and how impactful could children's personal characteristics and behaviour be on their exposure to Internet risk?

Previous studies have assessed levels of effectiveness of different parental mediation techniques (Kirwil, 2009; Livingstone & Helsper, 2010; Kur, Kolo, and Iorpagher, 2019; James and Kur, 2020). Some have also gone further to determine some factors that could impact on their effectiveness (Khurana et al., 2015; Sasson & Mesch, 2014). There is however, a paucity of studies investigating the joint contribution of children's Internet behaviours and parental mediation on children's exposure to Internet risk, especially in the Nigerian context. Furthermore, of particular interest to the present study is the impact of the type of school being attended by the children, as a surrogate of family social class, on their exposure to Internet risk.

Secondary schools in many states in Nigeria can be broadly classified into three, namely, federal, state and private secondary schools. Federal and state schools are owned by the government; there are however, usually class differences in the family backgrounds of the two sets of students. Federal government school students mostly come from homes that are average and sometimes above average social classes while those who attend state government schools are usually from below average social class. Although private schools cut across different class strata, most serve homes that are average and above average social classes. Despite the possible effect of children and adolescent family class, many studies have not provided information on this variable in a diverse society like Nigeria's. The present study in order to provide relevant information on this research gap, adopts the Routine Activity Theory to investigate the influence of parental mediation practices, adolescents' demographic characteristics, Internet risky behavior, attitude to parental mediation on Internet risk exposure of students in selected secondary schools in Oyo State, Nigeria.

1.1 Research Objective
The goal of this study is to investigate the influence of parental mediation practices, adolescents' demographic characteristics, attitude to parental mediation and vulnerable Internet behaviors on online risk exposure of secondary school students in Oyo State, Nigeria. To achieve the objective of the study, the specific objectives are to:

1. Determine students' Internet use behavior (frequency of use, purpose of use, place of Internet access, risky use behavior).
2. Determine levels of parental mediation (restrictive, co-use, instructive, supervision, technical, monitoring) experienced by students.
3. Assess students' attitude to parental mediation.
4. Assess students' levels of exposure to Internet risks (sexual solicitation, cyber bullying, provocative content)
5. Determine the influence of students Internet use behavior, parental mediation experiences, students attitude to parental mediation, students demography (Sex, Age and School type) on their levels of Internet risk exposure.

1.2 Research Questions
1. How do students behave in terms of their frequency of Internet usage?
2. What do students mostly use the Internet for?
3. Where do students mostly get their access to the Internet?
4. What risky Internet use behaviours do students engage in?
5. What levels of parental mediation are experienced by students?
6. What is the attitude of students to parental mediation of their Internet usage?
7. What are the levels of exposure of students to Internet risks?

1.3 Research Hypotheses
1. There is no significant joint influence of students' Internet use behavior, parental mediation experiences, students' attitude

3

to parental mediation, and students' demography on students' exposure to sexual solicitation risk on the Internet.

2. There is no significant joint influence of students' Internet use behavior, parental mediation experiences, students' attitude to parental mediation, and students' demography on students' exposure to cyber bullying.

3. There is no significant joint influence of students' Internet use behavior, parental mediation experiences, students' attitude to parental mediation, and students' demography on students' exposure to provocative content on the Internet.

The structure of the present paper has been systematically presented in line with the submission of Misra (2021) for publications in ICT and its related disciplines. The next section of this paper presents the review of the literature. This is followed by the third section that describes the research methodology. Section 4 presents the findings and their discussion while conclusion and recommendations are reported in Section 5.

2. Literature Review and Theoretical Framework

2.1 Previous Empirical Studies

Parental mediation involves series of strategies adopted by parents to regulate their children's media use, with a view to maximise the advantages and minimize the disadvantages of today's media-rich environment for their children (James & Kur, 2020). These strategies include the instructive, restrictive, co-use, supervision, monitoring and technical controls (Livingstone and Helsper 2008; Shin and Li 2017; Kirwil 2009; Nikken and Jansz 2013; Mitchell, Finkelhor, and Wolak, 2005; Hamade, 2015; James and Kur 2020; Kur, Kolo, and Iorpagher 2019; Livingstone & Helsper, 2010). Studies have been carried out on the effectiveness of parental mediation techniques; reporting varying degrees of success. For example, Khurana et al. (2015) investigated comparatively, the effectiveness of monitoring

and restrictive parental mediation strategies in reducing online harassment among U.S. adolescents (aged 12–17). Based on the adolescents' reports, parental monitoring attempts towards the regulation of adolescents' use of specific Internet activities were associated with reduced rates of online harassment. Parental internet restriction mediation resulted in lower rates of harassment only by limiting internet access in the adolescent's bedroom. Livingstone and Helsper (2008b) examined parental regulation of children and teenagers' online activities in a national survey of 1511 U.K. children (aged 12–17) and 906 parents. They reported that children encounter a range of online risks while parents implement a range of strategies, preferring active co-use and interaction rules to technical restrictions. All parental strategies were found not necessarily effective in reducing risk, except parental restriction of online peer-to-peer interactions.

Mesch (2009) assessed the effect of U.S teenagers' specific online activities and the role of parental mediation on their likelihood of being bullied. The study reported that adolescents who have an active profile on social networking sites and those who participate in chat rooms have higher risk of being bullied than those who do not. Most parental mediation techniques were found to be non-protective, however, instructive mediation on Websites that adolescents were allowed to visit had negative relationship on their risk of exposure to online bullying (Mesch, 2009). Navarro et al. (2013) investigated the effect of Internet usage and parental mediation on the occurrence of online victimization among Spanish, rural public school, children (aged 10– 12). They reported that Internet use, especially online communication, increases the propensity of cyber-bully occurrence. However, the technical, joint creation of rules by children and parents on the time spent online, and the amount of personal information shared online decreased the probability of online victimization.

Chae & Ph (2012) examined the effect of parental mediation and Internet literacy on solving the challenges associated with Internet use among Korean children (aged 10 -15). It was

reported that children's online participation had positive effect on their exposure to online risks. The association was reported to be moderated by children's Internet skills and parental restrictive mediation; though the effect was still significant. Sasson & Mesch (2014) investigated the differential contribution of peers' norms and parental mediation on adolescents' engagement in risky online behavior among sixth to eleventh grade students in a large city in Israel. It was reported that after controlling for age, gender, time spent online and online activities, restrictive parental supervision still increased adolescents' risky behaviour online while the other means of mediation had no effect on adolescents' risky online behaviour. Furthermore, adolescents' perceptions of their peers' approval of such behavior further reduced the effect of restrictive parental supervision, therefore, resulting in more risky actions online. A study carried out by Valcke et al. (2011) in Belgium reported that adolescents used the Internet in an unsafe way; and that the use trend was not alleviated by increased parental control.

These previous studies have shown that parental mediation practices have recorded varying degrees of success. The studies have also revealed that parental mediation might not be enough in preventing online risk experiences of the studied groups. Internet behavior of children such as use of Internet in the bedroom (Khurana et al., 2015), online peer-to-peer interactions (Livingstone & Helsper, 2008a), ownership of an active profile on social networking sites and participation in chat rooms (Mesch, 2009), online peer-to-peer communications (Navarro et al., 2013; Chae & Ph, 2012), peers' norms (Sasson & Mesch, 2014) could weaken parental mediation efforts to curb online risk exposure of adolescents.

Furthermore, studies have also revealed that reserved attitude of children to parents' mediation of their internet use have made some to circumvent mediation efforts. For example, a study on U.K children and their parents reported that while 46% of parents claim that there is

filtering software on the computer used by their child, about seventy percent of the children, 9–17 year olds, have some reservations about their parents' restricting or monitoring actions on their Internet use; consequently, two thirds of these children were reported to have taken some actions to circumvent their parents' mediating roles by deleting e-mails and hiding files (Livingstone & Bober, 2004). A report on Korean tweens showed significantly lower recognition of their parents' involvement in parental mediation than what the parents reported (Shin et al., 2012). A study of children in the North Western and North Central Nigeria reported flaws in the strategies used by adults as commonly techno-shaming children into silence, introducing fear, scepticism, guilt or moral panic to children. Consequently, the children have reported these parental mediations and rules as very annoying, intrusive and authoritarian (Uzuegbunam, 2019).

Negative attitude to parental mediation efforts among children especially as they get older has consequently led to some unintended outcomes of boomerang effect (Lwin et al., 2008; Shin & Li, 2017) or a forbidden fruit syndrome (Nathanson, 2009; Mitchell et al., 2005).

2.2 Routine Activity Theory

Routine Activity Theory (RAT) was developed by Cohen and Felson in 1979. It suggests that the organisation of routine activities in society create opportunities for crime. That is, the daily routine activities of people, such as where they work, the routes they travel, the groups with whom they socialise, the shops they frequent, amongst others, strongly influence when, where, and to whom crime occurs. RAT requires the convergence of three elements in time and space for a crime to take place. These three, as depicted in Fig. 1, are a motivated offender with criminal intentions and the ability to act on these inclinations, a suitable victim or target, and the absence of a capable guardian who can prevent the crime from happening (Criminal Justice, 2021; Ontario Ministry of & Children, 2016)

Fig. 1: Routine Activity Theory (Criminology Web, 2022)

RAT has been found useful and adapted to guide the present study because of the appropriateness of its constructs to the present study.

2.1.1 Research Model

Based on the assumptions of the Routine Activity Theory, the research model for the present study is as presented in Fig. 2.

The independent variables in the model are the demographic factors of respondents (age, sex, school type), parental mediation techniques experienced by them (restrictive, co-use, instructive, supervision, technical, monitoring) as a measure of guardianship, students' level of vulnerability, measured by their Internet use behavior (frequency of use, purpose of use, place of Internet access, risky use behavior) and their attitude to parental mediation. The dependent variables are students' cyber-risk exposure (sexual solicitation, cyber bullying, provocative content).
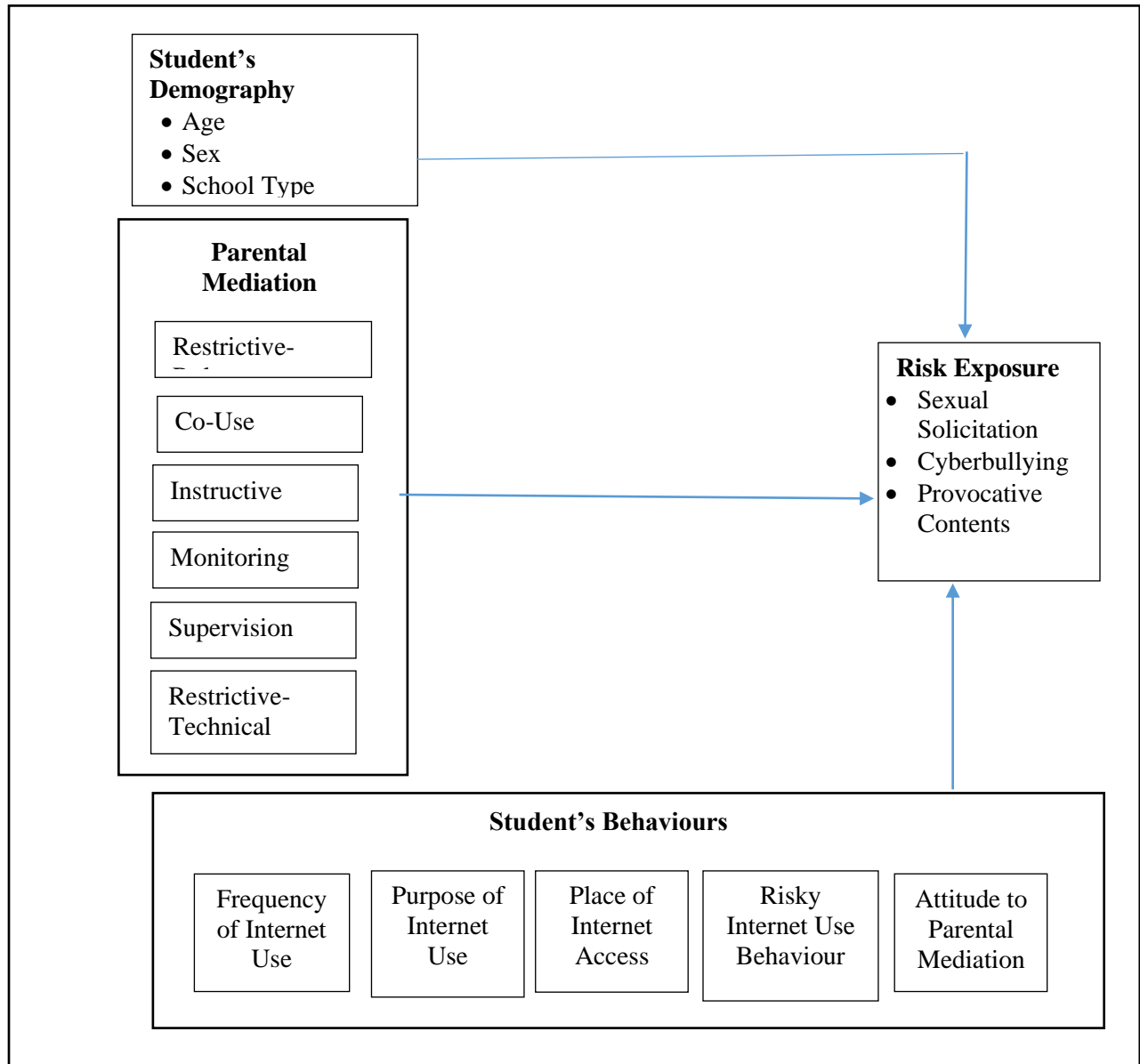
Fig. 2: Research Model

3. Research Methodology

The present study adopted the survey research method to enable the collection of relevant data that would provide credible results on the levels of parental mediation experienced by children, their Internet use behavior, attitudes to parental mediation, demographic factors and the joint influence of these factors on exposure to online risks among students of selected federal, state and private secondary schools in Oyo State, Nigeria.

A structured questionnaire adapted from three previous studies (Livingstone and Helsper, 2008; Bartau-rojas, Aierbe-barandiaran, and Oregui-gonzález, 2018; Opesade and Adetona, 2020) was used as an instrument for data collection. The questionnaire comprises nine sections. Section A contains questions on demographic characteristics of the respondent; Section B contains questions on respondent's purpose of Internet use; Section C contains questions on respondent's places of Internet

access. Section D contains questions on parental mediation techniques experienced by the respondent. Section E contains questions on attitude to parental mediation; Section F contains questions on respondents' risky internet use behavior while Sections G, H and I address Internet risk exposure of respondents to sexual solicitation, cyber bullying and provocative contents risks respectively.

A total of three hundred copies of the questionnaire were administered among students in selected federal, state and private secondary schools in Oyo, state, Nigeria. Two hundred and thirty nine (239) copies of the questionnaire were retrieved, giving a response rate of 79.7%. Collected data were analysed with the Statistical Package for the Social Sciences (SPSS) Version 23. Data analyses include frequency distributions and Binary Logistic Regression.

4. Research Findings

4.1 Demographic Characteristics of the Respondents

Table 1 presents the demographic characteristics of the respondents in this study.

Table 1:   Demographic Characteristics of the Respondents

Variable	Measures	Frequency	Percent (%)
Sex	Male	91	38.1
	Female	147	61.5
	No response	1	0.4
School Type	Private	103	43.1
	Public (State)	73	30.5
	Federal	63	26.4
Age in years	7	1	0.4
	10	19	7.9
	11	14	5.9
	12	16	6.7
	13	28	11.7
	14	42	17.6
	15	47	19.7
	16	25	10.5
	17	29	12.1
	18	8	3.3
	19	2	0.8
	20	1	0.4
	No response	7	2.9

As shown in Table 1, 61.5% of respondents were females while 38.1% were males. Most of the respondents were attending private secondary school (43.1%), followed by those in public (state) government secondary schools (30.5%). The respondents' ages range between 7years and 20years. Those who were 15 years old constituted the highest percentage (19.7%) of respondents, followed by those aged 14years (17.6%).

4.2 Answers to Research Questions

Research Question 1: How do students behave in terms of their frequency of Internet usage?

Students' behaviour in terms of their frequencies of Internet usage is as presented in Fig. 3.
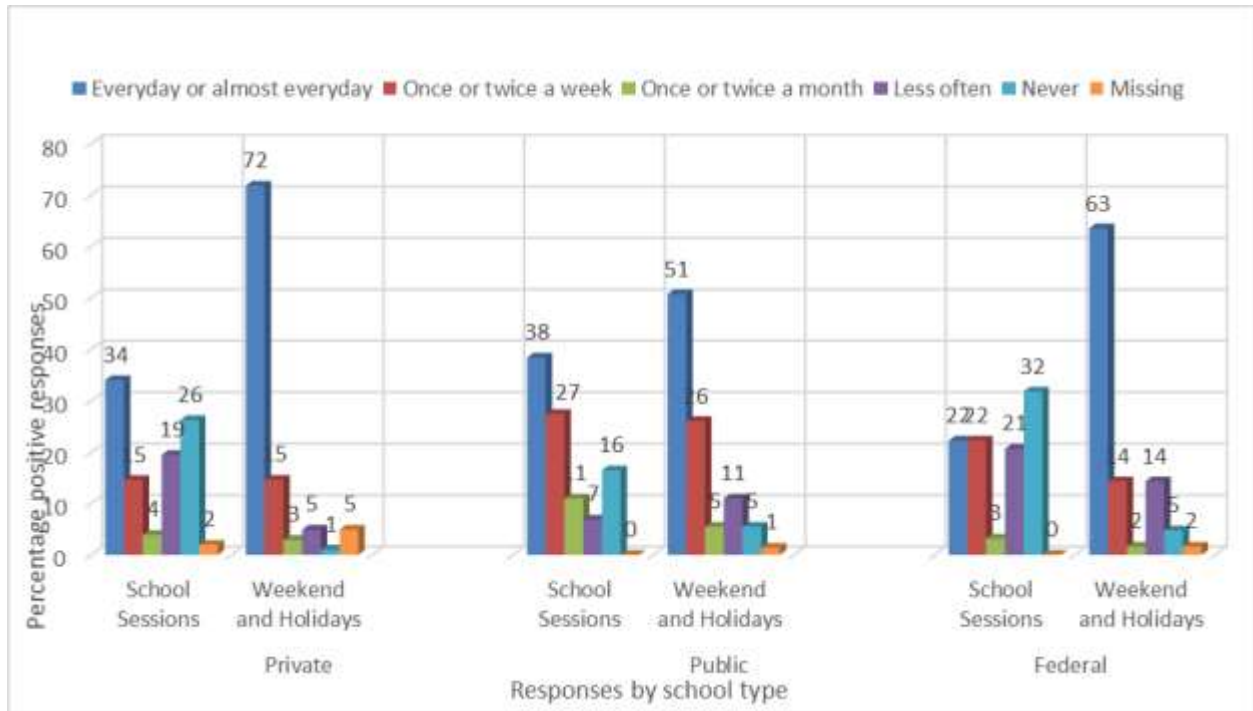
Fig. 3: Frequency of Internet use

As shown in Fig. 3, students mostly use the Internet during weekends and holidays; seventy two percent (72%) of private school students use the Internet every day or almost every day during weekends and holidays compared to thirty four percent (34%) of them who use it every day or almost every day during school sessions. Sixty three percent (63%) of federal government college students use the Internet every day or almost every day during weekends and holidays compared to twenty two percent (22%) of them who use it every day or almost every day during school sessions. Fifty one percent (51%) of public secondary school students use the Internet every day or almost every day during weekends and holidays compared to thirty eight percent (38%) of them who use it every day or almost every day during school sessions.

Research Question 2: What do the students use the Internet for?

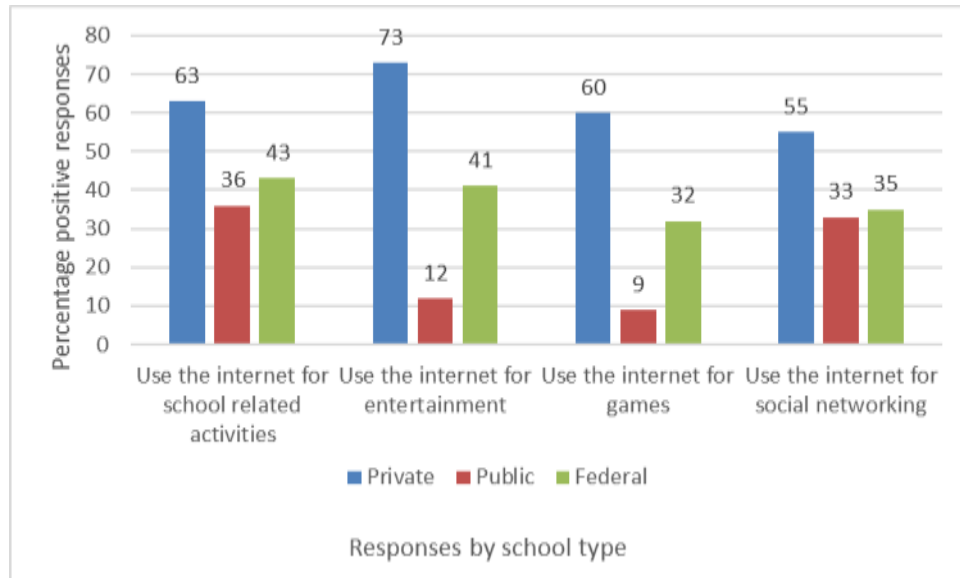Students' purposes of using the Internet are as presented in Fig. 4.

Fig. 4: Purpose of using the Internet

As shown in Fig. 4, private school students are the heaviest users of the Internet; they mostly use it for entertainment (73%), followed by its use for school related purposes (63%), games (60%) and then for social networking (55%). Federal government college students were next in their volume of Internet usage; they mostly use the Internet for school related purposes (43%), followed by entertainment (41%), social networking (35%) and then games (32%). State government owned secondary school (public) students mostly use the Internet for school related purposes (36%), followed by social networking (33%), entertainment (12%) and then games (9%).

Research Question 3: Where do the students mostly get their access to the Internet?

Students' places of Internet access are as presented in Fig. 5.

As shown in Fig. 5, across the three school categories, the largest percentages of students connect to the Internet in their own rooms or other private rooms at home, with the largest percentage being from federal government college (79.4%), followed by private (70.9%) and then public secondary school students (64.4%). The next most common place where they access the Internet is in the sitting room and other public room at home with the highest being from the public secondary school students (63.0%), followed by private (56.3%) and then federal government college students (47.6%).
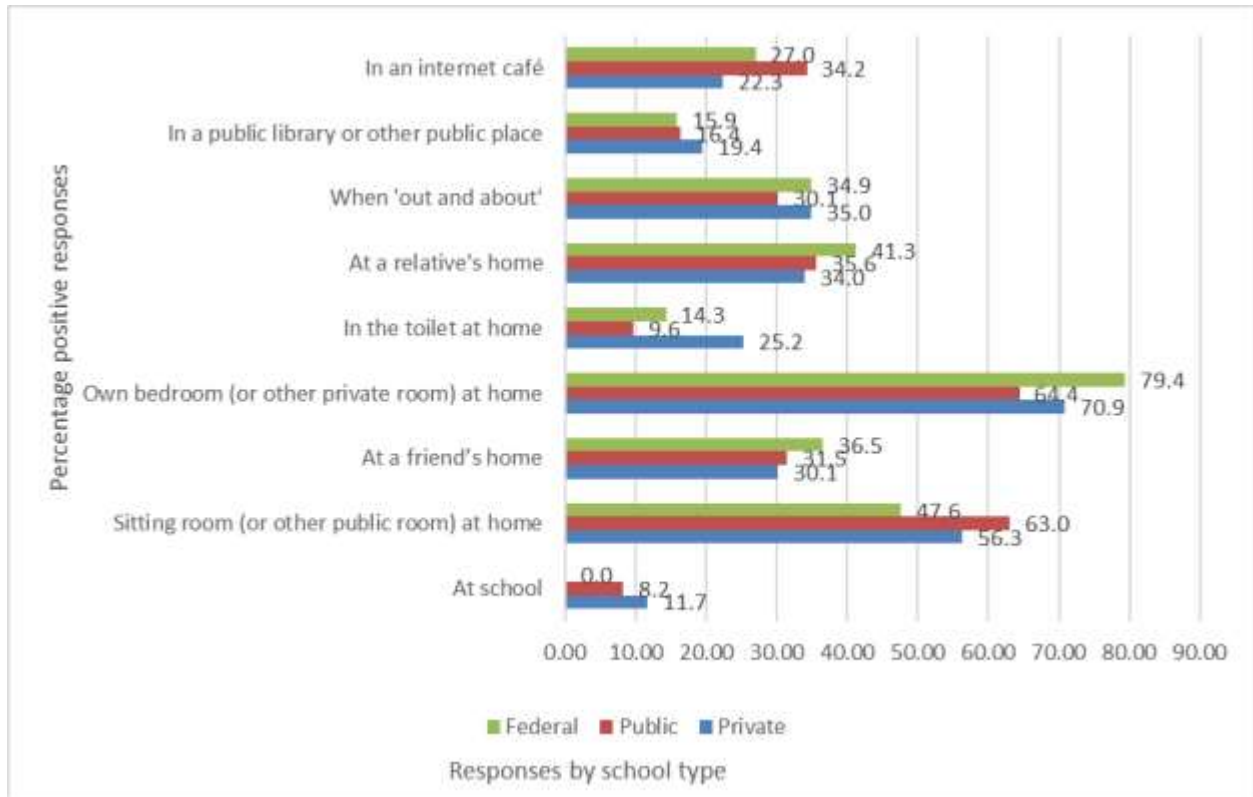
Fig. 5: Place of Internet access

It could be found that Federal government college students' access to the Internet at school is 0%; the largest percentage of students who access the Internet in the toilet at home are private school students (25.2%), followed by federal government college students (14.3%). The largest percentage of students who access the Internet at cyber-cafes are public secondary school students. Private school students are more involved in connecting to the Internet when they are out and about (35%) and also in public places (19.4%) while federal government college students are more involved in accessing the Internet in relatives' (41.3%) and friends' (36.5%) homes.

Research Question 4: What risky Internet use behaviours do students engage in?

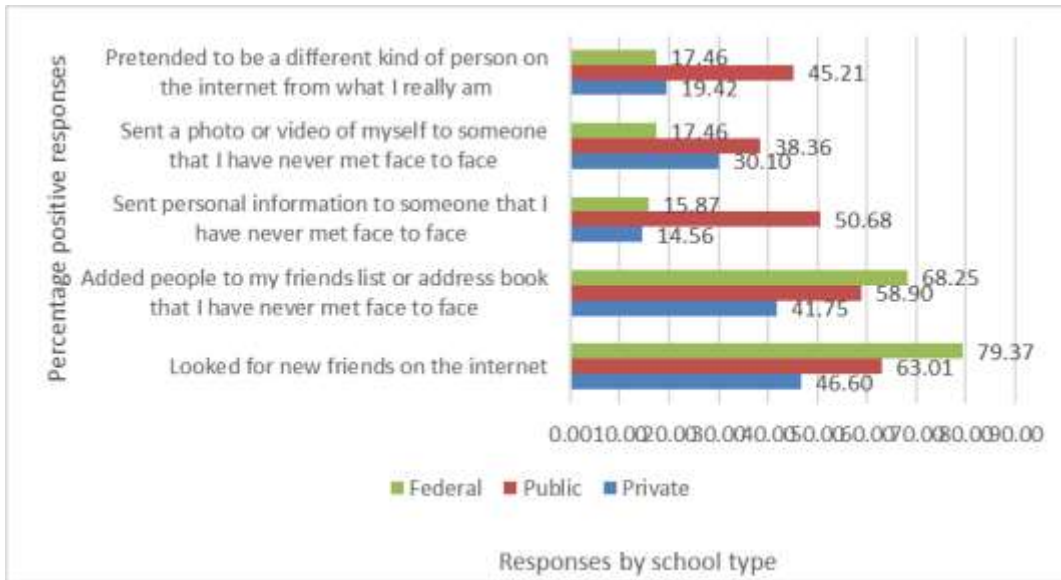Students' risky Internet use behaviours are as shown in Fig. 6.

Fig. 6: Internet use risky behavior

As shown in Fig. 6, the most prevalent risky behaviour among students across the three school types is looking for new friends on the Internet; with federal government college students taking the lead (79.4%), followed by state secondary school students (63%) and then private secondary school students (46.6%). The next most common risky behavior is adding people they have never met face to face to their friends' list; also with federal government college students taking the lead (68.3%), followed by state secondary school students (58.9%) and then private secondary school students (41.8%). Public (state) secondary school students are the most prominent in sending their personal information to those they have never met face to face (50.7%), sending photo or video of themselves to those they have never met face to face (38.4%) and pretending to be a different kind of person on the Internet from who they really are (45.2%).

Research Question 5: What levels of parental mediation are experienced by students?

Students' levels of experience of different parental mediation strategies are as shown in Fig. 7.
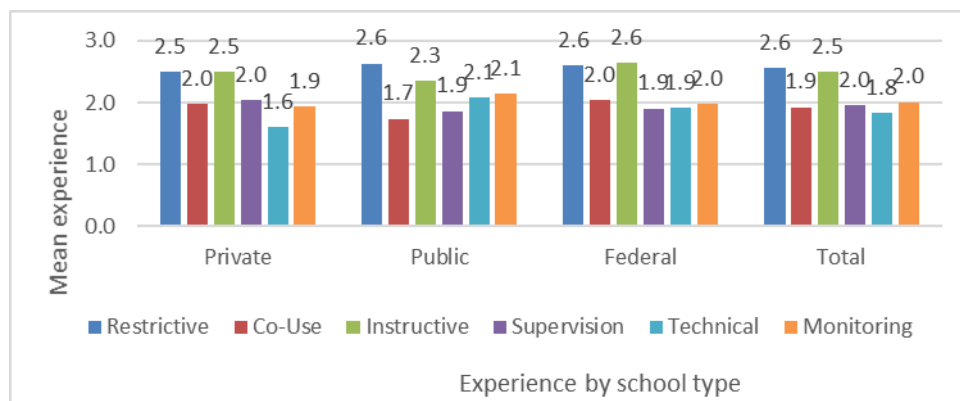

Fig. 7: Levels of parental mediation experienced by students

As shown in Fig. 7, the most common parental mediation approach experienced by students is the restrictive strategy with the mean value for all students being 2.6, followed by the instructive method (2.5), supervision and monitoring (2.0) each, co-use (1.9) and lastly technical mediation technique (1.8). Private school students' mean in restrictive mediation (2.5) is a bit less than the total mean, their mean co-use (2.0) is a bit higher than the total mean, their mean values in instructive and supervision are exactly the same as the total mean (2.5 and 2.0 respectively) while their mean values for technical and monitoring are less than the total mean values. For the public (state owned) secondary school students, their mean co-use (1.7), instructive (2.3) and supervision (1.9) values are less than the total mean. Their mean values for technical (2.1) and supervision (2.1)

are higher than the total mean values while their mean value for restrictive mediation is the same as the total mean. For the federal government owned secondary school students, their mean co-use (2.0), instructive (2.6) and technical (1.9) values are higher than the total mean value. Their mean value for supervision (1.9) is less than the total mean value while their mean values for restrictive and monitoring mediation strategies are the same as the total mean values.

Research Question 6: What is the attitude of students to parental mediation of their Internet usage?

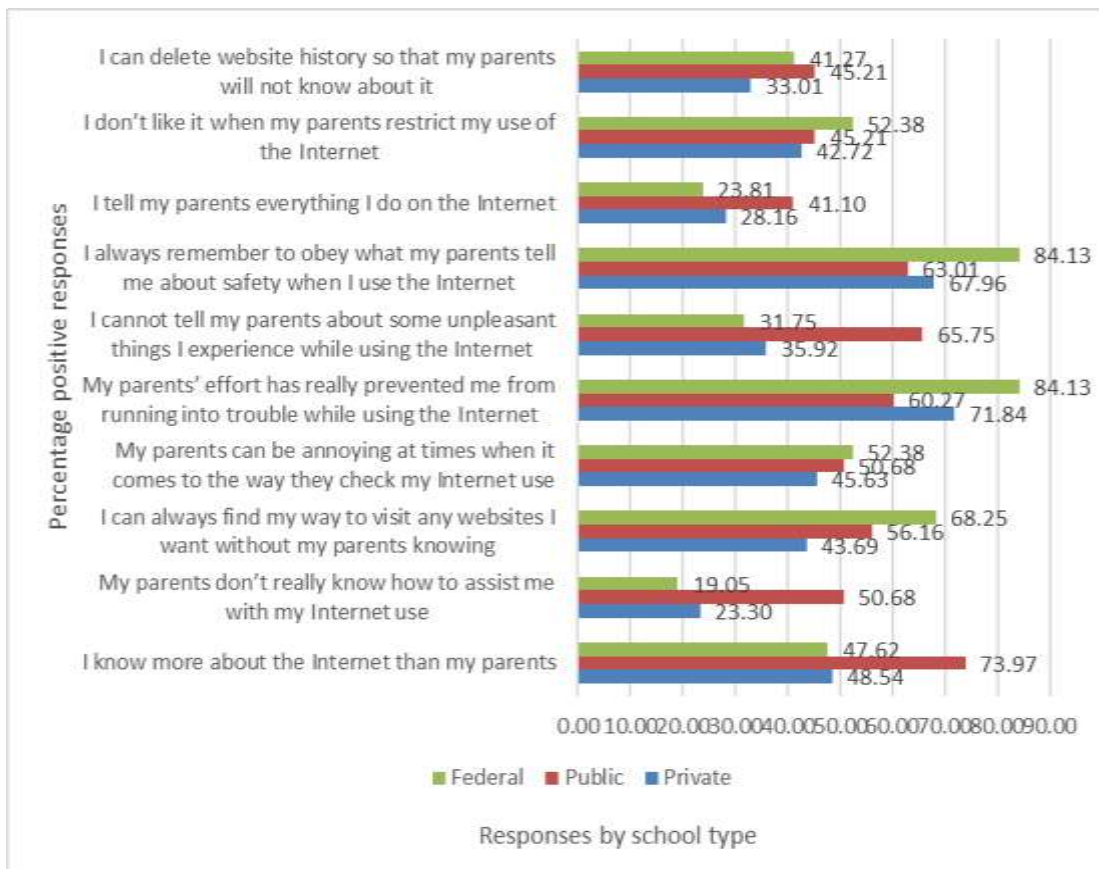Students' attitudes to their parents' mediation of their Internet usage are as presented in Fig. 8.

Fig. 8: Students' attitude to parental mediation of their Internet Usage.

As shown in Fig. 8, prominent among the responses on attitude is that students, especially in federal government college (84.13%) always remember what their parents told them about safety when they use the Internet. Also prominent is the fact that parents' efforts have prevented the students, again especially, the federal government college (84.13%) from running into trouble while using the Internet. Majority of those who responded to know more about the Internet than their parents are the public (state owned) secondary school students (73.97%). This same group of students are the most prominent among those whose parents do not really know how to assist them with their use of the Internet (50.68%) and those who cannot tell their parents about some unpleasant things they experience while they use the Internet (65.75%).

Research Question7: What are the levels of exposure of students to Internet risks (Sexual solicitation, Cyber bullying, Provocative content exposure)?

Students' levels of exposure to Internet risks (Sexual solicitation, Cyber bullying, provocative content exposure) are as presented in Fig. 9.
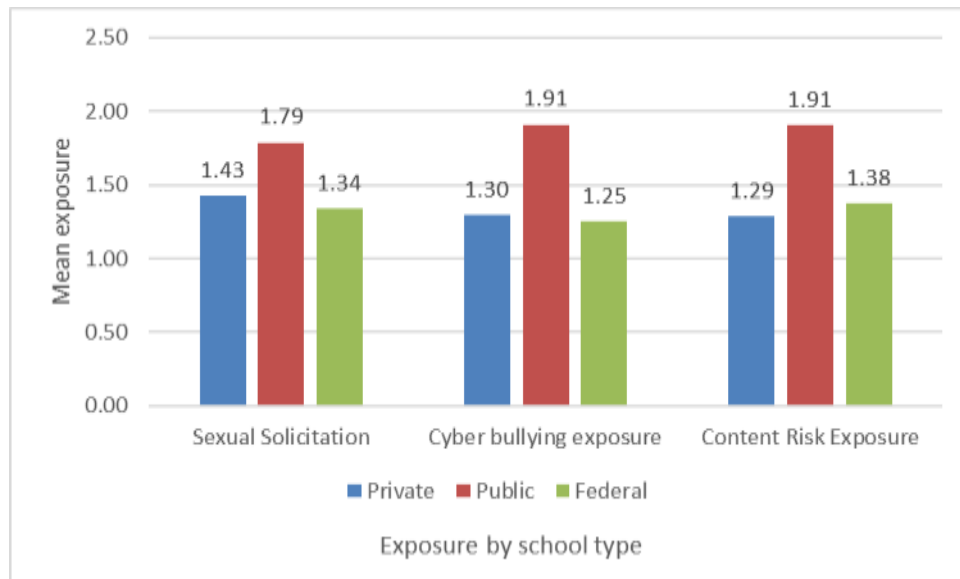
Fig. 9: Students' levels of exposure to Internet risks (sexual solicitation, cyberbullying, provocative content exposure)

As shown in Fig. 9, public (state owned) secondary school students are the most prominent in their exposure to each of the three risk types. With their mean being 1.79, 1.91, and 1.91 respectively. Private school students are next to state owned school students in their exposure to sexual solicitation, with a mean value of 1.43 and cyber bullying (1.30) while federal government college students are next to state secondary school students in exposure to provocative content, with a mean value of 1.38.

4.3 Results of the Tests of hypotheses

Hypothesis One: There is no significant joint influence of students' Internet use behavior (frequency of use, purpose of use, use risky behavior, place of Internet access), parental mediation experiences (restrictive, co-use, instructive, supervision, technical, monitoring), students attitude to parental mediation, and students demography (Sex, Age and School type) on students Exposure to sexual solicitation risk on the Internet.

A logistic regression analysis was performed to ascertain the effects of parental mediation techniques, Student's attitude to mediation, Internet behaviour, place of usage, age, school type and sex on the likelihood of student's exposure to sexual solicitation risk. The logistic regression model was statistically significant, $\chi2(47) = 103.305$, p = .000. The model explained 63.3% (Nagelkerke R^2) of the variance in exposure and correctly classified 90.6% of cases. Statistics of each variable is as shown in Table 2.

As shown in Table 2, private school students were 10.001 times more likely to experience sexual solicitation risk than federal government college students while State government secondary school students were 19.190 more likely to experience sexual solicitation risk than federal government college students. Increasing technical control was associated with an increased likelihood of exposure to sexual solicitation risk exposure, Increasing reserved attitude to parental mediation was also associated with an increased likelihood of exposure to sexual solicitation risk exposure.

Those who used the Internet once or twice a month were 22.398 times more likely to be exposed to sexual solicitation risk than those who never used it on a non-school periods like weekend or holiday. Use of the Internet for school related activities was associated with a reduction in exposure to sexual solicitation risk but increasing its use for games was associated with an increase in the likelihood of exposure to sexual solicitation risk. Students who always access the Internet in the sitting room and other public room at home were 7.994 times more likely to be exposed to sexual solicitation risk than those who never access it in their sitting room and other public places at home. Students who always access the Internet at the cyber café were 10.793 times more likely to experience sexual solicitation risk than those who never access at cyber café, while those who sometimes access the Internet at the cyber café were 110.649 times more likely to experience sexual solicitation risk than those who never access at cyber café.

Hypothesis Two: There is no significant joint influence of students' Internet use behavior (frequency of use, purpose of use, use risky behavior, place of Internet access), parental mediation experiences (restrictive, co-use, instructive, supervision, technical, monitoring), students attitude to parental mediation, and students demography (Sex, Age and School type) on students' exposure to cyber bullying.

A logistic regression analysis was performed to ascertain the effects of parental mediation techniques, student's attitude to mediation, Internet behaviour, place of usage, age, school type and sex on the likelihood of student's exposure to sexual solicitation risk. The logistic regression model was statistically significant, $\chi2(47) = 129.814$, p = .000. The model explained 82.9% (Nagelkerke R^2) of the variance in exposure and correctly classified 96.3% of cases. Statistics of each variable is as shown in Table 2.

As shown in Table 2, state government secondary school students were 789945613.6 more likely to experience cyberbullying risk than federal government college students. Increasing reserved attitude to parental mediation was associated with an increased likelihood of exposure to cyberbullying risk exposure. Increasing its use for entertainment was also associated with an increase in the likelihood of exposure to cyberbullying risk. Students who sometimes access the Internet at the friends' homes were less likely to experience cyberbullying risk than those who never access at friends' homes. Also those who sometimes access the Internet at cyber café were 29809883.19 more likely to experience cyberbullying risk than those who never access it in cybercafé.

Hypothesis Three: There is no significant joint influence of students' Internet use behavior (frequency of use, purpose of use, use risky behavior, place of Internet access), parental mediation experiences (restrictive, co-use, instructive, supervision, technical, monitoring), students attitude to parental mediation, and students demography (Sex, Age and School type) on students' exposure to provocative

Table 2: Binary Logistic Regression Result on the Tests of Hypotheses

Variable	Sexual Solicitation					Cyberbullying					Provocative Content				
	B	S.E.	Wald	Sig.	Exp(B)	B	S.E.	Wald	Sig.	Exp(B)	B	S.E.	Wald	Sig.	Exp(B)
Age	.044	.132	.110	.741	1.045	.396	.480	.683	.409	1.486	.207	.134	2.401	.121	1.231
Sex(1= Male)	-.761	.756	1.011	.315	.467	3.477	2.006	3.004	.083	32.371	.720	.934	.594	.441	2.055
School Type															
(1= Private)	2.303	1.044	4.864	.027	10.001	9.671	5.219	3.434	.064	15851.442	1.560	1.398	1.246	.264	4.760
(2= State)	2.954	1.174	6.334	.012	19.190	20.487	9.216	4.942	.026	789945613.589	4.613	1.377	11.221	.001	100.779
Parental Mediation															
Restrictive	.236	.486	.235	.627	1.266	-.881	2.001	.194	.660	.414	-.727	.708	1.053	.305	.483
Co-Use	-.406	.639	.403	.526	.667	-1.726	2.347	.541	.462	.178	.536	.773	.481	.488	1.708
Instructive	-.266	.542	.241	.623	.766	1.986	2.102	.893	.345	7.286	.771	.811	.902	.342	2.161
Supervision	-.049	.793	.004	.951	.952	-3.091	2.819	1.203	.273	.045	-.220	.902	.059	.808	.803
Technical	1.223	.486	6.337	.012	3.396	3.737	1.986	3.541	.060	41.963	1.492	.511	8.519	.004	4.445
Monitoring	-.843	.601	1.964	.161	.430	3.145	2.778	1.282	.258	23.231	.111	.677	.027	.870	1.117
Attitude	2.192	.657	11.133	.001	8.953	6.487	3.018	4.621	.032	656.574	1.382	.811	2.904	.088	3.983
Risky Use Behaviour	.667	.607	1.206	.272	1.947	-.883	2.460	.129	.720	.414	.870	.712	1.495	.221	2.388
Frequency of Internet Use															
1= Every day or almost	.753	1.119	.452	.501	2.122	7.869	5.766	1.863	.172	2615.444	-.567	1.193	.226	.635	.567
2= Once or twice a week	1.250	1.704	.538	.463	3.491	-3.781	33.470	.013	.910	.023	-2.048	2.129	.926	.336	.129
3= Once or twice a month	3.109	1.283	5.874	.015	22.398	-2.675	4.779	.313	.576	.069	.875	1.519	.332	.565	2.399
4= Less often	-14.806	11734.141	.000	.999	.000	-11.268	10795.446	.000	.999	.000	3.529	4.606	.587	.444	34.085
Purpose of Internet Use															
School related activities (1=Yes)	-1.432	.682	4.413	.036	.239	-1.734	3.115	.310	.578	.177	1.568	1.009	2.414	.120	4.796

	B	S.E.	Wald	Sig.	Exp(B)	B	S.E.	Wald	Sig.	Exp(B)	B	S.E.	Wald	Sig.	Exp(B)
Entertainment (1=Yes)	-.410	.919	.199	.655	.664	17.146	7.377	5.402	.020	27957173.575	1.041	1.252	.692	.406	2.833
Games (1=Yes)	2.874	.936	9.427	.002	17.699	1.762	2.585	.464	.496	5.823	.314	.996	.100	.752	1.370
Social networking (1=Yes)	.914	.800	1.306	.253	2.495	1.715	2.858	.360	.549	5.555	2.879	1.083	7.070	.008	17.802
Internet Access at School															
(1= Always)	-.207	2.670	.006	.938	.813	-36.786	9847.482	.000	.997	.000	-4.236	4.373	.939	.333	.014
(2= Often)	-1.137	2.137	.283	.595	.321	-36.179	9847.482	.000	.997	.000	.680	2.242	.092	.762	1.973
(3= Sometimes)	-.745	2.187	.116	.733	.475	-46.059	9847.486	.000	.996	.000	-.927	2.288	.164	.685	.396
Sitting room (or other public room) at home															
(1=Always)	2.079	.956	4.723	.030	7.994	-1.156	3.056	.143	.705	.315	5.745	1.526	14.168	.000	312.522
(2= Often)	1.013	.743	1.858	.173	2.753	6.448	3.913	2.715	.099	631.570	2.620	1.173	4.987	.026	13.731
(3= Sometimes)	-15.477	11546.188	.000	.999	.000	5.790	10845.881	.000	1.000	326.928	-17.206	13591.700	.000	.999	.000
At a friend's home															
(1=Always)	-.981	.915	1.150	.284	.375	-4.760	3.104	2.352	.125	.009	.362	1.018	.126	.722	1.436
(2-Often)	-1.367	1.197	1.302	.254	.255	1.114	2.789	.160	.689	3.048	-1.193	1.280	.869	.351	.303
(3=Sometimes)	-2.699	1.439	3.518	.061	.067	-16.382	8.282	3.912	.048	.000	-3.921	1.927	4.141	.042	.020
Own bedroom (or other private room) at home															
(1=Always)	-.455	1.845	.061	.805	.635	7.455	8.441	.780	.377	1728.039	-1.144	1.830	.391	.532	.318
(2=Often)	2.404	1.652	2.117	.146	11.068	12.336	8.510	2.101	.147	227821.624	-2.737	1.925	2.021	.155	.065
(3=Sometimes)	.271	1.587	.029	.864	1.311	8.058	6.736	1.431	.232	3158.061	-4.367	1.905	5.256	.022	.013
In the toilet at home															
(1=Always)	.248	.832	.089	.765	1.282	-7.846	4.776	2.698	.100	.000	-3.479	1.407	6.112	.013	.031
(2=Often)	.811	1.260	.414	.520	2.250	-19.376	34.337	.318	.573	.000	-2.740	1.594	2.956	.086	.065
(3=Sometimes)	.656	1.217	.290	.590	1.927	-11.581	6.910	2.809	.094	.000	2.589	1.445	3.211	.073	13.323
At a relative's home															
(1=Always)	-.595	1.029	.334	.563	.552	-1.552	5.544	.078	.779	.212	-.428	1.331	.103	.748	.652

(2=Often)	-1.719	1.047	2.698	.100	.179	-3.762	2.941	1.637	.201	.023	.433	1.371	.100	.752	1.542
(3=Sometimes)	.384	1.165	.109	.742	1.469	4.745	4.221	1.264	.261	115.055	-.183	1.452	.016	.900	.833
When 'out and about'															
(1=Always)	-1.081	.936	1.334	.248	.339	1.980	3.332	.353	.552	7.243	-1.301	1.206	1.163	.281	.272
(2=Often)	-.321	.933	.119	.731	.725	-1.794	3.570	.252	.615	.166	2.410	1.318	3.341	.068	11.133
(3= Sometimes)	1.309	1.083	1.460	.227	3.702	4.381	4.170	1.103	.294	79.882	2.195	1.789	1.505	.220	8.983
In a public library or other															
(1=Always)	-2.151	1.818	1.400	.237	.116	.933	5.358	.030	.862	2.542	1.848	1.698	1.185	.276	6.350
(2=Often)	-1.540	1.904	.654	.419	.214	-1.511	6.061	.062	.803	.221	-.007	1.779	.000	.997	.993
(3=Sometimes)	-2.085	1.796	1.347	.246	.124	2.709	3.624	.559	.455	15.011	-.008	1.603	.000	.996	.992
In an internet café															
(1=Always)	2.379	.864	7.575	.006	10.793	3.338	3.256	1.051	.305	28.153	-1.632	1.124	2.108	.147	.196
(2=Often)	1.334	.946	1.989	.158	3.795	5.964	3.977	2.249	.134	389.131	.037	1.082	.001	.972	1.038
(3=Sometimes)	4.706	1.356	12.054	.001	110.649	17.210	8.265	4.336	.037	29809883.193	3.163	1.605	3.884	.049	23.651
Constant	-11.049	4.425	6.236	.013	.000	-30.636	9847.488	.000	.998	.000	-18.923	6.007	9.923	.002	.000

content on the Internet.

A logistic regression was performed to ascertain the effects of parental mediation technique, student's attitude to mediation, Internet behaviour, place of usage, age, school type and sex on the likelihood of student's exposure to provocative content risk. The logistic regression model was statistically significant, $\chi 2(47) = 104.045$, p = .000. The model explained 67.1% (Nagelkerke R^2) of the variance in exposure and correctly classified 93.2% of cases. Statistics of each variable is also as shown in Table 2.

As shown in Table 2, state government secondary school students were 100.779 more likely to experience provocative content risk than federal government college students. Increasing technical control was associated with an increased likelihood of exposure to provocative content risk exposure. Increasing use of social networking was associated with an increase in the likelihood of exposure to provocative content risk.

Students who always and those who often access the Internet in the sitting room were more likely to experience provocative content risk than those who never access it in the sitting rooms, while those who sometimes access the Internet at their friends' homes were 0.02 less likely to experience provocative content risk than those who never access in their friends' homes. Also those who sometimes access the Internet in their own bedrooms were 0.013 less likely to experience provocative content risk than those who never access in their own bedrooms. Those who always access the Internet at their toilet at home were 0.031 less likely to experience provocative content risk than those who never access in their toilet at home. Also those who sometimes access the Internet at cyber café were 23.651 more likely to experience provocative content risk than those who never access it in cybercafé.

5. Discussion of Findings

The study shows that students, irrespective of their school type, use the Internet more during weekends and holidays than during normal school periods. This finding corroborates that of Opesade

and Adetona (2021) that secondary school students in Oyo State tend to use the Internet more during their non-school periods. The study also shows that students have found the Internet useful for multiple purposes, corroborating existing findings (Holloway, Green, & Livingstone, 2013; Opesade and Adetona, 2021) and buttressing the fact that the Internet has become an integral learning tool which could promote all-round development of young people (Holloway et al., 2013). Students mostly access the Internet in their homes; this shows the pervasiveness of the Internet among secondary school students in Oyo state, Nigeria. It also supports the assertion that the Internet has moved beyond an educational and research tool that facilitated a network of just a few scientists, to becoming a juggernaut that is widely accessible to many youths (World Health Organization, 2011). The very low access of the Internet in schools is a common phenomenon among students across the school types, most especially among students of the federal government college.

The study shows that students engage in a number of risky behaviours, especially in looking for new friends online and adding people they have never met physically to their friend's list. These two risky behaviours were the most prevalent contact risks among Oyo State students in a previous study (Opesade and Adetona, 2021). This trend also supports the seriousness and prevalence of contact risks among minors (Gasser et al., 2010). Students have experienced multiple parental mediation practices with the restrictive and instructive being the most prevalent and co-use and technical controls being the least commonly experienced parental mediation techniques. This finding corroborates the existing ones (Livingstone & Helsper, 2008b; Kirwil, 2009) that parents favour the use of multiple strategies to a single strategy in mediating their children's media usage.

There is a mixture of positive and negative attitudes to parental mediation among students. Students, especially, state owned (public) secondary school students have substantial exposure to Internet risk. This pattern was also found in a previous study (Opesade and Adetona, 2021) where public school students were found to have significantly higher exposure to sexual solicitation and cyberbullying than the private

school students. This might not have been unconnected with the fact that they are mostly from homes where parents do not have requisite Internet skills to assist them. School type (private, state), parental mediation (technical), reserved attitude to parental mediation, accessing the Internet in cybercafés, accessing the Internet in the sitting or other public places at home, using the Internet for games all increase the likelihood of exposure to sexual solicitation risk while using the Internet for school related activities reduce the likelihood of exposure to sexual solicitation. For cyberbullying, school type (state), reserved attitude to parental mediation, using the Internet for entertainment, accessing the Internet at cybercafés all increase likelihood of cyber bullying risk exposure while those who sometimes access the Internet in their friend's home have reduced likelihood of exposure to cyber bullying. For provocative content risk, school type (state), parental mediation (technical), using the Internet for social networking, accessing the Internet at cybercafés, accessing the Internet in the sitting or other public places at home, all increase likelihood of provocative content risk while those who sometimes access the Internet in their friend's homes, in their own bedrooms and in the toilet at home have reduced likelihood of exposure to provocative content.

These findings show that parental mediation techniques do not have significant effect in reducing students' exposure to any of the cybercrime types. The only one that has significant effect, technical mediation, actually increased the likelihood of exposure to sexual solicitation and provocative content. This finding is similar to those of Livingstone & Helsper (2008b) and Valcke et al. (2011). Internet usage for social networking, games and entertainment have been found to increase likelihood of risk exposure while its use for school related purposes led to reduced likelihood of risk exposure. This is similar to the findings of Navarro et al. (2013) and Mesch (2009).

5.1 Conclusion
Based on the findings of this study, it can be concluded that students, irrespective of their school type, use the Internet more during non-school periods. They use the Internet for multiple purposes cutting across educational, entertainment and social networking. Internet has become pervasive among secondary school students in Oyo state with most of them accessing it in the comfort of their own homes, whereas, there is an abysmally low access to Internet in their schools. Students, especially public (state) secondary school students, engage in different risky behaviours. Students across the three school types have experienced multiple parental mediation strategies with the restrictive and instructive methods being the most prominent and technical and co-use methods being the least experienced by students.

Students' attitudes to parental mediation are a mixture of positive and negative ones. Students attending state (public) school appear more vulnerable especially because of the remarkable Internet use skill divide between them and their parents. Students across all school types have different levels exposure to cyber risk, with state (public) school students having the highest level of exposure in each of the Internet risk types. Tests of the hypotheses revealed that being a student of public (state) secondary school, applying technical control, students' reserved attitude to parental mediation increase the likelihood of students' exposure to Internet risk. Furthermore, students who use the Internet for games, entertainment and social networking have higher likelihood of exposure to Internet risk while usage of the Internet for school related activities reduces students' likelihood of Internet risk exposure.

5.2 Recommendations

Based on the findings of the present study, the following are recommended:

1. Researchers should determine ways of improving the effectiveness of parental mediation techniques so that parental efforts can have desirable impact on children's exposure to Internet risks.

2. Stakeholders in the education and technology sectors should get intentionally involved in educating students on how to maximise benefit and minimise risk in their use of the Internet.

3. Stakeholders in the education and technology sectors should provide means of attending to the gap in Internet safety guardianship particularly among public school students in Ibadan, Oyo state.

4. Students' frequent exposure to the Internet during non-school periods could be leveraged by stakeholders for re-orientation of students for positive usage of the Internet.

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