PROBLEMATIC INTERNET USE AND STRESS LEVELS IN PRIMARY STUDENTS: A CASE OF PRIMARY STUDENTS IN THE UK

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ABSTRACT

Aim: The current research aims to determine the impact of problematic internet use on psychological stress in primary-school students in the UK.

Method: The researcher adopted a quantitative method in which 100 primary school students were approached to fill out the survey questionnaire. Their responses were recorded online and converted to conduct tests of descriptive statistics, correlation, and regression analysis in SPSS.

Findings: A correlation study on the students' responses showed that stress levels and technology addiction are more closely related than the duration of time spent online. Additionally, a mediation study revealed that parental control effectively mediates the association between the duration of online presence and stress levels. This indicates that implementing strict parental controls to limit a child's time spent online increases their stress levels. Furthermore, the independent variable of technology addiction has a strong effect on students' stress levels.

INTRODUCTION

The Internet has emerged as the leading avenue of technology-driven innovation around the world. While it is the primary source of networking and information sharing for people from all walks of life, children and young adults are especially attracted to it due to its characteristic tendencies of entertainment-laden information. According to epidemiological studies from various countries, internet addiction is rapidly becoming a health concern worldwide. A survey by Chou et al. (2015) conducted within a university case found that internet addiction was prevalent in 8% to 13% of university students. Students are also disproportionally inclined towards higher frequency internet usage. This is generally attributed to the actual information content easily available on online sources along with higher credibility of those sources which has been made possible by online peer review systems (Huda et al., 2017). However, students from primary school level are generally more inclined towards the entertainment or infotainment aspects of the internet (Francis and Peris, 2018). Infotainment refers to the avenue which merges the traditional information related websites with entertainment related content in order to provide a good mix of fun-driven learning. With the rise of platforms such as PBSKids, Khan Academy, and Sesame Street, primary level children are provided access to these avenues even during school. Despite these macro-level trends, research is scarce regarding internet usage tendencies among young children belonging to the primary education level.

Since the internet is a meta-level interactive platform, social media has become one of the most ubiquitous features. Social media sites such as Facebook, Twitter, Instagram, and now TikTok constitute a major online activity. According to Tsimtsiou's (2016) research, 367 (40.9%) elementary school students and 707 (44.9%) secondary school students played online games every day, and 115 (12.8%) and 965 (61.2%) of them, respectively, had a Facebook page. In primary: OR = 1.2, 95% CI (1.0, 1.9), secondary: OR = 2.3, 95% CI (1.9, 2.9), and [OR = 2.1, 95% CI (1.3, 3.2), OR = 1.3, 95% (1.1, 1.6), respectively, young boys used Facebook and played games more than young girls. Students who had access to the Internet at home were more likely to use Facebook and play online games. Similarly, Tsimtsiou (2016) also demonstrated that young boys are more

probable to create social media profiles from the age of six than girls, despite the prohibition of doing so both at home and school. Nonetheless, parental control in the forms of verbal instructions and family practices have been a leading method for parents to regulate internet usage of children. The current research intends to examine the relationship of problematic internet usage on psychological stress levels experienced by primary level students. For this, the research comprises of an extensive literature review through which the researcher extracted the major variables representing problematic internet usage. In order to achieve this aim, the researcher focused on the following objectives to narrow down the scope of this study.

- To assess the impact of duration of online presence on stress levels in primary level students
- To evaluate the impact of technology addiction on stress levels in primary level students
- To determine the effect of parental control on the relationship between problematic internet usage and stress levels in primary students in the UK

LITERATURE REVIEW

Stress is a specific mental condition that may lead to mental pressure and depression in the long run. It may trigger due to any specific condition and situation around. Lee et al. (2017) evaluated that stress level is increasing among children due to the role of various factors. This shows that the modern age is coming up with new challenges for parents as well. The need for support is high for the parents and teachers at the primary level because stress may impact the growth and learning efficiency of the students. In this regard, Moretta & Buodo (2018) discussed that the increase in the percentage of online presence time of kids is a reason that may be increasing the carving for the internet. This carving may lead to aggression if the children are banned from using the internet and focus on studies at the primary level.

In the UK, about 83% of 12-15-year-olds use smart phones and approximately 99% stay online for about 21 hours per week (El Asam et al., 2019). The parental role is important as a guardian

because parents are important individuals accountable for guarding and monitoring the activities of their children. The internet is a craze that is increasing with time, according to Odacı & Çikrıkci (2017), children take parents as negative actors in this context when they pause their use of the internet and limit the duration of internet use. Tomaszek & Muchacka-Cymerman (2020) admitted that the role of modern technology is a major factor in this regard, the facilitation of the internet and availability of the fastest networks like 5G are major instruments to increase the interest of children in the current age for the internet.

Four hypotheses are modified based on the conceptual framework of the current study in light of literature from various academic analyses. They are discussed here with claims from the literature.

H1: Duration of online presence has a significant impact on stress levels in primary level students

Tomaszek & Muchacka-Cymerman (2020) agreed on the increase in the duration of online timing for children of primary level age. It is increasing in the pandemic era when social distancing was mandatory so the parental check was also decreased for the children for the online duration. This continued in the long run, but when the normal routine is retrieved then it was difficult for the parents to convince the children to get back to normal life and manage things offline. Lee et al. (2017) claim that the stress level is increasing in children for staying online, it was a continuous depression that leads to anxiety when children are forcefully pressurised to leave the internet and coordinate with offline chores.

H2: Technology addiction has a significant impact on stress levels in primary-level students

Kawabe et al. (2020) surveyed the increasing use of tech tools in the digital world in the pandemic era, it has been evaluated that the digitalisation theory claims to apply to the need of the digital world in the absence of socialisation. This has boosted the interest in technology addiction among people. The aged people and mature individuals can discriminate between the need and entertainment to some extent this is why they are under the influence of tech tools to a limited extent. While on the other hand, Lee et al. (2017) admitted that children are addicted to technology more than adults, and it has a positive impact on them, keeping them busy. This may lead to addiction when they are inspired by

new tech tools and may understand modern games and technology modification better than elders because of the generation gap.

H3: Parental control significantly mediates the relationship between duration of online presence and stress levels in primary-level students

Parents are playing an important role in adjusting the timing of students for online surfing and managing the equilibrium between routine life and online coordination. In this context, Kawabe et al. (2020) evaluated that the major instrument is the counselling of children with proper psychological techniques. The parenting theory admits the opinion that there is a need of developing a supportive and mediating relationship with their children to ensure that the online presence is limited to the will and happiness of the children. Otherwise, it is sure that the child might be feeling that the parents are showing authoritative behaviour, which is not a positive instrument and may lead to disappointment for the children (El Asam et al., 2019). The significance of parental control can be more fruitful in the context of applying relevant and proper techniques for the online presence balance without developing stress.

H4: Parental control significantly mediates the relationship between technology addiction and stress levels in primary students

Moretta & Buodo (2018) reviewed the need for equilibrium for the maintenance of the online presence and offline time limitation. This is important if the parenting control is working as a positive instrument. The approach of parenting is supportive if the primary level children are aware of the opinion that the limit of online support is there and the kids are confident about their enjoyment time limits. Technology can be an addiction if misused and over used. This may happen only if the online presence time is being increased, on the other hand, Lee et al (2018) focused on the application of time checks and the awareness of kids about it. This is possible if the parents are applying smart tools for the implications of the app used to monitor the online presence time. The children will be able to realise the importance of these apps and the monitoring process on behalf of parenting control. In this manner, the relationship between problematic internet usage on psychological stress levels experienced by primary-level students can be reviewed.

Conceptual Framework

The current study has considered parental control as the independent variable. The study has seen its impact on the dependent variables like duration of online presence and stress levels of the primary students in the UK. Parental control as an independent variable shows the impact of technology addiction and stress levels on primary students in the UK.

Figure 1: Conceptual Framework

Source: Author (2021)
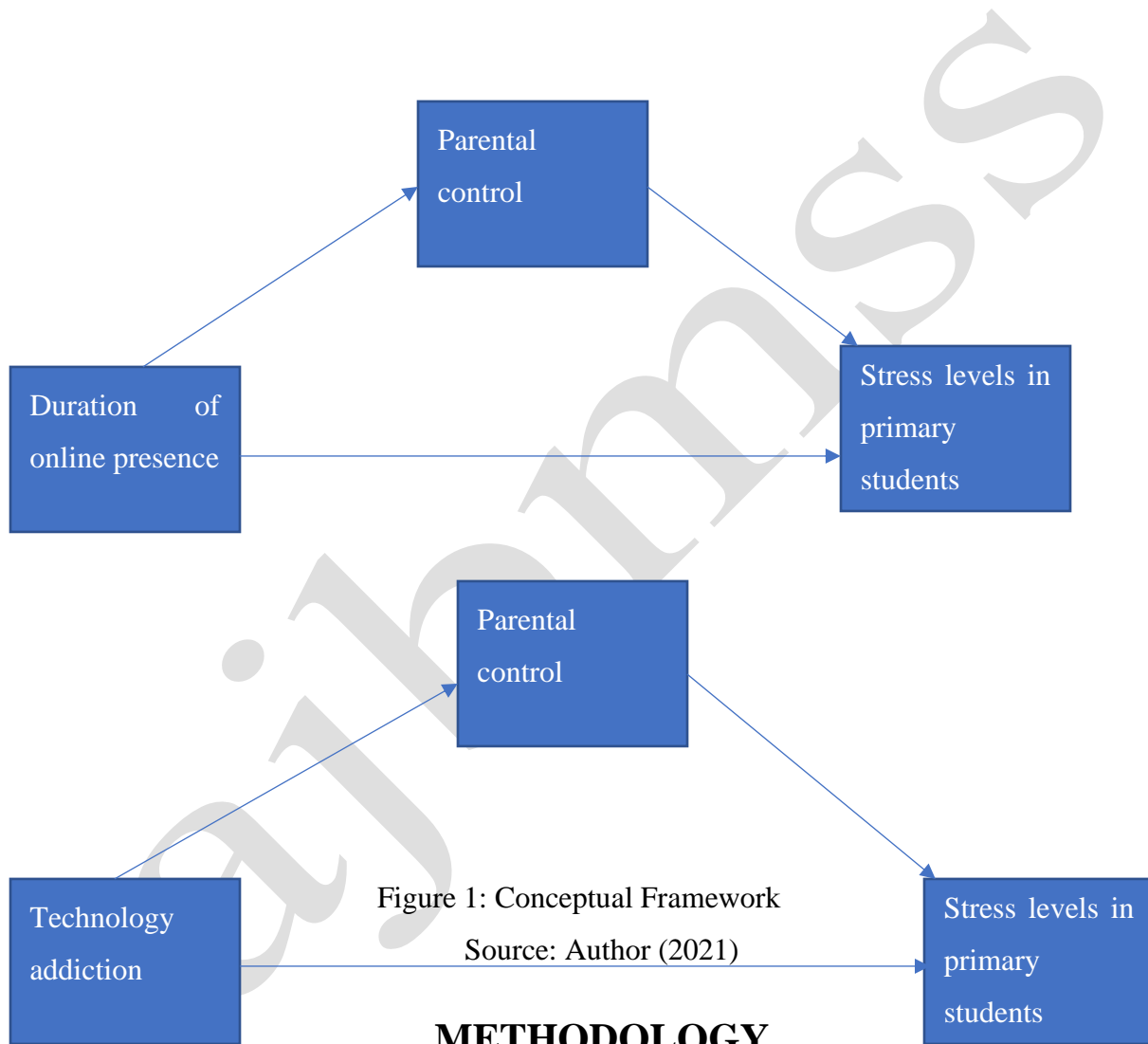
METHODOLOGY

Research philosophy refers to the underlying ideation of approach that research adopts to conduct a scientific study. Positive and interpretivist research philosophy are the two main categories (Saunders et al., 2015). Since the current research is subjective to factual information, the

researcher has given the positivist philosophy priority. A positivist philosophy enabled the researcher to shape the remaining design of this research on an empirical basis, with only marginal inclusion of subjective interpretivism. Moreover, positivist philosophy also helped in minimising the qualitative errors that are generally associated with interpretivist studies because in-depth view of stress levels required statistically consistent results to establish linkage with the internet usage by primary level students.

The method or premise a researcher uses for gathering, analysing, and interpreting data is known as their research approach (Woiceshyn & Daellenbach, 2018). Deductive and inductive approaches are considered the two main methodological approaches in social science research. However, the researcher tends to prioritise the deductive method compared to the inductive approach. This is because the current research initiates with a general observation of increasing internet usage among children and a simultaneous rise in psychological stress levels in this age group, as identified by several studies in the literature. Since the researcher intend to investigate whether these aspects are interrelated, testing of empirical hypothesis was required, which justified the use of a deductive approach because Melnikovas (2018) propounded that deductive approach helps in making a coherent flow of scientific ideas from general observations to empirical scientific theories, while taking facilitation from the existing theoretical framework.

Based on the nature of the current research, the researcher has notably depended on the quantitative research design to conduct this study. Quantitative research approach helps the researcher analyse the effects of problematic internet use on young children's stress levels in conjunction with the positivist ideology. In order to augment this design, the researcher made use of Lickert-scale based questionnaire which investigated the young students upon their internet usage habits, average duration of internet usage per day, use of social media platforms, and attraction to social media, games, and other entrainment related content on the internet (attached in the appendix). A total of 100 primary school level students were selected by convenience sampling. They were contacted through direct referencing from the schools and through emails to their parents, convincing them to participation in this study. Responses of the students on the questionnaire were converted into numeric codes in excel against each statement and then analysed through SPSS statistical package (SPSS Inc., Chicago, IL, USA). The researcher investigated the results for descriptive statistics,

correlation analysis, followed by a regression (mediation) analysis to decipher the statistical individual impacts of the duration of online presence and technology addiction on stress levels among students, with and without the mediation role of parental control.

RESULTS

Descriptive statistics analysis

Descriptive statistics refer to the examination of general trends in the data which show the arithmetical tendencies of the responses. In the current case, the researcher found the arithmetical mean, standard deviation, Skewness of the data, and its Kurtosis tendency. From the mean of the three variables in the following table, it can be asserted that the values for all three range between 1.1 and 1.5. On the survey questionnaire (in the appendix), this value corresponds to the option of 'agree'. This means that on average, responses under the variables showed agreement with the statements posed in the questionnaire. Meanwhile, standard deviation indicates the variance of the data points from the normal distribution line on the curve. Since the values of standard deviation for all three variables in the following table are less than 1, it shows that there are only a marginal number of outliers in the data. This result is further strengthened by Skewness and Kurtosis, whose values are evidence that most of the responses were within the normal distribution, with only negligible tailing of the data.

Table 1. Analysis of Descriptive Statistics

	N Statistic	Minimum Statistic	Maximum Statistic	Mean Statistic	Std. Deviation Statistic	Skewness Statistic	Std. Error	Kurtosis Statistic	Std. Error
Duration of online presence	100	0	3.75	1.5525	0.80348	0.155	0.241	-0.098	0.478
Technology addiction	100	0	3.8	1.446	0.9965	0.416	0.241	-0.791	0.478

Parental control	100	0	3.5	75	0.97207	0.473	0.241	1.18 -0.788	0.478
Stress level	100	0	3.5	1.49	0.98596	0.063	0.241	- -0.951	0.478
Valid N (listwise)	100								

Correlation analysis

Correlation refers to the determination of statistical association between the variables of the study. Although correlation does not show definite causality, it sheds light on the strength of the relationship between the variables. In the current case, correlation of duration of online presence, technology addiction, and parental control is shown with the stress level. It can be inferred that with a Pearson coefficient of 0.675, duration of online presence is only moderately and positively associated with stress level found in primary level students. Meanwhile, technology addiction was found to be positively and strongly correlated with stress levels with a coefficient of 0.863. This could be attributed to inherent psychological stress induced due to the pleasure-seeking mental frame of students, who find it hard to abandon the constant distraction of social media and online games. Parental control also has a strong association with stress levels, which might indicate that higher parental control actually adds up to the stress faced by children instead of decreasing it.

Table 2. Correlations analysis

	Duration of online presence	Technology addiction	Parental control	Stress level

Duration of online presence	Pearson Correlation	1	.759**	.750**	.675**
	Sig. (2-tailed)		0	0	0
	N	100	100	100	100
Technology addiction	Pearson Correlation	.759**	1	.989**	.863**
	Sig. (2-tailed)	0		0	0
	N	100	100	100	100
Parental control	Pearson Correlation	.750**	.989**	1	.877**
	Sig. (2-tailed)	0	0		0
	N	100	100	100	100
Stress level	Pearson Correlation	.675**	.863**	.877**	1
	Sig. (2-tailed)	0	0	0	
	N	100	100	100	100

Regression analysis

In order to decipher the causal impact of duration of online presence and technology addiction on the stress levels of students, the researcher conducted a regression analysis, by accounting for the mediation effects of parental control variable. Since the current study involved two distinct independent variables, that of duration of online presence and technology addiction, two separate mediation tests were conducted on the SPSS. The results are elaborated in the following sections:

For mediation effect of parental control on the relationship between duration of online presence and stress levels

In the first case, mediation analysis was conducted for the effect of parental control on the relations between duration of online presence and stress levels.

Model: 4

    Y: Stress

    X: TechAdd

    M: ParCont

Sample Size: 100

OUTCOME VARIABLE: ParCont

The following model summary describes the capability of the model to explain the behaviour of the variables. By taking the parental control as the outcome variable (basis), the table shows a high values of R and R-square, thus indicating a strong predictability of the variables' behaviour.

Table 3. Summary of variable model

R	R-sq	MSE	F	df1	df2	p
0.9895	0.979	0.02	4576.397	1	98	0

Similarly, the following model analysis also indicates a high significance of the model for technology addiction with a p-value<0.05.

Table 4. Model analysis

	coeff	se	t	p	LLCI	ULCI
constant	-0.2082	0.025	-8.3222	0.000	-0.2578	-0.1585

TechAdd	0.9652	0.0143	67.6491	0.000	0.9369	0.9935

OUTCOME VARIABLE: Stress

With respect to the outcome variable of stress, the following model summary also shows high predictability for the variables.

Table 5. Summary of variable model

R	R-sq	MSE	F	df1	df2	p
0.8781	0.7711	0.2272	163.3419	2.000	97.000	0.000

The following table depicts that although the significance of the model is strong for parental control, it has low statistical significance to explain the variations in technology addiction with a p-value>0.05.

Table 6. Summary of variable model

	coeff	se	t	p	LLCI	ULCI
constant	0.4914	0.1101	4.4636	0.000	0.2729	0.71
			-		-	
TechAdd	-0.2412	0.332	0.7265	0.4693	0.9001	0.4177
ParCont	1.1346	0.3403	3.3337	0.0012	0.4591	1.81

TOTAL EFFECT MODEL

Then the total effect of variables upon each other was assessed in which the following model summary show moderate predictive capability.

OUTCOME VARIABLE: Stress

Table 7. Model Summary

R	R-sq	MSE	F	df1	df2	p
0.863	0.7448	0.2506	286.0489	1.000	98.000	0.000

From the following table of total effect, it is observed that there is high significance of total effect. This means that the duration of online presence and parental control exert a significant impact on the stress levels.

Table 8. Total impact of X on Y

Effect	se	t	p	LLCI	ULCI	c_cs
0.8539	0.0505	16.913	0.000	0.7537	0.9541	0.863

From the following two tables of direct and indirect effects, the values of LLCI and ULCI show that the duration of online presence has a significant impact on stress level both, directly as well as through the mediation effect of parental control.

Table 9. Direct impact of X on Y

Effect	se	t	p	LLCI	ULCI	c_cs
-0.2412	0.332	-0.7265	0.04693	-0.9001	0.4177	-0.2437

Table 10. Indirect influence of X on Y:

	Effect	BootSE	BootLLCI	BootULCI
ParCont	1.0951	0.3611	-0.3667	1.7985

For mediation effect of parental control on the relationship between technology addiction and stress levels

Afterwards, the researcher investigated the mediation effect on the relation between technology addiction and stress level.

Model: 4
   Y: Stress
   X: TechAdd
   M: ParCont
OUTCOME VARIABLE: ParCont

With respect to the outcome variable of parental control, the model summary shows high predictability of the variables' behaviour with statistically significance values of R and R-squared terms.

Table 11. Summary of variable model

R	R-sq	MSE	F	df1	df2	p
0.9895	0.979	0.02	4576.397	1.000	98.000	0.000

The model of technology addiction was also noted to be significant with respect to the p-value<0.05 in the table below.

Table 12. Model summary

	coeff	se	t	p	LLCI	ULCI
constant	-0.2082	0.025	-8.3222	0.000	-0.2578	-0.1585
TechAdd	0.9652	0.0143	67.6491	0.000	0.9369	0.9935

OUTCOME VARIABLE: Stress

Furthermore, with respect to the outcome variable of stress, the model also shows high explanatory capacity, albeit it is lower than the above model of parental control.

Table 13. Model Summary

R	R-sq	MSE	F	df1	df2	p
0.8781	0.7711	0.2272	163.3419	2.000	97.000	0.000

The model analysis below expounds that while the conceptual model is efficacious in predicting the behaviour of parental control through p-value of 0.0012<0.05, it is not sufficient for the case of technology addiction.

Table 14. Model analysis

	coeff	se	t	p	LLCI	ULCI
constant	0.4914	0.1101	4.4636	0	0.2729	0.71
TechAdd	-0.2412	0.332	-0.7265	0.4693	-0.9001	0.4177
ParCont	1.1346	0.3403	3.3337	0.0012	0.4591	1.81

TOTAL EFFECT MODEL

OUTCOME VARIABLE: Stress

Then, the total effect model was analysed which showed moderate significance, as indicated in the following model summary. Nonetheless, its statistical significance is high for technology addiction as observed from the p-value.

Table 15. Model Summary

R	R-sq	MSE	F	df1	df2	p
0.863	0.7448	0.7448	286.0489	1.000	98.000	0.000

Table 16. Model analysis

	coeff	se	t	p	LLCI	ULCI
constant	0.2553	0.0885	2.8836	0.0048	0.796	0.4309
TechAdd	0.8539	0.0505	16.913	0.000	0.7537	0.9541

As shown in the following three tables of total, direct, and indirect effect, the p-value of total effect is high, thus showing high accuracy of the impact of technology addiction on stress levels. Moreover, from the LLCI and ULCI values, it can be inferred that technology addiction has a significant impact on stress levels in students in both cases, directly and through the mediation effect of parental control.

Table 17. Total impact of X on Y

Effect	se	t	p	LLCI	ULCI	c_cs
0.8539	0.0505	16.913	0.000	0.7537	0.9541	0.863

Table 18. Direct impact of X on Y

Effect	se	t	p	LLCI	ULCI	c_cs
-0.2412	0.332	-0.7265	0.04693	-0.9001	0.4177	-0.2437

Table 19. Indirect impact of X on Y

	Effect	BootSE	BootLLCI	BootULCI
ParCont	1.0951	0.3611	-0.3667	1.7985

DISCUSSION

The current study found significant results in the context of the literature reviewed in the above sections. While the study of Hulya et al. (2018) showed that school going children are more predisposed towards online gaming, the current research shows that the tendency in this case was almost equally distributed between online games and social media, because a number of students agreed that social media gives them positive feelings. Moreover, the finding showed a unique outcome with regards to the function of parental control such as in the research of Kalmus et al. (2013), which is unavailable in the literature. In contrast to conventional understanding, the research found that parental control has a strong association with stress levels in students. This means that increasing parental control actually adds up to the psychological stress experienced by children instead of ameliorating the situation. This could be attributed to the method of parental control, because literature shows that many parents adopt stringent methods to regulate their children's internet activities through bans and reprimand. In contrast, the researcher makes the case for more collaborative approach towards curbing the internet addiction, which may involve encouraging children to discuss their online learning, and providing them rewards for positive outcome.

S. No.	Hypotheses tested	Status
1	Duration of online presence has a significant impact on stress levels in primary level students	Yes
2	Technology addiction has a significant impact on stress levels in primary-level students	Yes

3	Parental control significantly mediates the relationship between duration of online presence and stress levels in primary-level students	Yes
4	Parental control significantly mediates the relationship between technology addiction and stress levels in primary students	Yes

CONCLUSION

The current study investigated the impact of problematic internet usage on the stress levels found in primary students in the UK population. For this, the researcher used variables of duration of online presence and technology addiction to represent problematic internet use. Through correlation analysis on students' responses, it was found that while duration of online presence has a moderate association, technology addiction is more closely associated with stress levels. In furtherance, mediation analysis showed that duration of online presence has a significant impact on stress levels, and parental control positively mediates this relationship. This means that adopting stringent parental control to decrease the child's duration online aggravates their stress levels. Similarly, the independent variable of technology addiction is also impactful on stress levels of students. Albeit the mediation effect of parental control in this case is relatively lower than in the first case.

REFERENCES

Chou, W. P., Ko, C. H., Kaufman, E. A., Crowell, S. E., Hsiao, R. C., Wang, P. W., ... & Yen, C. F. (2015). Association of stress coping strategies with Internet addiction in college students: The moderating effect of depression. *Comprehensive Psychiatry*, *62*, 27-33.

Derbyshire, K. L., Lust, K. A., Schreiber, L. R., Odlaug, B. L., Christenson, G. A., Golden, D. J., & Grant, J. E. (2013). Problematic Internet use and associated risks in a college sample. *Comprehensive Psychiatry*, *54*(5), 415-422.

El Asam, A., Samara, M., & Terry, P. (2019). Problematic internet use and mental health among British children and adolescents. *Addictive behaviours*, *90*, 428-436.

Francés, M., & Peris, À. (2018). Rigour in online science videos: An initial approach. In *Communicating science and technology through online video* (pp. 64-76). Routledge.

Huda, M., Jasmi, K. A., Hehsan, A., Mustari, M. I., Shahrill, M., Basiron, B., & Gassama, S. K. (2017). Empowering children with adaptive technology skills: Careful engagement in the digital ınformation age. *International Electronic Journal of Elementary Education*, *9*(3), 693-708.

Hülya, K. Ö. K., & Örsal, Ö. (2018). Computer game addiction and loneliness in children. *Iranian journal of public health*, *47*(10), 1504.

Kalmus, V., Blinka, L., & Olafsson, K. (2015). Does it matter what mama says: Evaluating the role of parental mediation in European adolescents' excessive Internet use. *Children & Society*, *29*(2), 122-133.

Kawabe, K., Hosokawa, R., Nakachi, K., Yoshino, A., Horiuchi, F., & Ueno, S. I. (2020). Excessive and problematic internet use during the coronavirus disease 2019 school closure: comparison between Japanese youth with and without autism spectrum disorder. *Frontiers in Public Health*, *8*, 609347.

Lam, L. T., & Wong, E. M. (2015). Stress moderates the relationship between problematic Internet use by parents and problematic Internet use by adolescents. *Journal of Adolescent Health*, *56*(3), 300-306.

Lee, J. Y., Kim, S. W., Kang, H. J., Kim, S. Y., Bae, K. Y., Kim, J. M., ... & Yoon, J. S. (2017). Relationship between problematic internet use and post-traumatic stress disorder symptoms among students following the Sewol ferry disaster in South Korea. *Psychiatry investigation*, *14*(6), 871.

Melnikovas, A. (2018). Towards an explicit research methodology: Adapting research onion model for futures studies. *Journal of Futures Studies*, *23*(2), 29-44.

Moretta, T., & Buodo, G. (2018). Autonomic stress reactivity and craving in individuals with problematic Internet use. *PLoS One*, *13*(1), e0190951.

Odacı, H., & Çikrıkci, Ö. (2017). Differences in problematic internet use based on depression, anxiety, and stress levels. *Addict: The Turkish Journal on Addictions*, *4*, 41-61.

Reed, P., Vile, R., Osborne, L. A., Romano, M., & Truzoli, R. (2015). Problematic internet usage and immune function. *PloS one*, *10*(8), e0134538.

Saunders, M. N., Lewis, P., Thornhill, A., & Bristow, A. (2015). Understanding research philosophy and approaches to theory development.

Tomaszek, K., & Muchacka-Cymerman, A. (2020). Examining the relationship between student school burnout and problematic internet use. *Educational Sciences: Theory and Practice*, *20*(2), 16-31.

Woiceshyn, J., & Daellenbach, U. (2018). Evaluating inductive vs deductive research in management studies: Implications for authors, editors, and reviewers. *Qualitative research in organizations and management: An International Journal*.