STUDIA Z TEORII
WYCHOWANIA
TOM XIII: 2022 NR 3(40)

Katarzyna Tomaszek
Uniwersytet Rzeszowski
ORCID 0000-0001-7019-5403
Agnieszka Muchacka-Cymerman
Uniwersytet Pedagogiczny im. Komisji Edukacji Narodowej w Krakowie
ORCID 0000-0002-1627-4036

„Just a few more minutes online - and I will release myself from tension". The moderation mediating effect of problematic cyber-activities and Japanese vs. East European culture on the relationship between academic burnout and cyber-aggression

„Jeszcze kilka minut online – a uwolnię się od napięcia". Wpływ problemów cyber-aktywności oraz kultury japońskiej i wschodnioeuropejskiej na związek między wypaleniem akademickim a cyberagresją

Abstract: Past studies indicate that a number of environmental and psychological factors positively predict the perpetration of cyber-aggression. The main purpose of the present study was to investigate the moderation mediating effect of problematic cyber-activities (FB addiction, phubbing) and culture (Japanese vs. East European) on the association between student burnout and cyber-aggression behaviours among the university student population.In the current studies 171 East European (83% Females, age M=23.16, SD=5.46) and 120 Japanese (50% Females, age M=21.95, SD=1.62) students. The highest levels of academic dissatisfaction, phubbing, and cyber–aggression in FB-addicted students were found. The phubbing mediated the association between student burnout and cyber-aggression behaviours, but the results for FB addiction in simple mediation analysis were insignificant.

Furthermore, FB addiction and culture were significant moderators of phubbing and cyber-aggression behaviours.

Keywords: student burnout, phubbing, FB addiction, cyber-aggression types.

Introduction

Cyberaggression is a broad term indicatingthe offensive behaviour of others and enacted via digital devices that manifests itself in various forms, e.g. sending humiliating or vulgar messages, cybergossip, spreading personal photos via the Internet, cyber-exclusion etc. (Antipina et al., 2020). The wilful and repeated online harm may be inflicted via computers, cell phones and other electronic devices (Hinduja and Patchin, 2009). Cyber aggressive behaviours have dramatically increased in society, and such a tendency was also observed among university students (Martines-Montinogue et al., 2020). The widespread use of digital technology for antisocial online behaviours may be related to the fact that cyber aggression is initiated by aggressors from anywhere, at any time (Antipina et al., 2020), and computer-mediated communication may give the impression of anonymity (Zhang et al., 2021). Importantly, the aggressive cyber-attack may involve not only perpetrators but also other people encouraged by the cyber-offender (Kang et al., 2021). A constants cyber-aggression turns into cyber-violence (Bosse& Stam, 2011) or cyberbullying (Kowalski et al., 2014).

The quadripartite cyber-violence typology is based on two main characteristics: (1) self-control, related to proactive (non-impulsive) vs. reactive (impulsive) aggression, and (2) motivational valance indicated by appetitive vs. aversive affect(Graf et al., 2022). Runions et al. (2018) described four types of cyber aggression, derived from this two orthogonal dimensions: (1) *Reward aggression* (non-impulsive-appetitive) defined as 'cold-blooded', controlled and deliberate aggression resulting in personal rewards, e.g. higher social status and positive affiliation; (2) *Recreation aggression* (impulsive – appetitive) characterised by thrill-seeking or fun at others' expense; (3) *Rage aggression* (impulsive – aversive) ‚hot-blooded', impulsive aggression involving negative affective violence such as anger, embarrassment, humiliation, and shame; (4) *Revenge aggression* (Wrath) (non-impulsive – aversive), self-controlled aggression elicited due to a provocation. Importantly, one key point worth noting is that cyber technology does not „produce a new form of aggressors" but provides new tools for youth who already engage in offline aggressive behaviours (Dempsey et al., 2011).

Despite the similarities in adverse outcomes of online and offline aggression, the specific factors may indicate different antecedents. Both start with personal, environmental, and situational factors that initiate hostile thoughts and are linked to the positive evaluation of aggressive response to a specific person (Kang et al., 2021). However, in cyber aggression, offenders do not come face to face with the victim because of asynchronous communication, which may lead to more severe attacks.

The socio-ecological model of diathesis-stress is a holistic framework for explaining the mechanism underlying cyber-aggression by the premise that aggression is a response to a stressful life event, and serves as a catalyst for a diathesis–stress. The interrelated factors such as family, school and cyber-community environments, peer influence, cyberspace features, personality, and attitudes towards aggression are responsible for bullying (Swearer and Hymel, 2015). Moreover, a variety of risky online activities, spending time on the Internet,e.g. Internet addiction, cybergossip, media-multitasking, online games, phone usage etc. may also increase aggression (Cebollero-Salinas et al., 2022). However, very few studies have specifically addressed cyberactivities such as social networks addiction, or phubbing (the snubbing others in favour of our mobile phones), although given that they are related to the high frequency and extent of online activities, they may be relevant in explaining cyberbullying.

Facebook addiction (also called FB intrusion, problematic FB use) is a behavioural addiction indicated by excessive and inappropriate use of social media (Hormes, 2016). Andreassen et al. (2012) characterised this type of online addictive behaviour as a form of internet addiction with several core symptoms such as tolerance, withdrawal, relapse, salience, mood modification, and conflict. Importantly, FB addiction has been recognised as a predictor of mental and behavioural problems, including offline aggression (Arendain and Murcia, 2016). Bauman (2014) pointed out that individuals often use social networks such as Facebook, forums and blogs to manifest cyberaggression. Giordano et al. (2021) revealed that higher social media addiction, especially more hours spent online, significantly predicts cyberbullying perpetration. Another important risk factor is related to phone addiction, namely phubbing behaviours, i.e. ignoring the interlocutor while using the telephone (Zhao et al., 2021). Phubbing is negatively related to the quality of interpersonal relationships (Roberts and David, 2016; Niu et al., 2020) and positively to the negative emotional states (Aagard, 2019). Moreover, phubbing experienced from parents influences youths' phone addiction (Xie et al., 2019; Niu et al., 2020) and cyberbullying (Qu et al., 2021).The analysis of certain environmental

factors for cyberbullying pointed to the school climate, school distress, and isolation from peers (Guo, 2016). Importantly, all of these risk factors are linked to educational burnout (Tomaszek and Muchacka-Cymerman, 2021, 2022), however little is known about its relationship to cyberaggression. Student burnout is a consequence of chronic overwhelming stress, and is recognized as a multidimensional construct that manifests itself as: emotional exhaustion, a cynical attitude towards learning, and diminished academic effectiveness (Schaufeli et al., 2002). In this study, academic burnout is defined as an emotional, cognitive, physical, mental, and behavioral response, drawn out in time, to prolonged overwhelming study demands and stress that results in both adverse academic (fatigue, frustration, amotivation, and reduced ability in acquiring academic goals) and psycho-social (risky behaviours, aggression, addictions, mental health problems) outcomes. It is necessary to point out that university student burnout is linked to numerous adverse outcomes, including Internet addiction, problematic FB use, and offline aggression (Tomaszek and Muchacka-Cymerman, 2022). Finally, also age (Del Rey et al., 2016), gender (Álvarez-García et al., 2017), and culture (Barlett et al., 2014) affect the occurrence of the cyberaggression.

The last characteristic included in this study project was cultural differences. Japanese culture is known as a combination both tradition and modernity. In Japan, formal, national identity and tradition are at great importance with the core values such as thinking of others, doing your best, not giving up, respecting your elders, knowing your role, and working in a group (Cramer, 2016). Although it is „non-contact culture" family bonds are more important than personal success. Although Japan people are recognized as shy and distance they prefer high-context communication (subtle, metaphorical at times). Eastern Europe are countries that are similar in traditional values and family to Japanese culture as being born in own country and having family background are important to truly share the national identity. In the comparison study by Cranmer (2016) a significant convergence of values of the Japanese and Czech cultures were found. Eastern Europe countries are moderate contact culture where close body contact in public is not commonly accepted in society. At the same time Eastern Europe differs from Western in core elements such as religion, values, and similarly to Japanese culture thinking of others and respecting elderly people are very important. The Pew Research Center (2018) revealed higher levels of religious nationalism, less openness toward multiculturalism, higher levels of traditional religious practice in Eastern Europe. European people prefer low-context communication (direct and transparent).

The present study

The general aim of the present study was to investigate the moderation mediation effect of phubbing, Facebook addiction, and Japanese vs. East European Culture on the relationship between student burnout and cyber-aggression types when controlling age, gender, and academic satisfaction. It consisted of four sub-goals, which are expressed in four research questions: (1) What are the differences in cyber-aggression types, phubbing, student burnout, and academic satisfaction between the students that differ in the level of FB addiction? (2) Do phubbing and Facebook addiction play a mediating role in the association between student burnout and cyber-aggression types? (3) Do phubbing, FB addiction, and culture interaction significantly predict cyber-aggression types? (4) Do age, gender, and academic (dis)satisfaction play a role ascovariants in explaining the levels of cyber-aggression types? Figure 1 shows the graphical presentation of the expected paths between all the examined variables.

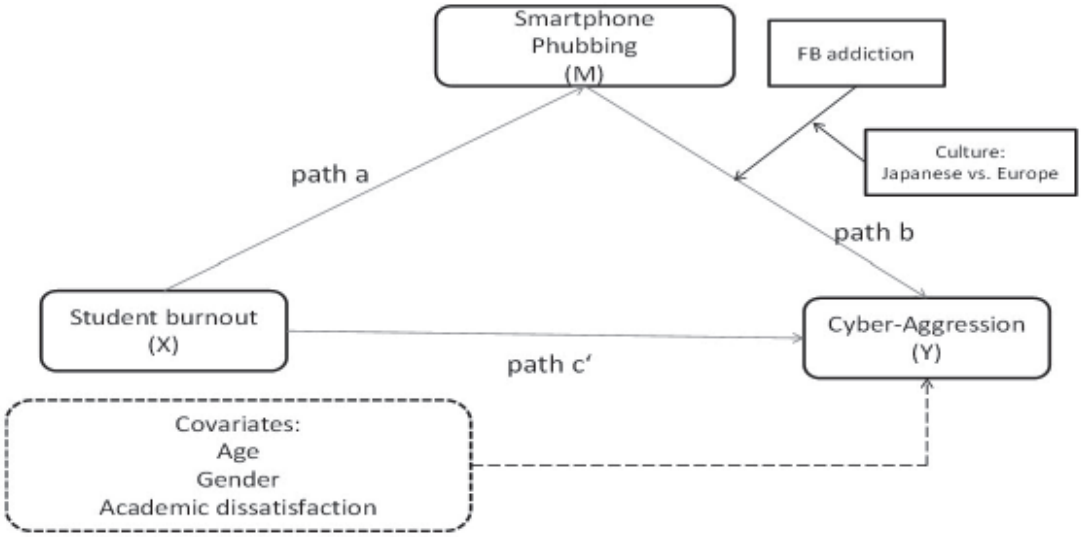

Figure 1. The hypothesized moderation mediation model, including covariates. Note. The lines represent the paths of interest X- Independent variable: Student Burnout; M – Mediator: Phone snubbing, Moderator: Facebook addiction, Culture: Japanese vs Eastern European; Y- Dependent variable: Cyber-Aggression Types; Covariates: Gender, Culture, Academic Satisfaction

Methods

Participants and Procedure

The group of 291 people participating in the study combined Psychology and Education students from Japan (41%), Poland and the Czech Republic (59%). The respondents' mean age was M = 22.66 years (SD = 4.35,Min.=18 years, Max. = 48 years). After receiving the approval of the ethics committee to conduct the research, the surveys were entered into the Google Forms questionnaire and the link to the page was sent to the

respondents. The selection for the study was deliberate with two criteria: (1) students of pedagogy and psychology (2) citizens from Japan or Eastern Europe. The university students took part in the research anonymously, were informed about the way of using the research results (research goals), and the possibility of withdrawing from the research at any time. The respondents did not receive any gratification for participating in the survey. The study was conducted during pandemic COVID 19 (March, 2021).

Measures

The Generic Scale of Smartphone Phubbing (GSP) (Chotpitayasunondh and Douglas, 2018) for assessing mobile phone snubbing was used. The scale consists of 15 items, and the respondent answer on a 5-point Likert scale. The Cronbach's α in this study was equal to .88.

The Facebook Intrusion Questionnaire scale (FIQ) developed by Elphinston and Noller (2011) was used to measure Facebook addiction. The scale consists of 8 items, rated on a 7-point Likert scale (e.g. *I lose track of how much I am using Facebook*). Cronbach's α was equal to .89. According to the authors, higher scores on the FIQ scale reflect the greater intensity of problematic Facebook use. According to Błachnio et al. (2021), individuals addicted to FB scored 24.81 (SD=13.41), and the control sample scored 16.53 (SD=6.61). Based on the above-mentioned proposition, three levels of low FB use were distinguished in this study: Low FB use (control sample) (M=8.00, SD=.00); Average FB use (M=12.63, SD=2.44, a student at risk of developing FB addiction), and High FB use (addicted sample) M = 26.92, SD = 6.28. In the current study, all three groups significantly differ from each other in the level of FB use ($F_{(2,288)}$=648.40, p<.0001).

The Cyber-Aggression Typology Questionnaire (CATQ) (Runions et al., 2016) consists of 29 items designed to assess four types of cyberaggression: Rage, Wrath, Reward, and Recreation. The Cronbach's α and McDonald's ranged from .92 to .95.

Maslach Burnout Inventory for Students (MBI-SS) (Maslach et al., 1996) consists of 15 items. The respondents answer on a 7-point Likert scale (0 – never to 6 – every day). The inventory has three subscales: exhaustion, cynicism and professional efficacy. The Cronbach's α was equal to .81

Academic dissatisfaction was measured with one question, e.g. How satisfied are you with your academic achievements? Participants answered on a 7-point Likert scale from 1 – I am totally satisfied to 7 – I am not satisfied at all. The results were divided into two sub-groups: 1 – satisfied (N=160) and 2 – dissatisfied (N=131), which were significantly different in the level of perceived (dis)satisfaction from academic achievement (t_{289}=-25.37, p<.0001).

Data Analysis

The data were exported into SPSS v.24 with macro PROCESS 3.3 and analysed with the same software. The differences between participants were estimated with t Student and one-way ANOVA statistic with Tuckey post hoc test. The macro PROCESS 3.3 by Hayes (2019) was used for moderation - mediation analysis: simple mediation effects (model 4), and the moderation mediating effects (model 18).

Results

The FB addicted students scored significantly higher in academic satisfaction, phubbing, and all cyber-aggression types than students with low FB use. Furthermore, they more often presented rage, and reward cyber aggression behaviours than the students at risk of FB addiction. However, the level of student burnout was similar in all groups (see Tab.1).

Table 1. Descriptive statistics for major study variables according to Problematic FB use

Variables	Cron-bach's Alfa	Gr.1 Low FB use	Gr. 2 Ava-rage FB use	Gr. 3 High FB use	F df(2,288)	Post hoca
N(%)		106(36)	90(31)	95(33)		
Phubbing (GSP)	.88	40.90(12.26)	35.47(12.81)	47.85(15.57)	19.35***	1-2,3; 2-3
Student Burno-ut(MBI)	.81	39.46(10.78)	36.61(15.10)	39.85(13.92)	1.65	-
Rage	.95	15.73(4.61)	17.58(9.71)	21.39(11.12)	10.68***	1-3; 2-3
Wrath	.93	7.47(2.48)	8.18(4.39)	9.86(5.80)	7.76**	1-3
Reward	.92	7.02(1.91)	7.17(3.90)	9.63(5.86)	12.06***	1-3; 2-3
Recreation	.92	5.92(1.61)	6.48(4.77)	7.46(4.93)	3.83*	1-3
Acade-micdissa-tisfaction	-	1.37(.49)	1.44(.50)	1.55(.50)	3.31*	1-3

Note: Values are reported as mean and standard deviation; M (SD), ***p<.0001; ** p<.01; * p<.05; F - one – way ANOVA statistics with Tuckey's post hoc test; a– the numbers refers to the number of group 1 – Group 1 with low FB use (controlled non-addicted from FB group); 2 - Group 2 with average FB use (students at risk of FB addiction), 3 - Group 3 with high FB use (addicted from FB)

Simple mediation analysis revealed that phubbing was a significant mediator in the associations between student burnout and all cyber-aggression types, while Facebook addiction was an insignificant mediator (see Tab. 2).

Table 2. Simple mediation effect of phubbing on the relation between student burnout and Cyber-aggression types

Path		Rage	Wrath	Reward	Recreation
Mediator: Phubbing (GSP)					
MBI→ Cyber-Aggression indicator (c)	c	.26***	.24***	.20**	.16**
	c'	.16**	.13*	.09	.07
MBI→GSP	a	.33***	.33***	.33***	.33***
GSP→ Cyber-Aggression indicator	b	.32***	.33***	.32***	.27***
Indirect effects					
MBI→GSP→ Cyber-Aggression indicator		.11 95%[.06;.16]	.11 95%[.06;.16]	.11 95%[.06;.16]	.09 95%[.05;.14]
Mediator: Facebbok addiction (FB)					
MBI→ Cyber-Aggression indicator	c	.26***	.24***	.20**	.16**
	c'	.30***	.23***	.19**	.16**
MBI→FB	a	.02	.02	.02	.02
FB→ Cyber-Aggression indicator	b	.25***	.26***	.31***	.19**
Indirect effects					
MBI→FB→ Cyber-Aggression indicator		.01 95%[-.002;.003]	.01 95%[-.02;.04]	.01 95%[-.03;.05]	.005 95%[-.02;.03]

***p<.0001; ** p<.01; * p<.05
Notes: Standardized Coefficients were cited with 95% confidence intervals in brackets, MBI – Student burnout; FB – Facebbok addiction, GSP – phubbing

The moderation mediating model for the first cyber-aggression type, rage, was significant ($F_{(11,279)}$ =8.58; p<.0001), and explained 25% of the variances. The direct effect of independent variable (MBI: B=.09,p=.024), mediator (GSP: B=.42,p<.0001), and moderators: FB addiction (FB: B=-4.50, p=.024) and culture (B=15.60, p=.001) were significant. The student burnout (MBI) indirectly via phubbing (GSP) predicted rage. The significance of

interaction effects: GSP x Culture (B=-.36,p = .044), FB x culture (B=10.59, p=.021), as well between GSP x FBx culture (B=-.41, p=.032) were confirmed. In the second analysis for wrath, 21% of the variances were explained ($F_{(11,279)}$ =6.88;p<.0001). The significant prediction power of wrath was confirmed for GSP (B=.16,p=.0003), culture(B=4.87, p=.030), and academic dissatisfaction (B=1.18, p=.036). The indirect effect of MBI on wrath via GSP was not significant. Moreover, none of the tested interaction effects were significant. The third online aggression type – namely reward – was significantly predicted by the tested variables($F_{(11,279)}$ =7.06,p<.0001), with 22% explained variances. The significant direct associations were found between reward and: GSP (B=.17, p<.0001), culture (B=6.82, p=.002), and gender (B=1.35, p=.020). The indirect effect of MBI via GSP on reward was significant, and four significant interaction effects were found: (1) GSP x FB, (2) GSP x Culture, (3) FB x Culture, and (4) GSP x FB x culture. In the last model for online aggression – recreation – 16% of the variances were explained ($F_{(6,284)}$ =13.11,p<.0001). Phone phubbing (B=.15, p=.0001), culture (B=5.69, p=.005), and gender (B=1.59, p=.004) significantly predicted recreation aggressive behaviours. The mediation effect, as well as all interaction effects were insignificant. In all the tested models, academic dissatisfaction significantly predicted GSP score (B=6.68, p=.0001) (see Tab.3).

Table 3. Mediation analysis of academic burnout on cyber-aggression types via phubbing and FB intrusion and Japanese vs West European Culture

Path	Cyber- Aggression Types			
	Rage	Wrath	Reward	Recreation
Direct effect	.09*	.03	.03	.02
Indirect effects	95%[.01;.17]	95%[-.01;.07]	95%[-.02;.06]	95%[-.02;.06]
MBI→GSP→ Cyber-Aggression indicator	-.11 95%[-.20;-.03]	-.03 95%[-.07;.01]	-.05 95%[-.09;-.01]	-.02 95%[-.06;.01]
Interaction effects				
GSP&FB→ Cyber-Aggression indicator	.13 95%[-.03;.29]	.06 95%[-.02;.14]	.14** 95%[.06;.22]	.05 95%[-.02;.13]
GSP&Culture→ Cyber-Aggression indicator	-.36* 95%[-.71;-.01]	-.15 95%[-.33;.03]	-.27** 95%[-.44;-.10]	-.08 95%[-.24;.08]

FB&Culture→ Cyber-Aggression indicator	10.59* 95%[1.61;19.58]	3.70 95%[-.85;8.25]	6.89** 95%[2.53;11.25]	3.04 95%[-1.10;7.18]
GSP&FB&Culture→ Cyber-Aggression indicator	-.41* 95%[-.78;-.03]	-.11 95%[-.30;.08]	-.18* 95%[-.36;-.002]	-.09 95%[-.26;.08]
Covariates				
Age	.05	.08	-.01	-.08
Gender	.62	.58	1.31*	1.59**
Academic dissatis-faction	.89	1.18*	.65	-.33
Model summary	F(11,279) =8.58; p<.0001; R=.50; R2=.25	F(11,279) =6.88; p<.0001; R=.46; R2=.21	F(11,279) =6.90; p<.0001; R=.47; R2=.22	F(6,284) =13.11; p<.0001; R=.39; R2=.16

***p<.0001; ** p<.01; * p<.05
Notes: Unstandardized Coefficients were cited with 95% confidence intervals in brackets. MBI – Student burnout; FB – Facebook addiction, GSP –phubbing, Culture: Japanese vs West European

Discussion

Cyberspace aggression due to the specific technological possibilities, both the scope of this type of antisocial behaviour and its dissemination, seems to be of greater importance than in the case of aggressive behaviour in real life. Considering this, the current project was concerned with the educational and online health risk behaviours as predictors of online aggression. Four study questions were examined:

The first question explored the differences in cyber-aggression types, phubbing, student burnout, and academic satisfaction between the students that differ in the level of FB addiction. The results confirmed significant differences between FB-addicted students in the levels of academic (dis)satisfaction, phubbing and cyber-aggression types, but not student burnout. The interpretation of these findings may lay in a different ways of dealing with academic stress and tension. FB addicted people are recognized as individuals that much often experience negative emotions, loneliness and have limited healthy coping capabilities (Jafri, 2015; Shetter et al., 2019). Such psychological characteristics are maladaptive and do not allow to alleviate social and educational problems. Past studies confirmed that those who spend more time online tend to be more active online and bear a significantly higher level of aggression compared (Parti et al., 2018). Consequently unhealthy ways of coping with stress and tension may result in students turning to externalizing

their tensions by aggressive behaviors in cyberspace. According Runions et al. (2016) aggression and antisocial behavior have a root in low self-control, with change attributable to environmental influences e.g. educational and social problems. The current findings are consistent with this explanation, and point outs the crucial rule of self-control trainings, including emotional and social coping, as a key elements of cyberaggression preventing programs.

The second question tested the mediating effect of phubbing and Facebook addiction on the association between student burnout and cyber-aggression types. The findings revealed that phubbing, but not Facebook addiction, played a mediating role in the association between student burnout and cyber-aggression types. Academic student burnout has been recognized as a precursor for more serious psychological, physical, and academic performance unbalances. Most noticing burnout symptoms are related to a decrease in the student school engagement and satisfaction that manifests as negative attitudes towards classmates and teachers, losing motivation about the school, and finding lessons meaningless and useless. The emotional perspective draws attention to the constant feeling of anhedonia and alienation of burned-out students. The negative psychological condition seems to push the student to look for relationships that could improve his mood. However, the feeling of being inferior (typical of burned-out students) does not allow for open and direct communication. Hence the closeness and acceptance cannot be reached and the state of frustration may lead to aggression expressed indirectly via social media or by ignoring others (phubbing behaviors). In the light of this mechanism, there is great importance to implement programs that heighten the self-esteem and social bonds in higher education.

The next question was related to prediction cyber-aggression types' levels on the basis of phubbing, FB addiction, and culture interaction. The moderation mediating analysis confirmed that phubbing, FB addiction and culture interact with each other and significantly predict two types of cyber aggression, namely rage and reward. The moderation effects indicated that for both the FB-addicted samples (Japanese and European), phubbing was positively linked to rage and reward, but it was most pronounced among European students. The findings also revealed cross-cultural differences, namely in the Japanese low FB addicted sample the relationship between phubbing and two cyber-aggression types (rage and reward) was positive, while in the European sample – negative. Japanese students, regardless of the level of FB addiction, tend to ignore others in public and either impulsively or non-impulsively use cyber-aggression, while European students present

such tendencies more frequently while they are addicted to FB. Focusing on online life (Facebook) in public and ignoring people in real life may be linked to adverse reactions from interlocutors, e.g. aggressive comments or social isolation. This, in turn, may be interpreted as a provocation, and as the aversive online impulsive response may occur as retaliatory. Interestingly, ignoring interlocutors and concentrating on virtual reality, e.g. FB website is also positively linked to a cold aggressive online response - controlled enactment, which involves the hidden motives of attaining higher social status through bullying. These results confirmed the need of including cultural differences in educational programs concerning preventing both student burnout and cyberaggression. The findings indicate the importance of increasing the level of knowledge of university students both about the results of chronic stress, i.e. burnout symptoms and effective ways of coping with stress and relaxation, as well as the knowledge about cyberspace culture, rules governing the rights and obligations of network users.

Statistical analysis also examined the role of age, gender, and academic (dis)satisfaction as covariants in explaining the levels of cyber-aggression types. The results confirmed that males were more prone to present reward and recreation than females, and academic dissatisfaction was a significant covariant in explaining the level of wrath.

The results of the current study supported and extended the socio-ecological model of diathesis-stress by showing significant interrelations between educational burnout and cyber activities as risk factors that contribute to a higher cyberaggression, and are related to cultural context.

Limitations

The current project had several limitations that merit discussion. The possibility of the extent of the findings on the general population is limited due to the relatively small study sample. A further limitation concerns the way of examining cyber aggression behaviours; as the participants made self-judgments in this area they might have underestimated the level of these socially unapproved behaviours. The lack of support for a mediating role of FB addiction on the association between student burnout and cyber aggression may have been specific to the particular one-dimensional scale used to represent this construct, e.g. the FB intrusion. As such, the use of a multidimensional FB scale is recommended in future research projects. A key concern is also the way of measuring student burnout; the study was conducted via the Internet during the COVID-19 pandemic when distance

learning was a common way of providing lessons. Thus, students might have underestimated or biased their level of educational burnout.

Conclusions

Due to the digital technology usage increase, the problem of online aggressive behaviours is likely to grow, and in the context of current findings it is very urgent to implement intervention programmes that allow young people to effectively cope with frustration, especially caused by educational failures and overwhelming university duties. As student burnout may impact cyber-aggressive behaviours via phubbing, and in light of the findings that FB addiction and Culture interact with phubbing, it is highly recommended to implement a health programme focusing on alleviating the digital technology negative impact on individuals relationships and social behaviours and to promote face-to-face interactions.

References:

Álvarez-García, D., Núñez, J. C., Barreiro-Collazo, A., García, T. (2017). Validation of the Cybervictimization Questionnaire (CYVIC) for adolescents. *Computers in Human Behavior*, *70*, 270-281.

Andreassen, C. S., Torsheim, T., Brunborg, G. S., Pallesen, S. (2012). Development of a Facebook addiction scale, *Psychological Reports, 110(2)*, 501-517.

Arendain, J., Murcia, J. W. (2016). *Facebook Addiction and Aggression: Is There a Profound Relation?* Munich: University of Mindanao.

Bauman, S. (2014). *Cyberbullying: What Counselors Need to Know*. John Wiley & Sons: Hoboken, NJ, USA.

Barlett, Ch. P., Gentile, D. A., Anderson, C. A., Suzuki, K., Sakamoto, A., Yamaoka, A., Katsura, R. (2014). Cross-Cultural Differences in Cyberbullying Behavior: A Short-Term Longitudinal Study. *Journal of Cross-Cultural Psychology, 45(2)*, 300–313. DOI: 10.1177/0022022113504622

Błachnio A, Przepiórka A. (2018). Be aware! If you start using Facebook problematically you will feel lonely: Phubbing, loneliness, self-esteem, and Facebook intrusion. A cross-sectional study. *Soc Sci Comput Rev, 37(2)*, 270-278 https://doi.org/10.1177/0894439318754490.

Błachnio, A, Ptrzepiórka A., Cudo, A., Elphinston, R. A. (2021). Assessing Problematic Facebook Use: Psychometric Properties of the Polish Version of Facebook Intrusion Questionnaire. *Research Squere*, https://doi.org/10.21203/rs.3.rs-535400/v1

Bosse, T., Stam, S. (2011). *A normative agent system to prevent cyberbullying*. In: Proceedings of the 2011 IEEE/WIC/ACM International Conferences on Web Intelligence and Intelligent Agent Technology-Volume 02. IEEE Computer Society, Lyon, France, 22–27.

Cebollero-Salinas, A., Orejudo, S., Cano-Escoriaza, J., Íñiguez-Berrozpe, T. (2022). Cybergossip and Problematic Internet Use in cyberaggression and cybervictimisation among adolescents. *Computers in Human Behavior, 131*, 107230.

Chotpitayasunondh, V., Douglas, K. (2018). Measuring Phone Snubbing Behavior: Development and Validation of the Generic Scale of Phubbing (GSP) and the Generic Scale of Being Phubbed (GSBP). *Computers in Human Behavior, 88*, 5-17.

Cramer, T. (2016). Work-Related Cultural Values Of Japanese and Czech Students. *Eurasian Journal of Social Sciences, 4 (2),* 22-37.

Del Rey, R., Casas, J. A., Ortega, R. (2016). Impact of the ConRed Program on different cyberbulling roles. *Aggressive Behavior, 42*, 123-135.

Dempsey, A. G., Sulkowski, M. L., Dempsey, J., Storch, E. A. (2011). Has Cyber Technology Produced a New Group of Peer Aggressors? *Cyberpsychology, Behavior, and Social Networking, 14 (5)*, 297-302.http://doi.org/10.1089/cyber.2010.0108

Elphinston, R. A., Noller, P. (2011). Time to face it! Facebook intrusion and the implications for romantic jealousy and relationship satisfaction. *Cyberpsychology, Behavior and Social Networking, 14(11)*, 631–635. https://doi.org/10.1089/cyber.2010.0318

Giordano, A. L., Elizabeth A. Prosek, E. A., Joshua C. Watson J. C. (2021). Understanding Adolescent Cyberbullies: Exploring Social Media Addiction and Psychological Factors. *Journal of Child and Adolescent Counseling, 7(1)*, 42-55. DOI: 10.1080/23727810.2020.1835420

Graf, D., Yanagida, T., Runion, K., Spiel, Ch. (2022). Why did you do that? Differential types of aggression in offline and in cyberbullying. *Computers in Human Behavior, 128*, 1-8.

Guo, S. (2016). A meta-analysis of the predictors of cyberbullying and perpetration and victimization. *Psychology in the Schools, 53(4),* 432-453. DOI:10.1002/pits.21914

Hayes, A. F. (2019). *The PROCESS macro for SPSS and SAS [Computer software]*.

Hinduja, S., Patchin, J. W. (2010). Bullying, cyberbullying, and suicide. *Arch. Suicide Res., 14,* 206–221. doi: 10.1080/13811118.2010.494133

Hormes, J.M. (2016). Under the influence of facebook? Excess use of social networking sites and drinking motives, consequences, and attitudes in college students. *Journal of Behavioral Addictions, 5(1),* 122-129.

Jafri, H. (2015). A Study on Facebook Addiction and its Relationship with Emotional Experience and Coping Strategies. *The International Journal of Indian Psychology, 2(4).* DOI: 10.25215/0204.059

Kang, K. I., Kang, K., Kim, C. (2021). Risk Factors Influencing Cyberbullying Perpetration among Middle School Students in Korea: Analysis Using the Zero-Inflated Negative Binomial Regression Model. *International journal of environmental research and public health*, *18(5),*2224. https://doi.org/10.3390/ijerph18052224

Martínez-Monteagudo, M. C., Delgado, B., García-Fernández, J. M., Ruíz-Esteban, C. (2020). Cyberbullying in the University Setting. Relationship With Emotional Problems and Adaptation to the University. *Frontiers in psychology, 10*, 3074. https://doi.org/10.3389/fpsyg.2019.03074

Maslach, C., Jackson, S. E., Leiter, M. P. (1996). *Maslach Burnout Inventory manual(3rd ed.*). Palo Alto, CA: Consulting Psychologists Press.

Niu, G., Yao, L., Wu, L., Tian, Y., Xu, L., Sun, X. (2020). Parental phubbing and adolescent problematic mobile phone use: The role of parent-child relationship and self-control. *Children and Youth Services Review, 116*, 105247 https://doi.org/10.1016/j.childyouth.2020.105247

Qu, L., Lei, L., Wang, X., Xie, X., Wang, P. (2020). Mother Phubbing and Adolescent Cyberbullying: The Mediating Role of Perceived Mother Acceptance and the Moderating Role of Emotional Stability. *Journal of Interpersonal Violence*, 1-16 https://doi.org/10.1177/0886260520983905

Parti, K., Tibor, K., Koplanyi, G. (2018). Architecture of aggression in cyberspace. Testing cyber aggression in young adults in Hungary. *International Journal of Cybersecurity Intelligence & Cybercrime, 1(1).* DOI: 10.52306/01010618QOSG3191

Pew Research Center (2018). Eastern and Western Europeans Differ on Importance of Religion, Views of Minorities, and Key Social Issues. *https://www.pewresearch.org/religion/2018/10/29/eastern-and-western-europeans-differ-on-importance-of-religion-views-of-minorities-and-key-social-issues/_*

Runions, K. C. Bak, M., Show, T. (2016). Disentangling Functions of Online Aggression: The Cyber-Aggression Typology Questionnaire (CATQ). *AggressiveBehavior*, *9999,* 1-11.

Roberts, J. A., David, M. E. (2016). My life has become a major distraction from my cell phone: partner phubbing and relationship satisfaction

among romantic partners. *Comput Human Behav., 54,* 134–141. doi:10.1016/j.chb.2015.07.058

Schaufeli, W. B., Martinez, M. I., Pinto, A. M., Salanova, M., Bakker, A. B. (2002). Burnout and engagement in university students - a crossnational study, MBI-SS. *Journal Of Cross-Cultural Psychology*, *33(5)*, 464-481.

Shettar, M., Karkal, R., Kakunje, A., Mendonsa, R. D., Chandran, V. M. (2017). Facebook addiction and loneliness in the post-graduate students of a university in southern India. *Int J Soc Psychiatry, 63(4),* 325-329.

Swearer, S.M., Hymel, S. (2015). Understanding the psychology of bullying: Moving toward a social-ecological diathesis–stress model.*American Psychologist, 70(4)*, 344-353, 10.1037/a0038929

Tomaszek, K., Muchacka-Cymerman, A. (2021). Be aware of burnout! The role of changes in academic burnout in problematic Facebook usage among university students. *International Journal of Environment & Public Health, 18(15),* 8055. https://doi.org/10.3390/ijerph18158055

Tomaszek, K., Muchacka-Cymerman, A. (2022). Student Burnout and PTSD Symptoms: The Role of Existential Anxiety and Academic Fears on Students during the COVID 19 Pandemic," Depression Research and Treatment. *Depression Research and Treatment, 2022,* 6979310. https://doi.org/10.1155/2022/6979310

Xie, X., Chen, W., Zhu, X., He, D. (2019). Parents' phubbing increases Adolescents' Mobile phone addiction: Roles of parent-child attachment, deviant peers, and gender. *Children and Youth Services Review*, *105*, 104426.

Zhao, J., Ye, B., Yu, L. (2021). Peer Phubbing and Chinese College Students' Smartphone Addiction During COVID-19 Pandemic: The Mediating Role of Boredom Proneness and the Moderating Role of Refusal Self-Efficacy. *Psychol Res BehavManag., 14*,1725-1736. https://doi.org/10.2147/PRBM.S335407

Glossary of statistical terms

1. *Mediation* – the effect of an independent variable (X) on the outcome (dependent variable, Y) in presence of a third variable marked as mediator, that is a continues variable.
2. *Moderation*- the effect of an independent variable (X) on the outcome (dependent variable, Y) in presence of a third variable marked as moderator, that is a categorical variable.

3. *Interaction effect* – in the regression models that may arise when two independent variables (X1, X2) simultaneously interact with each other and this interaction has an impact on the value of another dependent variable
4. *Direct effect* – it is the association between X and Y variables that is not mediated by other variables in the regression model
5. *Indirect effect* – it is the association between C and Y variables through one or more mediator(s) or moderato(s)