



Katarzyna Tomaszek\*   
Agnieszka Muchacka-Cymerman\*\* 

## ‘I wonder why sometimes I feel so angry’ The associations between academic burnout, Facebook intrusion, phubbing, and aggressive behaviours during pandemic Covid 19

**Abstract:** Several psychological factors are strongly related to aggressive behaviours in university students, such as educational issues and problematic digital activity, namely Smartphone and social media addiction. At the same time, little is known about the role of student burnout syndrome in predicting these mental and social problems. Moreover, although most researchers agree with the notion of sex differences in aggression, excessive digital activity, and burnout syndrome, only a few studies have examined the role of cultural differences. Thus, the present study sought to examine whether digital technology addictions mediate the relationship between student burnout and aggressive behaviours in European and Japanese university students. For this purpose, a cross-sectional, non-experimental and online study was developed with 291 participants (202 females,  $M = 22.66$ ;  $SD = 4.35$ ). The findings highlighted how academic burnout and phone snubbing increase, and problematic Facebook use decrease the risk of aggressive behaviours. In addition, phone snubbing (known as phubbing) mediates the association between student burnout and aggression. Men tend to have more aggressive behaviours than women, and Japanese students were less addicted to FB and less aggressive as well as scoring higher in phubbing than European students. In conclusion, the results confirmed the importance of including cross-cultural differences in digital technology health programs in order to minimise the risk of aggressive behaviours.

**Keywords:** student burnout, phubbing, FB addiction, aggressive behaviours

### INTRODUCTION

Aggression and violent behaviours have been widely explored in the literature. Despite empirical support for their negative relations to academic performance and mental health, little research has investigated this multi-dimensional construct in the context of student burnout and problematic digital activities. Moreover, to our knowledge none of the previous studies have examined these individual characteristics altogether in the cross-cultural perspective. Thus, the present study aimed to address the gaps in the literature by presenting the mediating effect of Facebook addiction and phone snubbing on the relationship between academic burnout and aggressive behaviours.

#### Aggressive behaviours

According to the definition, aggression is a behaviour intended to harm a person, and it has various forms, e.g. physical, verbal, relational, or mental (Baron, Richardson,

1994; Bushman, Anderson, 2001; McCarthy, Elson, 2018; Fritz et al., 2020). The most popular dimensionality model of aggression was proposed by Buss and Perry (1992). The authors distinguished four types of offline aggression e.g. physical aggression, verbal aggression, hostility, and anger. Forms of cyber-aggression appear just as often in the university context (Mishna et al., 2018). There are many theories explaining the genesis and mechanism of aggression in individuals, but the most common references to the theory of aggression are understood as instinct, frustration-libido, or as a result of social learning (Wojciszke, 2000). Throughout the study of human aggression, it has constituted a major societal burden with negative outcomes either for victims or perpetrators (Dam et al., 2021). According to research on aggression during adolescence, but also in early adulthood, aggressive behaviours progress from less to more severe forms (Loeber & Hay, 1997). Furthermore, violent behaviours representing the extreme end of a spectrum are linked with a range of individual and environmental risk factors

\* Rzeszów University, Rzeszów, Poland

\*\* Pedagogical University of Cracow, Cracow, Poland

relating to aggression, e.g. pathological personality traits, low self-control, insecure and dysfunctional parent-environment, poverty, family criminality including early adverse experiences (e.g. physical abuse, sexual abuse, and household dysfunction), harsh discipline and early neglect, as well as educational problems (poor academic performance, school-related stress indicating insecurities about educational evaluations, delays in study, and precarious home situations) (Bozkurt et al., 2020; Dam et al., 2021; Liu et al., 2021; Schafti et al., 2021; de Conicks et al., 2022). Fingan-Carr et al. (2016) posited that gender is also an important variable associated with the occurrence of aggression. Moreover, aggression is often associated in research with symptoms of depression (Dekker et al. 2007; Khanekhesi & Basavarajappa, 2011; Piko & Pinczes, 2014). This can be explained, *inter alia*, by the fact that masked depression takes the form of a behavioural disorder in which aggression is not uncommon (Glaser, 1967; Shetty et al., 2018). Furthermore, students more often report that aggression, like depression, reduces their quality of life and negatively affects various spheres of their lives (Dekker et al., 2007).

#### Academic burnout

The concept of burnout initially covered only human service occupations, i.e. education or community work (Maslach et al., 2001). It turned out, however, that burnout is also experienced by university students (Balogun et al., 1996; Aypay, 2017) as well as high school students (Tomaszek, Muchacka-Cymerman, 2019) and primary school students (Aypay, 2011). The individual's focus during education solely on learning outcomes translates into ignoring their own need'. In addition, an important aspect of burnout is peer pressure. The student is under constant stress. Institutions as well as the family environment are not prepared to provide adequate support. In the educational approach to the JD-R model, the lack of sufficient mental and social resources, combined with overwhelming and excessively high academic demands may lead to the experience of chronic distress, which is the basis of burnout syndrome (Salmela-Aro et al., 2009). Meier and Schmeck (1985) found that students who experienced burnout were bored with their daily academic activities, such as attending classes. Similar conclusions were reached by Behrouzi et al. (2013). Academic burnout is characterised by a permanent feeling of fatigue, which is the result of excessive demands made on students, the lack of interest in performing tasks, and the lack of effects of their interactions. This construct has been recognised as a three-dimensional phenomenon, e.g. educational exhaustion, a cynical and detached attitude towards learning, and the feeling of inefficacy in student activities (Salmela-Aro et al., 2009). A new theoretical approach to burnout syndrome (the BAT model) proposes that the core characteristics of burned out individuals are chronic distress and fatigue, as well as emotional and cognitive dysregulation, which causes mental distancing as a self-protection reaction (Schaufeli et al., 2020). Negative

effects on educational performance and achievement, health impairment (depression, anxiety) and a low sense of well-being, as well as sexual risk behaviours, substance abuse, suicidal ideation, technological addiction (to the Internet and mobile phones), and a higher risk of PTSD symptoms have been recognised as serious adverse outcomes of this phenomenon (Tomaszek, Muchacka-Cymerman, 2022).

#### Problematic digital technology use (FB addiction, phubbing)

Mobile device ownership and social media usage have been worldwide spreading, and many past studies pointed out the benefits of digital technology engagement e.g. increases in self-esteem, perceived social support and social capital, safe identity experimentation, increased opportunities for self-disclosure, heightened need for affiliation, social approval, and novelty seeking (Odgers, Jensen, 2020). Since the advent of the Internet, in addition to its undeniable benefits, we note the evolution of various areas that adversely affect the use and abuse of this medium by individuals, i.e. addiction (Shaw & Black, 2008), abuse (Notar et al., 2013), depression (Burleigh et al., 2018) or physical health (Güzel et al., 2018). Specific potential harms of social media usage were connected to its negative impact on mental health, especially an increase in depression and anxiety, social isolation, and cyberbullying (Odgers, Jensen, 2020). However, it is worth noticing, that some analyses did not confirm the detrimental effect of social media use (SNS) on well-being. Stavrova and Deniseen (2020) in their longitudinal studies revealed that although "(...) *among individuals, SNS use was associated with lower well-being, among individuals, year-to-year changes in SNS use were not prospectively associated with changes in wellbeing (or vice versa)*" (p.1). On the other hand, the analyzes presented above covered the time before the Covid 19 pandemic, which forced young people to an online form of contact and learning. In the light of this new condition, an increase in SNS was observed and recently longitudinal studies conducted among university students by Chang et al. (2022) found the reciprocal relationship between the level of problematic social media usage and the psychological distress e.g. depression and anxiety. The negative impact of using social media is certainly related to the frequency, intensity, and importance that an individual gives them in their life, especially its over-usage may be vulnerable for individuals, namely social media addiction. The concept of excessive social media addiction (social media addiction, problematic social media use, compulsory social media use) is defined as an urgent involvement in online activities and undisciplined use of social media applications (Facebook, Instagram, etc.), which results in problems with everyday functioning and is a form of Internet addiction (Elphinston, Noller, 2011). Dołęga (2009) recognises that the excessive use of the Internet and its applications by an individual may be related to the phenomenon of self-destructiveness. The term self-destructiveness can be used interchangeably with self-

harm, and it refers to the blockage of the emotional-social sphere of personality development. An important factor that plays a significant role in digital technology addictions is the psychological factor. According to research, this psychological factor may comprise, among others, loneliness (Cao et al., 2011) or the individual's perception of the stress they encounter (Lam et al., 2009). For example, social media overuse is recognised as a form of maladaptive coping strategy for psychological distress and anxiety, experienced when the person is physically or mentally isolated from others (Boursier et al., 2020). In accordance, social media usage may alleviate school-related pressure and stress (Salmela-Aro and Upadaya, 2014).

The purpose of use is a very important factor in an individual's digital technology usage. The Internet is most often used for entertainment (Cao et al., 2011) or contact with others via social networks or messengers such as Facebook or Instagram (Carbonell, et al., 2012; Abendroth et al., 2020; Ponnusamy et al., 2020). Moreover, it is very common to see people in society who use a mobile phone despite speaking face-to-face with someone. In the literature, this phenomenon has been called phubbing or phone snubbing, which explains this type of behaviour as an individual's flight from interpersonal communication (Karadağ et al., 2015; Erzen et al., 2019). Phubbing combines terms that have been used separately until now, such as cell phone addiction, Internet addiction, social media addiction, gaming addiction, and behavioural addiction. All these forms are combined in the phone, additionally in continuous availability. What is more, phubbing is considered to be a multi-dimensional construct characterised by four facets: (1) Nomophobia, indicated by the anxiety related to the inability to use the phone; (2) Interpersonal Conflict, caused by ignoring others and focusing on the phone; (3) Self-isolation, referring to positive feelings when focusing on the phone and ignoring others; (4) Problem Acknowledgement, defined as loss of control over using the mobile phone (Chotpitayasunondh, Douglas, 2018). The behavioural addiction to the mobile phone is detrimental to human interactions, as focusing on one's mobile phone and ignoring the interlocutor seriously disrupts interpersonal communication and the quality of personal relationships as well as negatively impacting mental health (Schneider, Hitzfeld, 2019). An individual often gives up basic needs such as sleep or a sense of belonging to a group when using various social networks. According to the research of Ponnusama et al. (2020), academic performance and Instagram addiction are predictors of individual life satisfaction. However, the meta-analysis did not confirm strong associations between using social networking sites (SNS) such as Facebook, Instagram, or Twitter and loneliness, self-esteem, life satisfaction, or depression (small correlation  $r = .10$ ). Interestingly, no proven devastating effects of SNS on school achievement, and school grades among adolescents were found (Appel et al., 2020).

## THE PRESENT STUDY

Based on the study demands-resources model (SD-R) and burnout assessment theory (BAT), burnout syndrome is defined as an effect of chronic distress with energy depletion and fatigue, a cynical and distant attitude towards education, and a feeling of inefficacy in meeting educational demands (Lesener et al., 2020; Schaufeli et al., 2020). Specifically, "*high study demands increase the risk of student burnout and lead to negative outcomes, such as health complaints, whereas high study resources play especially a motivational role, stimulate student engagement, mitigate student burnout, and foster positive outcomes, such as academic performance or commitment*" (Lesener et al., 2020, p.3). The burnout process has been also recognized as a form of cognitive and emotional dysregulation (BAT model by Schaufeli et al., 2020), that leads to serious mental health issues e.g. anxiety and depression, as well as maladjustment behaviors e.g. proactive aggression, substance abuse, and delinquency (Ang et al., 2015; Walburg et al., 2015). It is worth noting that the association between aggression and burnout is complex. Some authors stated that organizational violence is one of the key factors that lead to burnout, and to be more vulnerability to bullying (Vincent-Höper et al., 2020), however, others suggest a cyclical model of burnout and aggression (Winstanley & Whittington, 2002; Deery et al., 2011). The second explanation shed some light on the associations tested in this paper, as the authors found that being a victim of workplace aggression increases the job burnout symptoms and in turn leads to more cynical and adverse behaviors towards others and turnover intentions. Aggressive and negative behaviors presented by burned-out professionals are a form of coping mechanism with overloading job characteristics. What is more, Oreizi-Esfahani and Tomlinson (2016) stated that burnout may be a potential factor for increasing college aggression e.g. the strongest positive correlations were found between academic burnout and indirect aggression. Stem from the theoretical and empirical backgrounds described above the first study hypothesis is *H1. Academic burnout is positively associated with aggressive behaviors.*

Many past studies have confirmed burnout relationship to problematic social media use (including FB addiction) and Internet addiction (Han et al., 2020; Tomaszek, Muchacka-Cymerman, 2020; 2021a, 2021b; Pohl et al., 2022). Walburg et al. (2015) confirmed that student burnout predicts FB addiction. Demerouti et al. (2001) stated that social media use due to support from online groups may alleviate the off-life distress associated to school, and reduces burnout symptoms. On the contrary its overuse negatively impacts human functioning, including the process of exaggerating student burnout severity (Han et al., 2020). The *compensatory Internet use theory* by Kardefelt-Winther (2014) explores the motivations to go online, and states that the main reason is to escape reactions activated by negative life events or dysphoric moods. From this point of view, Internet applications and websites facilitate the distress caused by real-life related

problems e.g. with work or school. The basic tenet of this theory is that digital activity is an avoidant, maladjusted, and inflexible coping strategy, that does not allow individuals to face their problems, but exacerbates their severity and leads to more serious mental health outcomes (Cheng et al., 2015). At the same time, the effects of digital technology addiction lead people to resign from face-to-face interactions and turn to online contacts. However, online friendship cannot replace real-life relationships in terms of their quality and closeness (Fredrick, Zhang, 2020; Pouwels et al., 2021). As such, the social support received from online contacts does not mitigate frustration and tension, and the risk of an aggressive outbreak in real life is more probable. In line with these findings, Internet addiction was found to be positively associated with offline aggressive behaviors (Zhang et al., 2022). What is more, positive associations between Facebook addiction and aggression among college students are explained by problems connected to the pronouncement of feelings, knowing and being updated with affairs from posts in the newsfeed, disinhibition from personal confrontation, and gaining friendships (Arendain et al., 2016). Based on the findings described above two study hypotheses were formulated: *H2. Academic burnout is positively related to FB addiction and phone snubbing. H3. FB addiction and phone snubbing are positively related to aggressive behaviors.*

Digital technology addiction (Internet, social media) has been recognized as one of the key factors for phone snubbing, which can counteract the positive and alleviative effects of offline relationships on the psychological distress of addicted people (Benvenouti et al., 2020). This is because cell phone addiction irrevocably changes how people interact with others, and enhances the risk of social exclusion and conflicts because of ignoring social norms (David, Roberts, 2017; Schneider, Hitzfeld, 2019). Rozgonjuk et al. (2019) found that social smartphone use (typical social use of smartphone is Facebook use) could significantly predict smartphone addiction. However recently Chang et al. (2022) revealed that this regularity is related to social needs. Specifically, the predictive effects of online social support on smartphone addiction were greater for lower rather than higher agreeableness. Thus it was hypothesized that *H4. FB intrusion is positively associated with phone snubbing.*

The theoretical argument that problematic digital activities may mediate the associations between academic burnout and aggression stem from the Study Demands-Resources model proposed by Lesener et al. (2020) and a similar proposition developed by Tomaszek (2020) e.g. Educational demands-resources model, ED-R model). According to these approaches, the unbalanced education demands and resources lead to chronic educational stress and consequently to several strains e.g. burnout, anxiety, health complaints, and health risk behaviors. To cope with these adverse outcomes person engage in self-undermining behaviors, which are self-defense mechanism that helps people to cope with real-life stressors and pressure by avoiding confrontation with them. These kinds of actions

are self-defeating and dysfunctional and instead of diminishing tension and resolving the problems lead to a higher level of distress and create backlogs. An example of such behavior among adolescents is Internet addiction (Tomaszek, Muchacka-Cymerman, 2020), as a form of over-spending behavior. The vast amount of time spent online creates obstacles to the fulfillment of study duties which in turn increases educational distress. Consequently, the more person spends time on the Internet the more tension she/he feels. Also, relationship sabotage is mentioned as a form of self-defeating behavior, which is closely related to phone snubbing behaviors in terms of ignoring others and causing social exclusion (Vanden Abelee, 2020). Moreover, another form of undermining behavior is creating conflicts (Körner et al., 2021), that may be related to offline aggression. We postulate that self-undermining behaviors are interrelated to each other, similar to personal resources in educational demands-resources models. The mediating role of FB addiction also stems from the past cross-sectional and longitudinal studies that indicated that FB overuse mediates associations between stress and adverse health outcomes e.g. sleep disturbance, and depression (Brailovskaia, et al., 2019a, 2019b, Ho, 2022). Recently, Brailovskaia, et al. (2022) revealed that addictive social media use significantly mediates the association between work overload and depression symptoms. Moreover, Demirci et al. (2020) confirmed that FB addiction mediates the relationship between school burnout and school engagement.

So far little is known about the mediating effect of phone snubbing on the association between digital addictions and maladaptive outcomes. Ivanova et al. (2020) found that phubbing played a function of a mediator in the relationship between mobile phone addiction and depression. What is more, smartphone checking and addictive smartphone use predicted higher hostility (Khoo, Young, 2021). Berkowitz's frustration-aggression hypothesis stated that greater frustration, distress, and negative affect which were proven to be related to problematic smartphone use, heighten aggressive inclinations (Khoo and Yang, 2021). There is also a hypothesis that frustration with biological needs e.g. sleep disturbance implicates a loss of control over emotions and increases aggressive impulses (Vaughn et al., 2015). By understanding the mechanism of how social media use and real-life phone snubbing mediate the relationship between burnout syndrome and aggressive behaviors, we can draw conclusions about how online activities may elicit socio-behavioral problems. In view of the issues described above, the study hypothesis was formulated: *H5. FB intrusion and phone snubbing mediate the positive associations between academic burnout and aggressive behaviors. Specifically, we expect a serial mediation effect, e.g. the increase in academic burnout is related to increase in FB addiction which is associated with the increase in phone snubbing and this is connected to the increase in aggressive behaviors.*

Grounded on the past empirical results, the last two study hypothesis proposes that *H5. Academic burnout,*

problematic digital technology usage, and aggressive behaviors differ across gender and culture. H6. Gender and culture are significant predictors of problematic digital technology activity and aggressive behaviors. Numerous past studies indicated sex differences in the levels of student burnout, FB addiction, phubbing, and aggressive behaviors (Tomaszek, Muchacka-Cymerman, 2019; Escalera-Chávez et al., 2020; Padgett, Tremblay, 2020; Fung, 2021; Burén et al., 2021). Therefore gender was included as a covariate in the tested model. As regards culture as an important factor associated with digital technology addiction and aggression were also examined in several studies. For example, Błachnio et al. (2016) found that culture uniqueness is negatively and low context positively related to Facebook intrusion. According to Yang et al. (2013), cultural norms and values influence the functional meanings of aggressive behavior in social interactions and its relationship to adjustment outcomes. Jia et al. (2009) revealed that conformity values are related to burnout which is rooted in the inconsistencies between the social culture in which the individual students are immersed and the learning culture of the architectural schools to which students are trying to adapt. Thus this contextual factor should be taken into account when analyzing burnout syndrome.

To sum up, this study aimed to investigate the potential indirect effect of academic burnout on aggression via social media addiction (FB intrusion) and phone snubbing, when controlling for sex and culture in a cross-sectional sample of European and Japanese university students. The current research theoretical model is presented in Figure 1.

**METHODS**

**Sampling and Participants**

This study randomly selected students of pedagogy and psychology from universities in Eastern Europe (Poland and the Czech Republic, N=171) and Japan

(N=120). In order to test the theoretical model of direct and indirect relations, a quantitative empirical online survey was conducted. Information about the Web-based research in Google Forms was distributed via university platforms and social media during the COVID-19 pandemic in the years 2020 and 2021. A total sample size of 291 university students aged 18-48 years (M=22.66, SD = 4.35; 89 males) participated in the survey.

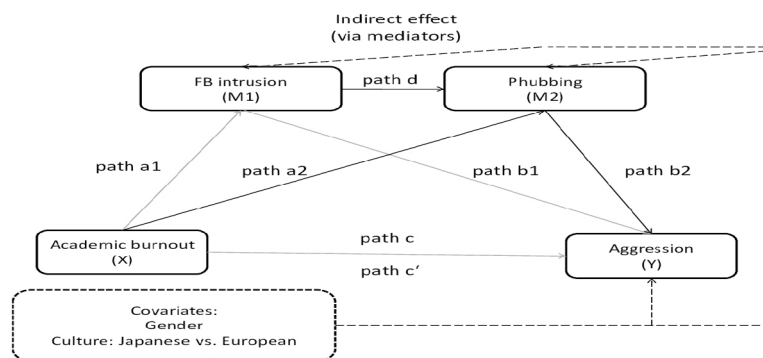
**Measures**

*The Buss-Perry Aggression Questionnaire (AQ)* was designed by Arnold H. Buss and Mark Perry (1992). It is a four-factor instrument consisting of 29 items to which the respondent answers on a 5-point Likert scale (from 1 – extremely uncharacteristic of me to 5 – extremely characteristic of me). A higher score indicates higher offline aggression. Cronbach’s  $\alpha$  and McDonald’s  $\omega$  were high in this study, both equal to .85, while for each individual factor Cronbach’s  $\alpha$  was: Anger  $\alpha=.72$ ; Verbal aggression  $\alpha=.69$ ; Physical Aggression  $\alpha=.67$ ; Hostility  $\alpha=.77$ .

*The Maslach Burnout Inventory for Students (MBI-SS)* was developed by Maslach, Jackson, Leiter and Schaufeli (1996). The scale consists of 15 items to which the respondent answers on a 7-point Likert scale from 0 (never) to 6 (every day). The inventory has three subscales: exhaustion (5 items), cynicism (4 items), and professional efficacy (6 items). Cronbach’s  $\alpha$  in this study was equal to .81

*The Generic Scale of Phubbing (GSP)* was developed by Chotpitayasunondh and Douglas (2018). It was used to measure ignoring behaviour among students in favour of the smartphone. The scale consists of 15 items, to which the respondent answers on a 5-point Likert scale. Cronbach’s  $\alpha$  in this study was equal to .88.

*The Facebook intrusion scale (FIQ)* by Elphinston and Noller (2011) was adapted from Błachnio, Przepiórka, and Pantic. The tool consists of 8 statements, to which



Note. The lines represent the paths of interest: X- Independent variable: Academic Burnout; M1,M2–Mediator: Facebook Intrusion, Phubbing; Y- Dependent variable:Aggression indicators; Covariates: Gender, Culture

**Figure 6:** Moderation effect of logical thinking skills

the respondent refers to a 7-point Likert scale. The tool allows for the determination of the global level of dependence on Facebook. Cronbach's  $\alpha$  in this study was equal to .89.

### STATISTICAL ANALYSIS

Descriptive statistics, e.g. mean (M) and standard deviation (SD), as well as an independent sample t-test for conducting a comparison analysis between females and males, and also between Japanese and European students, were performed by using the SPSS v. 22.0 package (IBM, IBM House, Shelbourne Road, Ballsbridge, Dublin, Ireland). For a theoretical model of direct and indirect relations testing, serial mediation analysis (Model 6) with covariates was performed using the macro-PROCESS 3.3 by Hayes (2018, 2019) package for SPSS 22. These statistics allowed us to examine the mediating effects of Facebook intrusion (first-order) and phone snubbing (second order) on the positive association between academic burnout and aggressive behaviours when controlling for gender and culture (Japanese vs European). The mediation analysis was calculated using the bootstrap method with 5,000 bootstrap samples to yield 95% bias-corrected confidence intervals (95%CI) for statistical inference of indirect effects. The PROCESS macro centred all of the variable means included in the mediation model in order to minimize the potential for collinearity. A statistically significant indirect effect appears if the 95% CI does not include zero. All data generated or analysed during this study are included in this published article. A Monte Carlo power analysis for indirect effects with two parallel mediators revealed that the power of 0.82 ( $p < 0.05$ ) was reached with 180 participants (conditions: (a)  $r = 0.4$  between: X – Y variables; X- M1; Y-M1, and M1-M2; (b)  $r = .02$  between X-M2; Y-M2). (Schoemann et al., 2017).

### RESULTS

*Descriptive statistics:* As can be seen from the descriptive statistics in Table 1, females scored higher on Facebook intrusion (medium effect size Cohen's  $d = .58$ ), and verbal aggression (medium effect size Cohen's  $d = .59$ ), while males scored higher on student burnout (small effect size Cohen's  $d = .30$ ), physical aggression (medium effect size Cohen's  $d = .59$ ), and hostility (small effect size Cohen's  $d = .29$ ). Japanese students scored higher on student burnout (small effect size Cohen's  $d = .31$ ), and phone snubbing (medium effect size Cohen's  $d = .62$ ), while European students scored higher on Facebook intrusion (large effect size Cohen's  $d = 1.22$ ), and verbal aggression (large effect size Cohen's  $d = .88$ ).

*Serial mediation analysis:* The proposed model explained 37 % of the variation in total aggression score (Adj.R2=.37,  $F(5,285) = 33.33$ ,  $p < .0001$ ). As can be seen in Figure 2, academic burnout was positively related to FB intrusion (a1 path) and phubbing (a2 path). Phubbing was positively associated with aggressive behaviours (b2path), while FB intrusion was inversely related to the dependent variable (b1 path). The relationship between independent and dependent variables after entering mediators remains significant but was lower (c' path), indicating a partial mediation effect. The total effect of academic burnout on aggression was significant ( $p < .0001$ ). When investigating the indirect effects of academic burnout on aggression through problematic digital technology indicators, the results revealed only one significant indirect effect via higher phubbing ( $\beta = .11$ , 95% [.07;.16]). When examining the effects of the covariates, both gender and culture predicted aggression. More specifically, females displayed a lower level of aggression than males ( $\beta = -.11$ ,  $p < .05$ ), and Japanese students displayed lower levels of FB intrusion ( $\beta = .48$ ,  $p < .0001$ ), and aggression ( $\beta = .36$ ,  $p < .0001$ ), and

**Table 1.** Descriptive statistics for major study variables according to sex and culture

| Variables               | Females         | Males           | European students | Japanese students |
|-------------------------|-----------------|-----------------|-------------------|-------------------|
| N(%)                    | 202(69)         | 89(31)          | 171(59)           | 120(41)           |
| Phubbing (GSP)          | 41.10(14.29)    | 42.36(14.78)    | 37.97(14.31)      | 46.50*** (13.09)  |
| Facebook intrusion (FB) | 17.10*** (9.02) | 12.20(7.87)     | 19.33*** (8.85)   | 10.30(5.99)       |
| Student Burnout (MBI)   | 37.57(14.33)    | 41.29* (10.20)  | 37.17(15.51)      | 40.90* (8.89)     |
| Aggression (AQ)         | 69.93(16.09)    | 72.47(11.57)    | 71.48(17.50)      | 69.60(10.00)      |
| Anger                   | 18.56(5.37)     | 18.58(5.04)     | 18.33(6.07)       | 18.90(3.82)       |
| Physical Aggression     | 15.94(4.86)     | 18.54*** (3.95) | 16.61(5.64)       | 16.90(3.09)       |
| Verbal Aggression       | 13.48*** (3.90) | 11.52(2.70)     | 14.05*** (3.89)   | 11.20(2.57)       |
| Hostility               | 21.95(6.73)     | 23.83** (6.02)  | 22.60(6.16)       | 22.60(6.86)       |

Note: Values are reported as mean and standard deviation; M (SD). Statistically significant higher values compared to opposite group; independent sample t-test (\*\*\*)  $p < .0001$ ; \*  $p < .05$

**Table 2.** Mediation analysis of academic burnout on aggression through phubbing and FB intrusion

| Path   | Anger  | Physical Aggression   | Verbal Aggression  | Hostility  | Aggression   |
|--|--|---|--|--|--|
| Total effect   | .14***   | .11***  | .05**  | .23***   | .53***   |
| Direct effect  | .10***   | .08***  | .03  | .18***   | .38***   |
| Indirect effects   |  |   |  |  |  |
| MBI→FB→AQ indicator  | -.01<br>95%[-.03;.01]  | -.01<br>95%[-.04;.01]   | -.01<br>95%[-.04;.002]   | -.01<br>95%[-.04;.01]  | -.02<br>95%[-.04;.003]   |
| MBI→GSP→AQ indicator                                       | .08<br>95%[.04;.12]  | .08<br>95%[.04;.13]   | .07<br>95%[.04;.12]  | .09<br>95%[.06;.13]  | .11<br>95%[.07;.16]  |
| MBI→FB→GSP→AQ indicator                                    | .02<br>95%[-.001;.05]  | .02<br>95%[-.002;.05]   | .02<br>95%[-.001;.05]  | .03<br>95%[-.001;.06]  | .03<br>95%[-.001;.07]  |
| Model summary (F, p, R <sup>2</sup> , Adj.R <sup>2</sup> ) | F <sub>(5,285)</sub> =14.85;<br>p<.0001;<br>R <sup>2</sup> =.45; Adj.R <sup>2</sup> =.21 | F <sub>(5,285)</sub> =16.86;<br>p<.0001;<br>R <sup>2</sup> =.48;<br>Adj.R <sup>2</sup> =.23 | F <sub>(5,285)</sub> =17.83;<br>p<.0001;<br>R <sup>2</sup> =.49; Adj.R <sup>2</sup> =.24 | F <sub>(5,285)</sub> =26.72;<br>p<.0001;<br>R <sup>2</sup> =.57; Adj.R <sup>2</sup> =.32 | F <sub>(5,285)</sub> =33.33;<br>p<.0001;<br>R <sup>2</sup> =.61; Adj.R <sup>2</sup> =.37 |

\*\*\*p<.0001; \*\*p<.001

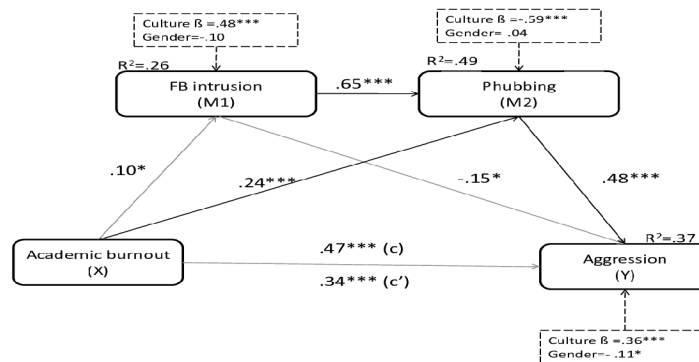
Notes: Standardized Coefficients β were cited with 95% confidence intervals in brackets; MBI – Student burnout; GSP – Phubbing, FB – Facebook intrusion, AQ indicators – indicators of aggression

'I WONDER WHY SOMETIMES I FEEL SO ANGRY'

1

**Figure 2**

Mediating effect of phubbing and FB intrusion on the association between academic burnout and aggression, when controlling Gender and Culture



Note: Gender (1 – females); Culture (1 – Japanese students)

\*\*\*p<.0001; \*p<.05

a higher level of phone snubbing ( $\beta = -.65$ ,  $p < .0001$ ) (see Table 2, Figure 2).

In additional analyses for aggression sub-dimensions, the first mediator, FB intrusion, was insignificant in all regression models (b1 path), while the second one, phubbing, significantly predicted all aggression indicators ( $\beta$  ranged from .31 to .39,  $p < .0001$ ) (b2 path). The direct path from academic burnout to aggression indicators was significant;  $\beta$  ranged from .17,  $p < .01$  (verbal aggression) to

.47,  $p < .0001$  (hostility) (c path). The partial mediation effects via phubbing were confirmed for anger ( $\beta = .11$ , 95% [.04;.01]), physical aggression ( $\beta = .10$ , 95% [.05;.17]), and hostility ( $\beta = .12$ , 95% [.07;.17]) (the c' paths became lower after entering mediators;  $\beta$  ranged from .21 to .36,  $p < .0001$  for both). The full mediation effect was found for verbal aggression ( $\beta = .12$ , 95% [.07;.17]) (the c' paths became insignificant after entering mediators  $\beta = .09$ ,  $p = .099$ ). Covariates significantly pre-

dicted all aggression indicators except anger. All models were significant and explained from 21 to 32 % of the variances in aggression indicators (see Tab.2, see Fig.2).

## DISCUSSION

The growth in digital technology usage has given rise to concerns about the positive and negative impacts it may have on users' behaviours. Phone snubbing is one of the negative consequences of the new media transformation in the cyber era, and this new phenomenon for humanity nowadays is widespread and affects most severely the younger population (Ivanova et al., 2020; Garrido et al., 2021). This paper's main objective was to shed light on the mediation effect of problematic digital technology activities (social media addiction and phubbing) on the positive associations between academic burnout and aggressive behaviours. Moreover, social media enable people to initiate and maintain online networks with others and exchange information with a cyber community, regardless of geographical or time constraints (Cheng et al., 2019, Cheng et al., 2021). Nevertheless, one of the dark sides of online life is social media addiction, and nowadays this is considered an emergent problem that has raised public concern globally (Cheng et al., 2022; Lee et al., 2022). A recent meta-analysis has confirmed higher rates of this mental health problem in collectivist countries (Cheng et al., 2021), as well as gender differences involved in the risk of developing social network addiction (Aparicio-Martínez et al., 2020). Therefore, the effects of culture and gender were also included in the statistical analysis.

The present study revealed that academic burnout is positively associated with FB intrusion and phone snubbing (H1), as well as with all aggressive behaviour indicators, mostly with Hostility (H2). Facebook intrusion was positively related only to total aggressive behaviour score, while phubbing appeared as a significant predictor of all aggression indicators (H3). The mediating effects were confirmed for phubbing, with partial mediation in the associations between academic burnout and aggression, anger, physical aggression, and hostility. The full mediation effect of phubbing was found in the relationship between academic burnout and verbal aggression. The mediation effects of FB intrusion, as well as FB intrusion and phubbing together, were insignificant (H4). Gender was a significant covariate in the models for almost all aggression indicators (except anger), and an insignificant predictor for FB intrusion and phubbing (H5). These findings indicate the higher risk of overall aggression, physical aggression, and hostility for men, and verbal aggression for women. Culture was a significant predictor of both problematic digital technology activities and aggressive behaviours (H5). The results revealed that Japanese students are more vulnerable to developing phone snubbing, and European students are more so to developing FB addiction and presenting aggressive behaviours (H5).

Previous studies have shown that academic burnout during the COVID-19 pandemic, apart from the loss of social resources, higher uncontrollable distress, frustration, detachment, and pessimism about academic activities, is also linked to the crisis in mental and psychosocial health, including a higher risk of developing problematic digital technology usage (social media and Internet addictions) among university students (Jijang, 2021; Tomaszek, Muchacka-Cymerman, 2021; Basri et al., 2022). For some authors, online addictions may be considered as a form of maladaptive, inflexible *coping strategy*. This is because Internet activities provide young people with many benefits, e.g. emotional and social support, control, and accomplishment, allowing them to escape from real-world concerns and emotional states when difficulties occur (Yi, Li, 2021). Zhao and Zhou (2021) revealed that individuals who experience more COVID-19 distress are at increased risk of addictive social media use, which may be fostered by active usage and the social media flow experience. Moreover, mobile phone snubbing previously was linked to the violation of social injunctive norms, as well as online vigilance, a non-pathological form of constant psychological connectedness to online life, chronic attention, permanently content, and prioritising options for online communication over other (offline) behaviour (Reinecke et al., 2018; Schneider, Hitzfeld, 2019). Despite being able to distinguish between what is recognised as socially appropriate behaviour, people face the conflict between social conventions and personal desires to connect at the moment. However, social media addiction and burnout syndrome may increase the permissibility of inappropriate behaviours, e.g. ignoring others and concentrating on the mobile phone. These behaviours seem to be connected to the display of a cynical, antisocial, and distant attitude towards others that is present in burnout syndrome. Furthermore, the findings of the current study should also be interpreted in light of the challenges created by the coronavirus COVID-19 pandemic. In particular, the lifestyle change triggered by distance learning during the COVID-19 pandemic might also have negatively impacted face-to-face social interactions, especially the ability to appreciate direct support given and obtained. Due to the long hours alone at home, wherein social relationships have been constrained to a minimum, or kept alive only via social media, concentration on virtual life has become much higher, and therefore digital technology addictions and phone snubbing might have increased. In the interaction of the Person-Affect-Cognition-Execution (I-PACE) model perspective, Internet-related disorders (e.g. social media or mobile phone overuse) rise as a result of interactions between predisposing characteristics of individuals (e.g., genetic, neurobiological and psychological), moderators (internal triggers e.g., maladjusted passive coping style, negative or positive moods, and Internet-related cognitive false beliefs), and mediators (external aspects of the situation, e.g. reactions to specific behaviour-stimuli and confrontation to reduced executive functioning) (Brandt et al., 2019; Li et al., 2020; Mehmood et al., 2021). In the process of behavioural addiction, the



perception of specific situations may lead to cognitive and emotional reactions (e.g., FoMO), namely an increase in attention to behavioural stimuli and urges to behave in specific ways that may bring negative outcomes (e.g. urges to play online games or view pornography in the Internet or use mobile phones and ignore social norms) (Brandt et al., 2019; Li et al., 2020). What is more, previous findings have also demonstrated the association between Internet addiction and internalising and externalising problems, e.g. depression and aggression during the Covid-19 pandemic (Zhao, Huang, Li, 2022). The studies mentioned above highlighted the pivotal role of support/conflict from friends and positive/delinquent peers. The results of current research suggest that educational exhaustion and fatigue are also important as one of the key factors in the mechanism that is linked to social interaction crises and maladjusted online behaviours. The findings should be also explained in light of the Social Media Self-Control Failure (SMSCF) construct, which is defined as a strong tendency to use social media even when it collides with important goals (Hameed, Irfan, 2020). Some authors have stated that this is a symptom of emotional dysregulation processes and this seems to be consistent with the recently proposed BAT model of burnout syndrome. The BAT model highlights the devastating impact of burnout symptoms on the self-regulation mechanism (Schaufeli et al., 2020). The authors pointed out two aspects of regulation process impairments, cognitive and emotional, as an effect of which mental distancing as a self-protection reaction increases. This may be indicated by cutting off direct social contacts and preferring more anonymous online relationships. As such, maladjustment behaviours may occur, namely phubbing others and aggressive behaviours.

Additionally, Facebook addiction was negatively related, while phubbing was positively associated with aggressive behaviours. Such opposite associations are consistent with the recent suggestions. The dependency of these outcomes from the usage of different social media applications was confirmed by Pouwels et al. (2021). Furthermore, these results highlighted the need for controlling for different motivations underlying the use of social media and mobile phones, as well as different forms of social relationships built via social media (maintaining pre-existing offline formal and informal contacts or initiating new relationships). For example, Li et al. (2021) stated that the avoidance motivation indicated by FOMO is closely associated with social media use, but much less with mobile phone addiction. The authors suggested that phone addiction includes specific problematic activities (e.g., gaming, shopping, gambling, etc.), and such varieties may lead to different social and mental outcomes (positive and negative). Moreover, Facebook addiction has mainly three phases (1) engagement in the virtual world; (2) substitution of real life; (3) escape from reality (Shukla, Tripathi, 2013).

Burnout syndrome, problematic digital technology usage, and aggressive behaviours as a societal problem intrude on young people's educational and social perfor-

mance and negatively affect their mental health. It would be beneficial for education departments to implement a change in educational policy and implement effective prevention strategies for university students that would guide them to use digital technology rationally and establish face-to-face interactions in order to improve their social adaptability and competencies. The activation of counseling services for university students as a whole to train them in recognising problematic digital technology usage symptoms is recommended. Moreover, the need for peer social network support programs would help young adult people keep away from the harmful impacts of social media overuse on maladjusted behaviours. However, excessive use of social media may not be considered addictive unless it is compulsive (Chakraborty, 2016), thus mental health issues may not be recognised by the person.

Some methodological limitations are noted in our research project. This study was based on self-report methods, in which participants subjectively rated their educational (burnout syndrome), social (phubbing, aggressive behaviours), and mental problems (FB addiction). However, these characteristics are sensitive to social approval and evaluations, moreover, they may be influenced by other factors, such as personality traits or the stage of addiction (e.g., people may deny or underestimate their mental health problems). Thus, collecting data from more objective sources and controlling for susceptibility to social approval is recommended. A cross-sectional design was used in this study and thus the findings do not reveal causality relationships, so in future research projects a longitudinal-based model of data collecting would be more accurate. Another limitation is related to the fact that in the studied sample women definitely prevailed in the studied group over males (89 males, 202 females). This predominance of women is related to the specificity of the fields of study of social faculties (psychology and pedagogy). Hence, the findings can not be generalized to the entire student population. Finally, the study sample is relatively small so any generalisations are limited and future projects should include a larger number of participants.

## CONCLUSIONS

Our research contributes to the literature by examining the mediation effects of problematic digital technology on the association between academic burnout and aggressive behaviours when controlling for gender and culture. The results revealed the significant effect of mobile phone snubbing and insignificance of FB intrusion on this relationship. Moreover, the findings confirmed the importance of including culture and gender in recognising the risk of problematic digital technology activities and aggressive behaviours.

All data generated or analysed during this study are included in this published article.

Ethical Approval

The study procedure and instruments were approved by the Commission of the Ethics.

Conflicts of Interest

The authors declare that they have no conflicts of interest. No funding was received to assist with the preparation of this manuscript.

## REFERENCES

- Abendroth, A., Parry, D.A., le Roux, D.B., Gundlach, J. (2020). An Analysis of Problematic Media Use and Technology Use Addiction Scales – What Are They Actually Assessing? In: Hattingh M., Matthee M., Smuts H., Pappas I., Dwivedi Y.K., Mäntymäki M. (eds) Responsible Design, Implementation and Use of Information and Communication Technology. I3E 2020. Lecture Notes in Computer Science, vol 12067. Springer, Cham. [https://doi.org/10.1007/978-3-030-45002-1\\_18](https://doi.org/10.1007/978-3-030-45002-1_18)
- Ang R. P., Huan V. S., Teng Chan W., Cheong S. A., & Leaw J. N. (2015). The role of delinquency, proactive aggression, psychopathy and behavioral school engagement in reported youth gang membership. *Journal of Adolescence*, *41*, 148-156. <https://doi.org/10.1016/j.adolescence.2015.03.010>
- Appel, M., Marker, C., & Gnams, T. (2020). Are social media ruining our lives? A review of meta-analytic evidence. *Review of General Psychology*, *24*(1), 60–74. <https://doi.org/10.1177/1089268019880891>
- Arendain, J. & Murcia, J.V.(2016): *Facebook Addiction and Aggression: Is There a Profound Relation?* Munich Personal RePEc Archive. <https://mpra.ub.uni-muenchen.de/72171/> (Retrieved: 28.06.2022)
- Aypay, A. (2011). Elementary School Student Burnout Scale for Grades 6–8: A Study of Validity and Reliability. *Educ. Sci. Theory Pract.* *11*, 520–527. <https://doi.org/10.12738/estp.2017.4.0173>
- Aypay, A. (2017). A Positive Model for Reducing and Preventing School Burnout in High School Students. *Educ. Sci. Theory Pract.* *17*, 1345–1359.
- Aparicio-Martínez, P, Ruiz-Rubio, M., Perea-Moreno, A.-J., Martínez-Jiménez, M.P.,Pagliari, C., Vaquero-Abellán, M. (2020). Gender differences in the addiction to social networks in the Southern Spanish university students. *Telematics and Informatics*, *46*, 101304. <https://doi.org/10.1016/j.tele.2019.101304>
- Balogun, J.A., Helgemoe, S., Pellegrini, E., &Hoeberlein, T. (1996). Academic performance is not a viable determinant of physical therapy students burnout. *Perceptual and Motor Skills*, *83*, 21-22. <https://doi.org/10.2466/pms.1996.83.1.21>
- Baron, R. A., & Richardson, D. R. (1994). *Human aggression* (2nd ed.). Plenum Press.
- Basri, S.,Hawaldar, I.T.,Nayak, R.,&Rahiman, H.U. (2022). DoAcademic Stress, Burnout andProblematic Internet Use AffectPerceived Learning? Evidence fromIndia during the COVID-19Pandemic. *Sustainability*, *14*, 1409. <https://doi.org/10.3390/su14031409>
- Behrouzi, N., ShahniYeylagh, M., &Pourseyed, S.M. (2013). The relationship of perfectionism, perceived stress, and social support with academic burnout. *Journal of Cultural Strategy*, *20*, 84-102.
- Benvenuti, M., Błachnio, A., Przepiorka, A. M., Daskalova, V. M., &Mazzoni, E. (2020). Factors Related to Phone Snubbing Behavior in Emerging Adults: The Phubbing Phenomenon. In: M. Desjarlais (Ed.), *The Psychology and Dynamics Behind Social Media Interactions* (pp. 164-187). IGI Global. <https://doi.org/10.4018/978-1-5225-9412-3.ch007>
- Błachnio, A., Przepiorka, A., Benvenuti, M., Cannata, D., Ciobanu, A.M., Senol-Durak, E., Durak, M., Giannakos, M.N., Mazzoni, E., Pappas, I.O., Popa, C., Seidman, G., Yu, S., Wu, A.M., Ben-Ezra, M. (2016). Cultural and Personality Predictors of Facebook Intrusion: A Cross-Cultural Study. *Front Psychol.*, *7*, 1895.
- Boursier, V., Gioia, F., & Griffiths, M. D. (2020). Do selfie-expectancies and social appearance anxiety predict 423 adolescents' problematic social media use? *Comput Human Behav*, *110*, 106395. [doi:10.1016/j.chb.2020.106395](https://doi.org/10.1016/j.chb.2020.106395)
- Bozkurt, A., Jung, I., Xiao, J., Vladimirsch, V., Schuwer, R., Egorov, G., et al. (2020). A Global Outlook to the Interruption of Education Due to COVID-19 Pandemic: Navigating in a Time of Uncertainty and Crisis. *Asian J. Distance Educ.*, *15* (1), 1–126. <https://doi.org/10.5281/zenodo.3878572>
- Brailovskaia, J., Rohmann, E., Bierhoff, H.-W., Margraf, J., & Kollner, V. (2019a). Relationships between addictive Facebook use, depression, insomnia, and positive mental health in an inpatient sample: A German longitudinal study. *Journal of Behavioral Addictions*, *8*(4), 703–713. <https://doi.org/10.1556/2006.8.2019.63>
- Brailovskaia, J., Velten, J., & Margaf, J. (2019b). Relationship between daily stress, depression symptoms, and Facebook addiction disorder in Germany and in the United States. *Cyberpsychology, Behavior, and Social Networking*, *22*(9), 610–614. <https://doi.org/10.1089/cyber.2019.0165>
- Brailovskaia, J., Frahsek, M. & Margraf, J. (2022). Work Overload and Addictive Social Media Use: A Relationship with Depression Symptoms and Life Satisfaction. *J. technol. behav. sci.* <https://doi.org/10.1007/s41347-022-00258-2>
- Brand, M., Wegmann, E., Stark, R., Müller, A., Wölfling, K., Robbins, T.W., Robbins, T.W., & Potenza, M.N. (2019). The Interaction of Person-Affect-Cognition-Execution (I-PACE) model for addictive behaviors: Update, generalization to addictive behaviors beyond Internet-use disorders, and specification of the process character of addictive behaviors. *NeurosciBiobehav Rev*, *104*, 1-10. <https://doi.org/10.1016/j.neubiorev.2019.06.032>
- Burén, J., Nutley, S.B., Sandberg, D., Ström Wiman, J. & Thorell, L.B. (2021). Gaming and Social Media Addiction in University Students: Sex Differences, Suitability of Symptoms, and Association With Psychosocial Difficulties. *Front. Psychiatry*, *12*, 740867. <https://doi.org/10.3389/fpsy.2021.740867>
- Burleigh, T.L., Stavropoulos, V., Liew, L.W.L., Adams, B.L.M., & Griffiths, M.D. (2018). Depression, Internet Gaming Disorder, and the Moderating Effect of the Gamer-Avatar Relationship: an Exploratory Longitudinal Study. *Int J Ment Health Addiction*, *16*, 102–124 <https://doi.org/10.1007/s11469-017-9806-3>
- Buss, A.H., &Perry, M. P. (1992). The Aggression Questionnaire. *Journal of Personality and Social Psychology*, *63*, 452-459.
- Bushman, B. J., & Anderson, C. A. (2001). Media violence and the American public: Scientific facts versus media misinformation. *American Psychologist*, *56*(6-7), 477–489. <https://doi.org/10.1037/0003-066X.56.6-7.477>
- Cao, H., Sun, Y., Wan, Y., Hao, J., &Tao, F. (2011). Problematic Internet use in Chinese adolescents and its relation to psychosomatic symptoms and life satisfaction. *BMC Public Health*, *11*(1), 2–8.
- Carbonell, X., Chamarro, A., Griffiths, M., Oberst, U., Cladellas, R., &Talarn, A. (2012). Problematic Internet and cell phone use in Spanish teenagers and young students. *Anales de Psicología/Annals of Psychology*, *28*(3), 789–796.
- Chakraborty, A. (2016). Facebook Addiction: An Emerging Problem. *The American Journal of Psychiatry Online*, *12*(11), 7-9. <https://doi.org/10.1176/appi.ajp-rj.2016.111203>
- Chang, K., Li, X., Zhang, L., Zhang, H.A. (2022). Double-Edged Impact of Social Smartphone Use on Smartphone Addiction: A Parallel Mediation Model. *Front Psychol.*, *7*(13), 808192.
- Chang, C-W., Huang, R.-Y., Strong, C., Lin, Y.-C., Tsai, M-C., Chen, I-H., Lin, C-Y., Pakpour, A.H. & Griffiths, M.D. (2022). Reciprocal Relationships Between Problematic Social Media Use, Problematic Gaming, and Psychological Distress Among University Students: A 9-Month Longitudinal Study. *Front. Public Health*, *10*, 858482
- Cheng, C., Sun, P., &Mak, K. (2015). Internet addiction and psychosocial maladjustment: Avoidant coping and coping inflexibility as psychological mechanisms. *CyberpsycholBehav Soc Netw*, *18*(9), 539-546. [doi:10.1089/cyber.2015.0121](https://doi.org/10.1089/cyber.2015.0121)
- Cheng, C., Wang, H., Sigerson, L., & Chau, C. (2019). Do socially rich get richer? A nuanced perspective on social network site use and online social capital accrual. *Psychological Bulletin*, *145* (7), 734–764. [doi:10.1037/bul0000198](https://doi.org/10.1037/bul0000198)
- Cheng, C., Lau, Y.-Ch., Chan, L., &Luk, J.W. (2021). Prevalence of social media addiction across 32 nations: Meta-analysis with subgroup analysis of classification schemes and cultural values. *Addictive Behaviors*, *117*, 106845. <https://doi.org/10.1016/j.addbeh.2021.106845>

- 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.
- Dam, V.H., Hjordt, L.V., da Cunha-Bang, S., Sestoft, D., Knudsen, G.M., & Stenbæk, D.S. (2021). Trait aggression is associated with five-factor personality traits in males. *Brain Behav, 11*, e02175. <https://doi.org/10.1002/brb3.2175>
- Deery, S., Walsh, J., & Guest, D. (2011). Workplace aggression: The effects of harassment on job burnout and turnover intentions. *Work, Employment and Society, 25*(4), 742- 759. <https://doi.org/10.1177/0950017011419707>
- De Coninck, D., Matthijs, K., & Van Lancker, W. (2022). Distance Learning and School-Related Stress Among Belgian Adolescents During the COVID-19 Pandemic. *Front. Educ., 7*, 836123. doi:10.3389/educ.2022.836123
- Dekker, M. C., Ferdinand, R. F., Van Lang, N. D., Bongers, I. L., Van Der Ende, J., & Verhulst, F. C. (2007). Developmental trajectories of depressive symptoms from early childhood to late adolescence: Gender differences and adult outcome. *Journal of Child Psychology and Psychiatry, 48*, 657-666. <https://doi.org/10.1111/j.1469-7610.2007.01742.x>
- Demerouti, E., Bakker, A. B., Nachreiner, F., & Schaufeli, W. B. (2001). The job demands-resources model of burnout. *Journal of Applied Psychology, 86*(3), 499 - 512. <https://doi.org/10.1037/0021-9010.86.3.499>
- Demirci, I., Usta, F., Yıldız, B., Ayşe Sibel Demirtaş, A.S. (2020). School Burnout and School Engagement in Adolescents: The Mediator and Moderator Role of Facebook Addiction. *Education and Science, 1-19*. <https://doi.org/10.15390/EB.2020.8377>
- Dołęga, Z. (2009). Poczucie samotności a sposoby radzenia sobie w sytuacjach szkolnych w kontekście autodestruktywności. In: Z. Dołęga, M. John-Borys (rd.), *Zdrowie psychiczne uczniów – różne konteksty i odniesienia* (s. 154–181). Wydawnictwo Uniwersytetu Śląskiego, Katowice.
- Elphinston, R.A., & Noller, P. (2011). Facebook intrusion and the implications for romantic jealousy and relationship satisfaction. *Cyberpsychology, Behavior, and Social Networking, 14*, 631–635. <https://doi.org/10.1089/cyber.2010.0318>
- Erzen, E., Odaci, H., Yeniçeri, I. (2019). Phubbing: Which Personality Traits Are Prone to Phubbing? *Social Science Computer Review, 39*(1), 56-69. <https://doi.org/10.1177/0894439319847415>
- Escalera-Chávez, M. E., García-Santillán, A., Molchanova, V.S. (2020). Phubbing Behavior: Is There a Gender Difference in College Students? *European Journal of Contemporary Education, 9*(3), 546-551. <https://doi.org/10.13187/ejced.2020.3.546>
- Finigan-Carr, N. M., Gielen, A., Haynie, D. L., & Cheng, T. L. (2016). Youth violence: how gender matters in aggression among urban early adolescents. *Journal of Interpersonal Violence, 31*(19), 3257–3281. <https://doi.org/10.1177/0886260515584348>
- Frederick, C. M., & Zhang, T. (2020). *Examining the Qualities of Online and Offline Friendships: A Comparison Between Groups*. <https://commons.erau.edu/publication/1413>
- Fritz, N., Malic, V., Paul, B., & Zhou, Y. (2020). A Descriptive Analysis of the Types, Targets, and Relative Frequency of Aggression in Mainstream Pornography. *Archives of Sexual Behavior, 49*, 3041–3053.
- Fung, A.L.-C. (2021). Sex Differences in the Relationships between Forms of Peer Victimization and Reactive and Proactive Aggression in Schoolchildren. *Int. J. Environ. Res. Public Health, 18*, 5443. <https://doi.org/10.3390/ijerph18105443>
- Garrido, E.C., Tomayesslssa, Esteban, P.G., Delgado, S.C. (2021). A descriptive literature review of phubbing behaviors, *Heliyon, 7* (5), e07037. <https://doi.org/10.1016/j.heliyon.2021.e07037>
- Glaser, K. (1967). Masked depression in children and adolescents. *American Journal of Psychotherapy, 21*(3):565-74. <https://doi.org/10.1176/appi.psychotherapy.1967.21.3.565>
- Güzel, N., Kahveci, İ., Solak, N., Cömert, M. & Turan, F. N. (2018). INTERNET ADDICTION AND ITS IMPACT ON PHYSICAL HEALTH. *Turkish Medical Student Journal, 5* (2), 32-36. Retrieved from <https://dergipark.org.tr/en/pub/tmsj/issue/38047/439213>
- Hameed, I., & Irfan, B.Z. (2020). Social Media Self-Control Failure leading to antisocial aggressive behavior. *Human behavior and emerging technologies, 3*(2), 296-303. <https://doi.org/10.1002/hbe2.226>
- Han, R., Xu, J., Ge, Y., & Qin, Y. (2020). The Impact of Social Media Use on Job Burnout: The Role of Social Comparison. *Front. Public Health, 8*, 588097. doi: 10.3389/fpubh.2020.588097
- Hayes, A. F. (2019). *The PROCESS macro for SPSS and SAS [Computer software]*.
- Hayes, A.F. (2018). *Introduction to mediation, moderation, and conditional process analysis: A regression-based approach*. 2nd ed.; New York: Guilford NY.
- Ho, T.T.Q. (2020). Facebook Addiction Partially Mediated the Association Between Stress Symptoms and Sleep Disturbance Among Facebook Users. *International Journal of Mental Health and Addiction*. <https://doi.org/10.1007/s11469-021-00619-7>
- Ivanova, A., Gorbaniuk, O., Blachnio, A., Przepiórka, A., Mraka, N., Polishchuk, V., Gorbaniuk, J. (2020). Mobile Phone Addiction, Phubbing, and Depression Among Men and Women: A Moderated Mediation Analysis. *Psychiatric Quarterly*. <https://doi.org/10.1007/s11126-020-09723-8>
- Jia, Y.A., Rowlinson, S., Kvan, T., Lingard, H.C., & Yip, B. (2009). Burnout among Hong Kong Chinese architecture students: the paradoxical effect of Confucian conformity values. *Construction Management and Economics, 27*(3), 287-298. <https://doi.org/10.1080/01446190902736296>
- Jiang, Y. (2021). Problematic Social Media Usage and Anxiety Among University Students During the COVID-19 Pandemic: The Mediating Role of Psychological Capital and the Moderating Role of Academic Burnout. *Frontiers in Psychology, 12*, 612007. doi: 10.3389/fpsyg.2021.612007
- Karadağ, E., Tosuntaş, Ş. B., Erzen, E., Duru, P., Bostan, N., Mızrakşahin, B., Çulha, I., & Babadağ, B. (2016). The virtual world's current addiction: Phubbing. *Addicta: The Turkish Journal on Addiction, 3*, 250–269. <http://dx.doi.org/10.15805/addicta.2016.3.0013>
- Kardefelt-Winther, D.A. (2014). A conceptual and methodological critique of internet addiction research: Towards a model of compensatory internet use. *Comput Human Behav, 31*, 351-354. doi:10.1016/j.chb.2013.10.059
- Khanekheshi, A., & Basavarajappa (2011). The Relationship of Academic Stress with Aggression, Depression and Academic Performance of College Students in Iran. *Journal on Educational Psychology, 5*(1), 24-31.
- Körner, L.S., Rigotti, T., Rieder, K. (2021). Study Crafting and Self-Undermining in Higher Education Students: A Weekly Diary Study on the Antecedents. *Int. J. Environ. Res. Public Health, 18*, 7090. <https://doi.org/10.3390/ijerph18137090>
- Lam, L.T., Peng, Z., Mai, J., & Jing, J. (2009). The association between internet addiction and self-injurious behaviour among adolescents. *Injury Prevention, 15*, 403–408. DOI: 10.1136/ip.2009.021949.
- Lee, Y., Jeon, Y.J., Kang, S. et al. (2022). Social media use and mental health during the COVID-19 pandemic in young adults: a meta-analysis of 14 cross-sectional studies. *BMC Public Health, 22*, 995. <https://doi.org/10.1186/s12889-022-13409-0>
- Lesener, T., Pleiss, L.S., Gusy, B., Wolter, C. (2020). The Study Demands-Resources Framework: An Empirical Introduction. *Int J Environ Res Public Health, 17*(14), 5183. <https://doi.org/10.3390/ijerph17145183>
- Li, L., Griffiths, M.D., Mei, S., & Niu, Z. (2020). Fear of Missing Out and Smartphone Addiction Mediates the Relationship Between Positive and Negative Affect and Sleep Quality Among Chinese University Students. *Front. Psychiatry, 11*, 877. doi: 10.3389/fpsyg.2020.00877
- Liu, H., Dou, K., Yu, C., Nie, Y., & Zheng, X. (2021). The Relationship between Peer Attachment and Aggressive Behavior among Chinese Adolescents: The Mediating Effect of Regulatory Emotional Self-Efficacy. *Int. J. Environ. Res. Public Health, 18*, 7123. <https://doi.org/10.3390/ijerph18137123>
- Loeber, R., & Hay, D. (1997). Key issues in the development of aggression and violence from childhood to early adulthood. *Annual*

- Review of Psychology*, 48, 371–410. <https://doi.org/10.1146/annurev.psych.48.1.371>
- Maslach, C., Jackson, S. E., & Leiter, M. P. (1996). *Maslach Burnout Inventory manual* (3rd ed.). Palo Alto, CA: Consulting Psychologists Press.
- Maslach, C., Schaufeli, W., & Leiter, M.P. (2001). Job Burnout. *Annu. Rev. Psychol.* 52, 397–422.
- McCarthy, R.J., & Elson, M. (2018). A Conceptual Review of Lab-Based Aggression Paradigms. *Collabra: Psychology* (2018) 4 (1): 4. <https://doi.org/10.1525/collabra.104>
- Mehmood, A., Bu, T., Zhao, E., Zelenina, V., Alexander, N., Wang, W., Siddiqi, S.M., Qiu, X., Yang, X., Qiao, Z., Zhou, J., & Yang, Y. (2021). Exploration of Psychological Mechanism of Smartphone Addiction Among International Students of China by Selecting the Framework of the I-PACE Model. *Front. Psychol.* 12, 758610. doi: 10.3389/fpsyg.2021.758610
- Meier, S. T., & Schmeck, R. R. (1985). The burned-out college student: A descriptive profile. *Journal of College Student Personnel*, 26(1), 63–69.
- Mishna, F., Regehr, C., Lacombe-Duncan, A., Daciuk, J., Fearing, G., & Van Wert, M. (2018). Social media, cyber-aggression and student mental health on a university campus. *Journal of Mental Health*, 27(3). <https://doi.org/10.1080/09638237.2018.1437607>
- Notar, C.E., Padgett, S., & Roden, J. (2013). Cyberbullying: A Review of the Literature. *Universal Journal of Educational Research* 1(1): 1-9. <https://doi.org/10.13189/ujer.2013.010101>
- Odgers, C.L., & Jensen, M.R. (2020). Annual Research Review: Adolescent mental health in the digital age: facts, fears, and future directions. *Journal of child psychology and psychiatry, and allied disciplines*. doi:10.1111/jcpp.13190
- Oreizi-Esfahan, S., & Tomlinson, T. (2018). *The relationship between student burnout and aggression on college campuses* [Master's Thesis]. College Park: University of Maryland.
- Padgett, J.K., & Tremblay, P.F. (2020). Gender Differences in Aggression. *The Wiley Encyclopedia of Personality and Individual Differences: Personality Processes and Individual Differences, Vol. III*, First Edition. [Eds.] JB J. Carducci & Ch. S. Nave. John Wiley & Sons Ltd.
- Piko, B.F., & Pinczes, T. (2014). Impulsivity, depression and aggression among adolescents. *Personality and Individual Differences*, 69, 33–37.
- Pohl, M., Feher, G., Kapus, K., Feher, A., Nagy, G.D., Kiss, J., Fejes, É., Horvath, L., & Tibold, A. (2022). The Association of Internet Addiction with Burnout, Depression, Insomnia, and Quality of Life among Hungarian High School Teachers. *Int. J. Environ. Res. Public Health*, 19, 438. <https://doi.org/10.3390/ijerph19010438>
- Ponnusamy, S., Iranmanesh, M., Foroughi, B., & Hyun, S.S. (2020). Drivers and outcomes of Instagram Addiction: Psychological well-being as moderator. *Computers in Human Behavior*, 107, 106294. <https://doi.org/10.1016/j.chb.2020.106294>
- Pouwels, J. L., Valkenburg, P. M., Beyens, I., van Driel, I. I., & Keijsers, L. (2021). Social media use and friendship closeness in adolescents' daily lives: An experience sampling study. *Developmental Psychology*, 57(2), 309–323. <http://dx.doi.org/10.1037/dev0001148>
- Reinecke, L., Klimmt, C., Meier, A., Reich, S., Hefner, D., Knop-Huels, K., Rieger, D., & Vorderer, P. (2018). Permanently online and permanently connected: Development and validation of the Online Vigilance Scale. *Plos One*, 13(10), e0205384. doi: <https://doi.org/10.1371/journal.pone.0205384>
- Rozgonjuk, D., Elhai, J. D., Täht, K., Vassil, K., Levine, J. C., and Asmundson, G. J. G. (2019). Non-social smartphone use mediates the relationship between intolerance of uncertainty and problematic smartphone use: evidence from a repeated-measures study. *Comput. Hum. Behav.* 96, 56–62. <https://doi.org/10.1016/j.chb.2019.02.013>
- Salmela-Aro K, Savolainen H, & Holopainen L. (2009). Depressive symptoms and school burnout during adolescence: evidence from two cross-lagged longitudinal studies. *Journal of Youth Adolescents*, 38(10), 1316–1327. doi: 10.1007/s10964-008-9334-3
- Salmela-Aro, K., & Upadyaya, K. (2014). School burnout and engagement in the context of demands–resources model. *British Journal of Educational Psychology*, 84, 137 - 151. <https://doi.org/10.1111/bjep.12018>
- Schaufeli, W.B., De Witte, H. & Desart, S. (2020). *Manual Burnout Assessment Tool (BAT). Version 2.0*. KU Leuven, Belgium: Unpublished internal report.
- Schneider, F.M., & Hitzfeld, S. (2019). I ought to put down that phone but I phub nevertheless: Examining the predictors of phubbing behavior. *Social Science Computer Review*, 39(6), 1075–1088. <https://doi.org/10.1177/0894439319882365>
- Schoemann, A.M., Boulton, A.J., & Short, S. D. (2017). Monte Carlo Power Analysis for Indirect Effects Application. [https://schoemanna.shinyapps.io/mc\\_power\\_med/](https://schoemanna.shinyapps.io/mc_power_med/) (Date of access: 20.04.2022)
- Shafti, M., Taylor, P.J., Forrester, A., & Pratt, D. (2021). The Co-occurrence of Self-Harm and Aggression: A Cognitive-Emotional Model of Dual-Harm. *Front. Psychol.*, 12, 586135. doi:10.3389/fpsyg.2021.586135
- Shaw, M., & Black, D.W. (2008). Internet Addiction. *CNS Drugs*, 22, 353–365. <https://doi.org/10.2165/00023210-200822050-00001>
- Shetty, P., Mane, A., Fulmali, S., & Uchit, G. (2018). Understanding masked depression: A Clinical scenario. *Indian J Psychiatry*, 60(1), 97–102. [https://doi.org/10.4103/psychiatry.IndianJPsychiatry\\_272\\_17](https://doi.org/10.4103/psychiatry.IndianJPsychiatry_272_17)
- Shukla, A.K., & Tripathi, S. (2013). *Interactive Media and Society*. New Delhi: Kalpaz Publications.
- Stavrova, O., & Denissen, J. (2021). Does Using Social Media Jeopardize Well-Being? The Importance of Separating Within- From Between-Person Effects. *Social Psychological and Personality Science*, 12(6), 964–973. <https://doi.org/10.1177/1948550620944304>
- Tomaszek, K., & Muchacka-Cymerman, A. (2019). Sex Differences in the Relationship between Student School Burnout and Problematic Internet Use among Adolescents. *Int. J. Environ. Res. Public Health*, 16, 4107. <https://doi.org/10.3390/ijerph16214107>
- Tomaszek, K., & Muchacka – Cymerman, A. (2020). Examining the relationship between student school burnout and problematic internet use. *Educational Sciences-Theory & Practice*, 20(2), 16–31. <https://doi.org/10.12738/jestp.2020.2.002>
- Tomaszek, K., & Muchacka – Cymerman, A. (2021a). 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. (2021b). The mediating effect of student school burnout on the relationship between coping strategies and Internet addiction. *Current issue in personality psychology*. <https://doi.org/10.5114/cipp.2021.110085>
- 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*. <https://doi.org/10.1155/2022/6979310>
- Vanden Abeele, M. M. P. (2020). The social consequences of phubbing: A framework and a research agenda. In R. Ling, G. Goggin, L. Fortunati, S. S. Lim, & Y. Li (Eds.), *Handbook of Mobile Communication, Culture, and Information* (pp. 158–174). Oxford University Press.
- Vaughn, M.G., Salas-Wright, C.P., White, N.A., Kremer, K.P. (2015). Poor Sleep and Reactive Aggression: Results from a National Sample of African American Adults. *J. Psychiatr. Res.*, 66–67, 54–59. <https://doi.org/10.1016/j.jpsychires.2015.04.015>
- Vincent-Höper, S., Stein, M., Nienhaus, A., Schablon, A. (2020). Workplace Aggression and Burnout in Nursing-The Moderating Role of Follow-Up Counseling. *Int J Environ Res Public Health*, 17(9), 3152. <https://doi.org/10.3390/ijerph17093152>
- Walburg V., Moncla D., & Mialhes A., (2015). Burnout Among High-School Students and Cannabis Use, Consumption Frequencies, Abuse and Dependence. *Child Youth Care Forum*, 44, 33–42.
- Winstanley, S., & Whittington, R. (2002). Anxiety, burnout and coping styles in general hospital staff exposed to workplace aggression: A cyclical model of burnout and vulnerability to aggression. *Work & Stress*, 16(4), 302–315. <https://doi.org/10.1080/0267837021000058650>
- Wojciszke, B. (2000). Relacje interpersonalne. In: J. Strelau (Eds.), *Psychologia* 3. Gdańsk: GWP.

Zhao, Q., Huang, Y., & Li, C. (2022). Does adolescents' Internet addiction trigger depressive symptoms and aggressive behavior, or vice versa? The moderating roles of peer relationships and gender. *Computers in Human Behavior, 129*, 107143. <https://doi.org/10.1016/j.chb.2021.107143>

Zhang, Y., Hou, Z., Wu, S.m, Li, X., Hao, M, & Wu,. X. (2022). The relationship between internet addiction and aggressive behavior among adolescents during the COVID-19 pandemic: Anxiety as a mediator. *Acta Psychologica, 227*, 103612. <https://doi.org/10.1016/j.actpsy.2022.103612>