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'Is it just a matter of impulse control?' A cross-cultural study in offline and online aggression among Japanese and European burnout students[***]

SUMMARY

Abundant evidence has demonstrated a strong relationship between aggressive behaviour, one of the most common problems among students at every stage of education all over the world, and a trait for impulsiveness. Impulsiveness is also connected to diverse and enduring psychopathology. However, studies that tested burnout syndrome, impulsivity, and aggression are scarce. Accordingly, the current study examined the role of academic burnout and cross-cultural differences (Japanese vs European culture) in the association between trait impulsivity and online and offline aggression among university students ($N = 291$; $M_{age} = 22.66$ years; $SD = 4.35$; 31% males). The participants filled in self-report measures of Academic Burnout (MBI-SS); Impulsivity (BIS-15); Offline Aggression (Buss-Perry AQ), and Cyber-Aggression Types (CATQ). The results revealed that academic burnout, impulsivity, and both aggression indicators are positively interrelated. Moreover, the interaction effect between academic burnout and culture (Japanese vs European) was significant for almost all aggression characteristics. The

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significance of the interaction between impulsivity, academic burnout, and culture altogether was confirmed for offline aggression and the rage/cyber aggression type. The main implications and suggestions for future research are related to the importance of academic burnout and culture as crucial factors related either to offline aggression or cyber aggression levels.

Keywords: academic burnout, impulsivity trait, offline aggression, cyber aggression, interaction effect.

Introduction

Aggression in offline and virtual environments has received great attention from scholars. Accordingly, researchers have advanced a broad range of theories to understand both phenomena. One of the broadest conceptualisations is a social-ecological framework that highlighted diathesis–stress interaction (vulnerability stress model; Ingram & Luxton, 2005). This holistic view units the dynamic interaction of neurobiological, psychological, interpersonal, and environmental characteristics that contribute to bullying and cyberbullying (Ansary, 2020). Individual factors which increase aggressive behaviours are associated with callous-unemotional traits, for example, antisocial personality traits, susceptibility to peer pressure, and anxiety and depression (Swearer & Hymel, 2015). Recently conducted analysis have focused mainly on the following factors, i.e. school atmosphere and poor classmates relations and social isolation, along with personal factors i.e. low self-control, low ethical engagement, high impulsivity, and certain activities in cyberspace (Cebollero-Salinas et al., 2022; Zych et al., 2021). Nevertheless, only a few studies have examined school burnout syndrome as an moderator in such a context. Furthermore, the association between impulsivity, student burnout, and different forms of aggression altogether has received little attention. In accordance with the socio-ecological model of diathesis-stress, we assume the tendency of offline and online aggression to be related to an interplay of predisposing personality traits (e.g. impulsivity) and students' school environmental dysfunction (e.g. student burnout).

The role of impulsivity in explaining face-to-face aggression and cyber aggression

Impulsivity, currently conceived as a multifaceted personality trait, is a form of self-regulation failure because of a strong tendency to act on the spur of the moment (DeYoung & Rueter, 2016; Meneguzzo et al., 2021). Moreover, it is a universal personality feature which encompasses neurocognitive mechanisms (Barratt, 1983; Bravo et al., 2018). Impulsivity is also one of the most frequently

tested constructs in relation to externalised mental health issues (DeYoung & Rueter, 2017). Numerous past studies have confirmed the positive relationship between impulsivity facets and face-to-face offline aggression (Bresin, 2019; Velotti et al., 2016). Particularly, meta-analysis conducted by Bresin (2019) revealed that negative and positive urgency (impulsivity in the face of strong affect) and lack of premeditation (unplanned action) have the strongest association with a general tendency to aggression. The effects suggest that people with these features are more susceptible to aggression-instigating situations, less able to inhibit their emotional reactions because of their high intensity, and less likely to think about the negative outcomes of their actions. Furthermore, impulsivity and aggression are assumed as two variables that maintain a pattern of consistent relationship (Pérez Fuentes et al., 2016). Hence, the distinction between impulsive (reactive, defensive survival response to threat) and instrumental (appetitive, goal-directed, the pleasure of attacking and fighting) aggression was proposed (Blair, 2010). The first type of aggressive response refers to sudden, unexpected, immediate, and disproportionate behaviour with little comprehension of their repercussions. It is a direct reaction to a subjectively perceived provocation (Coccaro, 2015). According to Blair (2016), impulsive aggression involves the acute threat response system structures (i.e. the amygdala, hypothalamus, and periaqueductal grey). However, the results highlighted the functional role of several areas of the frontal cortex that are behind response selection, i.e. inhibited vs uninhibited impulsive behaviour. In addition, impulsivity was also defined as a joint effect of two neurological systems: a chronically active Behavioural Approach System (BAS, high sensitivity to rewards) and a weak Behavioural Inhibition System (BIS, low sensitivity to punishment; Braddock et al., 2011). A high reactivity to reward was recognised as a risk factor for behavioural aggression, while higher reactivity to punishment may act both as a protective factor by inhibiting aggressive behaviour as well as a risk factor for physical and verbal aggression (Megías-Robles et al., 2022). What is more, Megías-Robles et al. (2022) confirmed that a higher reaction to punishment was also a mediator in the relation between anger/hostility and physical/verbal aggression. The findings also revealed that these associations were influenced by a decreased capacity for regulating emotions.

The role of cross-cultural differences in aggression, academic burnout and impulsivity

Cultural variation in aggressive behaviours is well proven by many studies (Katsantonis, 2021). The discrepancies in the students' aggression levels are reflected in national differences in cultural, socioeconomic, and education-related factors. For

example, Hilton et al. (2010) confirmed differences in the bullying level and related factors among individualistic (American) and collectivistic (Japanese) cultures. More recent studies by the OECD revealed that Japanese students represent one of the lowest rates of school aggression (Katsantonis, 2021). The results indicate that the students' aggressive behaviours are a common issue in both countries, but there are distinctions between its antecedents, e.g. personal, family- and school-related risk factors of bullying. The comparative analysis between eastern European and Canadian students also revealed significant differences in bullying levels, with a higher rate of aggression in Europe (Inchley et al., 2020). According to Katsantonis (2021), these cultural variations in aggression may be explained by individualism (vs collectivism). Specifically, "highly individualistic nations score lower than the honor-based and east European collectivist clusters; however, the scores of the countries belonging to the individualistic cluster are higher than those of the Confucian-based collectivist cluster" (Katsantonis, 2021, p. 20).

Burnout syndrome is a serious health issue that was recognised as a culturally relevant phenomenon. In detail, some studies revealed cross-cultural differences in the risk of developing job burnout and its level. For example, a lower level of burnout was found among Asian nurses compared to Australian medical staff (Fish et al., 2021).Moreover, recent studies have indicated that one of the important burnout risk factors is work culture (sense of hominess of the working environment; Listopad, Esch, & Michaelsen, 2021). The bio-psycho-socio-spirito-cultural model of burnout assessment (the holistic model) characterised burnout from the individual vs social perspective as a state in which a person loses the ability to experience oneself as "resonant," i.e. the distance between the inside (feelings and beliefs) and outside (activities, reactions) part of the self, and thus the meaningless of work/education arises, as well as the lack of work/education-related controllability (Esch, 2019; Listopad, Esch, & Michaelsen, 2021). It is worth mentioning that in this approach the *cultural domain* is defined as a sense of hominess, belongingness, and connectedness.

Impulsivity as a trait responsible for adverse mental health outcomes was mainly studied in Western countries, and according to some researchers there are no indicators of cultural differences in this facet along the superficial division between countries from the Western and Arab-Muslim world (Ziada et al., 2022). However, there is some evidence that partially suggests the importance of including culture (Western vs Eastern) in analysing types of behaviours which are characterised by losing self-control. The first argument is the fact that the meta-analysis confirmed that the prevalence of impulse control disorders is higher in Western countries compared to Asian countries (Parra-Diaz et al., 2021). Next, cultural factors moderate many aspects of impulsive behaviours. For example, cultural differences

were confirmed in consumer impulsive buying, and this feature interacts with self-identity, normative influences, the suppression of emotion, and the postponement of instant gratification (Kacen & Lee, 2002). Past analyses revealed that culture may be considered as a significant factor which directly impacts management control system (MCS), defined as "management controls include all the devices and systems managers use to ensure that the behaviours and decisions of their employees are consistent with the organisation's objectives and strategies, but exclude pure decision-support systems" (Malmi & Brown, 2008, pp. 290–291).

Research Model Summary

In the current research, the role of academic burnout and cross-cultural differences in the relationship between trait impulsivity and offline and online aggression (Japanese vs European culture) was aimed to be tested. Based on the theoretical and empirical background discussed above, the following hypotheses were formulated:

H1: Impulsivity, academic burnout and aggression indicators are positively associated with each other.

H2: Impulsivity, academic burnout and culture predict offline and online aggression levels.

H3: The interaction between impulsivity and academic burnout will explain a significant proportion of the variance in offline and cyber aggression.

H4: The interaction between academic burnout and culture will explain a significant proportion of the variance in the aggression (offline and online).

Method

Research Sample and Procedure

Taking part in the research project were 291 university students (69% of the respondents were women), 41% were Japanese ($N = 120$, 60 females), and 59% ($N = 171$; 142 females) were European students (from Poland and the Czech Republic). The respondents' mean age was $M = 22.66$ years ($SD = 4.35$), with Japanese students $M = 21.9$ years ($SD = 1.62$), and European students $M = 23.2$ years ($SD = 5.46$). After the approval of the study by the institutional research ethics board, the online version of the questionnaires on Google Forms was prepared and the invitation to the study with the link to the research site was sent out via the Internet. Specifically, in Japanese, the invitation was distributed through the website of the student group, whereas in Poland and Czech Republic the invitation

was sent out via university's internal research systems. Participants completed versions of the tools adapted by previous authors in their native language. Only the Cyber-Aggression Typology Questionnaire (CATQ) was translated into Japanese by a native Japanese speaker, and this version was consulted with a Japanese professor of psychology. Students volunteered to participate in the survey and were informed about anonymity and the way of using the results (the scientific goals of this research). The estimated time required to fill out all the assessments was equal to 20 minutes, and the participants were required to fill all forms at the same time. There were no incomplete forms in the study. The respondents received no monetary reward. The studies were conducted between 2020 and 2021.

Research Instrument and Procedure

The Buss-Perry Aggression Questionnaire (AQ) was used to capture offline aggressive students' behavioural tendencies. It is a 29-item questionnaire using a 5–point Likert scale (from 1 – extremely uncharacteristic of me, to 5 – extremely characteristic of me), which assesses four offline aggression characteristics: physical aggression, verbal aggression, hostility, and anger (e.g. "I have become so mad that I have broken things") (Buss & Perry, 1992). A higher score indicates higher offline aggression. In this study, Cronbach's alpha and McDonald's omega were high, both equal to .85.

The Cyber-Aggression Typology Questionnaire (CATQ) was developed by Runions, Bak, and Shaw (2017). The respondents used 7-point Likert scale from 1 (never) to 7 (always). The scale consists of 29 items designed to assess four types of cyber aggression: Rage (Impulsive-Aversive Aggression), Wrath (Controlled-Aversive Aggression), Reward (Controlled-Appetitive Aggression), and Recreation (Impulsive-Appetitive Aggression; e.g. "I have at times used the Internet to make someone look bad"). Cronbach's alpha and McDonald's omega ranged from .92 to .95. The Japanese version of CATQ had acceptable psychometric properties (e.g. EFA: 762.63% of the explained variances with item loading ranged from .34 to .98; reliability: = .97).

The Maslach Burnout Inventory for Students (MBI-SS) was developed by Maslach, Jackson, and Leiter (1996). The scale consists of 15 items that constitute three subscales: exhaustion (5 items), cynicism (4 items), and professional efficacy (6 items). All were scored on a 7-point Likert scale from 0 (never) to 6 (every day). In this study the values of Cronbach's alpha was equal to .81, and McDonald's omega was .82.

The Impulsivity Scale (BIS–15) is a short form of the Barratt Impulsivity Scale consisting of 15 items (e.g. "I act on impulse") rated on a 4-point Likert-type

(1 – rarely/never; 4 – almost always/always). It is a valid instrument widely used in psychological studies in nonclinical populations to measure impulse control level. The higher scores indicate greater impulsiveness (Nguyen, 2020; Patton, Stanford, & Barratt, 1995). In this study the value of Cronbach's alpha was equal to .66 and McDonald's omega was .71.

Data Analysis

To test all the study hypotheses, the SPSS 22 with the macro PROCESS 3.0 by Hayes (2017) was used. Pearson's correlation analysis was conducted at first. Next, the four blocks of regression models were created in order to check the significance of the interactions between impulsivity, academic burnout, and culture (Japanese vs European). For all offline and online aggression indicators, first the block in which only impulsivity was included (Block 0), and then the predictor effect of all three variables was tested (Block 1). In Block 2, the two-way interaction effects were considered: Academic Burnout × Impulsivity; Impulsivity × Culture, and Academic Burnout × Culture. Subsequently, in Block 3, the full interaction effect was included, e.g. Academic Burnout × Impulsivity × Culture. The indicators of asymmetry of normality, e.g. skewness and kurtosis prove normal univariate data distribution (ranged between –2 and +2). The multicolinearity between all tested independent variables was medium (VIF ranged between 1 to 1.3). The Durbin-Watson statistic was lower than 2, indicating no autocorrelations (D – W = 1.91). All scores on the independent variables were standardised before conducting the analysis. The Hayes Bootstrap Method (Model 3) for interaction effects was performed in order to confirm the significance of the results. The G*Power free software was used to estimate sample size requirements. Correlation analysis with: two tails, medium effect size $p = 0.3$, α error = .05; power $ß = 0.95$ requires 134 subjects, whereas linear multiple regression analysis with 7 predictors requires sample equal to 153 (conditions: two tails, small effect size f2 = .15, α error = .05; power $ß = 0.95$. No outliers in the data were detected).

Results

The Pearson's zero-ordered correlation coefficients between the variables are presented in Table 1. Academic burnout was found to be positively related to impulsivity, as well as to offline and online aggression. Offline aggression was positively related to impulsivity and cyber aggression. Cyber aggression was positively associated with impulsivity (see Table 1).

Table 1. Pearson's correlation coefficients between measured variables

Variables	*M*(*SD*)	1	2	3	4
1. Academic burnout	38.71(13.3)	–			
2. Aggression offline	70.70(14.88)	.46***	–		
3. Impulsivity	32.16(5.89)	.37***	.37***	–	
4. Cyber aggression	41.13(20.11)	.25***	.42***	.20**	–

** $p < .01$; *** $p < 0.001$

Impulsivity, academic burnout, and culture – testing the additive and the interactive effects from regression analyses

Analysis for Offline Aggression

In Block 0, as well as in the models including all three independent variables (Block 1), and interaction effects (Blocks 2 and 3), the predictor effects of impulsivity, academic burnout, and culture on offline aggression were significant. In the final model, the prediction power of Academic Burnout × Impulsivity increased to a significant level, and the interaction effect of Academic Burnout × Culture remained significant (Block 3). The full interaction effect Academic Burnout × Impulsivity × Culture appeared significant. The proportions of variance accounting for Offline Aggression were significantly higher after entering the interaction effects in Block 2 ($F_{change} = 7.56$, $p < .0001$, $R^2_{change} = .05$), as well as in Block 3 ($F_{change} = 7.56$, $p = .008$, $R^2_{change} = .02$). All of three tested independent variables and interaction effects (Block 3) explained 34% of variances in Offline Aggression ($F_{(6,284)} = 22.64$, $p < .0001$, *Adj.* $R^2 = .34$; see Table 2).

Table 2. Impulsivity, Academic Burnout and Culture as predictors of Offline and Cyber Aggression

Predictors	Offline Aggression	Cyber Aggression
Block 0	$F_{(1,289)} = 39.71$, $p < .0001$, *Adj.*$R^2 = .12$	$F_{(1,289)} = 11.91$, $p = .001$, *Adj.*$R^2 = .04$
Impulsivity	.35***	.20**
Block 1 *F*, *p*, *Adj.*R^2	$F_{(3,287)} = 39.18$, $p < .0001$ *Adj.*$R^2 = .28$	$F_{(3,287)} = 13.03$, $p < .0001$ *Adj.*$R^2 = .11$
Academic Burnout	.39***	.20**
Impulsivity	.29***	.21**

Predictors	Offline Aggression	Cyber Aggression
Culture	.22***	.23***
Block 2 $F, p, Adj.R^2$ ($F_{change}, p_{change}, R^2_{change}$)	$F_{(5,285)} = 24.71, p < .0001\ Adj.R^2 = .33$ ($F_{change} = 7.56, p < .0001, R^2_{change} = .05$)	$F_{(5,285)} = 9.18, p < .0001\ Adj.R^2 = .15$ ($F_{change} = 4.82, p = .003, R^2_{change} = .04$)
Academic Burnout	.49***	.28***
Impulsivity	.29***	.21*
Culture	.23***	.22**
Impulsivity x Culture	.09	.09
Academic Burnout x Impulsivity	.02	.06
Academic Burnout x Culture	–.25***	–.21**
Block 3 $F, p, Adj.R^2$ ($F_{change}, p_{change}, R^2_{change}$)	$F_{(6,284)} = 22.64, p < .0001\ Adj.R^2 = .34$ ($F_{change} = 7.56, p = .008, R^2_{change} = .02$)	$F_{(6,284)} = 8.15, p < .0001\ Adj.R^2 = .15$ ($F_{change} = 1.77, p = .185, R^2_{change} = .01$)
Academic Burnout	.64***	.20*
Impulsivity	.39***	.15
Culture	.29***	.19*
Impulsivity x Culture	–.01	.15
Academic Burnout x Impulsivity	–.36*	.28*
Academic Burnout x Culture	–.42***	–.12
Academic Burnout x Impulsivity x Culture	.42**	–.24

* $p < 0.05$; ** $p < 0.01$; *** $p < 0.001$

Note: The standardised (β) coefficients are displayed in the table; Culture: 1 – Japanese, 2 – European.

The Bootstrap Method (Model 3) confirmed the significance of the following interaction effects: Academic Burnout × Impulsivity ($B = –1.38$; $SE = .39$; $t = –3.54$, $p = .0005$; 95% CI [–2.14; –.61]; Academic Burnout × Culture ($B = –21.16$; $SE = 4.01$, $t = –5.27$, $p < .0001$, 95% CI [–29.05; –13.26]); Academic Burnout × Impulsivity × Culture ($B = 3.52$, $SE = .89$, $t = 3.95$, $p = .0001$, 95% CI [1.76; 5.27]), and the insignificance of interaction: Impulsivity × Culture ($B = –.22$, $SE = .45$, $t = –.50$, $p = .621$, 95% CI [–1.10; .66]). The results indicate that the observed high level of

academic burnout among European students was related to negative association between impulsivity and offline aggression much more than among highly burned out Japanese students. Moreover, among low burned out European students the positive association between impulsivity and offline aggression was much lower than among low burned out Japanese students (see Figure 1).

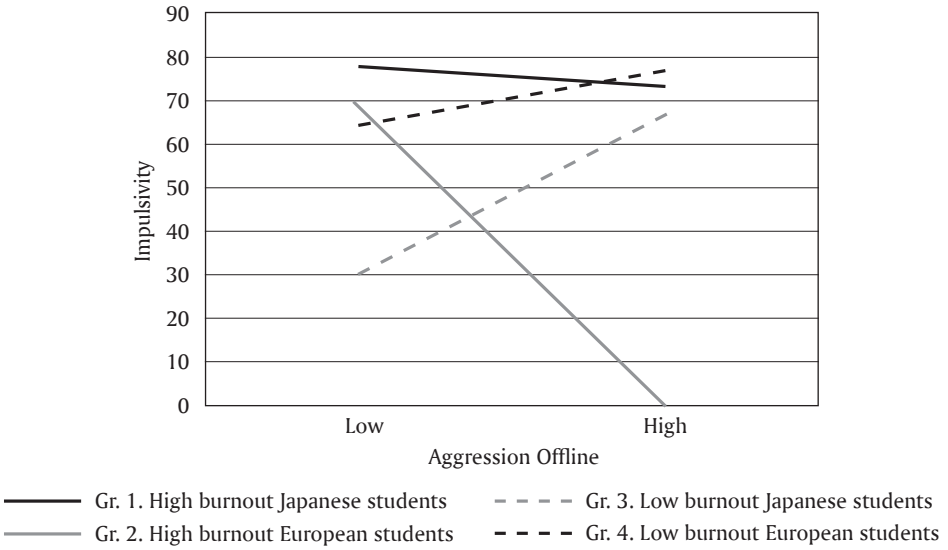

Figure 1. The effect of academic burnout and culture on the association between impulsivity and offline aggression.

Additional analysis revealed that impulsivity significantly predicted all types of offline aggression, e.g. anger, physical aggression, verbal aggression, and hostility. Academic Burnout appeared to be significant predictors of anger, physical aggression, and hostility, whereas Culture predicted all types of offline aggression, except hostility. In Block 2 the following significant two-way interaction effects were found: (1) Academic Burnout × Culture for all types of offline aggression, except verbal aggression; (2) Impulsivity × Culture for anger and verbal aggression. The full interaction effect, e.g. Academic Burnout × Impulsivity × Culture was significant only in the model for anger and verbal aggression. Moreover, in Block 3, entering the full interaction effect increased the two-way interaction effects, e.g. (1) Impulsivity × Culture for physical aggression; (2) Academic Burnout × Impulsivity for anger and verbal aggression, (3) Academic Burnout × Culture for all types of offline aggression, except verbal aggression. The explained variances of all aggression types were found to be significantly higher after entering all three independent variables and two-way interaction effects, and for anger and verbal

aggression also after entering the full interaction effect (see Table A. Appendix). The explained variance for Offline Aggression types ranged from 21% to 30% (see Table B. Appendix). The Bootstrap Method (Model 3) confirmed the significance of all interaction effects for anger: full interaction effect ($B = .11$, $SE = .01$, $t = 9.06$, $p < .0001$, 95% CI [.08; .13]); Academic Burnout × Impulsivity ($B = –.04$, $SE = .01$, $t = –8.75$, $p < .0001$, 95% CI [–.05; –.03]; Academic Burnout × Culture ($B = –.42$, $SE = .04$, $t = –9.41$, $p < .0001$, 95% CI [–.51; –.33]); Impulsivity × Culture ($B = .28$, $SE = .09$, $t = 3.27$, $p = .001$, 95% CI [.11; .45]). Also all interaction effects were significant for models with physical aggression (e.g. full interaction effect ($B = .04$, $SE = .01$, $t = 4.63$, $p < .0001$, 95% CI [.02; .05]); Academic Burnout × Impulsivity ($B = –.01$, $SE = .003$, $t = –3.45$, $p = .001$, 95% CI [–.02; –.01]; Academic Burnout × Culture ($B = –.31$, $SE = .04$, $t = –7.61$, $p < .0001$, 95% CI [–.39; –.23]); Impulsivity × Culture ($B = –.38$, $SE = .09$, $t = –4.38$, $p < .0001$, 95% CI [–.55; –.21]). In Hayes model for verbal aggression three significant interaction effects were detected: full interaction effect ($B = –.04$, $SE = .01$, $t = –4.58$, $p < .0001$, 95% CI [–.05; –.02]); Academic Burnout × Impulsivity ($B = .02$, $SE = .004$, $t = 4.65$, $p < .0001$, 95% CI [.01; .02]; Academic Burnout × Culture ($B = .10$, $SE = .03$, $t = 3.22$, $p = .001$, 95% CI [.03; .16]). Finally, in model for hostility the following significant interaction effects were observed: full interaction effect ($B = .05$, $SE = .01$, $t = 3.31$, $p = .001$, 95% CI [.02; .08]); Academic Burnout × Impulsivity ($B = –.02$, $SE = .01$, $t = –2.69$, $p = .008$, 95% CI [–.03; –.005]; Academic Burnout × Culture ($B = –.41$, $SE = .06$, $t = –7.36$, $p < .0001$, 95% CI [.02; .08]). The results indicate that the higher impulsivity the higher anger in the low burn-out students, regardless culture. Similar pattern was observed among European students characterised by high level of burnout. However, the inverse relation was detected in highly burned out Japanese students e.g. the higher impulsivity the lower anger (see Appendix Figure A). Interestingly, impulsivity and verbal aggression were not related in European sample, whereas among Japanese students the negative association was observed in the group of young people who suffer from burnout syndrome, and positive in the sample with low level of academic burnout (see Appendix Figure B).

Models for Cyber Aggression Types

According to the results higher impulsivity, academic burnout and culture predicted higher cyber aggression level (Block 0 and 1). In Block 2 the interaction Academic Burnout × Culture was significant, however in Block 3 only interaction Academic Burnout × Impulsivity appeared a significant predictor (see Table 2). The Bootstrap Method (Model 3) confirmed the significance of all interaction effects: full interaction effect Academic Burnout × Impulsivity × Culture ($B = –.12$, $SE = .03$,

$t = –3.93$, $p = .0001$, 95% CI [–.18; –.06]), Academic Burnout × Impulsivity ($B = .06$, $SE = .02$, $t = 3.60$, $p = .0004$, 95% CI [.03; .09]); Academic Burnout × Culture ($B = –.41$, $SE = .18$, $t = –2.22$, $p = .027$, 95% CI [–.76; –.05]); Impulsivity × Culture ($B = 1.22$, $SE = .40$, $t = 3.05$, $p = .003$, 95% CI [.43; 2.01]). The results indicate that the higher impulsivity the higher cyber aggression in the group of highly burned out students, as well as low burn out European students. Interestingly, in the group of low burned out Japanese students the opposite effect occurred: the higher impulsivity, the lower cyber aggression (see Figure 2).

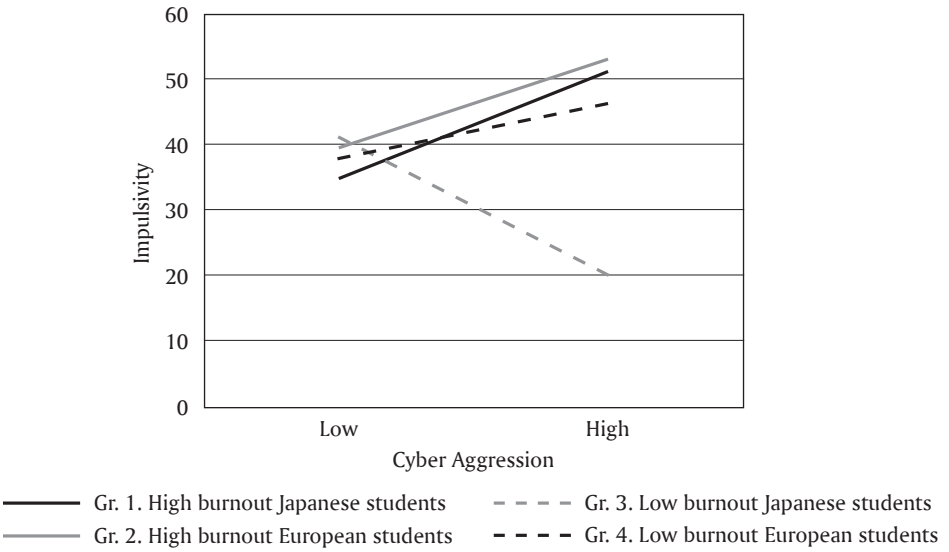

Figure 2. The effect of academic burnout and culture on the association between impulsivity and cyber aggression.

Additional analysis revealed that impulsivity significantly predicted three types of cyber aggression, e.g. rage, wrath, and recreation. Academic Burnout and Culture appeared to be significant predictors of cyber aggression types in all the tested models. Additionally, in Block 2 the following significant two-way interaction effects were found: (1) Academic Burnout × Culture for rage, wrath, and reward; (2) Impulsivity × Culture for recreation. The full interaction effect, e.g. Academic Burnout × Impulsivity × Culture was significant only in the model for rage. Moreover, in Block 3, entering the full interaction effect increased the two-way interaction effects, e.g. (1) Impulsivity × Culture for rage; (2) Academic Burnout × Impulsivity for rage, (2) Academic Burnout × Culture for rage and reward. The explained variances of all cyber aggression types were found to be

significantly higher after entering all three independent variables and two-way interaction effects, and for rage also after entering the full interaction effect (see Table B Appendix). The explained variance for Online Aggression types ranged from 7% to 19% (see Table B Appendix). The Bootstrap Method (Model 3) confirmed the significance of only two interaction effects: full interaction effect for rage ($B = –1.40$, $SE = .59$, $t = –2.36$, $p = .019$, 95% CI [–2.57; –.23]) and Academic Burnout × Culture for wrath ($B = –2.72$, $SE = .31$, $t = –1.98$, $p = .049$, 95% CI [–5.43; .01]).The results indicate that the higher impulsivity the higher cyber aggression – rage in the group of highly burned out Japanese students, while in the group of highly burned out European students the opposite effect occurred: the higher impulsivity the lower cyber aggression – rage. What is more, in the group of low burned out Japanese students the higher impulsivity was not related to higher cyber aggression – rage, while in the low burned out European students such an association was observed (see Appendix Figure C). Further analysis indicated that in the group of Japanese students higher impulsivity was related to higher cyber aggression – wrath, regardless of burnout level. On the contrary, in the group of highly burned out European students, the higher impulsivity the higher cyber aggression – wrath was found, while low burned out European students demonstrated that higher impulsivity was associated with higher cyber aggression – wrath (see Appendix Figure D).

Discussion

It is widely acknowledged that impulsivity may play an adaptive role, but its positive impact is dependent on the situation. For instance, fast aggressive responses may favour survival in the face of danger, but a rapid reaction or spontaneous response is also connected to a higher risk of mistakes and failure. Hence, excessive impulsivity can lead to negative outcomes not only related to physical consequences (e.g. injuries, wounds), but also to social (isolation, rejection), legal (imprisonment), educational (low educational performance), and health (substance abuse, risky behaviours) problems (Berg, Latzman, Bliwise, & Lilienfeld, 2015; Bravo et al., 2018; Esteves, Moreira, Sousa, & Leite-Almeida, 2021; Scavone, 2021). As of now, there has been a limited amount of research exploring the relationship between impulsivity and academic burnout. Furthermore, the studies that explored the association between academic burnout and aggression (offline and online) are also scarce. Thus, this study aimed to test this area.

The positive correlations between impulsivity, academic burnout, and offline and cyber aggression were confirmed (H1 was accepted). Impulsivity was a significant predictor of offline and online aggression (H2 was confirmed). In the regression

models with additional factors, i.e. academic burnout and culture (European vs Japanese), the level of explained variances in aggression indicators increased, as both above-mentioned characteristics were significant predictors of aggression among university students (H2 was confirmed). Impulsivity and Academic Burnout did not interact with each other in Block 2 (H3 was rejected). The interaction effects between academic burnout and culture were significant for almost all aggression characteristics (except verbal aggression, and recreation cyber aggression type) 2 (H4 was confirmed). Furthermore, our findings also revealed significant interaction effect between impulsivity and culture in explaining anger and verbal aggression (types of offline aggression), as well as recreation (cyber aggression type). The examination of the full effect revealed the significance of the interaction between impulsivity, academic burnout, and culture in regression models for offline aggression (anger and verbal aggression), and rage. The Bootstrap Method confirmed the above-mentioned effects as well as the significant full interaction effect for cyber aggression. The findings suggest that burnout is a significant factor that should be measured while exploring the impulsivity-aggression relationship. More specifically, the level of burnout appeared to be important in the direction of the association between these variables (high burnout indicating a negative association between impulsivity and offline aggression, and low burnout the opposite). Interestingly the above pattern was detected in aggression indicators in the European sample, but the results for Japanese students varied depending on sub-dimensions of aggression. For example, high level of burnout among students from Japan was related to inverse association between impulsivity and anger, but the direction of the above effect for verbal aggression was positive (e.g. high level of impulsivity was related to high verbal aggression). The explanation for the observed differences may lay in the cultural endorsement of the modification of universal negative emotional expressions. Individuals manage the expression of their adverse emotions (anger) differently, in example by expressing more vs less of the their feelings (Amplification vs Deamplification), not showing emotions at all (Neutralisation), expressing emotions with some other emotional states (Qualification), or denying emotions that are threatening and showing an emotion other than the one felt (Masking) (Matsumoto, Yoo, & Chung, 2010). For example, according to Fernández et al. (2000), Asians have a stronger normative system of emotional display rules than other groups, and thus they hide distress, anger or embarrassment more often than other less collectivistic cultures. Notably, self-in-group identification – typical for collectivistic cultures – is associated with norms for greater emotion expressivity, however, affective reactions that may threaten the in-group harmony or increase uncertainty are not directly expressed and are socially unaccepted. Hence, although highly burned out students, who suffer from

chronic tension and fatigue may be less able to control their impulses, they do not show their difficulties by revealing anger, but suppress this emotion (Boiger, Mesquita, Uchida, & Feldman Barrett, 2013; Matsumoto, Yoo, & Chung, 2010). Such an explanation is consistent with the mechanism of repression observed in anger-in (anger prevention) type of anger. Specifically, this tendency to hide and direct anger inside, in attempts to control the negative expressions of this emotions is associated to irritability, guilt, and rumination. Interestingly, the second type of anger e.g. anger – out, which is characterised by the expression of this emotion in a tangible way, is related to physically and verbal aggression (Yamaguchi et al., 2017). Classical studies conducted by Ekaman and Friesen highlighted that Japanese people smile when experiencing distress in the presence of a high status person, however when they are alone they display negative behaviours similarly to American nation (Fernández et al., 2000). Findings provided by Smith et al. (2015) showed that holding anger in and controlling anger is associated positively to face cultures (Asian collectivistic countries – China), whereas holding anger in and letting anger out was observed in honour cultures (Turkey or Pakistan). The explanation for discussed relationship may stem from, recently conducted studies, in which scholars revealed that anger is related to disidentification (active distancing from a group that is relevant to the self-concept)in Japan (collectivistic culture), but not in Canada and Germany (individualistic culture) (Aliyev et al., 2023). According to Bierle, Becker and Ikegami (2019), in collectivistic societies, this type of behaviour serves as a coping strategy in face of group-conflict but also as a form of dealing with culturally undesired emotions (i.e. anger). To sum up, according to the results burned-out European students tend to channel school distress and fatigue through impulsivity or offline aggression. In contrast, such a mechanism was not detected in low burned-out students or in Japanese students.

According to our findings, high academic burnout is related to positive association between impulsivity and cyber aggression, regardless culture. However low level of burnout among Japanese students indicated inverse relationship between impulsivity and cyber aggression compared to positive relations in European group. From the results of this study, when considering cyber aggression, culture, as the second additional factor, should be controlled, particularly because the direction of the association between impulsivity and two types of cyber aggression (rage, wrath) was different according to culture and burnout level. Existing knowledge about students' aggression is derived from the aggression–frustration model, which indicates a strong predictive power of educational external stressors, e.g. unfairness of teachers, being scolded by parents, or being rejected and ridiculed by schoolmates (Tam & Taki, 2007). Results from studies conducted by Cinnirella and Green (2007) confirmed that people from collectivistic cultures conform more

with the confederate judgments but this effect is demonstrated only in the face-to-face conditions, being absent in computer-mediated conditions. In this context similarities found between highly burned-out European and Japanese students e.g. higher impulsivity higher cyber aggression) may be explained with mechanism related to classical Dollard frustration–aggression theory. The above-mentioned thesis involves frustration as an intermediate factor between stress and bullying (Breuer & Elson, 2017). Impulsive aggression is thought to involve interaction between acute threat response and the neural bases of frustration (Dugré & Potvin, 2021). School aggression is defined in terms of psychological defence triggered by stressors to reduce negative emotions. Thus, one of the main foci of prevention programs is teaching students to manage stress. Moreover, the frustration motive for aggression was found to be more relevant to Japanese students (Tam & Taki, 2007). The cross-cultural differences in moral upbringing may also play an important role in impulse control. For example, moral reasoning for aggression among Japanese children is focused more on the needs of others and intrinsic motivation to avoid aggressive behaviours – a less self-centred perspective. Japanese parents use more indirect and psychological methods, e.g. appeal to goals and reasons to model rational children's behaviours (Bear, Manning, & Shiomi, 2006). Secure attachment to parents, as well as highlighting the understanding and identification of ones' emotions, increases the capability to regulate one's emotions and is also important for behavioural inhibition and regulation of reactive aggression (Farah, Ling, Raine, Yang, & Schug, 2018; Mancinelli, Li, Lis, & Salcuni, 2021). Furthermore, studies confirmed the direct relationship between an insecure attachment to parents and reactive aggression (Mancinelli, Li, Lis, & Salcuni, 2021). In contrast, in a low burnout sample the cultural differences in coping with urgent impulses through cyber aggression (European students) or not (Japanese students) may be directly related to culturally-acquired causal-explanatory frameworks for social actions, especially the internalisation of social norms. Individuals from collectivistic societies defend specific values that they consider important, even if it is related to high costs (Gavrilets & Richerson, 2017). Thus, collectivistic actions, that serve cooperation and social utility may become "instinctive", and people behave in pro-social way even though they feel frustrated or feel the impulse to react without thinking or are not directly controlled by society. In addition, the system of upbringing and teaching in Japan is similar to the idea of Adler's assumptions, which emphasised the importance and value of appropriate, i.e. prosocial upbringing a child for the "good of the community," being aware that it is part of the whole and looking for appropriate relations with the world (Adler, 1933/1986, p. 56). As Chaim (2000) wrote, upbringing is essential for realising the meaning of one's life. The assumptions of education in Japan are therefore based on a sense of community with other people (Uosaki, Mouri, Yin,

& Ogata, 2018). The sense of community reduces the anonymity of the individual, and the group is more attentive to the needs and difficulties of a person, which also influences the immediate response. Development is based on Confucian cultural patterns, which place responsibility as one of the most important factors in social life (Kanayama & Kurihara, 2018). Such responsibility may be visible, inter alia, in the efficiency of the communication network, intensive pedagogical observation, and attention to students, or the possibility of consulting other specialists. Past studies also confirmed the cultural differences in moral education. For example, Japanese teachers emphasise obedience to internal and external factors, which facilitates the process of internalisation of the values that serve the social good and not only the individual (Bear, Manning, & Shiomi, 2006). Although some past studies confirmed that Japanese students are more reflected in aggression and use a less expressive representation of aggression (Ramirez, Andreu, & Fujihara, 2001), others found the opposite effect. For instance, recent studies have revealed that Japanese college students are more violent due to of being more oriented toward an external locus of control and having a more favourable attitude toward bullying than Americans (Kobayashi & Farrington, 2019). The results of our studies may suggest that the reason for such cultural differences may be related to higher academic distress, which may cause mental health problems, e.g. severe burnout symptoms. For example, several studies revealed a higher risk of educational distress, depression, and anxiety among Japanese students as an effect of remote learning and the COVID-19 pandemic (Horita, Nishio, & Yamamoto, 2020; Nishimura et al., 2021). In other words, higher burnout increases the risk of cyber aggression impulsive expressions; however, in real social conflicts – maybe due to intense school discipline and obedience training – it is inhibited. Importantly, it is worth noting that a sense of belonging and strong social connections (higher collectivism values) could potentially act as a protective factor against psychological distress in the context of the COVID-19 pandemic, leading to lower levels of mental health issues and behavioural problems (Xiao, 2021). On the contrary, past studies have provided some empirical evidence that individualistic people who think prioritise their uniqueness and competitiveness may have encountered greater psychological distress during the COVID-19 pandemic due to their difficulty in establishing emotional connections with others (Xiao, 2021). Notably, social isolation is one of the factors responsible for increase in the aggressive behaviour (Takahashi, 2022). Therefore, in our study, European students who are more self- focused, may be more concentrate on their symptoms of exhaustion and lack of energy (psychological distress). Moreover, the constant feeling of fatigue may be the reason for lack of energy to react more impulsively; thus their aggression may be more relevant to frustrating circumstances.

Limitations

One of the main limitations of this research is that based on this study causal relationships cannot be established. As such, future research projects should enable analysis of the causal associations between trait impulsivity, academic burnout, culture, and aggression. Furthermore, since only cross-sectional relationships were analysed, intervention programs should be implemented to answer the question of whether burnout causes an increase in aggressive behaviour or that a reciprocal association between these variables is more possible, e.g. aggression causing lower academic performance and educational difficulties, which increases chronic educational stress and burnout. The next shortcoming of the this study was the comparison of samples only by their nationality. Future research projects should also consider to control cultural orientation as a personality construct.

Conclusion

The tendency toward impulsive behaviours has been confirmed as one of the main psychological characteristics that allow predicting involvement in aggressive behaviours. In view of the results, the level of academic burnout and culture should be considered when exploring the association between impulsivity and aggression.

References

Adler, A. (1986). *Sens życia*, Adler, A. (1986). *Sens życia* (M. Kreczowska, Trans.). Warszawa: Wydawnictwo Naukowe PWN. (Original work published 1933)

Ansary, N. S. (2020). Cyberbullying: Concepts, theories, and correlates informing evidence-based best practices for prevention. *Aggression and Violent Behavior, 50,* 101343.

Barratt, E. S. (1983). The biological basis of impulsiveness: The significance of timing and rhythm disorders. *Personality Individual Differences, 4*(4), 387–391.

Bear, G. G., Manning, M. A., & Shiomi, K. (2006). Children's reasoning about aggression: Differences between Japan and the United States and implications for school discipline. *School Psychology Review, 35*(1), 62–77.

Berg, J. M., Latzman, R. D., Bliwise, N. G., & Lilienfeld, S. O. (2015). Parsing the heterogeneity of impulsivity: A meta-analytic review of the behavioral implications of the UPPS for psychopathology. *Psychological Assessment, 27,* 1129–1146.

Bierle, I., Becker, J. C., & Ikegami, T. (2019). Coping with unpleasant group memberships in Japan and Germany: Cultural differences in disidentification, confrontation and emotion regulation. *European Journal of Social Psychology, 49*, 953–469.

Blair, R. J. R. (2010). Neuroimaging of psychopathy and antisocial behavior: A targeted review. *Current Psychiatry Reports*, *12*, 76–82.

Blair, R. J. (2016). The neurobiology of impulsive aggression. *Journal of Child and Adolescent Psychopharmacology, 26*(1), 4–9.

Boiger, M., Mesquita, B., Uchida, Y., & Feldman Barrett, L. (2013). Condoned or condemned: The situational affordance of anger and shame in the United States and Japan. *Personality and Social Psychology Bulletin, 39,* 540–553.

Braddock, K. H., Dillard, J. P., Voigt, D. C., Stephenson, M. T., Sopory, P., & Anderson, J. (2011). Impulsivity partially mediates the relationship between BIS/BAS and risky health behaviors. *Journal of Personality, 7*(4), 793–810.

Bravo, A. J., Pearson, M. R., Pilatti, A., Read, J. P., Mezquita, L., Ibáñez, M. I., & Ortet, G. (2018). Impulsivity-related traits, college alcohol beliefs, and alcohol outcomes: Examination of a prospective multiple mediation model among college students in Spain, Argentina, and USA. *Addictive Behaviors*, *81,* 125–133.

Breuer, J., &Elson, M. (2017). Frustration–aggression theory. In P. Sturmey (Ed.), *The Wiley handbook of violence and aggression* (pp. 1–12). Wiley.

Buss, A.H., & Perry, M. P. (1992). The aggression questionnaire. *Journal of Personality and Social Psychology*, *63*, 452–459.

Cebollero-Salinas, A., Orejudo, S., Cano-Escoriaza, J., & Iniguez-Berrozpe, T. (2022). Cybergossip and problematic internet use in cyberaggression and cybervictimisation among adolescents. *Computers in Human Behavior, 131*, 107230.

Cinnirella, M., & Green, B. (2007). Does 'cyber-conformity' vary cross-culturally? Exploring the effect of culture and communication medium on social conformity. *Computers in Human Behavior*, *23*(4), 2011–2025.

Chaim, W. (2000). Atmosfera rodziny i religijność a poczucie sensu życia. In P. Mazanka (Ed.), *Filozoficzne orientacje w wyborze sensu życia* (pp. 135–150). Warszawa: Wydawnictwo Uniwersytetu Kardynała Stefana Wyszyńskiego.

Coccaro, E. F. (2015). The nature of impulsive aggression: Commentary on "Aggression in borderline personality disorder—A multidimensional model". *Personality Disorders: Theory, Research, and Treatment, 6*(3), 292–293.

Dugré, J. R., & Potvin, S. (2021). Neural bases of Frustration–Aggression Theory: A multi-domain meta-analysis of functional neuroimaging studies. *Journal of Affective Disorders, 331, 64–76.*

DeYoung, C. G., & Rueter, A. R. (2016). Impulsivity as a personality trait. In K. D. Vohs, and R. F. Baumaister (Eds.), *Handbook of self-regulation: Research, theory, and applications.* (3rd ed., pp. 345–362). New York: Guilford Press.

Esch, T. (2019). Burn-out ist zuvordersteine Sinnkrise. In N. Rose (Ed.), *Arbeitbessermachen. Positive Psychologie für Personalarbeit und Führung* (pp. 6–66). HaufeVerlag.

Esteves, M., Moreira, P. S., Sousa, N., & Leite-Almeida, H. (2021). Assessing impulsivity in humans and rodents: Taking the translational road. *Frontiers in Behavioral Neuroscience, 15*, 647922.

Farah, T., Ling, S., Raine, A., Yang, Y., & Schug, R. (2018). Alexithymia and reactive aggression: The role of the amygdala. *Psychiatry Research: Neuroimaging, 281*, 85–91.

Fish, J. A., Sharplin, G., Wang, L., An, Y., Fan, X., & Eckert, E. (2021). Cross-cultural differences in nurse burnout and the relationship with patient safety: An East-West comparative study. *Journal of Advanced Nursing, 78*(4), 1000–1011.

Gavrilets, S., & Richerson, P. J. (2017). Collective action and the evolution of social norm internalization. *Proceedings of the National Academy of Sciences, 114*(23), 6068-6073.

Hilton, J. M., Anngela-Cole, L., & Wakita, J. (2010). A cross-cultural comparison of factors associated with school bullying in Japan and the United States. *The Family Journal, 18*(4), 413–422.

Horita, R., Nishio, A., & Yamamoto, M. (2020). The effect of remote learning on the mental health of first year university students in Japan. *Psychiatry Research, 295,* 113561.

Inchley J., Currie, D., Budisavljevic, S., Torsheim, T., Jåstad, A., Cosma, A., Kelly, C., Arnarsson, A. M., Barnekow, V., & Weber, M. W. (2020). *Spotlight on adolescent health and well-being. Findings from the 2017/2018 Health Behaviour in School-aged Children (HBSC) survey in Europe and Canada. International report.* Copenhagen: WHO Regional Office for Europe.

Ingram, R. E., & Luxton, D. D. (2005). Vulnerability-Stress models. In B. L. Hankin and J. R. Z. Abela (Eds.), *Development of psychopathology: A vulnerability stress perspective* (pp. 32–46). Thousand Oaks, CA: Sage Publications Inc.

Kacen, J. J., & Lee, J. A. (2002). The influence of culture on consumer impulsive buying behavior. *Journal of Consumer Psychology, 12*(2), 163–176.

Katsantonis, I. G. (2021). Cultural variation in aggressive behavior: A cross-cultural comparison of students' exposure to bullying across 32 countries. *Electronic Journal of Research in Educational Psychology*, *19*(3), 465–490.

Kanayama, K., & Kurihara, S. (2018). Preventive measures against cyberbullying at a university in Japan. In W. Cassidy, C. Faucher, and M. Jackson (Eds.), *Cyberbullying at university in international contexts* (pp.168–172). London: Routledge.

Kobayashi, R., & Farrington, D. P. (2019). Why do Japanese bully more than Americans? Influence of external locus of control and student attitudes toward bullying. *Educational Sciences: Theory & Practice, 20*(1), 5–19.

Listopad, I. W., Esch, T., & Michaelsen, M. M. (2021). An empirical investigation of the relationship between spirituality, work culture, and burnout: The need for an extended health and disease model. *Frontiers in Psychology, 12*, 723884.

Malmi, T., & Brown, D. A. (2008). Management control systems as a package—Opportunities, challenges and research directions. *Management Accounting Research, 19*, 287–300.

Mancinelli, E., Li, J.-B., Lis, A., & Salcuni, S. (2021). Adolescents' attachment to parents and reactive–proactive aggression: The mediating role of alexithymia. *International Journal of Environmental Research on Public Health, 18*, 13363.

Maslach, C., Jackson, S. E., & Leiter, M. P. (1996). *Maslach burnout inventory. Third edition.* Palo Alto, CA: Consulting Psychologists Press.

Matsumoto, D., Yoo, S. H., & Chung, J. (2010). The expression of anger across cultures. In M. Potegal, G. Stemmler and C. Spielberger (Eds.), *International handbook of anger: Constituent and concomitant biological, psychological, and social processes* (pp. 125–137). Springer Science + Business Media.

Megías-Robles, A., Gómez-Leal, R., Gutiérrez-Cobo, M. J., Cabello, R., & Fernández-Berrocal, P. (2022). The role of sensitivity to reward and punishment in aggression. *Journal of Interpersonal Violence*, *37*(13–14), 12014–12039.

Meneguzzo, P., Todisco, P., Collantoni, E., Meregalli, V., Dal Brun, D, Tenconi, E., & Favaro, A. (2021). A multi-faceted evaluation of impulsivity traits and early maladaptive schemas in patients with anorexia nervosa. *Journal of Clinical Medicine, 10*, 5895.

Nguyen, P. T. (2020). *Factor structure of the short form of the Barratt Impulsiveness Scale (BIS-15) in an early adolescent, non-clinical population*. University Honors Theses. Paper 906.

Nishimura, Y., Ochi, K., Tokumasu, K., Obika, M., Hagiya, H., Kataoka, H., & Otsuka, F. (2021). Impact of the COVID-19 pandemic on the psychological distress of medical students in Japan: Cross-sectional survey study. *Journal of Medical Internet Research*, *23*(2), e25232.

Parra-Díaz, P., Chico-García, J. L., Beltrán-Corbellini, Á., Rodríguez-Jorge, F., Fernández-Escandón, C. L., Alonso-Cánovas, A., & Martínez-Castrillo, J. C. (2020). Does the country make a difference in impulse control disorders? A systematic review. *Movement Disorders Clinical Practice, 8*(1), 25–32.

Patton, J. H., Stanford, M. S., & Barratt, E. S. (1995). Factor structure of the Barratt impulsiveness scale. *Journal of Clinical Psychology*, *51*(6), 768–774.

Pérez Fuentes, M. D. C., Molero Jurado, Md. M., Carrión Martínez, J. J., Mercader Rubio, I., & Gázquez, J. J. (2016). Sensation-seeking and impulsivity as predictors of reactive and proactive aggression in adolescents. *Frontiers in Psychology, 7*, 1447.

Ramirez, J. M., Andreu, J. M., & Fujihara, T. (2001). Cultural and sex differences in aggression: A comparison between Japanese and Spanish students using two different inventories, *Aggressive Behavior, 27*(4), 313–322.

Runions, K. C., Bak, M., & Show, T. (2017). Disentangling functions of online aggression: The Cyber-Aggression Typology Questionnaire (CATQ). *Aggressive Behavior*, *43*(1), 74–84.

Scavone, A. (2021). *Think first: Examining impulsivity among university students*. Electronic Theses and Dissertations. 8575. Retrieved January 25, 2022 from https://scholar.uwindsor.ca/etd/8575.

Smith, P. B., Easterbrook, M. J., Celikkol, G. C., Chen, S. X., Ping, H., & Rizwan, M. (2016). Cultural variations in the relationship between anger coping styles, depression, and life satisfaction. *Journal of Cross-Cultural Psychology*, *47*(3), 441–456.

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.

Takahashi, A. (2022). The role of social isolation stress in escalated aggression in rodent models. *Neuroscience Research*, 30. doi: 10.1016/j.neures.2022.07.009

Tam, F. W., & Taki, M. (2007). Bullying among girls in Japan and Hong Kong: An examination of the frustration–aggression model. *Educational Research and Evaluation, 13*(4), 373–399.

Uosaki, N., Mouri, K., Yin, C., & Ogata, H. (2018). How we can support international students' job hunting in Japan seamlessly. In *26th International Conference on Computers in Education, 26–30 November, 2018, Philippines* (pp. 527–529). Asia-Pacific Society for Computers in Education.

Velotti, P., Garofalo, C., Petrocchi, C., Cavallo, F., Popolo, R., & Dimaggio, G. (2016). Alexithymia, emotion dysregulation, impulsivity and aggression: A multiple mediation model. *Psychiatry Research*, *237*, 296–303.

Xiao, W. S. (2021). The role of collectivism–individualism in attitudes toward compliance and psychological responses during the COVID-19 pandemic. *Frontiers in Psychology*, *12*, 600826.

Ziada, K. E., Bakhiet, S. F., & Al-Shafey, A. (2022). Culture and sexual differences in impulsivity among university students. *JFAFU, 14*(2), 265–293.

Zych, I., Viejo, C., Vila, E., & Farrington, D. P. (2021). School bullying and dating violence in adolescents: A systematic review and meta-analysis. *Trauma Violence Abuse, 22*(2), 397–412.

Appendix

Table A. Impulsivity, Academic Burnout and Culture as predictors of Offline Aggression Dimensions

Predictors	Offline Aggression Types			
	Anger	Physical Aggression	Verbal Aggression	Hostility
Block 0	$F_{(1,289)} = 30.94$, $p < .0001$ $Adj.R^2 = .09$	$F_{(1,289)} = 30.29$, $p < .0001$ $Adj.R^2 = .10$	$F_{(1,289)} = 5.65$, $p = .018$ $Adj.R^2 = .02$	$F_{(1,289)} = 17.29$, $p < .0001$, $Adj.R^2 = .05$
Impulsivity	.31***	.31***	.14*	.24***
Block 1 F, p, $Adj.R^2$	$F_{(3,287)} = 19.19$, $p < .0001$ $Adj.R^2 = .17$	$F_{(3,287)} = 17.55$, $p < .0001$ $Adj.R^2 = .15$	$F_{(3,287)} = 29.76$, $p < .0001$ $Adj.R^2 = .24$	$F_{(3,287)} = 28.59$, $p < .0001$, $Adj.R^2 = .23$
Academic Burnout	.28***	.25***	.06	.44****
Impulsivity	.24***	.40***	.30**	.11
Culture	.07	.10	.50**	.09
Block 2 F, p, $Adj.R^2$ (F_{change}, p_{change}, R^2_{change})	$F_{(5,285)} = 14.97$, $p < .0001$ $Adj.R^2 = .24$ ($F_{change} = 9.12$, $p < .0001$, $R^2_{change} = .07$)	$F_{(5,285)} = 13.35$, $p < .0001$ $Adj.R^2 = .20$ ($F_{change} = 7.88$, $p < .0001$, $R^2_{change} = .07$)	$F_{(6,284)} = 15.80$, $p < .0001$ $Adj.R^2 = .25$ ($F_{change} = 1.64$, $p = .180$, $R^2_{change} = .01$)	$F_{(6,284)} = 19.06$, $p < .0001$, $Adj.R^2 = .29$ ($F_{change} = 7.57$, $p < .0001$, $R^2_{change} = .06$)
Academic Burnout	.30***	.39***	.08	.54***

Impulsivity	.06	.40***	.39***	.10
Culture	–.02	.20**	.55***	.09
Impulsivity x Culture	.32***	–.12	-.14*	.11
Academic Burnout x Impulsivity	–.04	.03	.04	.03
Academic Burnout x Culture	–.16*	–.27***	.01	–.26***
Block 3 F, p, $Adj.R^2$ (F_{change}, p_{change}, R^2_{change})	$F_{(6,284)} = 17.32$, $p < .0001$ $Adj.R^2 = .30$ ($F_{change} = 24.13$, $p < .0001$, $R^2_{change} = .06$)	$F_{(6,284)} = 11.96$, $p < .0001$ $Adj.R^2 = .21$ ($F_{change} = 3.04$, $p = .082$, $R^2_{change} = .01$)	$F_{(6,284)} = 14.55$, $p < .0001$ $Adj.R^2 = .27$ ($F_{change} = 5.50$, $p = .020$, $R^2_{changev} = .014$)	$F_{(6,284)} = 16.96$, $p < .0001$, $Adj.R^2 = .30$ ($F_{change} = 3.38$, $p = .067$, $R^2_{change} = .01$)
Academic Burnout	.59***	.50***	-.06	.65***
Impulsivity	.25**	.47***	.30**	.17*
Culture	10	.24**	.49***	.14*

Table B. Impulsivity, Academic Burnout and Culture as predictors of Offline and Cyber Aggression

Predictors	Cyber-Aggression Types			
	Rage	Wrath	Reward	Recreation
Block 0	$F_{(1,289)} = 14.38, p < .0001$ $Adj.R^2 = .04$	$F_{(1,289)} = 12.52, p < .0001$ $Adj.R^2 = .04$	$F_{(1,289)} = 3.67, p = .056$ $Adj.R^2 = .01$	$F_{(1,289)} = 7.25, p = .008,$ $Adj.R^2 = .02$
Impulsivity	$.22^{**}$	$.20^{**}$	.11	$.16^{**}$
Block 1 $F, p, Adj.R^2$	$F_{(3,287)} = 16.52, p < .0001$ $Adj.R^2 = .14$	$F_{(3,287)} = 10.16, p < .0001$ $Adj.R^2 = .09$	$F_{(3,287)} = 5.98, p = .001$ $Adj.R^2 = .05$	$F_{(3,287)} = 7.75, p < .0001,$ $Adj.R^2 = .07$
Academic Burnout	$.21^{**}$	$.19^{**}$	$.18^{**}$	$.12^{*}$
Impulsivity	$.24^{**}$	$.20^{**}$	.10	$.19^{**}$
Culture	$.27^{**}$	$.17^{**}$	$.14^{*}$	$.21^{**}$
Block 2 $F, p, Adj.R^2$ $(F_{change}, p_{change}, R^2_{change})$	$F_{(5,285)} = 10.90, p < .0001$ $Adj.R^2 = .17$ $(F_{change} = 4.66, p = .003,$ $R^2_{change} = .04)$	$F_{(5,285)} = 8.34, p < .0001$ $Adj.R^2 = .13$ $(F_{change} = 6.00, p = .001,$ $R^2_{change} = .05)$	$F_{(6,284)} = 4.85, p < .0001$ $Adj.R^2 = .07$ $(F_{change} = 3.56, p = .015,$ $R^2_{change} = .03)$	$F_{(6,284)} = 5.82, p < .0001,$ $Adj.R^2 = .09$ $(F_{change} = 3.67, p = .013,$ $R^2_{change} = .03)$
Academic Burnout	$.29^{**}$	$.31^{**}$	$.24^{**}$	$.16^{*}$
Impulsivity	$.24^{**}$	$.30^{**}$	.05	.13
Culture	$.27^{**}$	$.23^{**}$	.11	$.15^{*}$

Impulsivity x Culture	.09	–.05	.15	.17*
Academic burnout x Impulsivity	.03	–.06	.04	.10
Academic burnout x Culture	–.22**	–.25***	–.17*	–.12
Block 3 $F, p, Adj.R^2$ ($F_{change}, p_{change}, R^2_{change}$)	$F_{(6,284)} = 10.63, p < .0001$ $Adj.R^2 = .19$ ($F_{change} = 7.47, p = .007,$ $R^2_{change} = .02$)	$F_{(6,284)} = 7.44, p < .0001$ $Adj.R^2 = .14$ ($F_{change} = 1.90, p = .170,$ $R^2_{change} = .01$)	$F_{(6,284)} = 4.18, p < .0001$ $Adj.R^2 = .07$ ($F_{change} = .27, p = .606,$ $R^2_{change} = .001$)	$F_{(6,284)} = 4.98, p < .0001,$ $Adj.R^2 = .09$ ($F_{change} = .11, p = .742,$ $R^2_{change} = .00$)
Academic Burnout	.12	.22*	.27**	.18
Impulsivity	.12	.24*	.07	.14
Culture	.20**	.19*	.12	.16*
Impulsivity x Culture	.20*	.01	.13	.15
Academic burnout x Impulsivity	.47**	.29	–.05	.05
Academic burnout x Culture	–.03	–.15	–.20*	–.14
Academic burnout x Impulsivity x Culture	–.48**	–.25	.10	.06

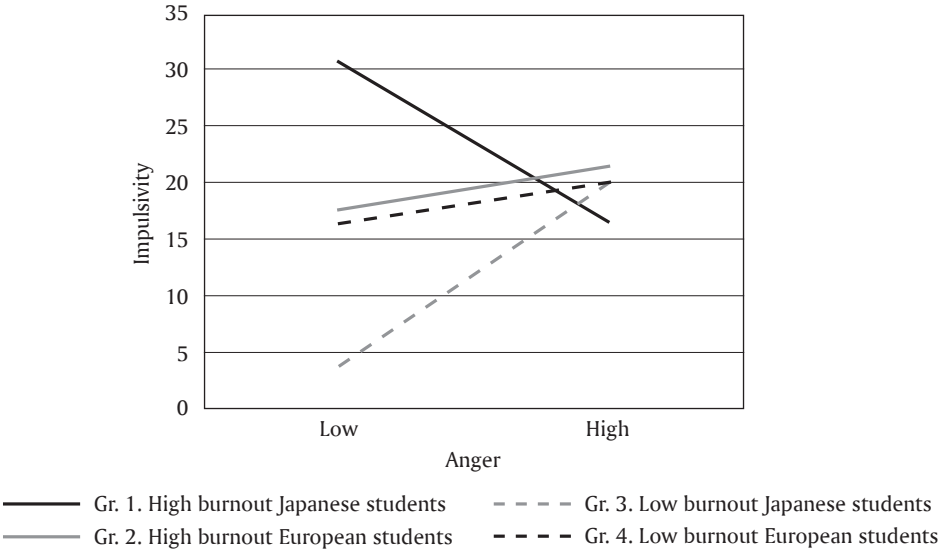

Figure A. The effect of academic burnout and culture on the association between impulsivity and offline aggression – anger.

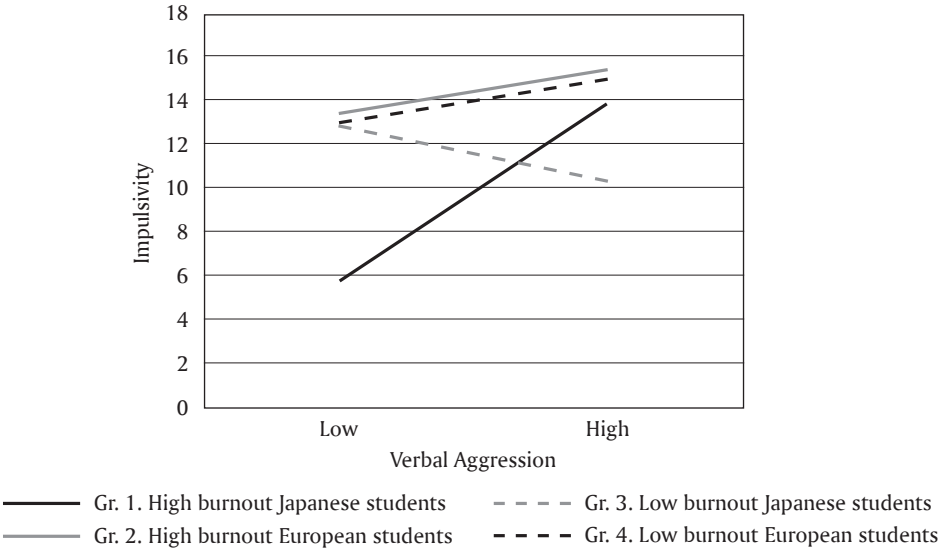

Figure B. The effect of academic burnout and culture on the association between impulsivity and offline aggression – verbal aggression.

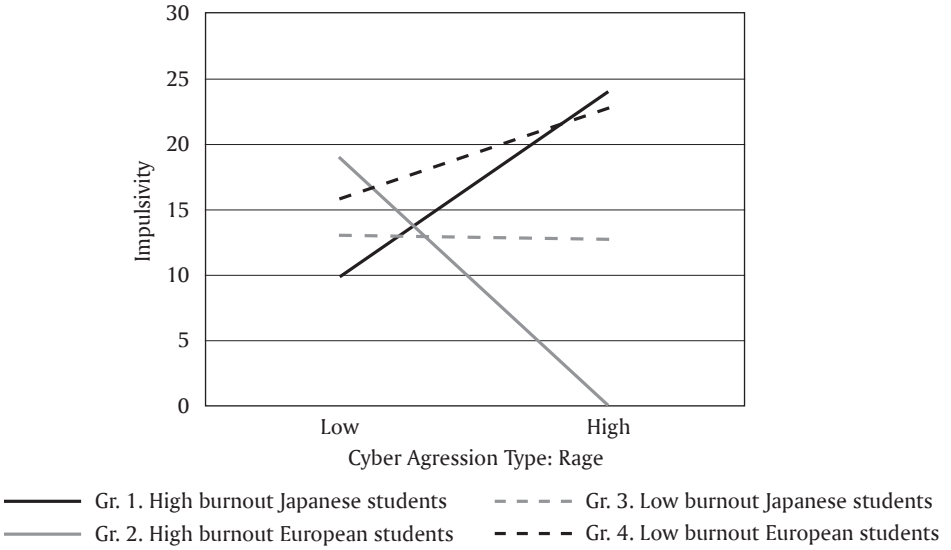

Figure C. The effect of academic burnout and culture on the association between impulsivity and cyber aggression – rage.

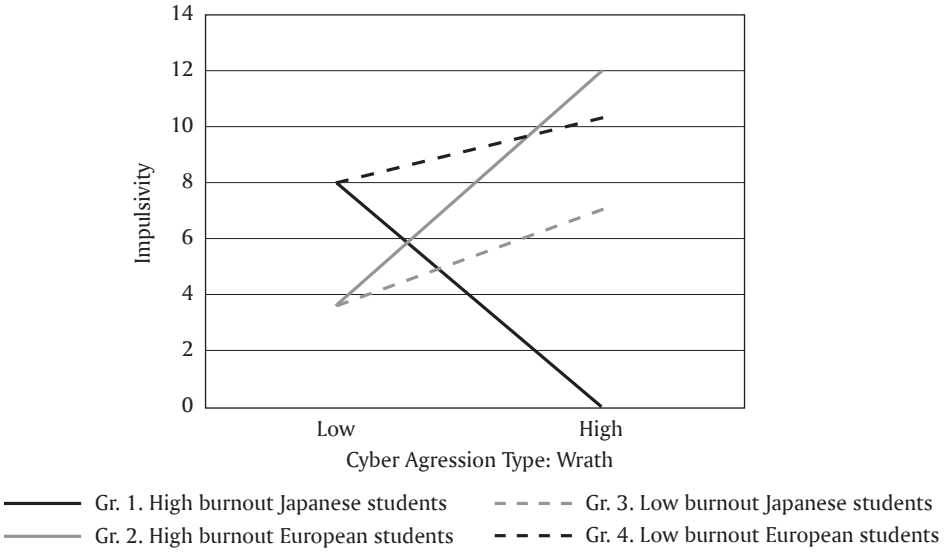

Figure D. The effect of academic burnout and culture on the association between impulsivity and cyber aggression – wrath.