RESEARCH ON THE USE OF VIDEOGAMES: EFFECTS ON STUDENTS OF SECONDARY UPPER SCHOOLS OF UDINE TERRITORY

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ABSTRACT

From the researches carried out in literature it appears how gaming is a behaviour in continuous evolution and expansion (Mauceri & Di Censi, 2020) and is widespread in the entire population, particularly among teenagers. The present paper is the result of a multi-professional and inter-sectorial research carried out and shared with operators of the health service Azienda Sanitaria Universitaria Friuli Centrale (ASUFC), teachers of the Regional School Office (Uff. VI), the Provincial Student Council (CPS) of Udine and with a professional educator.

One of the targets of this research was to analyse the feelings and beliefs of players regarding the use of videogames and this was done in March 2021 through a questionnaire. 596 students of upper secondary schools of Udine territory joined this survey and to reach the target four videoplayer profiles have been outlined taking into account the play time: the occasional player (N = 61; 10.2%) who uses the videogames for maximum 30 minutes per day, the habitual player – mild (N=57; 9.6%) between 30 minutes and 1 hour, the habitual player – moderate (N=250, 41.9%) between 1 and 4 hours and the severe player (N=71, 11.9%) between 4 and more than 6 hours. The analysis of the replies demonstrates how all statements (21), following the chi-squared test, have a statistically important difference with respect to the profiles, except for two. It appears how the severe players run more often into potential experiences of risk of addiction or trouble, and they prefer to play instead of going out with friends, sometime also stopping friendship relations and feeling a higher desire to going on playing at the end of the session, also forgoing some hours of sleep. The research group, taking into consideration the spreading of the behaviour of severe players (11.9%), would deem useful to plan and carry out future interventions aimed at encouraging the technological health since the first classes of upper secondary schools, in order to allow the students the acquainted use of technologies and gaming activities and to prevent the relative risks coming from the massive and improper use of these tools and actions.

INTRODUCTION

In almost 60 years after their development, the videogames have a prominent position in the cultural and creative industries, and their market is addressed in particular to teenagers and therefore gaming is in continuous expansion; in 2020 the Italians who used videogames were 16.7 millions and represented 38% of population, and having an age between 6 and 64 years; moreover during the *lockdown* periods or the periods of increased restrictions, the time dedicated to gaming has increased year after year of about 1 additional hour per week during the first and second infection waves (IIDEA, 2021).

On January 2022 the World Health Organization (WHO) has recognized, within the ICD 11, the *gaming disorder* i.e. "*a series of persistent or recurrent behaviours linked to gaming, both online as well as offline, which are revealed by: an unsuccessful control on gaming, a constantly increasing priority given to gaming to the point that this becomes more important than daily activities and interests of life, a continuous escalation of gaming despite the negative consequences on personal, familiar, social, educational, employment sectors or other important areas*" (WHO, 2018).

Considering the constantly increasing use of videogames and in line with what described in the field literature and from the observations reported inside the working party, it appeared the need to embark on actions aiming at awaken, prevent and promote the health in technologies use, in particular of videogames, also taking into consideration the pandemic period just lived through.

And to this end the following research has the target to deeply understand the phenomenon of videogames among students of upper secondary schools of Udine territory, analysing the sensations and beliefs created by gaming among the profiles of videoplayers; the last ones have been outlined on the basis of the time dedicated to videogames.

METHODS AND MATERIALS

The creation of a multiprofessional and multiple branches project group formed by operators of the health service Azienda Sanitaria Universitaria Friuli Centrale (ASUFC), a contact teacher of the Provincial Student Council (CPS), the Regional School Office (Uff. VI), representative students of the CPS of Udine and with a professional educator, has allowed a shared planning in the spirit of *empowered peer education* where the knowledge of students meet and deal with adults' ones; the role of adults is to accompany teenagers in finding and developing tools and efficient competences in the promotion of welfare inside the territory.

The understanding and deepening of gaming phenom-
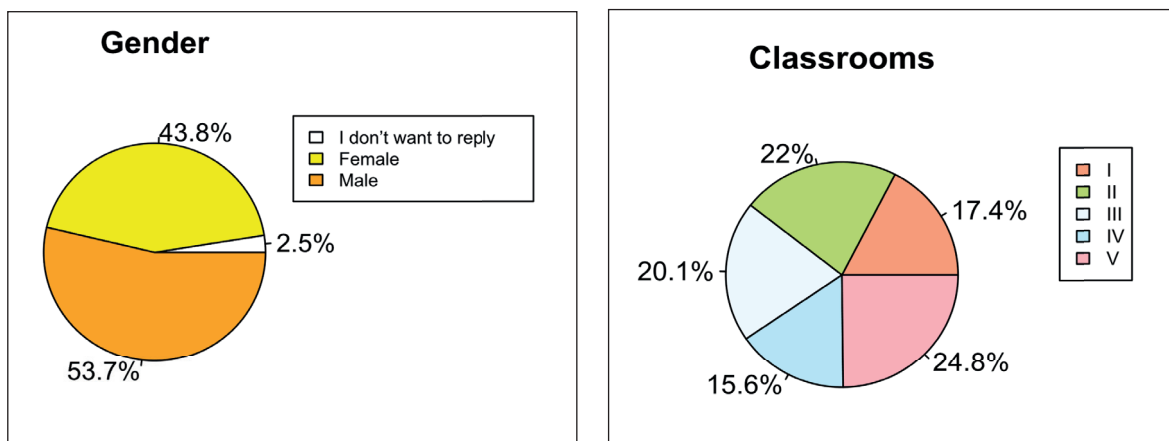
Tab. 1,2 – *Gender and class referred to the intervention sample (values in percentage); Class attended by the intervention sample (values in percentage)*

enon among students were made possible through the submission of a questionnaire, carried out by the research group, containing some questions whose results refer to other results already published in local, national and international literature, and with new questions with the aim to integrate and update the analysis carried out.

The sections of the questionnaire were subdivided as follows:

- *Personal data of the sample*, composed by questions on gender, age, attended classroom, characteristics of the family environment of the compiler;
- *Use of videogames*, questions referring to frequency, period of time, moment of the day and place dedicated to gaming, the way how the interviewee uses the videogames;
- *Beliefs and sensations* linked to gaming, related to perceptions experienced during gaming and possible conditionings that these have on personal everyday life.

The questionnaire did not foresee any form of identification of the participants and has been filled in anonymous and autonomous form, against signature for acceptance of the use of personal data. In the questionnaire sections relative to sensations and beliefs, the research group has decided to use a Likert scale in four points which are included among "*totally in disagreement*" (lower value – "0"), "*totally in agreement*" (higher value – "3") and the option "*don't know*".

The collected data, analysed through the RStudio software, permitted to obtain both a descriptive analysis (frequences, percentages, media, median, pie chart, bar chart) as well as a statistical analysis and this one has been carried out through the statistical chi-squared test (χ^2) in order to understand the significance of the replies to the questionnaire; it has been decided to adopt an alfa (α) of 0.02 and consequently all items with a *p-value* minor or equal to 0.02 have been considered significant (H_1).

■ RESULTS AND DISCUSSION

The questionnaire was submitted on March 2021 through *Google Forms* platform so that the students could easily answer despite distance learning activity.
Received questionnaires and presentation of the sample

The total amount of received questionnaires was 603, the students who gave their assent to the privacy informative report are 596 and have therefore filled in the questionnaire independently and anonymously.

Hereunder are described and discussed the obtained results, starting from the section relative to the personal data of the sample.

From Picture 1 you can see how the answering persons are equally subdivided between female gender (N=261; 43.8%) and male gender (N=320; 53.7%), while the students who declared "*I don't want to reply*" (N=15; 2.5%) being equally distributed among different school classrooms and having answered in line with the general sample, in the subsequent data analysis, when the gender differences are considered, will not be taken into consideration and only the answers coming from the options *"female"* and *"male"* will be evaluated.

As it's possible to deduce from Picture 2, the answering persons are equally subdivided among the classrooms, in particular each classroom is represented by a minimum of 15.6% of students who attend the IV upper class (N=93) and a maximum of 24.8% who attend the V upper class (N=148).

Distributions based on the use of videogames and identification of the corresponding gamer profile
Analysing in a second time the answers of the sample regarding the use of videogames in the last month, it is possible to find out how 157 students do never use them (26.3%), 66 students use them 1-2 times per month (11.1%), 172 students use them from 1 to 4 times per week (28.9%) and finally 201 students play at least once a day (33.7%); the total amount of students who used videogames in the last month was 439 (73.7%) and therefore the following sections have been filled in only by this part of the sample.

Following the analysis of the replies regarding the time of use of videogames during one day (be it scholastic or non-scholastic) it was possible to outline the following four profiles:

- *Occasional player* (uses the videogames maximum for 30 minutes): it is represented by 14.0% of players (N=61) and by 10.2% of the general interviewed sample (N=596);
- *Habitual player – mild* (uses the videogames between 30 minutes and 1 hour): it is represented by 13% of players (N=57) and by 9.6% of the

	profiles	0 %	1 %	2 %	3 %	don't know %	fre-quency	total %	chi-squared test profiles	hypo-tesis
"I think I spend too much time playing" `	A	83.6%	13.1%	3.3%	0.0%	0.0%	61	100.0%	<2.2e-16	H1
	B	57.9%	26.3%	12.3%	0.0%	3.5%	57	100.0%		
	C	28.0%	33.2%	33.6%	3.6%	1.6%	250	100.0%		
	D	9.9%	22.5%	42.3%	22.5%	2.8%	71	100.0%		
	Total	36.7%	27.8%	28.0%	5.7%	1.8%	439	100.0%		
"At the end of game session I need to go on playing and I say to myself «I still play for some minutes» "	A	65.6%	19.7%	13.1%	0.0%	1.6%	61	100.0%	4.67E-05	H1
	B	52.6%	29.8%	14.0%	1.8%	1.8%	57	100.0%		
	C	40.8%	25.6%	24.8%	6.4%	2.4%	250	100.0%		
	D	32.4%	31.0%	11.3%	23.9%	1.4%	71	100.0%		
	Total	44.4%	26.2%	19.6%	7.7%	2.1%	439	100.0%		
"My parents say that I spend too much time playing"	A	77.0%	13.1%	3.3%	3.3%	3.3%	61	100.0%	2.76E-13	H1
	B	66.7%	21.1%	8.8%	3.5%	0.0%	57	100.0%		
	C	36.4%	22.8%	23.2%	17.2%	0.4%	250	100.0%		
	D	19.7%	16.9%	40.8%	21.1%	1.4%	71	100.0%		
	Total	43.3%	20.3%	21.4%	14.1%	0.9%	439	100.0%		
"I can reduce the playing time if I want"	A	14.8%	3.3%	13.1%	67.2%	1.6%	61	100.0%	0.0008559	H1
	B	3.5%	5.3%	19.3%	71.9%	0.0%	57	100.0%		
	C	1.2%	6.8%	22.0%	67.2%	2.8%	250	100.0%		
	D	4.2%	9.9%	21.1%	57.7%	7.0%	71	100.0%		
	Total	3.9%	6.6%	20.3%	66.3%	3.0%	439	100.0%		
"It happens that I prefer playing instead of going out with my friends"	A	83.6%	8.2%	3.3%	1.6%	3.28%	61	100.0%	2.85E-04	H1
	B	80.7%	10.5%	7.0%	1.8%	0.00%	57	100.0%		
	C	60.8%	21.2%	9.2%	6.4%	2.40%	250	100.0%		
	D	39.4%	21.1%	16.9%	19.7%	2.82%	71	100.0%		
	Total	63.1%	18.0%	9.3%	7.3%	2.28%	439	100.0%		
"It happens that I stop relations because of excessive time dedicated to playing"	A	91.8%	6.6%	0.0%	0.0%	1.6%	61	100.0%	0.020	H1
	B	87.7%	8.8%	3.5%	0.0%	0.0%	57	100.0%		
	C	79.6%	13.6%	1.6%	1.6%	3.6%	250	100.0%		
	D	67.6%	15.5%	1.4%	7.0%	8.5%	71	100.0%		
	Total	80.4%	12.3%	1.6%	2.1%	3.6%	439	100.0%		
"My school performance feels the effects of the time spent in gaming"	A	82.0%	11.5%	1.6%	1.6%	3.3%	61	100.0%	1.07E-05	H1
	B	73.7%	19.3%	7.0%	0.0%	0.0%	57	100.0%		
	C	59.6%	18.8%	11.2%	4.8%	5.6%	250	100.0%		
	D	28.2%	35.2%	21.1%	14.1%	1.4%	71	100.0%		
	Total	59.5%	20.5%	10.9%	5.2%	3.9%	439	100.0%		
"I try to hide to my parents/friends the time dedicated to gaming"	A	85.2%	14.8%	0.0%	0.0%	0.0%	61	100.0%	0.0051	H1
	B	77.2%	14.0%	8.8%	0.0%	0.0%	57	100.0%		
	C	66.4%	20.8%	6.4%	3.6%	2.8%	250	100.0%		
	D	59.2%	14.1%	15.5%	5.6%	5.6%	71	100.0%		
	Total	69.2%	18.0%	7.3%	3.0%	2.5%	439	100.0%		
"It happens to feel guilty after having played too much with a videogame"	A	63.9%	9.8%	11.5%	4.9%	9.8%	61	100.0%	0.0034	H1
	B	43.9%	19.3%	26.3%	8.8%	1.8%	57	100.0%		
	C	39.6%	26.0%	16.0%	14.4%	4.0%	250	100.0%		
	D	50.7%	22.5%	14.1%	5.6%	7.0%	71	100.0%		
	Total	45.3%	22.3%	16.4%	10.9%	5.0%	439	100.0%		
"Sometime I give up some hours of sleep to play"	A	70.5%	19.7%	8.2%	0.0%	1.6%	61	100.0%	1.92E-06	H1
	B	59.6%	24.6%	10.5%	5.3%	0.0%	57	100.0%		
	C	47.2%	20.8%	22.0%	8.4%	1.6%	250	100.0%		
	D	22.5%	14.1%	36.6%	23.9%	2.8%	71	100.0%		
	Total	48.1%	20.0%	21.0%	9.3%	1.6%	439	100.0%		

	profiles	0 %	1 %	2 %	3 %	don't know %	total frequency	total %	chi-squared test profiles	chi-squared test hypotesis
"While I'm playing I cry or I'm vexed"	A	50.8%	19.7%	16.4%	13.1%	0.0%	61	100.0%		
	B	29.8%	28.1%	35.1%	7.0%	0.0%	57	100.0%		
	C	17.6%	22.4%	39.2%	20.0%	0.8%	250	100.0%	2.00E-04	H1
	D	14.1%	14.1%	40.8%	31.0%	0.0%	71	100.0%		
	Total	23.2%	21.4%	35.8%	19.1%	0.5%	439	100.0%		
"Generally I feel that playing improves my mood"	A	32.8%	26.2%	26.2%	3.3%	11.5%	61	100.0%		
	B	22.8%	29.8%	43.9%	0.0%	3.5%	57	100.0%		
	C	10.0%	22.4%	44.0%	19.2%	4.4%	250	100.0%	<2.2e-16	H1
	D	0.0%	11.3%	26.8%	54.9%	7.0%	71	100.0%		
	Total	13.2%	22.1%	38.7%	20.3%	5.7%	439	100.0%		
"It happens I schedule the next gaming session"	A	77.0%	13.1%	6.6%	0.0%	3.3%	61	100.0%		
	B	66.7%	17.5%	10.5%	5.3%	0.0%	57	100.0%		
	C	32.4%	17.2%	28.8%	17.2%	4.4%	250	100.0%	4.66E-11	H1
	D	21.1%	7.0%	31.0%	29.6%	11.3%	71	100.0%		
	Total	41.2%	15.0%	23.7%	15.3%	4.8%	439	100.0%		
"It happens I spend time online watching other people playing videogames (Youtube/Twitch)"	A	63.9%	13.1%	16.4%	6.6%	0.0%	61	100.0%		
	B	29.8%	28.1%	22.8%	19.3%	0.0%	57	100.0%		
	C	16.8%	15.2%	27.2%	39.6%	1.2%	250	100.0%	**5.53E-13**	H1
	D	9.9%	5.6%	33.8%	50.7%	0.0%	71	100.0%		
	Total	23.9%	15.0%	26.2%	34.2%	0.7%	439	100.0%		
"While I am playing I feel depressed, sad or moody"	A	82.0%	9.84%	6.56%	1.6%	0.00%	61	100.0%		
	B	78.9%	14.0%	3.51%	0.0%	3.5%	57	100.0%		
	C	68.8%	18.8%	8.80%	2.8%	0.8%	250	100.0%	0.13	H0
	D	62.0%	23.9%	4.23%	5.6%	4.2%	71	100.0%		
	Total	70.8%	17.8%	7.06%	2.7%	1.6%	439	100.0%		
"While I am playing I feel energetic and excited"	A	41.0%	19.7%	31.1%	4.9%	3.3%	61	100.0%		
	B	26.3%	14.0%	49.1%	7.0%	3.5%	57	100.0%		
	C	4.4%	19.6%	52.4%	22.0%	1.6%	250	100.0%	<2.2e-16	H1
	D	1.4%	15.5%	45.1%	33.8%	4.2%	71	100.0%		
	Total	11.8%	18.2%	47.8%	19.6%	2.5%	439	100.0%		
"I feel that life without videogames would be boring and empty"	A	63.9%	26.2%	6.6%	1.6%	1.6%	61	100.0%		
	B	56.1%	31.6%	8.8%	0.0%	3.5%	57	100.0%		
	C	35.2%	32.8%	22.4%	5.2%	4.4%	250	100.0%	4.47E-10	H1
	D	7.0%	43.7%	25.4%	21.1%	2.8%	71	100.0%		
	Total	37.4%	33.5%	18.9%	6.6%	3.6%	439	100.0%		
"Generally I feel that playing worsen my mood"	A	54.1%	14.8%	6.6%	11.5%	13.1%	61	100.0%		
	B	50.9%	26.3%	12.3%	1.8%	8.8%	57	100.0%		
	C	56.8%	28.0%	7.6%	4.4%	3.2%	250	100.0%	0.02666	H0
	D	60.6%	31.0%	4.2%	0.0%	4.2%	71	100.0%		
	Total	56.3%	26.4%	7.5%	4.3%	5.5%	439	100.0%		

Tab.3 – *Sensations and beliefs subdivided per profile with the values of p-value of each statement with respect to video-player profiles*

general interviewed sample (N=596).

- *Habitual player – moderate* (uses the videogames between 1 and 4 hours): it is represented by 57% of players (N=250) and by 41.9% of the general interviewed sample (N=596).
- *Severe player* (uses the videogames between 4 and 6 hours): it is represented by 16% of players (N=71) and by 11.9% of the general interviewed

sample (N=596); 6.4% of this (N=28) uses the videogames for more than 4 hours per day.

Differences of gender of player profiles

If we select again the profiles with gender, we can note how this can vary according to the profile and consequently to the gaming frequency: among *occasional players* 3 students over 4 are females, among

habitual players – mild there is an equal distribution between the genders and then it becomes different again being three fourth males among *habitual players – moderate and severe*.

Analysis of the replies on the basis of beliefs and sensations linked to videogames use

Two sections of the questionnaire were dedicated to sensations and beliefs risen by videogames. The assertions contained in the questionnaire, to which the students answered through a Likert satisfaction scale, were outlined starting from the diagnostic criteria relative to *gaming disorder* (WHO; 2018) and to *Internet gaming disorder* (APA, 2013).

Hereunder is the table that contains all statements with relative significances and the relations existing between these and the player profiles.

It is possible to declare that all statements regarding sensations and beliefs have a statistically significant difference, but two: "*While I am playing I feel depressed, sad or moody*" (chi-squared = 13.79; p-value >0.02) and "*Generally I feel that playing worsen my mood*" (chi-squared= 18.83; p-value >0.02).

Analysing the statements shown on Table 1, the *occasional player* appears as a student who prefers to go out with friends instead of using videogames (83.6%), is able to reduce the time dedicated to gaming if he wants (67.2%), the school performance does not feel the effects of the excessive time spent in gaming (82.0%) and it is not necessary to to hide to parents/friends the time dedicated to gaming (85.2%).

Then we find the *habitual player – mild*, with percentages similar to those of the occasional player; in fact he/she can reduce the time dedicated to gaming if he/she wants (91.2%) and prefer to go out with friends (91.2%); unlike the previous profile, a part of the players give up some sleep hours in order to play (15.8%) and to spend time online watching other people playing (42.1%).

The most important aspects can be found in the profiles of the *habitual player – moderate or severe*: among the first ones little more than one third declares to agree (37.2%) with the statement "*I feel I spend too much time playing*", of these a minor percentage agrees totally (3.6%); some of them give up some sleep hours to play (30.4%), and this behaviour is increasing with respect to previous profiles, moreover almost one third of them feels guilty after having played a lot with videogames (30.4%). As far as time spent online watching other people playing is concerned, such action is performed by two thirds of *habitual players – moderate* (66.8%), in addition the more the hours dedicated to playing increase, the more the presence of the behaviour of playing some more minute at the end of the session increases (31.2%).

As far as *severe player* is concerned, almost two thirds agree on the fact that they spend too much time playing (64.8%) and one third thinks that at the end of the playing session needs to continue such activity (35.2%); with reference to the social network one part of severe players prefers playing than going out with friends (36.6%), sometime also interrupting the relations due to the excessive time spent to play (8.4%). Unlike previous profiles a certain percentage of subjects tries to hide its friends/parents the time spent playing (21.1%) and nonetheless some parents tell off their children for the excessive use of videogames

(61.9%).

Another aspect to take into consideration is the statement "*It happens to feel guilty after having played too much with a videogame*"; analysing the data a first aspect that appears is how among *occasional and severe players* the percentage of players who answered "*totally*" and the percentage who answered "*partially in agreement*" is almost the same (16.4%; 19.7%); this means that, despite an important use of videogames, the *severe players* are not always aware of the gaming problems and this awareness is probably due to a reduced information regarding to *gaming* itself and to the negative consequences that may occur.

■ DISCUSSION ON OBTAINED RESULTS

After having analysed the data it is possible to declare how the male gender is more at risk to develop problems linked to the use of videogames than the female gender; moreover, despite the aspect of gaming time is not included in the diagnostic criteria of *gaming disorder* or *Internet gaming disorder*, and there are no sources in literature that demonstrate how the time used can cause troubles linked to videogames use, observing the data of the present research we can outline that a high number of gaming hours, from 4 to more than 6 hours every day or nearly, produces negative consequences from a personal, social and educational point of view.

The *severe players* therefore show more frequently potential experiences of risk of addiction or trouble: one part of them prefers gaming instead of going out with friends, sometime also interrupting friendship relations; at the end of a gaming session they feel a higher desire to proceed with it and among the selected time bands there is also the night time one in almost half of these students, unlike other player categories in which it represents a residual part only.

Moreover it is interesting to observe how for the *severe players* the gaming moment is a time when their mood improve and the aspect of mood worsening is almost not even taken into consideration; this means that gaming is considered among the activities that produce highest satisfaction and wellness.

Taking into consideration what just said and that the period of COVID-19 emergency determined an increase in the use of videogames (IIDEA, 2021), we can conclude that it is right now that preventive actions and wellness promotion linked to technologies should be taken, for sure addressing to students as "final" addressees, but also interesting parents, teachers and all operators of different sectors who interact with youth for a more aimed, cohesive, methodical and strategic action.

The initiatives can be carried out preferably with a participation of a multi-professional and multiple branches project group, who is oriented in unique targets such as sensitization to the positive use of technology, paying attention to the risks linked to it, sensitization and prevention of detrimental use of *gaming* and the consequent *gaming disorder* and encourage knowledge of psychological health.

And finally we deem that a sensitization to an acquainted use of videogames and of technologies has to be achieved through projects aimed to different age bands starting from primary schools, since electronic tools are now the essential base of modern life.

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▪ NOTES

[1] European School Survey Project on Alcohol and other Drugs (2021). ESPAD #iorestoacasa 2020. The risky behaviours during the first lockdown among students between 15 and 19 year old. Available in: https://www.epid.ifc.cnr.it/wp-content/uploads/2021/01/ESPAD-iorestoacasa-2020_ISBN-22.02.2021-LEGGERO.pdf.

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[2] Statistically representative sample on the basis of sample size (21,000 students), considering a level on confidence of 95% and a margin of error (Confidence interval) of 0.4%.

[3] The research investigated the playing time both in scholastic and non scholastic days, nevertheless when the profiles have been outlined, the replies by excess for every student have been estimated.

[4] Profiles of videoplayers: "A" (occasional player); "B" (habitual player – mild); "C" (habitual player– moderate); "D" (severe player).