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Differential Impact of Protective Psychological Factors on Psychopathology and Satisfaction with Online Teaching in University and Psychotherapy Schools Students During the Covid-19 Pandemic

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Abstract

Background: In 2020 the COVID-19 pandemic has imposed a lockdown in several countries all around the world. In Italy a decret-law on March 9, 2020 lockdown was extended to schools and Universities. This situation caused symptoms such as: anxiety, insomnia, post-traumatic stress disorder and somatization. In these conditions, loneliness likely exacerbated symptoms of depression and anxiety. Furthermore, changes due to online teaching, managing relationship with professor could affect well-being and mood. This research aims to verify how a low level of depression, high self-esteem, internal Locus of Control and high self-efficacy are predictors of well-being and allowing a good management of the critical situation due to the pandemic.

Methods: This study has been carried out during the COVID-19 pandemic and lockdown. The experimental subjects were psychology students and postgraduates in psychotherapy. Tests were administered measuring: personality traits, self-esteem, self-efficacy, perceived social support, depression, internet addiction.

Results: Both experimental groups showed difficulties in socialization and in motivational support and the students showed higher anxiety and depression with respect to postgraduates. Furthermore, a correlation between depression, anxiety and stress was observed. Also, stress proved to be a cross-cutting factor in conditions of anxiety and low mood, while depression and anxiety were correlated. Additionally, high self-efficacy is related to low score of stress, anxiety and depression, such as internal Locus of Control. Last, internet addiction is in relationship with low perceived social support and low capacity of handling the situation.

Conclusions: Internal Locus of Control is crucial to handle anxiety, depression and internet addiction and a high level of self-esteem, self-efficacy and perceived social support are protective factors for anxiety and depression.

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1. Introduction

The COVID-19 pandemic and consequent lockdown had a large effect on human life and psychology. COVID-19 is a highly infectious epidemic (Li et al., 2020; Tang et al., 2020; Wang et al., 2020a); with a virus transmitted by respiratory droplets and close contact (Center of Disease Control and Prevention, 2020). In some situations it can lead to acute respiratory distress syndrome and death (Torales et al., 2020; Wang et al., 2020b).

Due to the high transmittability of virus, most Governments all over the world took up for lockdown on all schools and universities. Thus, most educational institutions stopped face-to-face teaching activities and chose distance learning to prevent from the spread of COVID-19 pandemic.

Italy was strongly affected by this virus. The Italian Government declared a state of emergency on January 31, 2020. A new decree-law on March 9, 2020 introduced new measures such as closure of all schools and universities and Italy became “Red zone”, (Italian Government, Prime Minister’s Office, 2020).

Thus, all people were invited to stay at home in order to maintain social distance and isolation (Catelmi & Lambiase, 2020). These measures were chosen in order to avoid the spreading of the viral transmission (Di Giacomo, 2020; Remuzzi & Remuzzi, 2020; Urban & Urban, 2020; WHO, 2020).

In this condition, the uncertainty and fear of the virus resulted in a negative effect on mental health (Brooks et al., 2020; Casagrande et al., 2020; Li et al., 2020; Mazza et al., 2020; Ozamiz-Etxebarria et al., 2020; Settineri & Merlo, 2020a; Settineri & Merlo, 2020b; Gori et al., 2021; Passavanti et al., 2021; Wang et al., 2021a; Wang et al., 2021b).

Symptoms of anxiety, depression, insomnia, post-traumatic stress disorder, cyberchondria, somatization and fear were described worldwide (Ammar et al., 2020; Chatterjee & Chauhan, 2020; Li et al., 2020; Lum et al., 2020; Mazza et al., 2020; Röhr et al., 2020; Rossi et al., 2020; Shigemura et al., 2020; Somma et al., 2020; Sood, 2020; Torales et al., Vismara et al., 2021). Furthermore, lockdown caused drastic changes in social interactions, habits, diets (Di Giacomo et al., 2020; Scamorzino & Viscioli, 2020) and sleep (Li et al., 2020; Xiao et al., 2020).

The pandemic due to the spread of COVID-19 has led to important changes in everyone’s life: social isolation, transition to smart working, online education, massive use of the Internet, etc. (Afshan & Ahmed, 2020; Baloran, 2020; Cellini et al., 2020; Bashir et al., 2021; Truzoli et al., 2021a; Venuleo et al., 2022).

Such measures may exacerbate mental stress, especially in students (Sadman et al., 2021; Truzoli et al., 2021b; Guidotti et al., 2022). In fact, the COVID-19 pandemic had a severe impact on the psychological health of distress-prone university students, as well as mental health disorders, such as high level of anxiety and depression symptoms (Le Vigouroux et al., 2021). In all likelihood, loneliness exacerbated symptoms of depression and anxiety as well as insomnia and eating disorders. Furthermore, students reported: (a) difficulties in coping with psychological challenges; (b) problems of adaption to academic activities; (c) heavy discomfort; (d) practical and emotional distress due to social isolation (Visser & Law-Van Wyk, 2021). All these issues had a strong, negative impact on well-being and mood.

In this context, the role of protective risk factors such as self-efficacy and internal Locus of Control (LCB) becomes crucial to help people preserve personal well-being in such tremendously demanding environmental conditions. Therefore, a thorough analysis of protective/risk factors, as well as the role of personality factors on satisfaction with online teaching become crucial. In fact, when the situation appeared uncertain and unpredictable, increased depression, anxiety or feel stress did not help to manage environmental demands. Hence, self-efficacy, self-esteem and internal locus of control could be the protective factors for personal well-being.

Self-efficacy refers to the beliefs of the individual about their own skills to “organize and execute courses of actions required to obtain designed types of performance” (Bandura, 1986, p. 391). This trait affecting effort, persistence and resilience (Pintrich & Schumk, 2002), is in relationship with self-control and self-esteem (Tangney et al., 2004). Furthermore, Breland and colleagues (2020) reports that high levels of self-efficacy lead to better accept the measures preventing the spread of pandemic. Self-esteem deals with the beliefs of persons on themselves and on what the other people think of them (Rosenberg, 1965). As for Locus of Control, Rotter (1966) discriminates between internal and external locus of control. In the former case, individuals believe that events in their lives are primarily a result of their own actions; in the latter case, individuals believe that external elements such as fate, destiny, luck etc. lead the events of their lives. Internal locus of control could play a role in managing stress and problems. Also, it is associated with well-being (Drnovšek et al., 2020). Active coping, planning and use of emotional social support could play a role in achieving wellness (Petito et al., 2022).

In order to study the protective factors on psychopathology, as well as teaching satisfaction, a study on self-esteem, self-efficacy, social support, anxiety, depression, locus of control and internet addiction was carried out in two groups: university students (group 1) and post graduates attending psychotherapy schools (group 2). Furthermore, the possible effect on well-being of COVID-19 personal of family exposure to the virus was investigated.

More specifically, this research aims to investigate how a low level of anxiety and depression, a high self-esteem, an internal locus of control, and a high self-efficacy are predictors of well-being allowing a better psychological management of the pandemic. In addition, the level of satisfaction for online teaching was investigated in the two groups.

In this context, the role of protective risk factors such as self-efficacy, self-esteem and internal locus of control becomes crucial to preserve personal well-being.

2. Methods

2.1 Participants

The participants were 41 psychology and medical and surgical students from the University of Milan and the University of Cagliari (mean age=24.68, SD=6.41; 4 males and 37 females) and 41 postgraduates in psychotherapy (mean age=38.28, SD=11.34; 1 male and 40 females). The tests and the informed consent were administered online anonymously. Informed consent was collected.

2.2 Procedure

The Dept. Directors from the Universities of Cagliari and Milan, and from the Psychotherapy Schools advertised the recruitment to this study possibility with an announcement on their websites in the “communications” section.

Participants were informed of their right to withdraw from the study at any time, and were also informed about the steps being taken to ensure their privacy.

The participants signed a document containing information on the aim of the research, data processing and an informed consent for: data processing, participation in the survey, use of data for research purposes. Anonymity was always preserved. Finally, this study is conform to the provisions of the Declaration of Helsinki in 1995 (as revised in Edinburgh 2000).

After a short introduction in which the participants were informed on the content of the questionnaires and the importance of answering each item of the questionnaire and tests, both questionnaire and tests were administered online. The participants could take as long as they wished to complete each questionnaire, but, on average, the entire process typically took about 30 minutes per participant.

2.3 Materials

The online questionnaire was made up of a socio-demographic section, 7 tests and a short questionnaire.

The tests were:

- 1) Rosenberg Self-Esteem Scale (RSES, Rosenberg, 1965). It is a self-administered test investigating the beliefs of persons on themselves and on what the other people think about them. It is a 10-item test with a rating scale 1-4 and score ranging from 10 to 40. Cronbach's alpha value is 0.84. The Italian version of the test (Prezza & Trombaccia, 1997) was used.
- 2) Generalized Self-Efficacy Scale (GSE, Schwarzer & Jerusalem, 1993, 1995). This self-administered test measures the individual beliefs on their own ability to cope either with a new or with a stressing situation. It is made up of 10 items with a rating scale 1-4 and score ranging from 10 to 40. Cronbach's alpha values range from 0.82 to 0.93 (Schwarzer & Jerusalem, 1993). The Italian version of the test (Sibilia et al., 1995) was used.
- 3) Multidimensional Scale of Perceived Social Support (MSPSS, Zimet et al., 1988). It is a 12-item self-administered scale measuring the perceived adequacy of social support from three sources: family, friends and colleagues. Answers ranged from 0 (strongly disagree) to 1 (strongly agree) and the score ranged from 12 to 84. The Italian version of the test was used (Di Fabio & Palazzeschi, 2012) with Cronbach's alpha = 0.91.
- 4) Beck Anxiety Inventory (BAI; Beck et al., 1988). It is a 21-item self-administered test aiming to evaluate symptoms of anxiety. The rating scale is 0-3 and total score ranges from 0 to 63 (Beck et al., 1998). Cronbach's alpha is = 0.92. The suggested clinical cut-off is ≥ 16 . The Italian version of this test (Sica & Ghisi, 2007) was used.
- 5) Locus of Control Behavior (LCB, Craig et al., 1984). It is a 17-item self-administered test measuring the locus of control (internal or external) of the behavior. The rating scale is 0-5 and score ranges from 0 to 85. Higher scores indicate a more external locus of control. Cronbach's alpha is = 0.79. The Italian version of this test (Farma & Cortinovic, 2000) was used.
- 6) Center for Epidemiology Studies-Depression Scale (CES-D; Radloff, 1977). It is a 20-item self-administered test analyzing some dimensions: depression mood, feeling of quiet, feeling of helplessness and despair, loss of appetite and sleep disorder. Cronbach's alpha ranges from 0.85 to 0.90 (Radloff, 1977). Clinical cut-off is ≥ 16 . The Italian version of this test (Balsamo & Saggino, 2007) was used.
- 7) Internet Addiction Test (IAT, Young, 1998). This test was used to check the effects of isolation on habits and use of computer. It is a 20-item self-administered test with rating scale 1-4. Score ranges from 20 to 80.

The short questionnaire was related to the personal involvement with COVID-19 (e.g., whether the subjects or a family member had been infected by the virus or not; whether the subjects had lost a beloved one due to COVID-19 infection or not).

2.4 Data analysis

Continuous variables have been expressed as medians and interquartile ranges, or means and standard deviations, as appropriate. The occurrence of anxiety and depression using the cut-offs >16 was considered. In order to compare continuous variables non-normally distributed, the Kruskal-Wallis was used. To compare categorical variables between groups, the Fisher's Exact Test was used. To evaluate the association between continuous variables non-normally distributed, Spearman correlations were used. Multiple Regressions were used to determine a ranking of predicting variables based on their respective contributions to the overall variance in: "satisfaction for online teaching"; IAT, BAI and CES-D total scores. Two-sided significance level was set at $p \leq 0.05$.

Results

Table 1 reports descriptive statistics for the two groups of students.

Table 1. Mean (M) and standard deviation (SD) of each scale for the two groups

Scales	M (SD)	
	University students	Postgraduates students
RSES	29.44 (5.19)	3.63 (5.75)
LCB	24.88 (10.75)	21.59 (9.33)
GSE	30.05 (4.54)	30.98 (3.65)
MSPSS	63.68 (16.60)	68.93 (12.79)
IAT	40.56 (12.67)	30.68 (7.18)*
BAI	17.49 (12.36)	9.15 (8.47)*
CES-D	23.80 (12.35)	12.41 (9.08)*
Satisfaction	2.34 (0.85)	2.98 (0.65)*

The results show that between the two study groups (university students and postgraduate students) there are significant differences with respect to internet addiction, anxiety and depression. In fact, it was observed that IAT tests, BAI, CES-D, and the satisfaction of online teaching activities are significantly different between groups at $p < 0.05$ (Table 2).

Table 2. Significant p-values of the Kruskal-Wallis test between the two groups

Scale	Kruskal-Wallis
IAT	< 0.0001
BAI	0.002
CES-D	< 0.0001
Satisfaction	0.001

It was observed that university students during the Covid-19 pandemic showed significantly higher scores for anxiety, depression and internet addiction when compared with postgraduate students.

Furthermore, the majority of university students think they have not been directly exposed to the virus, while postgraduates mostly declare they have had an indirect exposure ($p < 0.05$).

None of the test participants were infected by the virus and no significant differences were found even regarding the loss of beloved ones due to Covid-19: in both groups there was the loss of two beloved ones for group, with a ratio of 2 out of 41 participants.

The correlations between the variables were identified through the Spearman rank correlation index R.

For the group of postgraduates, the most significant correlations concern:

- BAI which negatively correlates with MSPSS (-0.349). This means that the perceived social support increases and anxiety decreases, and vice versa. Thus, anxiety increases with the feeling of lacking social support and positively correlates with depression (0.619) since, as anxiety increases, depressive symptoms also increase (Table 3).

- CES-D negatively correlates with both perceived Social Support (MSPSS) and with the awareness of self-efficacy (GSE) (Table 3). Therefore, depression increases with the perception of lacking social support and the reduced awareness of the ability to manage the events. Also, depression positively correlates with anxiety (BAI), (Table 3).

Table 3. Postgraduate students: correlations among the variables

	RSES	LCB	GSE	MSPSS	IAT	BAI	CES-D	Expos	Lost	Relativ	satisf
RSES	1	-0.35*	0.37*	0.19	-0.23	-0.10	-0.27	0.04	-0.26	-0.11	0.12
LCB		1	-0.44**	-0.16	0.51***	0.19	0.27	0.21	0.13	0.04	0.28
GSE			1	0.15	-0.003	-0.04	-0.35*	-0.16	-0.30	0.01	-0.15
MSPSS				1	-0.19	-0.35*	-0.47**	-0.06	0.26	0.41**	0.003
IAT					1	0.21	0.22	0.26	-0.14	0.01	0.16
BAI						1	0.62***	0.13	-0.25	-0.003	0.13
CES-D							1	-0.03	-0.29	-0.21	-0.11
Expos								1	0.01	0.13	0.38*
Lost									1	0.46**	-0.01
Relativ										1	0.08
Satisf											1

Legend:

expos: Have you ever been exposed to COVID-19?

lost: Have you ever lost a beloved one because of COVID-19?

relativ: Has any of your relatives been affected by COVID-19?

satisf: In general, how satisfied are you with the online teaching activity?

*: $p \leq 0.05$; **: $p \leq 0.01$; ***: $p \leq 0.001$

The possibility of being exposed to Covid-19 virus leads trainees to feel safer (i.e., more satisfied) when involved in online teaching. However, they seem to be less susceptible to Internet addiction, as detected by the positive correlation between IAT and LCB (0.51). Hence, students with internal LCB show a lower risk of Internet addiction. Interestingly, they show a good capacity for self-control.

Locus test is negatively correlated to GSE and RSES, but positively correlated to IAT. Moreover, external Locus of Control is in relation to low levels of self-esteem and self-efficacy and to high levels of Internet addiction. RSES is positively correlated to GSE and negatively with LCB. Last, CES-D positively correlates with BAI and negatively with GSE and MSPSS. Thus, high levels of depression are associated with high levels of anxiety, low levels of self-efficacy and low levels of perceived social support.

Concerning the University students, a significant, positive correlation between anxiety (BAI) and depression (CES-D) was observed along with the following results (Table 4):

- BAI positively correlates with IAT, LCB and loss of a beloved one. Thus, anxiety increases as well as depression and internet addiction. Such emotional factors seem to be exacerbated the loss of a beloved one due to COVID-19. Therefore, anxiety appears positively correlated with an external locus of control and negatively correlated with self-efficacy, showing that anxiety increases as a result of low self-esteem and the inability to cope with difficult situations (Table 4).

- CES-D positively correlates with BAI and with LCB, thereby underlining an interconnection between anxiety, depression and external locus of control. Therefore, the lack of full control on life and situations seems to be associated with low self-esteem, low perceived social support and lack of self-efficacy (Table 4).

Table 4. University students: correlations among the variables

	RSES	LCB	GSE	MSPSS	IAT	BAI	CES-D	Expos	Lost	Relativ	Satisf
RSES	1	-0.28	0.44**	0.13	0.32*	-0.08	-0.38*	-0.13	0.09	-0.05	0.21
LCB		1	-0.55***	-0.32*	0.28	0.55***	0.45**	0.08	0.25	0.06	-0.02
GSE			1	0.33*	-0.10	-0.32*	-0.37*	0.09	-0.01	-0.06	-0.002
MSPSS				1	-0.17	-0.26	-0.43**	0.05	0.30	-0.21	0.08
IAT					1	0.31*	0.26	-0.32*	0.09	0.30	-0.25
BAI						1	0.71***	-0.06	0.35*	-0.04	-0.03
CES-D							1	-0.10	-0.07	0.08	-0.38*
Expos								1	0.00	0.02	0.18
Lost									1	-0.05	0.34*
Relativ										1	-0.19
Satisf											1

Legenda:

expos: Have you ever been exposed to COVID-19?

lost: Have you ever lost a beloved one because of COVID-19?

relativ: Has any of your relatives been affected by COVID-19?

satisf: In general, how satisfied are you with the online teaching activity?

*: $p \leq 0.05$; **: $p \leq 0.01$; ***: $p \leq 0.001$

A more external Locus of Control is negatively correlated with GSE and positively correlated with BAI and CES-D. Thus, a more external Locus of Control is in relationship with the lack of self-efficacy and increasing depression and anxiety.

RSES is positively correlated with GSE and negatively with CES-D. Thus, a high self-esteem is correlated with high self-efficacy and low levels of depression. MSPSS is negatively correlated with LCB and CES-D. A high level of social perceived support is in relation with an internal Locus of Control and low levels of anxiety. Last, GSE is positively correlated with RSES, MSPSS and negatively with LCB, BAI and CES-D. This means that high levels of self-efficacy are positively correlated with high levels of perceived social support, low levels of anxiety and low levels of depression.

As for the results of correlations, the following variables: "Internet addiction", "Satisfaction with online teaching", "Anxiety" and "Depression" were included in the ANCOVA and the following variables "Self-esteem", "Locus of Control", "Self-efficacy", "Perceived support", "Being exposed to the virus" and "Having lost a beloved one due to COVID-19" were used as predictors.

Concerning BAI, ANCOVA showed: $F_1 = 20.14$, $p < 0.0001$. Therefore, LCB was retained in the model with $R^2 = 0.34$. This means that 34% of the BAI variability is explained by LCB as predictor. As regards CES, ANCOVA showed: $F_1 = 12.33$, $p < 0.001$. Thus, LCB was retained in the model with $R^2 = 0.24$. Hence, 24% of the CES variability is explained by LCB as predictor.

As for "Satisfaction with online teaching", ANCOVA showed: $F_1 = 5.80$, $p < 0.02$. Only the variable "You have lost a beloved one due to COVID-19" was retained in the model with $R^2 = 0.13$. Therefore, 13% of the "Satisfaction with online teaching" variability is explained by "You have lost a beloved one due to COVID-19" as predictor.

As for psychotherapy trainees, the results of correlations for the following variables: "Internet addiction", "Satisfaction with online teaching", "Anxiety" and "Depression", "Self-efficacy", "Perceived support" and "Having been exposed to the virus" were included in the ANCOVA. For IAT, we obtained: $F_1 = 14.095$, $p < 0.001$; only LCB was retained in the model with $R^2 = 0.27$. Thus, 27% of the variability of IAT is explained by LCB as predictor. For BAI, we obtained: $F_1 = 6.943$, $p < 0.01$; only MSPSS was retained in the model with $R^2 = 0.15$. Hence, 15% of the BAI variability is explained by MSPSS as predictor. For CES, we obtained: $F_1 = 12.341$, $p < 0.001$; only MSPSS was retained in the model with $R^2 = 0.24$. Therefore, 24% of the CES-D variability is explained by MSPSS as predictor. Concerning "Satisfaction with online teaching", we obtained: $F_1 = 2.871$, $p < 0.049$; only the variable "You have lost a beloved one

due to COVID-19" was retained in the model with $R^2 = 0.19$. So, 19% of the variability is explained by "You have lost a beloved one due to COVID-19" as predictor.

For psychotherapy trainees, an external Locus of Control is associated with Internet addiction.

4. Discussion

COVID-19 pandemic and lockdown caused by increased anxiety and depression symptoms (Salari et al., 2020; Casagrande et al., 2020; Passavanti et al., 2021; Rossi et al., 2021; Petito et al., 2022). The pandemic caused pervasive effects in many fields: financial (Duan & Zlaum, 2020); healthcare (Brooks et al., 2020; Lai et al., 2020; Phelan, 2020; Settineri & Merlo, 2020a). These effects are likely to affect the worldwide population for a long time, even once the emergency is over (Koushik, 2020; Lima et al., 2020) with stress and depression symptoms (Passavasunnti et al., 2020).

The current research exhibits how university students showed higher levels of anxiety, depression and internet addiction when compared to postgraduate students, as the former have to cope with stress related to academic requests.

On the other hand, postgraduate students exhibit better physical and mental health conditions and are more satisfied with online teaching activities. University students must handle a more anxious situation because they have to manage with a higher number of lessons, exams and interactions with Professors in online mode. Therefore, they are exposed to more erratic Academic situations (i.e., uncertainties concerning reliability; communications with Administrative and Professors, and so on). Moreover, they have to cope with exams and stronger interactions with their Professors.

Lockdown and pandemic caused feelings of fear due to isolation with a strong negative impact on wellbeing in students (Somma et al., 2020; Tang et al., 2020). Furthermore, it was observed that anxiety and depression are negatively correlated with social support in both groups of students. These findings are in agreement with Plakhotnik et al. (2021), Ranieri et al. (2021) and Skalsky et al. (2021). Therefore, this outcome highlights how the mutual relationships of closeness is crucial to reach physical and psychological well-being (Seppala et al., 2012).

Despite the constraints to stay at home in order to maintain social distance and isolation (Catelmi & Lambiase, 2020) and hinder the spreading of pandemic, the need of social support is vital to avoid negative effects on mental health and fear observed during COVID-19 pandemic (Salari et al., 2020; Shigemura et al., 2020; Gori et al., 2021). Indeed, we observed that anxiety and depression increase when associated with feelings of lacking support and decrease in conditions of social support.

Moreover, external Locus of Control is related to high levels of anxiety, depression and internet addiction risk.

These results confirm that a low level of anxiety and depression are associated with an external Locus of Control. Thus, University students had to cope with highly demanding conditions in their academic activities, resulting in increasing levels of anxiety and depression.

In contrast, internal Locus of Control is related to high level of perceived support and self-efficacy. Indeed, internal Locus of Control could play a role to handle stress and it is very important to achieve psychological well-being (Drnowsek et al., 2020). In addition, active coping and perceived emotional support could play a role in achieving wellness.

Noteworthy, not having the situation under control leads to a greater use of the network. Moreover, anxiety and depression are related to a low perceived support and addiction.

Finally, protective factors can prevent both anxiety and depression symptoms when related to each other (Truzoli et al., 2021a). High levels of self-efficacy and internal Locus of Control are related to low levels of stress, anxiety and depression. Therefore, a high level of self-esteem, self-efficacy, internal Locus of Control and perceived social support are protection factors for anxiety and depression.

5. Conclusions

This research was carried out during COVID-19 lockdown and subsequent social distancing as a way to hinder the spread of COVID-19. Results show that the psychology students faced more difficulties than postgraduates in psychotherapy during the COVID-19 pandemic. The unsatisfactory online teaching as well as the emergency conditions led the former to a higher socio-psychological vulnerability when compared to the latter. Moreover, psychology students showed higher anxiety and depression caused by loss of beloved ones as a consequence of COVID-19. As a whole, both psychology students and postgraduates in psychotherapy showed difficulties in socialization and motivational support during the lockdown, resulting in a tremendous change in the style of life as well as psychological instability, namely in young people during their process of growth as well as their personal and professional development. Students had to face several practical difficulties related to their ordinary university lives: when and how to do exams or meeting Professor and teaching staff when compared to postgraduates. In this context, many researches on epidemiological studies show big rates of depression during the pandemic period (Gualano et al., 2020; Wang et al., 2020b). Furthermore, a negative correlation between depression, anxiety, stress and protective factors was observed. Specifically, stress is a cross-cutting factor in condition of anxiety and depression. Furthermore, depression and anxiety

are correlated (Truzoli et al., 2021). Additionally, high self-efficacy is related to low values of stress, anxiety and depression, such as internal Locus of Control (Zee and Koomen, 2016). Also, Internet addiction is in relation with a low perceived social support and low capacity of managing the situation. Thus, the research underlines the importance of Internal Locus of Control to manage anxiety, depression and Internet addiction. Likewise, a high level of self-esteem, self-efficacy and perceived social support are protective factors for anxiety and depression.

However, this research shows some limitations: since the participants are voluntary, the sample is not random. Thus, the subjects could be more motivated and more positive. Although an online survey could cause biases, this could not affect validity of research given the exploratory nature of this survey. Noteworthy, the sample is small and could show some generalization problems.

Ethical approval

All procedures followed were in accordance with the ethical standards of the responsible committee on human experimentation (institutional and national) and with the Helsinki Declaration of 1975, as revised in 2000.

Informed Consent Statement

Informed consent was obtained from all subjects involved in the study.

Data Availability Statement

Data have been saved and are available to whom they may interest under request.

Conflict of interest statement

The authors declared no conflict of interest in this current study.

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