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Stress, online courses and parenting during COVID19 pandemic

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ABSTRACT

In March 2020, the World Health Organisation declares a pandemic of infection with the novel coronavirus (nCoV) COVID-19 and on 23rd of April the first official report on its evolution and effects emerges. A state of medical emergency and quarantine is imposed in all affected countries. This study proposed a research of what parenting entails and which are the implications of parenting in a crisis context for young people, particularly how perceived parental support and perceived support work on the relationship between stress on one hand, and depression and anxiety on the other hand, especially for those who study online due to context. The proposed sample consists of 104 students aged 18 to 25. Participants self-reported on their attitude towards online school, perceived stress levels, perceived parental and maternal support and anxiety and depression levels. The procedure consists of completing online questionnaires. The statistical procedure used is the mediation analysis. The results show that there is a partial mediation effect of perceived parental support and perceived parental support in the relationship between stress and anxiety, and the attitude towards the online academic races leave to an increase in perceived stress levels. These results could be used for programs to prevent the negative effects associated with online school and the effects of long-term social isolation, as well as for psychological education and parenting programs in emergency situation..

Keywords: *stress, parental support, anxiety, depression, COVID-19, quarantine*

1. INTRODUCTION

The world's population faces a pandemic for the first time in its modern history. However, on a lower scale in some areas, people have experienced epidemics with different types of viruses and have also experienced the imposed quarantine status (Jeong et al., 2016). Quarantine separates vulnerable people exposed to an infectious agent and involves physical isolation and social distancing measures in order to protect the population, to stop the virus spread and tu protect the public health. Studies show significant psychological and emotional effects associated with this context (Hawryluck et al., 2004).

There is a body of studies conducted in Asia during the MERS epidemic. Thus, a study conducted with the aid of patients diagnosed with MERS and isolated individuals, direct contacts of MERS patients, concluded that during isolation, anxiety symptoms were reported in 47.2% of MERS cases and 7.6% of quarantined people. Four to six months after leaving isolation, the symptoms of anxiety persisted in 19.4% of the patients diagnosed with MERS and 3% of the isolated persons. For patients with emotional disorders, the effects of quarantine were maintained four to six months after leaving isolation (Jeong et al., 2016). This suggests that special interventions are not only useful, but also necessary for people exposed to such situations.

However, studies highlighting the effects in young people part of the non-clinical population and aged 18-25 are only a few. There is, however, a body of research published during 2020 after the first wave of the COVID-19, which focuses on the specificity of the context of students, that is, a period of gaining autonomy from the family and refocusing of attention on interactions with peers, friends, colleagues, romantic partners or teachers and mentors and depend on their support in the process of academic training and adjustment to the new roles of young adults.

Their mental health is a growing concern and the situation of the COVID-19 pandemic or its influences on their lifestyle brings this vulnerable population into the spotlight (Son et al., 2020). Thus, a recent study assessing the effects of the COVID-19 pandemic on the mental health of students, show how sensitive the need to understand the effects impacting on their mental health and well-being in general is, especially since returning home does not mean a warm or supportive environment for all of them. The results show that 71% of participants had an increase in stress and anxiety levels. Factors highlighted by this study include fear and concern about their own health and loved ones (91%), concentration difficulties (89%), sleep pattern disruptions (86%), low social interactions due to physical distance (86%) and increased concerns about academic performance (82%). To cope with stress and anxiety, participants sought support from others or helped themselves by adopting negative or positive coping mechanisms. Other studies showed similar factors that contributed to increased perceived levels of stress, anxiety and depression in this context (Rubin et al, 2020).

Studies that bring attention on risk and protection factors have shown that parental support can reduce mental suffering among adolescents and young people (Son et al., 2020). At the same time, the absence of social support is more than harmful to them. Anxiety is one of the most widespread psychological conditions. It is estimated a percent between 25% and 33% of adults suffering from intense anxiety that report avoiding certain social situations in their lives (Krieg, Xu & Cicero, 2016). It is characterized as "a marked and persistent fear" (Scaini, Belotti & Ogliari, 2014, cited in the American Psychiatric Association, 2013). On the other hand, Pugh (2017) considers anxiety to be a cognitive and affective response characterized by apprehension about an imminent and potentially negative outcome that one thinks it is impossible to avoid. Those who experience severe anxiety tend to withdraw from social situations and isolate themselves. The state of fear is accompanied by specific physiological symptoms (Beidel et al., 1985). These symptoms include impaired breathing, hot flushes or chills, palpitations, fainting, trembling, fear of dying and migraines (Scanii, Belotti & Ogliari, 2014). Anxiety has a strong connection to intolerance and uncertainty (Advicel et al., 2017). The present situation is particularly characterised by uncertainty and fear, reported not only to the general situation, but for students in particular as uncertainty has implications into their academic life. To cope with the situation, students engage additional resources, adapt and change the usual way of learning itself and the motivation for learning associated with this context. Access to resources, technology skills and availability for intensive use become important factors that come into play in this process. The whole picture of fear and uncertainty is completed in the bleakest scenario of depression accompanied by suicidal ideation. Social support could be in this context one of the protective factors

Parental support

"Man is a social animal" Aristotle said more than 2,000 years ago. The study of human psychology shows that meaningful relationships play a vital role in human development, and empirical results suggest that people who are more socially integrated and have more supportive relationships, have better mental health, perceive higher levels of wellbeing and have lower morbidity and mortality rates(Cohen, 2004; Cohen & Syme, 1985; Holt-Lunstad & Smith, 2012).

Social support has come to the attention of social sciences recently. Although there is a generous theoretical body, there is currently no conceptual unity to define and explain its mechanisms. Caplan (1976) shows that social

support systems are "continuous social aggregates" that provide people with opportunities for feedback about themselves and validation of their expectations of others. Social support provides us with information and guidance, material resources and emotional aid when needed. Cobb (1976) brings a completely different perspective. He considers that social support consists of information leading the subject to believe that he is cared for and loved, esteemed and appreciated and that he belongs to a social network within which mutual responsibility is communicated and describes three possible types: instrumental through counselling, active "mothering" and material (Cobb, 1979).

Another vision suggests that social support is an interpersonal transaction involving one or more of the following: emotional relationship (sympathy, love, empathy), instrumental support, information, evaluation and information relevant to self-assessment (House, 1981).

Explanatory models for social support refer to social support in the context of a particular stressful event (Cohen & Wills, 1985) and social support as a contributor to personality and social development (Rollins & Thomas, 1979).

Theories that build the framework for perceived social support, present it as a construct belonging to the personality, relatively stable and with individual differences in cognitions on social behavior. At the same time there is a percentage that varies and it is determined by contextual situations and the person's unique response to them, a mixture of person - situation response (Pierce, Saranson, & Saranson, 1996).

The social support deterioration model explains the psychological mechanism by which the impact of potentially traumatic events on mental health is both direct and indirect through disturbances in the social network and the decrease in the perception of the availability of social support (Kaniasty & Norris, 2004; Norris & Waniasty, 1996). Studies show a higher importance of perceived social support than the support received itself, because it is the perception that is more consistent with mental health and it functions as a protective factor in face of adversity (Cassel, 1976; Cobb, 1976; Norris & Kaniasty, 1996).

Thus, in a possible network of social relations, the cornerstone of the development and functioning of the human being is the family. Parents continue to exert an important influence on their children while they live at home, by providing attention, approval, affection, material support (Golu, 2015). At the same time, adjusting or not adjusting parental behaviours to the child's changing needs, especially at the transition age to adulthood, leads to a new relationship dynamic between them, often conflicted (Golu, 2010).

Research in the field of social and family support focuses on describing the elements that generate support on the one hand and their psychological results on the other (Pierce et al., 1996). The parent-child relationship lasts a lifetime and has a changing dynamic that involves mutually influenced social and emotional resources (Steinberg & Lerner, 2004). Conceptual models describing parent-child relationships address the issue of adolescent-oriented or relationship-oriented support. Most models touch on the issues and influences of aspects of the relationship that tend to be stable and less the elements that vary. We aim in this study to explore that what varies. A consistent body of studies shows that the parent child relationship changes at different stages and for different reasons, some due to the context, other related to those involved in the relationship and the time or stage of development of the child (Golu, 2015). This study focuses on the issues of 18-25 year olds, who are at the transition between adolescence and adulthood, as they are in a moment of social reorientation towards friends/entourage/fellows.

Parental support is that dimension of parenting related to the emotional or emotional bond between parent and child (Kuppens & Ceuletans, 2019). Specifically, it shows how parents are involved in their child's life, how the parent shows acceptance, emotional availability and warmth and the parent's responsiveness (Cummings et al., 2000). Parental support is defined by Barnes and colleagues (2000) as those parental behaviours towards the child, such as praise, encouragement and the granting of physical affection, indicating that it is accepted and loved and incorporates constructs such as warmth, care, attachment, acceptance, cohesion and love (Jacob & Leonard, 1994), as well as the provision of emotional and material resources (Dutton, Choi & Choi, 2020). Beyond other sources of social support, parental support is a protective factor against the effects of adverse events and stress-generating contexts (Rueger et al., 2016), which is extremely important, even for young people in the transition to adulthood, when peer and friend support begins to become significantly important (Von Ah et al., 2003).

If parental support represents parent-child interaction, perceived parental support is how the recipient evaluates this interaction, defined as the belief that parental support is available if necessary (Calvete & Connor-Smith, 2006). Cobb (1976) states that major life transitions and crises are vulnerable, but those who have positively interpreted the behaviours of significant people, appreciating that they have been cared for and loved, appreciated and included, have been protected, and this is because this perception facilitates coping and better adaptation of the child. Riegel's Theory of change and development shows that in building the perception of parental support there are periods of stability and periods of change, which involve a constant struggle between conflicting tendencies, balance and stability on the one hand and imbalance and change on the other. This is extremely important in adolescents and young people until they complete the maturation process and

changes occur mainly at the interpersonal and psychological level, and parental support remains the key factor in relation to depressive symptomatology (Tang, 2020). And Wickrama in 1997 shows the need for an assessment of parental support and the relationship with perceived parental support and shows their continuous changes during the bio-psycho-social development of adolescents. Thus, it indicates the existence of a timely instability of these attributes and that the support provided runs in parallel with the perception of support and changes according to it with significant effects on health. Weigel (1998) brings to the attention the changes that occur over a period of seven months in the perception of social support in adolescents under stress and what is different between those who perceive differently and those who remain stable in the perceived level. Sarason, Pierce and Sarason (1994) show that there are global perceptions, the general sense of the person of social support and a relational support that refers to the degree to which specific, meaningful people provide support.

Attitude towards online school

Attitude was originally defined as a mental and neural state of preparation (Allport 1935). In recent studies, attitude is studied as an assessment of something, be it a person, an object, a concept, an event or an action. In Psychology of Attitude, Eagly and Chaiken (1993) define the concept of attitude as a psychological tendency that is expressed by evaluating a particular entity with a certain degree of favor or disadvantage.

Attitude towards online school refers to positive, negative or neutral evaluation of academic courses conducted online using technology in the context of pandemic COVID-19. The theoretical technology acceptance model (TAM) includes attitude in the primary taxonomic group along with affect and motivation (Bower, 2019), which measures with constructs such as attitude towards the use of technology, motivation or perceived satisfaction of the user (Kemp et. al, 2019). The TAM model posits that the ability to use and the accepted need for use determines the intention to use and use the technology effectively (Zhu et al., 2020).

Attitudes toward online courses and stress

Technology has the potential to support education and moreover to improve the learning experience (Bower, 2019). Attitudes towards technology represent an important factor for the way online school experience is perceived. Students are completely affected by the sudden decision to switch from on site, to 100% online courses system. This change comes together with social distance and a complete and sudden change in overall lifestyle, in conditions of uncertainty about the duration of this change. Attitudes towards the online school are built on the need for adjustment, fears about the future and the success of the examination. Female students tend to perceive a higher degree of stress than male persons (Cardoso et al., 2019). A study conducted at Wingate University shows that after three weeks of online schooling, 48.6% of young people perceive the situation more stressful and chronophage (Unger & Meiran, 2020). Attitudes towards online school were mediated by the level of perceived online social interactions. Thus, those with a negative attitude and those who were not sure, showed that they would have preferred face-to-face interaction and that they felt a lower level of the availability of support and feedback in online interactions (Zhu et al., 2020).

Based on the above, we establish the first hypothesis of the present study:

H1. *The negative attitude towards online school is a significant positive predictor of stress.*

Relationship between stress and mental health (depression and anxiety)

Modern research attaches great importance to the relationship between stress and physical and mental health. More and more studies show that perceived levels of stress of the person can affect both physiological health and mental health and general well-being (Lebois et al, 2016; Slavich, 2016).

Young students in the transition between adolescence and adulthood in the subperiod of prolonged adolescence (Arnett, 2004; Golu, 2015), are living a period of change in enery aspect of their lives. They are particularly affected by stress in response to the new responsibilities and unfamiliar situations they face, which include, without being limited to, academic load, new social recipes, new lifestyle (Von Ah et al., 2003). Stress occurs when their coping resources are perceived as being exceeded by the requirements of the situation (Lazarus & Folkman, 1984). Studies show that there is a significant association between stress and depression (Mazzure et al., 2002). Some explain this link from the diathesis-stress perspective in the sense that certain cognitive styles predispose individuals vulnerable to depression when they are experiencing stressors (Schotte et al., 2006). Others propose an indirect model of the influence of stress on depression through mediators (Quittner et al., 1996; Zuo et al., 2020). Stress-related anxiety is present to the same extent in young people, with the main factor highlighted by a study with more than 1000 participants from 150 universities indicating that 54.4% had mild to severe anxiety symptoms (Mon et al., 2018).

Research on how stress is experienced by adolescents and young people show that there are consistent associations between stress and clinical symptomatologies such as depression (Deardorff et al., 2004; Pascoe et al., 2020; Thapar et al., 2012; Von Ah & Kang, 2003; Wichstrøm, 2000) and anxiety (Citivici, 2015; Lu, 1994; Mahmoud et al., 2012).

Based on the above, we establish the second hypothesis of the present study:

H2 *Perceived stress level is a significant predictor of mental health.*

Relationships between stress, perceived parental support and mental health

Literature shows unequivocally the association between the presence of social support and health (Cohen & Wills, 1985). A systematic review and meta-analysis with 1883 studies included, identified fifteen psychosocial risk factors in children and adolescents. They are grouped into three categories: general stressors that include negative life events, poor interpersonal relationships and low level of social support; factors related to the family environment that include poor communication, abuse, dysfunction, poor cohesion, conflict, parental aversion, low level of parental warmth and hyper-involvement; and school-related factors that include academic pressure, bullying, rejection and poor results. Factors in the category of family environment and especially parental warmth have significant effects on mental health. Thus, the study showed that there is a significant relationship between depression and family support and between a reported low level of parental warmth and depression (Tang et al., 2020).

Other research indicates an association of the high level of perceived support with good mental health, but also with general well-being, and some of these conclude that in the absence or at low rates of support, both are affected. Thus, stress, parental support and mental health are interdependent (Bum & Jeon, 2016; Civitci, 2015; Cohen, 2004; Cohen & Willis, 1985); Rueger et al., 2016; Weber, Puskar, & Ren, 2010; Yang et al., 2010; Zhou et al., 2013).

The mechanisms that explain how the perceived support works and its effectiveness are mainly described by three models. The most often studied are the theoretical model of the main effects (Main Effect Model) and the model of buffering effects (Stress Buffering Hypothesis). These models examine whether social support works as a constant effect or only when the recipient is under stress (Cohen, 2004) and confirms a moderating role for perceived parental support in the relationship between stress on the one hand and depression and anxiety on the other. There was, however, a third model, described by Quittner (1990), of indirect effects or a model of mediation. This model shows how social support functions as a mediating variable when it intervenes between the stress factor and its results (Quittner et al., 1990). This model is underexplored (Tang, 2019).

Five dimensions of support that mediate or moderate the relationship between stressors and effects on mental health are highlighted: direction (offered or received), availability (available or adopted), evaluation, content (emotional, instrumental, informational or evaluation support) and the support network, which may consist of family, friends, teachers or other significant persons (Tardy, 1985).

Perceived parental support may have effects on mental health by stimulating beliefs such as acceptance, personal value, the belief that others can and will support and connect or lack of feeling of loneliness thatare negatively associated with depression. Mother's role has the greatest effect on depression compared to other sources of support, father or teachers and even colleagues and friends (Colarossi & Eccles, 2003). Also, the protective effect of maternal support in reducing depressive symptoms is stronger for girls than for boys (Ruetger et al., 2013). It is suggested that attributions and perceptions may result from factors such as adolescent mood or mood. For example, adolescents' perception of parental support may depend more on the adolescent's general feelings towards the relationship with the parent than on their actual behaviour (Wickrama, Lorenz, & Conger, 1997). The literature indicates factors such as the specific characteristics of the medium assessor, the characteristics of the supporter and the characteristics of the relationship between them (Lakey et al., 1996). Furthermore, other researchers point out that there are factors associated with the broader social and cultural context of support interactions that may affect the assessment of the perceived level of support (Badr et al., 2001). What is common to them is that they consider the perceived support as a result of specific events (Haber et al., 2007; Procidano & Smith, 1997).

Thus, it is necessary to explain how the same supportive behaviours are observable, are perceived, what influences their perception and with what consequences.

Based on the above, we establish the last two hypotheses of this study:

H3 *Perceived parental support mediates the relationship between stress and mental health.*

H4a *Perceived maternal warmth mediates the relationship between stress and depression.*

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2. METHODOLOGY

Participants and procedure

The present study involved 104 students between the ages of 18 and 25, M = 21.14, SD = 1.81. Of these, 20 are male (19.42%), and 84 are female (80.58%), 54 have middle-educated parents (51.92%), 50 have parents with higher education (48.08%), nine students say they have income below 2000 RON per family (8.65%), and 95 say

they have income per family above 2000 RON (91.35%). A total of 23 students report their parents work from home (22.11%), and 81 report their parents work at the premises (77.89%), 42 reported no siblings (40.38%), and 62 reported brothers or sisters (59.62%), 13 use the common space (12.50%), and 91 say they are studying in their own rooms (87.50%).

This study has a cross-sectional, descriptive, correlational design.

Participants were asked for informed consent prior to the administration of the instruments according to GPDR policy. The tools consisted of four questionnaires that were administered online through Google forms. The average completion time is fifteen minutes. Participants were asked for demographic data (gender, age, background, siblings, family income, type of work present by parents, home or premises, access to technology and ergonomics. The perception of parental support and the perception of maternal support, depression and anxiety, stress and attitude towards online school were measured.

Instruments

Stress, anxiety and depression were measured with the Scale for Depression, Anxiety and Stress (DASS-21R), the Romanian version. The DASS-21R questionnaire has 21 items, divided equally into 3 scales – Anxiety, Depression, Stress and evaluates states in relation to experiences and situations outside the test context (Cognitrom, 2021). The answers were measured on Likert scale from 0 to 3 where 0 = did not suit me, 1 = suited me to some extent or from time to time, 2 = suited me quite a lot or quite often and 3 = suited me very much or almost all the time (Lovibond & Lovibond, 1995).

Perceived Parental Support was measured with the Perceived Parental Support Questionnaire for Youth (PPS) (Kristjansson et al., 2011). The scale has five items: care and warmth, discussions about personal interests, advice about studies, advice on other issues (projects) and support for other things. Responses were measured summarily on the Likert scale 1 – 4, where 1 = very difficult, 2 = quite difficult, 3 = quite easy and 4 = very easy (Kristjansson et al., 2011).

The Perceived Maternal Support was measured with the Perceived Maternal Support Questionnaire for Students (POPS), which assesses adolescent perceptions of the support provided by the mother in terms of warmth, involvement and support for autonomy. The questionnaire has seven items for each construct, evaluated on Likert scale where 1 is never true and 5 is very true. Items are formulated as statements such as "My mother clearly shows her love for me" or "My mother allows me to make my own decisions" (Robins, 1994).

Attitude towards online school was measured with a single item with three different responses (I like/don't like it/ regardless). Participants were asked what their attitude to online school was.

3. RESULTS

Descriptive statistics

This study has a cross-sectional, descriptive, correlational design. The IBM SPSS.24 statistical analysis program (IBM Corp., 2013) and Jamovi's medmod module (The jamovi project, 2021) were used to organize the data and test the hypotheses.

Table 1. *Descriptive statistics*

	M.	ace	α	Str.	Sp.	Am	Im	Cm	Anx	Dep
Str.	10.69	5.59	.92	1						
Sp.	15.09	4.45	.92	-.38**	1					
Am	46.01	12.93	.93	-.29**	.63**	1				
Im	31.63	8.81	.88	-.35**	.64**	.77**	1			
Cm	33.99	7.74	.89	-.34**	.63**	.88**	.89**	1		
Anx	6.97	5.16	.89	.65**	-.35**	-.34**	-.37**	-.42**	1	
Dep	7.02	5.82	.91	.65**	-.50**	-.47**	-.48**	-.48**	.68**	1

**. $p < .01$

Str – Stress, Sp – Parental Support, Am – Maternal Support through Autonomy, – Im – Maternal Support Through Involvement, Cm – Maternal Support Through Warmth, Anx – Anxiety, Dep – Depression

Hypotheses testing

H1 *Negative attitude towards online school is a significant positive predictor of stress.*

To test this hypothesis, a simple linear regression analysis was carried out, predicting the attitude towards the online school and as a stress-dependent variable.

Table 2. *Simple linear regression analysis for attitude towards online school as a predictor of stress*

	R^2	B	SE	Beta	t	p
Attitude towards online school	.15	-2.48	.58	-.39	-4.29	.00

It is noted that the attitude towards the online school is responsible for 15% of the variation of stress, the regression equation is significant, $F(1,102) = 18.40$, $p < .01$. Negative attitude towards online school is associated with stress levels, $β = -.39$, $p < .01$.

In view of this result, we can say that the H1 hypothesis is supported by the data analysed, in the sense that a negative attitude towards the online school is significantly associated with a higher level of stress.

H2 *Perceived stress level is a significant predictor of mental health.*
H2a *Perceived stress levels are a significant positive predictor of depression.*
H2b *Perceived stress level is a significant positive predictor of anxiety.*

In order to test these hypotheses, two simple linear regression analyses were performed as predictors of perceived stress and as dependent variables, alternatively, depression, anxiety and satisfaction with life.

Table 3. *Simple linear regression analysis for stress as predictor for depression*

	R^2	B	SE	Beta	t	p
Stress	.42	.68	.08	.65	8.65	.00

It is noted that stress is responsible for 42% of the variation in depression, the regression equation being significant,

$F(1,102) = 74.78$, $p < .01$. Stress is positively associated with depression levels, $β = .65$, $p < .01$.

Table 4. *Simple linear regression analysis for stress as predictor for depression*

	R^2	B	SE	Beta	t	p
Stress	.43	.61	.07	.65	8.73	.00

It is noted that stress is responsible for 43% of the variation in anxiety, the regression equation being significant, $F(1,102) = 76.38$, $p < .01$. Stress is positively associated with anxiety levels, $β = .65$, $p < .01$.

In view of this result, we can state that the H2 hypothesis is supported by the data analysed.

H3 *Perceived parental support mediates the relationship between stress and mental health.*

H3a *Perceived parental support mediates the relationship between stress and depression.*
H3b *Perceived parental support mediates the relationship between stress and anxiety.*

In order to test this hypotheses, two mediation analysis were performed using stress as a predictor, depression and anxiety (alternatively) as dependent variables, and perceived parental support as mediator.

Table 5. *Mediation estimates for parental support in the relationship between stress and depression*

Effect	Label	Estimate	SE	95% CI Lower	95% CI Upper	Z	p	% Mediation
indirect	a × b	.12	.04	.04	.11	2.88	.00	17.4
direct	c	.56	.08	.41	.71	7.16	< .01	82.6
total	c + a × b	.68	.08	.53	.83	8.73	< .01	100.0

Table 6. *Path estimates for parental support in the relationship between stress and depression*

			Label	Estimate	SE	95% CI Lower	95% CI Upper	Z	p
Stress	→	Pps	A.	-.30	.07	-.44	-.16	-4.18	< .01
Parental support	→	Dep	b	-.39	.10	-.58	-.20	-3.97	< .01
Stress	→	Dep	C.	.56	.08	.40	.71	7.16	< .01

It is observed that perceived parental support mediates the relationship between stress and depression, the mediation percent being 17.4%, β = .12, CI95%(.04,.11), Z = 2.88, p < .01. Stress is significantly negatively associated with perceived parental support, β = -.30, CI95%(-.44,-.16), Z = -4.18, p < .01, and perceived parental support is significantly associated with depression, β = -.39 CI95%(-.58,-.20), Z = -3.97, p < .01. So, the hypothesis H3a is supported by data.

Table 7. *Mediation estimates for parental support in the relationship between stress and anxiety*

Effect	Label	Estimate	SE	95% CI Lower	95% CI Upper	Z	p	% Mediation
indirect	a × b	.04	.03	-.02	.10	1.46	.14	7.18
direct	C.	.57	.07	.42	.70	7.67	< .01	92.82
total	c + a × b	.60	.07	.47	.74	8.82	< .01	100.00

It is noted that perceived parental support fails to mediate the relationship between stress and anxiety, for which the H3b hypothesis is not supported by data.

H4 *Perceived maternal support mediates the relationship between stress and mental health.*

In order to test this hypothesis, a series of mediation analysis were performed with stress as a predictor, depression as dependent variable, and maternal support through warmth, maternal support through involvement, and maternal support for autonomy (alternatively) as mediators.

Table 8. *Mediation estimates for maternal support through warmth in the relationship between stress and depression*

Effect	Label	Estimate	SE	95% CI Lower	95% CI Upper	Z	p	% Mediation
indirect	a × b	.10	.04	.03	.18	2.67	.01	15.0
direct	c	.58	.08	.43	.73	7.54	< .01	85.0
total	c + a × b	.68	.08	.53	.83	8.73	< .01	100.0

Table 9. *Path estimates for maternal support through warmth in the relationship between stress and depression*

			Label	Estimate	SE	95% CI Lower	95% CI Upper	Z	p
Stress	→	Warmth	a	-.46	.13	-.71	-.20	-3.55	< .01
Warmth	→	Depression	b	-.22	.06	-.33	-.12	-4.06	< .01
Stress	→	Depression	c	.58	.08	.43	.73	7.54	< .01

It is observed that maternal support through warmth mediates the relationship between stress and depression, the mediation procent being 15%, β = .10, CI95%(.03,.18), Z = 2.67, p < .01. Stress is significantly and negatively associated with maternal warmth support, β = -.46, CI95%(-.71,-.20), Z = -3.55, p < .01, and maternal warmth support is significantly and negatively associated with depression, β = -.22 CI95%(-.06,-.33), Z = -4.06, p < .01.

Table 10. *Mediation estimates for maternal support through warmth in the relationship between stress and anxiety*

Effect	Label	Estimate	SE	95% CI Lower	95% CI Upper	Z	p	% Mediation
indirect	a × b	.07	.03	.01	.13	2.31	.02	11.5
direct	c	.53	.07	.39	.68	7.70	< .01	88.5
total	c + a × b	.60	.07	.47	.73	8.82	< .01	100.0

Table 11. *Path estimates for maternal support through warmth in the relationship between stress and anxiety*

			Label	Estimate	SE	95% CI Lower	95% CI Upper	Z	p
Stress	→	Warmth	a	-.46	.13	-.70	-.20	-3.55	< .01
Warmth	→	Anxiety	b	-.15	.05	-.25	-.05	-3.04	.00
Stress	→	Anxiety	c	.53	.07	.34	.67	7.70	< .01

It is observed maternal support through warmth mediates the relationship between stress and anxiety, the mediation procent being 11.5%, β = .07, CI95%(.01,.13), Z = 2.31, p < .01. Stress is significantly and negatively associated with maternal support through warmth, β = -.46, CI95%(-.70,-.20), Z = -46, p < .01, and maternal support through warmth is significantly and negatively associated with anxiety, β = -.15 CI95%(-.05,-.25), Z = -3.04, p < .01.

Table 12. *Mediation estimates for maternal support through involvement in the relationship between stress and depression*

Effect	Label	Estimate	ES	95% CI Lower	95% CI Upper	Z	p	% Mediation
indirect	a × b	.10	.04	.03	.18	2.69	.01	15.2
direct	c	.58	.08	.42	.73	7.46	< .01	84.8
total	c + a × b	.68	.08	.53	.83	8.73	< .01	100.0

Table 13. *Path estimates for maternal support through involvement in the relationship between stress and depression*

			Label	Estimate	SE	95% CI		Z	p
						Lower	Upper		
Stress	→	Involvement	a	-.54	.15	-.82	-.25	-3.70	< .01
Involvement	→	Depression	b	-.19	.05	-.29	-.09	-3.91	< .01
Stress	→	Depression	c	.58	.08	.42	.73	7.46	< .01

It is noted that maternal support through involvement mediates the relationship between stress and depression, the mediation procent being 15.2%, β = .10, CI95%(.04,.18), Z = 2.69, p < .01. Stress is significantly and negatively associated with maternal support through involvement, β = -.54, CI95%(-.82,-.25), Z = -3.70, p < .01, and maternal support through involvement is significantly and negatively associated with depression, β = -.19 CI95%(-.05,-.29), Z = -3.91, p < .01.

Table 14. *Mediation estimates for maternal support through involvement in the relationship between stress and anxiety*

Effect	Label	Estimate	SE	95% CI		Z	p	% Mediation
				Lower	Upper			
indirect	a × b	.05	.03	-.004	.10	1.81	.07	8.39
direct	C.	.55	.07	.41	.69	7.76	< .01	91.61
total	c + a × b	.60	.07	.47	.73	8.82	< .01	100.00

It is noted that maternal support through involvement fails to mediate the relationship between stress and anxiety.

Table 15. *Mediation estimates for maternal support for autonomy in the relationship between stress and depression*

Effect	Label	Estimate	SE	95% CI		Z	p	% Mediation
				Lower	Upper			
indirect	a × b	.09	.04	.02	.17	2.51	.01	13.8
direct	c	.59	.07	.44	.73	7.83	< .01	86.2
total	c + a × b	.68	.08	.53	.83	8.73	< .01	100.0

Table 16. *Path estimates for maternal support for autonomy in the relationship between stress and depression*

			Label	Estimate	SE	95% CI		Z	p
						Lower	Upper		
Stress	→	Autonomy	a	-.67	.22	-1.09	-.24	-3.08	.00
Autonomy	→	Depression	b	-.14	.03	-.20	-.08	-4.35	< .01
Stress	→	Depression	c	.59	.07	.44	.73	7.83	< .01

It is noted that maternal support for autonomy mediates the relationship between stress and depression, the percentage of mediation being 13.8%, β = .09, CI95%(.02,.17), Z = 2.51, p < .01. Stress is significantly and negatively associated with

maternal support for autonomy, β = -.67, CI95%(-1.09,-.24), Z = -3.08, p < .01, and maternal support for autonomy is significantly and negatively associated with depression, β = -.14 CI95%(-.20,-.08), Z = -4.35, p < .01.

Table 17. *Mediation estimates for maternal support for autonomy in the relationship between stress and anxiety*

Effect	Label	Estimate	SE	95% CI Lower	95% CI Upper	Z	p	% Mediation
indirect	a × b	.04	.02	-.01	.09	1.76	.08	7.17
direct	c	.56	.07	.42	.69	8.01	< .01	92.83
total	c + a × b	.60	.07	.47	.74	8.82	< .01	100.00

It is noted that maternal support for autonomy fails to mediate the relationship between stress and anxiety.

4. DISCUSSION

The results of this study come from a non-clinical sample of young student, people who are currently learning online from home in the context of the COVID-19 pandemic. Their responses have been provided in relation to this experience, which has been going on since March 2020, and the impact of these events has been reported in line with the emotions and thoughts about this situation.

A percent of 41.7% of the students reported they did not like online school, 35% liked it and 23.3% reportend they were indifferent. Sores obtained by participants assessed with DASS21-R Stress Scale were at a under-average level, which may be an indicator that a large number of young people did not perceive the experience of online courses as a stressor, and the anxiety and depression reported by participants were also at a low level, very little above scores for depression versus anxiety.

Parental support and maternal support were important for the participants in this study, the results were above average in parental support and very high in maternal support for autonomy, through involvement and warmth. Highest results were reported for the support for autonomy, followed by maternal warmth and involvement.

Following the negative experience with online school those with a low perception of parental support and in particular maternal support, reported higher levels for anxiety and depression.

The hypothesis H1 showed that in the context of physical isolation and the return home, the negative attitude towards online school has effects on the levels of perceived levels of stress relative to this situation. Thus, there is an increase in the perception of stress levels when the individual has a negative attitude towards the online school, the negative attitude representing in this relationship 15% of the stress variance. As Zhu and colleagues (2020) have also pointed out, social isolation, lack of face-to-face interaction, lack of feedback, internet access dificulties and dificulties related to other resources can be factors that determine attitudes towards online study.

The fact that negative attitudes increase the level of perceived stress is also consistent with numerous recent studies, which have shown the existence of relationships of determination between acceptance or non-acceptance of technology and online school and stress level. In this regard, Aguilera-Hermida (2020) showed that students found the online study difficult, that they had problems concentrating in the home space, were less motivated, lacked social support and experienced negative emotions and stress. Another study that researched online learning and the challenges of sudden adaptation to pandemic context restrictions showed that changes in routine, uncertainty and ambiguity due to conditions of virtual classes led to negative emotions, stress and affective disorders (Besser, Flett, & Zeigler-Hill, 2020).

Our results are also consistent with the theoretical TAM (Technology-Mediated Learning Theory) model for attitudes towards the online school that posits that the acceptance and usage skills determine the intention to use and effectively use technology in learning and its outcomes related to these attitudes (Bower, 2020).

Hypothesis H2 has shown that, under conditions of social isolation and adjustment to online courses, young students with negative attitudes towards online courses experience a moderately increased level of stress, and this has caused increases in depression and anxiety, with

perceived stress explaining between 42% and 43% of the variation of depression and anxiety respectively.

A large number of studies have already shown that stress affects mental health (Kendler et al., 1999; Mazure, 1998; Riarh et al., 2009). Our results are congruent with research indicating that an increased level of stress is significantly positively associated with clinical symptoms of depression (Deardorff et al, 2004; Pascoe et al, 2020; Shapero et al., 2014; Thapar et al., 2012; Von Ah & Kang, 2003; Wichstrøm, 2000; Young and Dietrich, 2015) and anxiety (Citivici, 2015; Lu, 1994; Mahmoud et al., 2012).

In the context of the COVID-19 pandemic, a poll in Hong Kong, pending a decision on the conduct of the courses, showed that the stress was already at a level of 10/10 to 20% of students, in the face of uncertainty about how to continue the academic year. Distance measures also resulted in social isolation for some young people, returning to sometimes abusive parental homes and thus generating new stressors (Lee, 2020).

In a review of the literature on the impact of quarantine, Brooks and colleagues (2019) described a series of symptoms that show distress before, during and after leaving quarantine, in a broad category of the population including 16-24 year olds. Among the most commonly reported symptoms with this age group were reported stress, depression, irritability, insomnia, anger or mental exhaustion. The most affected of them developed symptoms of post-traumatic stress disorder that further generated clinical levels of depressive symptomatology (Brooks et al., 2019).

Other studies conducted during and after quarantine confirm that stress is the predictor of anxiety and depression reported in this context. Exposure to stressors generated by "infodemia" or the abundance of negative news and fake news in relation to the pandemic, positively correlated with high levels of anxiety and depression (Gao et al., 2020). Not only in students, but also in teachers and parents, pandemic stress influenced levels of depression and anxiety. Thus, Wu and colleagues (2020) show that for parents, the level of perceived stress was also influenced by factors such as marital conflict, parenting style, social support, mental health or children's level of schooling, and reported levels were positively associated with anxiety and depression, although in student parents a lower level of symptomatology intensity was observed compared to parents with primary or secondary school children.

The results of this study showed that increased levels of perceived stress were positively associated with increased levels of depression and anxiety. Thus, the perceived stress level explains much of the variance of depression and anxiety, indicating that it is strongly associated positively. These results are also consistent with other studies that investigate the impact of stress on mental health in the young student population. Schneiderman, Ironson and Siegel (2004) show that stressful life events generate depressive symptomatology, often preceded by anxiety. Associated with the profound changes in interpersonal relationships faced by university students, including family separation and the beginning of new friendships or romantic relationships, along with other factors such as academic requirements or financial difficulties for young people from all cultures, and up to a third of them report depression and anxiety (Calvete& Smith, 2006). Last but not least, our results, which report an increased level of stress perception, are in congruence with a study conducted in Bangladesh that assessed the effects of the COVID-19 pandemic on students' mental health and listed among the stressors uncertainties related to academic progress in the online school context, uncertainties related to information, food resources, fear of infection and exposure to social media. In this case, some respondents reported low to severe levels of stress, and nearly half reported symptoms of mild to severe depression, and another reported anxiety (Khan et al., 2020).

Our results are in agreement with Theory of Stress and Coping, which posits that stress is a dynamic process within which the individual's subjective perception of the stressful experience shapes his or her response to stress, and the ability to cope depends on how the individual perceives that he or she has sufficient resources to deal with the situation or eliminate it, as the case may be (Lazarus & Folkman, 1984).

The H3 hypothesis has shown that a low level of perceived parental support mediates the relationship between stress and depression, but has no effect on anxiety.

There is a generous body of studies that show that parental support has a moderating effect in the relationship between stress and aboutsie and stress and anxiety, most based on buffering and main-effect models (Cohen, 2004; Cohen & Willis, 1985; Puskar, 2010; Yang et al., 2010; Zhou et al., 2013). Furthermore, a meta-analysisby Rueger and colleagues (2016) shows that an increased level of perceived parental support has beneficial effects on self-esteem, academic results and well-being in general.

On the other hand, the mediation effect of perceived parental support is less present in studies. However, this study, like others, shows that this effect exists and is significant, particularly in the relationship between objective situations generating stress and depression, and in most cases at a low level of support perceived as a coping resource (Haber et al., 2007; Quittner, Gluecceauf, & Jackson, 1990; Wiegel et al., 1998), and a high level mediates the relationship between mindfulness and positive or negative states (Swickert et al., 2018).

Meta-analysis by Haber and colleagues (2007) compares the received support, measured with observable behaviors of parents, with the perception of support. They show that only the perception of support is significantly

related to health, and this perception is based on impressions of the person being evaluated, and these are influenced by other processes and situations, such as perceptual, judgmental differences, the memory of other supportive events, and the different contexts in which support appears necessary (Saranson, Saranson, & Pierce, 1995). Their conclusions are that there are research results that argue that the perception of the support could bealtered by manipulating the support received, which would allow interventions to alter this assessment and consequently the state of health.

Thus, this study showed that there are changes in the perception of parental support explained by stress. Our hypothesis is partially confirmed, with stress having indirect effects, through mediation of parental support, on depression, but not on anxiety. A longitudinal study shows similar results. Over the course of seven months, the findings show that in adolescents, low levels of perceived stress correlated with a high perception of parental support from both the mother and the father, but also that there is a transient state of perception of the caregivers. More than half of young people showed a stability in the perception of support, even in variations in perceived stress levels, and this could be due to a non-conflicting and more controlled family environment. They reported lower levels of stress compared to those who reported changes in perceived support (Wiegel et al., 1998). All the results, including those of this research, show that stress is key and its effects are important when young people report a low level of perceived support.

Under the COVID-19 pandemic, empirical data show that there is stress associated with negative attitudetowardss towards online school and that its effects on depression are mediated by parental support. Ye and colleagues (2020) show on a sample of students that perceived social support has a mediation effect alongside resilience and coping, between the psychological stress associated with quarantine, uncertainty or exposure to news on the one hand, and depression and anxiety on the other.

Our results are also congruent with the mediation model or indirect effects of the perceived medium (Quittner et al., 1990; Yu et al., 2020), but also withThe social support deterioration model,which posits that the psychological mechanism by which the impact ofpotentially traumatic events on mental health is both direct and indirect, through disturbances in the social network and the decrease in the perception of the availability of social support (Kaniasty & Norris, 2004; Norris & Waniasty, 1996).

The hypothesis H4 has shown that maternal support through warmth mediates the relationship between stress and depression and between stress and anxiety, that maternal support through involvement mediates the relationship between stress and depression, but has no effects for anxiety and that maternal support through autonomy mediates the relationship between stress and depression, but not the relationship between stress and anxiety.

The results of this study are consistent with other studies, which highlight social support with the contributions of each parent (Cohen, 2004; Cohen & Willis, 1985; Puskar, 2010; Rueger et al., 2016; Yang et al., 2010; Zhou et al., 2013) and showing that an increased level of warmth, involvement and support for autonomy have beneficial effects on self-esteem, academic results and well-being, generally by minimizing or removing the effect of stressors.

As theoretical models show, maternal warmth remains an important protective factor during the transition to adulthood (Arnett, 2000). Our results are congruent with these studies, showing that maternal warmth is the only one that mediates the effects of stress for both depression and anxiety. Empirical data from meta-analyses show significant associations between the perceived level of maternal support and mental health, even if at this age, support from peers, friends or colleagues becomes important (Rueger et al., 2016).

Continuity and major changes in the parent-child relationship coexist permanently (Arnett, 2000). Maternal warmth provides the right environment for the development of positive outcomes that will support adjustment to difficult events later in individual development. Support for autonomy is also important for parents and young people (Collins & Lauresen, 2004). There are studies that indicate that female persons are more sensitive to parental warmth and support (Bosco et al., 2003) than male persons, without discriminating between the source parent, and some of these highlight the role of warmth and involvement, further from mental health, in the sphere of sexuality and self-esteem (Whitbeck, Conger, & Kao , 1993).

Tang and colleagues (2014) show the role of the mother in the development of the child at the level of the neuroendocrine system, with effects in behavior from the infant stage to animals, with generalized patterns in human relationships. Maternal warmth has a complex mediation role between the environment and the state of health and more, maternal warmth has protective effect against disease (Chen et al., 2011).

Even though literature remains poor in differentiating between parental contributions, there are recent studies that support significant effects on the part of maternal support. Mother's warmth has a more significant effect on the symptoms of depression of the child both simultaneously and longitudinally compared to paternal support. However, the mothers warmth predicts longitudinally the symptoms of child depression, when maternal warmth is maintained for more than a year, and the mediating effects are significant. Paternal warmth needs two years longer to deliver the same effects. Thus, maternal contribution to the reduction of depressive symptomatology is more significant than that of

the father and moreover, the absence of maternal warmth is the most important predictor for depression (DelBarrio et al., 2016).

Conclusions

The pandemic context is *per se* a global stressor. The implications of the pandemic transcend all boundaries, from the individual level, to families, communities, whole societies. Humanity has changed its routines from cleaning, to ways of networking, working, up to obtaining resources and meeting the needs of medical care. At some point this last year, everything except the medical system stopped.

In this context, young people aged 18-25 years, students, newly entered into autonomous functioning mode, still semi-dependent on families on which they rely for support during their studies, suddenly found themselves in need to return home. Distance measures mean for some of them social isolation from colleagues, friends, partners, teachers. Student dormitories are evacuated, courses suspended until transition to the online system.

As we have previously pointed out, Brooks and colleagues (2019) list in a quick review the psychological impact of quarantine, from irritability, insomnia, depression, anxiety, or avoidance behaviors, to post traumatic stress disorder, associated with risk factors from uncertainty about the duration of the situation, fear of illness, inadequate information and resources, frustration or boredom, and students returning to families experience including financial fears and parental losses related to job stability (Cao et al. , 2020; Wu et al., 2020).

Moreover, the education system switched ad hoc to online. At home, however, students share technology resources and spaces with their siblings and/or parents who no longer go to work and they face challenges not only technical, but also pedagogical, with teachers in turn having the same problems (Ali, 2020). Both young people and those responsible for their education are initially limited by their attitudes towards school in the online system, negative attitudes having impacts at psychological level and at the level of results (Aguilera Hermida, 2020; Besser et al., 2020; Unger & Meiran, 2020; Zhu et al., 2020).

All these factors, together and separately and influences of personality structure and personal context, contribute to changes in mental health with symptoms of depression and anxiety and more seriously with suicidal ideation in extreme cases (Gao et al., 2020; Hou et al., 2020; Khan et al., 2020; Pascoe et al., 2020; Warthelet et al., 2020; Zhang et al., 2020).

In all this worrying picture of a situation defined by both novelty and unpredictability and a transcesion of its implications across borders of any kind, with immediate need for adjustment and adaptation, there is, paradoxically, a need for social support and cooperation in order to have the chance to return to a new normal.

For these young people to whom the present study refers, parental support becomes a protective factor when it is perceived at a good enough level and it becomes a risk factor when the perception of parental availability is reported at low levels. The conclusions of this study are consistent with other studies carried out in the same context, with population samples of the same category. Parents' difficulties affect the relationship with children, support for autonomy and warmth being the dimensions most affected in their interactions, which makes sense, where new rules of hygiene and physical relationship must be imposed and possibly control to increase at the expense of autonomy. At the same time, tensions, conflicts and parental stress could alter those behaviors that express warmth, and proximity bring unwanted involvement (Bulow et al., 2020). Even with these unfavourable circumstances, the warmth of parents still matters to these young people (Butterfield et al., 2019). The implications are not only at the level of mental health, but at the level of general well-being. And the effects are interdependent. Support for autonomy must be maintained in order to allow the parent not to neglect his or her own needs to adapt to the pandemic context (Neubauer et al., 2020). Parental support for young people remains alongside resilience and coping strategies a factor that protects against the effects of stress and traumatic effects with an impact on depression and anxiety (Ye, Li, & Lin, 2020).

Finally, even though the results of this research are partially confirmed, we are in congruence with many other studies for the same context, indicating indirect effects of stress on depression and anxiety through perceived parental support, in young students who are anyway in a stage marked by change and adjustment due to the transition to adulthood.

Practical implications of the study

This study captured the importance of the bond between parents and children, even when these children begin to enter adult life with all the rights and responsibilities arising from the assumption of maturity and autonomy. This panoply of behaviors make up the parental support necessary for the optimal functioning of young people at the emotional and cognitive level, can support processes of optimization of parent-child relationships in the processes of counseling and psychotherapy or education. At the same time, the pandemic context of the study and the experts' estimates that this could only be the beginning of a period marked by similar subsequent situations, may be a lesson in what can help us adapt healthily to such situations and what predisposes us to risks. Furthermore, this study may support us in ways of establishing strategies that promote the functioning of education in crisis conditions and minimise the risks arising from the chaotic use of technology as support and effects on the health, academic outcomes and the general future of young people exposed to the lasting interruption of a relatively stable life in its dynamics.

The practical implications of the study are also for education. It is necessary to know the risks associated with the implementation of online school and avoid them not only to avoid the mental health problems associated with online stress, but also to establish the factors that can make academic results more efficient by optimizing online learning by adapting teaching methods for this environment and for the associated specific requirements.

Therapeutic and counselling efforts can be directed towards awareness of the risks associated with stress, the factors that cause this stress and the healthy practice of parental support towards the child, even if the child is in a transition stage to adulthood. When confronting extreme events such as the COVID-19 pandemic, we all need, regardless of race, culture, age or gender, to know that there are others that we can rely on that they will support us in need, and that thought itself is enough to change a state, a life.

Study limits and future research directions

This study is exploratory and not by far exhaustive. We set out to discover how it is that in the same situation, there are young people more at risk of depression or anxiety. One of the limitations of the study is that it was conducted online and self-reporting tools were used, which did not allow us to observe interactions, attitudes to testing, the surprise of a history or the context of completion that could have been anyway and to be decisive in capturing the perception of the relationships that were the subject of the tools.

Another limitation of the study is the composition of the group of participants, female prepaderent. The lower number of male study participants prevented us from conducting a gender-based comparative analysis. In the future, we aim to address these limits with face-to-face interviews, observation of behaviours and appropriate measurement tools for this age segment that specifically capture the reality of these relationships.

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