Adolescents' dreams under COVID-19 isolation

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Summary. Based on the continuity hypothesis of dreaming, we have studied the effects of quarantine/isolation on the dreams of Italian adolescents during the time of the COVID-19 pandemic. A sample of 235 subjects (73.2% girls; ages 12-18 years, M = 16.08, SD = 1.7) was involved. Participants were asked to complete part of the MADRE Questionnaire, as well as to report their Most Recent Dream by responding to specific questions related to this dream content (e.g., positive vs. negative emotions, realism/bizarreness, and presence of sensory impressions). Results indicated that participants most strongly affected by the COVID-19 pandemic reported the strongest effects on their dreams, as well as longest dreams. Results also indicated that girls recall dreams more often than boys, in addition to reporting higher emotional intensity, predominantly negative emotions, and more nightmares, including recurrent ones. Finally, the most recent dreams were set in both indoor and outdoor settings, with many family members and friends present. They were marked by strong negative emotions, especially related to dangerous, violent, and frustrating situations. In sum, the findings of this study indicate that the method of quali-quantitative dream content analysis is a very informative approach for studying the effects of significant contextual and catastrophic events on people's inner lives.

Keywords: Dreams, COVID-19 pandemic, adolescents, isolation, traumatic events

1. Introduction

In March 2020, the World Health Organization declared COVID-19 a global pandemic. Since then, data concerning new cases (and deaths) all over the world has been steadily increasing, affecting more than 200 countries or regions. Italy is one of the European countries most affected by the pandemic, with 240,136 confirmed cases and 34,716 deaths (at the time of writing: June 2020). Elderly people were found to be the most at-risk, and the death toll in the population over 75 was very high (Istituto Cattaneo, 2020).

In order to face the pandemic, the Italian government decided to adopt very restrictive measures for the entire Italian population (Decree of the President of the Council of Ministers, March 9, 2020). These measures have included, among others: a) the prohibition of all forms of gathering in public places; b) the suspension of all sporting activities in public or private facilities; and c) the suspension of teaching activities of any kind, favoring a move to online teaching. In sum, the Italian government decided to prohibit all persons from physically leaving home, except for proven work needs, emergencies, or health reasons. In these cases, a self-certification attesting to the reasons for leaving home was necessary, and numerous checks were carried out by the police to verify the documents.

These measures were still in force during the present study.

Such a drastic form of social isolation has never been seen historically. All citizens were asked to drastically change their daily lives, interrupting relationships and activities to stay at home. It is therefore not excessive to define this period as traumatic. Mental health services have recorded both a worsening of symptoms in various people with past mental health challenges, as well as a generalized spread of anxiety, depression, and post-traumatic stress disorder, and an increase in sleep difficulties in children, adolescent, and adult populations (e.g., Ammar et al., 2020; Cellini, Canale, Mioni, & Costa, 2020; Chen, Zheng, Liu, Gong, Guan, & Lou, 2020; DePierro, Lowea, & Katz, 2020; Galea, Merchant, & Lurie, 2020; Gonzáles-Sanguino et al., 2020; Guessoum, Lachal, Radjack, Carretier, Minassian, Benoit, & Moro, 2020; Lima et al., 2020; Parola, Rossi, Tessitore, Troisi, & Mannarini, 2020; Shah, Mann, Singh, Bangar, & Kulkarni, 2020; Smirni, Lavanco, & Smirni, 2020; Usher, Durkin, & Bhullar, 2020; Zandifar & Badrfam, 2020; Wanga et al., 2020).

In this situation, it is particularly important to take into account children and adolescents' mental health. Indeed, due to the nationwide school closures (with online courses assigned only to children and adolescents), as well as to the interruption of every relationship outside the family and the prohibition of outdoor activities, this population can be considered particularly at risk. This is especially so because of the importance of the peer group in this phase of the lifespan, as well as the importance of in-person contact with classmates, friends, and teachers (e.g., Brooks et al., 2020; Cui, Li, & Zheng, 2020; Ghosh, Dubey, Chatterjee, & Dubey, 2020; Liu, Bao, Huang, Shi, & Lu, 2020). The type of information and the point of view provided by the mass media in this period is added to these factors and can lead to increased anxiety and heightened stress responses (Garfin, Silver & Holman, 2020). For example, politicians and scientists have tried to empower younger people by emphasizing that they may infect their grandparents, individuals at high risk (e.g., Bianco, 2020), but this media's stance had the effect of putting undue pressure on adolescents, by focusing on the consequences of their actions.

Based on the continuity hypothesis of dreaming, which states that dream content reflects waking-life (e.g., Domhoff, 1996; Schredl, 2006), it is possible to think that the subjective significance of catastrophic life events, such as the COVID-19 pandemic, could be reflected in the dream

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content of people subject to the isolation measures. Indeed, findings in the literature of dream studies on catastrophic and/or traumatic events (e.g., Barrett, 2001; Hartman & Basile, 2003; Rosen, Reynolds, Yeager, Houck, & Hurwitz, 1991; Schredl, 2006), as well as recent studies on adult populations subject to the restrictive measures of the COVID-19 pandemic (e.g., Barrett, 2020; MacKay & DeCicco, 2020; Iorio, Sommantico, & Parrello, 2020; Pesonen et al., 2020; Schredl & Bulkeley, 2020), show that these events have a strong impact on dreams. This is due to their emotional significance, thus influencing dream tone, content, imagery, and length, especially in female participants. In particular, it emerged that that female participants were higher recallers than men and reported higher emotional intensity, a predominantly negative emotional tone and higher sensory impressions in their dreams, as well as that participants experiencing COVID-19 more personally reported higher emotional intensity and sensory impressions (Barret, 2020; Iorio et al., 2020; Schredl & Bulkeley, 2020). Furthermore, during the early phase of the pandemic, dream imagery was characterized by a high presence of virus-related themes (MacKay & DeCicco, 2020; Pesonen et al., 2020), such as concerns and anxieties related to contagion.

Similarly, according to psychoanalytic thought (Adams-Silvan & Silvan, 1990; Freud, 1900, Sommantico, 2016; Sommantico, 2018; Sommantico, De Rosa, & Parrello, 2017), dreams can be interpreted not only as an attempt at the fulfillment of repressed wishes, but also as a means of retrospectively mastering and transforming a traumatic waking-life event through the regulatory and compensatory function of the dream. Thus, following this line of thought, it seems that significant events in waking-life can be associated with the specific experiences of dreaming, especially regarding emotions and threats in dreams.

Aims and Hypotheses

The main aim of the present study is to analyze the content of adolescents' dreams during the time of COVID-19. In accordance with the continuity hypothesis of dreaming, with particular reference to catastrophic and/or traumatic events (e.g., Barrett, 2001; Barrett, 2020; Hartman & Basile, 2003; Schredl, 2006; MacKay & DeCicco, 2020; Iorio, Sommantico, & Parrello, 2020; Schredl & Bulkeley, 2020), we hypothesized that the dreams of adolescents living under the quarantine/isolation measures of the COVID-19 pandemic would be mainly characterized by negative emotional intensity and the presence of sensory impressions. We also hypothesized that people most strongly affected by the COVID-19 pandemic (personally knowing people infected by or died of COVID-19) reported the strongest effects on their dreams (more negative emotional tone, nightmares frequency, and COVID-19-related dreams), as well as longest dreams.

Furthermore, we were interested in understanding if, and how, the real dangers of infection and the quarantine/isolation measures would be represented in adolescents' dreams. We therefore hypothesized that most recent dreams would take place in both indoor and outdoor settings, where the quarantine/isolation is lived out. We also hypothesized that, above all, negative emotions related to dangerous situations, such as anxiety and fear, would emerge.

Moreover, based on previous studies utilizing the MADRE Questionnaire (e.g., Scapin, Dehon, & Englebert, 2018; Schredl et al., 2014; Shahabian, Taghipour, Khademi, Fer-

dosi, Jahantiq, Salmani, & Ebadirad, 2017; Settineri et al., 2019), we hypothesized that participants with more frequent dream recall would report more nightmares (including recurrent ones).

Finally, based on previous dream research on preadolescent and adolescent populations (e.g., Avila-White, Schneider, & Domhoff, 1999; Georgi, Schredl, Henley-Einion, & Blagrove, 2012; Karagianni, Papadopoulou, Kallini, Dadatsi, Abatzoglou, & Zilikis, 2013; Maggiolini, Morelli, Falotico, & Montali, 2016; Oberst, Charles, & Chamarro, 2005; Riva Crugnola, Maggiolini, Caprin, De Martini, & Giudici, 2008; Saline, 1999; Schredl, Buscher, Haaß, Scheuermann, & Uhrig, 2015; Schredl & Reinhard, 2008, 2011; Strauch & Lederbogen, 1999), we hypothesized that: (a) girls would recall their dreams more often, evaluate their dreams as more emotionally intense, and report more familiar and indoor settings than boys; and (b) boys would report more aggressive themes than girls.

2.   Method

2.1.   Research Instruments

2.1.1   The Socio-Demographic Questionnaire

Respondents provided socio-demographic data (e.g., age, gender, region of residence, level of education, and profession) via a basic socio-demographic questionnaire. Respondents were also asked to report information about their quarantine (e.g., number of people, dimensions of their house, availability of a private room), and whether they knew people affected by, or who died of, COVID-19.

2.1.2   The Mannheim Dream Questionnaire (MADRE)

We utilized part of the Italian adaptation of the Mannheim Dream Questionnaire (MADRE; Schredl, Berres, Klingauf, Schellhaas, & Göritz, 2014; Settineri, Frisone, Alibrandi, & Merlo, 2019). Dream recall frequency was measured on a 7-point Likert-type scale (ranging from 0 = Never to 6 = Almost every morning). Emotional intensity was measured on a 5-point Likert-type scale (ranging from 0 = Not at all intense to 4 = Very intense). Emotional tone was measured on a 5-point Likert-type scale (ranging from -2 = Very negative to +2 = Very positive). Current Nightmare frequency was measured on a 8-point Likert-type scale (ranging from 0 = Never to 7 = Almost every morning).

Other items were related to: Nightmare distress, measured on a 5-point Likert-type scale (ranging from 0 = Not at all distressing to 4 = Very distressing); Recurring nightmares (Yes/No); and Percentage of recurring nightmares (%).

2.1.3   The Most Recent Dream

Regarding the instructions for reporting the "Most Recent Dream," we followed the indications provided by Hall and Van de Castle (1966) and later modified by Domhoff (1996, 2003), by asking participants to indicate: a) whether the dream occurred last night, last week, or last month; b) the date the dream occurred; and c) what time of the day the dream was recalled. Participants were also asked to: a) describe the dream as exactly and as fully as they can remember it; b) describe the setting of the dream, whether it was familiar to them or not; c) describe the people who appeared in the dream: their sex, age, and relationship to

them; d) describe any animals or objects that appeared in the dream; e) describe their feelings during the dream and whether they were pleasant or unpleasant; and f) say exactly what happened during the dream to them and the other characters. Participants were also asked to self-rate their dream (Domhoff, 1996; Schredl, 2002, 2010a) regarding the following: the intensity of the Positive emotions of the dream (measured on a 4-point Likert-type scale, ranging from 0 = No emotions to 3 = Intense emotions), the intensity of the Negative emotions of the dream (measured on a 4-point Likert-type scale, ranging from 0 = No emotions to 3 = Intense emotions), the Realism/bizarreness of the dream (measured on a 4-point Likert-type scale, ranging from 0 = Realistic dream to 3 = Bizarre dream), and the presence of Sensory impressions in the dream (measured on a 4-point Likert-type scale, ranging from 0 = No sensory impressions to 3 = Strong sensory impressions).

2.2. Data Analyses Plan

For the quantitative analyses, following the indications of Hoffman (2013) and in order to compare participants' self-ratings with judges' ratings, the judges' rating scales used in the study were the same as those utilized for the "Most Recent Dream." These were the following: a) intensity of positive emotions; b) intensity of negative emotions; c) realism/bizarreness; and d) presence of sensory impressions. For all scales, the same format as the participants' self-rating scales was used. The interrater reliability coefficients (Spearman rank correlations) for these scales are high and range from .64 (realism/bizarreness) to .84 (negative emotions).

Qualitative analyses (Richards, 2015) and the Grounded Theory Model (Glaser & Strauss, 1967) were used to explore the presence of common aspects in the adolescents' dreams, as analyzed by three independent judges. Beyond allowing for the researcher's need to establish preliminary hypotheses, thereby providing greater freedom to explore and allow issues to emerge, the Grounded Theory approach offers several other benefits: a) rigorous insight into areas which are relatively unknown to the researchers; b) capacity to interpret complex phenomena; c) accommodation of social issues; d) appropriateness for socially-constructed experiences; and e) absence from the constraints of a priori knowledge. Specific questions oriented the content analyses, such as the search for recurring emotional tone and symbolic elements linked to: a) elements of the traumatic situation adolescents are experiencing; b) aspects related to the condition of quarantine/isolation; and c) aspects related to 'escape' from the quarantine/isolation situation.

Survey data were then entered into SPSS 23.0 (IBM, 2015) for the quantitative analyses and QRS NVivo 11 (Bazeley & Richards, 2000; Richards, 1999) for the quali-quantitative analyses, and checked/verified by project staff for accuracy and in order to maintain the irreplaceable process of the researcher's meaning-making. Numerical data are expressed by means and standard deviations, while categorical variables are expressed by numbers and percentages. To assess the dependence of response variables related to nightmares and demographic variables (such as age and gender), linear regression models were estimated for numerical outcome variables (i.e. percentage of recurring nightmares). Binary logistic regression models were used for dichotomous outcome variables (i.e. recurring nightmares), and ordinal logistic regression models for ordinal

outcome variables (i.e. dream recall frequency, etc.) (p-value < .05). Correlations analyses were conducted by means of Spearman's coefficients (r; between .10 and .39 = small association; between .40 and .59 = medium association; and > .60 = large association; p-value < .05). Group differences were verified through ANOVA (p-value < .05). Effect sizes were measured through Eta-square (η^2; small ≥ .01; medium ≥ .059; large ≥ .138) (Cohen, 1998).

2.3. Procedure and Participants

Participants were recruited in Italy via the Internet between April 1, 2020 and May 18, 2020, according to the following criteria: individuals between 12 and 18 years old, who obey the quarantine measures. All data were collected through self-report questionnaires, using an Internet-based survey (Hewson, Vogel, & Laurent, 2016). Participation in the study was voluntary, anonymous, and unpaid. All adolescents' parents gave consent to the participation of their children on the first page of the survey. The informed consent included detailed information about the aims and procedures of the study, confidentiality, and anonymity of the answers. Participants completed instruments in the following order: a) the Socio-demographic questionnaire; b) the MADRE Questionnaire; and c) "The Most Recent Dream." Dream reports were arranged and scored on the dream rating scales by three independent judges.

The study complied with the American Psychological Association (APA) ethical standards in the treatment of human research participants and conformed to the provisions of the 1964 Helsinki declaration and its later amendments. Furthermore, the study was approved by the Ethical Committee of Psychological Research of the Department of Humanities of the University of Naples Federico II (protocol no. 14/2020).

Respondents included 235 adolescents (73.2% girls; ages 12-18y ears, M = 16.08, SD = 1.7). Participants living in a big city or its suburbs of were 50.6%. Adolescents living out the quarantine with their parents and their siblings were 71.9%. The mean number of people cohabitating during the quarantine was 4.3 (SD = 1.2). The majority of adolescents (56.6%) lived in a house between 80 and 140 square meters, with their own room available (79.6%). The majority of participants (90.2%) attended high school (56.1% with humanistic or scientific focus and 43.9% with a technical or professional focus) and 9.8% attended middle school. Participants who knew a person infected by COVID-19 were 26%, and participant who knew a person who died of COVID-19 were 10.2%.

3.   Results

3.1. The MADRE Questionnaire

Results of the analyses carried out are in line with previous studies utilizing the MADRE Questionnaire (e.g., Scapin et al., 2018; Schredl et al., 2014; Shahabian et al., 2017; Settineri et al., 2019). The Dream recall frequency is shown in Table 1, and results show that, in our sample, this phenomenon is relevant. Indeed, only a low number of adolescents (N = 7; 3%) were unable to recall their dreams. The majority of the distribution is related to scores ranging from "Several times a week" to "About two to three times a week" (N = 150; 63.8%). Distribution of Current nightmares is shown in Table 2. The majority of the distribution is related

Table 1. Dream Recall Frequency

	Girls (N = 172)		Boys (N = 63)		Total sample (N = 235)	
	N	%	N	%	N	%
Almost every morning	28	16.3	5	7.9	33	14
Several times a week	50	29.1	15	23.8	65	27.7
About once a week	35	20.3	9	14.3	44	18.7
About 2 to 3 times a week	30	17.4	11	17.5	41	17.4
About once a month	17	9.9	15	23.8	32	13.6
Less than once a month	6	3.5	7	11.1	13	5.5
Never	6	3.5	1	1.6	7	3

to scores ranging from "Several times a week" to "About one a month" (N = 129; 54.9%)

The dependent variables were compared to age, gender, word count, and COVID-19 quarantine variables as independent variables. Result are shown in Table 3 and 4, reporting coefficients, x^2 or t, and significance (p-value).

Regarding the effect of age, and differently from previous studies, we obtained a significant causal relationship only for the Nightmare distress. Regarding the effect of gender, and in line with previous studies, significant causal relationships were found with Dream recall frequency, Emotional intensity, Nightmare frequency (current), Recurring nightmares (Yes/No), Recurring nightmares (%), and Reference to COVID-19 (%). Finally, regarding the effect of word count, and again in line with previous studies, significant causal relationships were found with Dream recall frequency, Emotional intensity, Nightmare frequency (current), Recurring nightmares (Yes/No), and Reference to COVID-19 (%).

Regarding the effect of Knowing a person infected by COVID-19 and of Knowing a person who died of COVID-19, significant causal relationships were found with Emotional intensity, Overall emotional tone, Nightmare frequency (current), Nightmare distress, and Reference to COVID-19 (%). Regarding the effect of the number of Cohabiting people during the quarantine, we obtained a significant causal relationship only for the Emotional intensity. Regarding the effect of the House dimension, we obtained a significant

causal relationship only for the Overall emotional tone. Finally, no significant causal relationship emerged for the effect of Having an own room. Taken together, these results strongly support our hypotheses.

3.2. Most Recent Dream Quali-Quantitative Analysis

With the support of NVivo, three independent judges classified 1639 references, in a textual corpus consisting of 235 dreams (20651 words), of which 11.1% with explicit reference to COVID-19. Each reference was placed in one or more nodes: a) the main nodes, or starting macro-categories, which corresponded to structural elements of the dream as determined by the judges (settings, characters, actions, etc.); and b) the sub-nodes that emerged from the exploration of the text (See Tables 5 and 6).

Node 1. Settings. The dream settings are both Indoor, in 117 references [(50.6%); in particular, *home* in 97 ref. (82.8%) and *school* in 20 ref. (17.1%)], and Outdoor in 114 references [(49.4%): *streets, squares, amusement parks, tourist villages, parks, woods, beaches*, etc.].

The *houses* are their own or those belonging to relatives, romantic partners, and friends. Sometimes they turn into unusual scenarios (for example, classes are held at home or a concert is performed), while other times there are scenarios full of danger. Here are some examples of excerpts from dreams: *"I was tormented by the fact that a classmate*

Table 2. Current Nightmares

	Girls (N = 172)		Boys (N = 63)		Total sample (N = 235)	
	N	%	N	%	N	%
Several times a week	9	5.2	0	0	9	3.8
About once a week	19	11	4	6.3	23	9.8
Two to three times a month	37	21.5	6	9.5	43	18.3
About once a month	43	25	11	17.5	54	23
About two to four times a year	27	15.7	22	34.9	49	20.9
About once a year	7	4.1	9	14.3	16	6.8
Less than once a year	14	8.1	4	6.3	18	7.7
Never	16	9.3	7	11.1	23	9.8

Table 3. Regression analyses for dream variables and for Covid-19 reference (1)

Scale	Effect of age			Effect of gender			Effect of word count		
	ß	χ^2/t	p	ß	χ^2/t	p	ß	χ^2/t	p
Dream recall frequency[1]	.016	3.86	.695	.035	8.48	.004	.655	250.32	<.001
Emotional intensity[1]	.009	2.21	.792	.013	3.16	.046	.790	366.38	<.001
Overall emotional tone[1]	.022	5.17	.522	.003	0.80	.371	.688	273.52	<.001
Nightmare frequency (current)[1]	.019	4.43	.618	.047	11.38	.001	.693	277.80	<.001
Nightmare distress[1]	.074	18.06	.006	.001	0.31	.577	.602	216.27	<.001
Recurring nightmares (Yes/No)[1]	.010	2.41	.878	.053	12.86	<.001	.551	187.96	.008
Recurring nightmares (%)[2]	.086	1.31	.191	.174	2.69	.008	.082	1.26	.210
Reference to Covid-19 (%)[2]	.051	0.78	.434	.213	3.32	<.001	.322	5.20	<.001

Note: *ß* = Standardized estimates; [1]Ordinal regression (χ^2 values); [2]Linear regression (*t* values)

of mine could take more than me in an interrogation. The lesson was online, so the setting was in **my house**, in the **kitchen**, where I usually follow the lessons"; "I was very happy because one of my favorite singers was performing in that **room** and it was a kind of small concert"; "For days I was in **my room** in a video lesson, when suddenly my mother enters screaming that a tornado was coming and we had to hide in the closet on the ground floor"; "We were at **my grandmother's house**, when suddenly I see a man with a cloak and a pickaxe come out of the bedroom"; "I was in a house I'd never seen before in my life, but it was **my grandmother's house**. As I was opening the kitchen cabinets to find something good to eat, as always, suddenly the floor crumbles and I fall down"; "We were in my **grandparents' country house**. I went to the barn and found a thief. I was very frightened because he had a pitchfork in his hand, and I thought he wanted to attack me."

The *school* appears both as a scenario from pre-pandemic routines and as situations full of anxiety about infection. Here are some examples: "I was at **school** and was about to do physics homework"; "I was in **school**, in class, and we were having fun"; "I was at **school**, sitting in the central row of desks near the windows. From the classroom door I see

a friend of mine on a very sick stretcher. I think it was just COVID-19"; "I am with various people at a rock concert in front of my **school**. At some point a storm comes and all the people take shelter in the **school**. Shortly thereafter we are all quarantined in the **school**, which becomes like a home for us, complete with showers in the corridors"; "I was at **school** with my friends. The teacher told us that we had to stay very far apart from each other because of the danger of contagion, but the class was too small, and a climate of tension was created that was always growing. At some point the teacher began to scream. She kept telling us that we were too close and that it was dangerous. The more she screamed, the more frightened we were. Then, like a fury, the teacher goes to the window and throws herself down."

Even outdoor places are sometimes quiet, while other times they turn disturbing. Here are some examples: "We were on the **island** of Vulcano. We were going down a sunny street and I was taking a photo with the background of the crater behind it"; "I was at the **amusement park** with an old friend and I had to go to the bathroom"; "I was **outdoors**, it was evening, and I had to go home. I was on a path that was familiar to me, but it was much stranger than it really is. It was dangerous. There should have been stairs, and instead

Table 4. Regression analyses for dream variables and for Covid-19 reference (2)

Scale	Effect of Knowing an infected person			Effect of Knowing a died person			Effect of Co-habitation during quarantine			Effect of House dimension			Effect of Having an own room		
	ß	χ^2/t	p	ß	χ^2/t	p	ß	χ^2/t	p	ß	χ^2/t	p	ß	χ^2/t	p
Dream recall frequency[1]	.001	.19	.661	.001	0.27	.604	.039	9.40	.310	.003	0.60	.895	.000	0.04	.840
Emotional intensity[1]	.019	4.48	.034	.022	5.29	.021	.068	16.60	.035	.026	6.29	.098	.007	1.57	.209
Overall emotional tone[1]	.030	7.17	.007	.003	10.10	.001	.052	12.45	.132	.054	13.06	.004	.000	0.05	.822
Nightmare frequency (current)[1]	.024	5.72	.017	.035	8.39	.004	.036	8.67	.371	.015	3.48	.324	.000	0.02	.897
Nightmare distress[1]	.059	14.39	<.001	.065	15.79	<.001	.024	5.69	.682	.020	4.68	.197	.001	0.34	.559
Recurring nightmares (Yes/No)[1]	.000	.89	.765	.000	0.85	.742	.045	10.86	.210	.013	3.05	.384	.002	0.45	.502
Recurring nightmares (%)[2]	.024	.37	.712	.033	0.50	.615	.040	0.62	.538	-.059	-0.91	.365	-.024	-0.36	.718
Reference to Covid-19 (%)[2]	.142	2.18	.030	.236	3.70	.000	-.047	-0.71	.476	-.099	-1.53	.128	.055	0.83	.405

Note: *ß* = Standardized estimates; [1]Ordinal regression (χ^2 values); [2]Linear regression (*t* values)

there were paths through a kind of **wood**"; "It was late at night, I was in a **wood** with a boy. It started to get colder and colder and a thickening fog appeared, where I turned and saw nothing, not even the boy."

Node 2. Characters. Apart from the *dreamer*, *family members* appear in the dreams (160 ref., 32.2%), as do *friends* (and *boy/girlfriends*) (178 ref., 35.7%), *unknown people and crowds* (125 ref., 25.1%), and *animals* (35 ref., 7%). Of the *family members* there are grandparents (20 ref., 16.3%): in 16 cases, these are grandparents long dead, and in 3 cases, these are grandparents who die of COVID-19.

There are several *family members* who get sick or die. Here are some examples: "I dreamt of **my grandfather who died** last year"; "My cousin and I were at my grandmother's house, it was full of dust and cobwebs and the floor was covered with dead people. We had to leave the house and **my dead grandmother** was also in front of the door; she is actually alive"; "In a hurry my grandmother takes a glass full of hemlock that I had left in the kitchen and drinks it thinking it is water. When my mother realizes that I had actually involuntarily poisoned **my grandmother**, she starts to get angry with me and I start to cry desperately"; "We were all having lunch together. It all seemed peaceful when **my aunt** started to feel bad. I was especially afraid for **my grandparents**"; "**My father** has a high fever and can't breathe. I immediately think that the thief had the virus and that **my father** had become infected"; "At some point **my father's soul** comes up and speaks to me."

Romantic partners and friends sometimes disappoint, while other times they are supportive. Sometimes they, too, die: "**My boyfriend** kisses **my best friend**. After a while I go to him and I scream at him and try to punch him while I cry and he reaches out to her, so they shake hands, I stay upset"; "It was at night, we were in a house in the woods, **my best friend** and I were very scared because we heard various noises and we couldn't sleep, but then we shook hands and said that we were there for one other and that we shouldn't be afraid of anyone, so we fell asleep"; "I read messages on the WhatsApp group with my friends: **my 17 year-old best friend** is dead. I start to cry and to feel a pain in my chest."

Strangers are the protagonists of peaceful parties and gatherings, or they are threatening, disturbing characters: "I dreamt of going out for a walk with my boyfriend downtown in my city. On the street we met a **lot of people**. We were happy"; "I started running, with the suspicion that **someone** was chasing me"; "Suddenly I start running and I collide with **a hooded man**, I look at him and he shows me his face"; "**His face was disfigured and he was without an eye**, he was holding a rope, he tied me up and took me to a hut."

Animals are almost always victims or assailants: "**My dog** was on a hot air balloon and was dying"; "Someone was throwing **the dog** down the stairs"; "**My cat** tried to commit suicide by throwing herself out the window"; "**The dog** bites my father"; "I saw **a spider** approaching me and I was terrified because it was coming right near my face"; "There is **a fish**, which is me, and together with other fish I swim in the sea. Until at one point, a hand pulls me out of the water, and, being a fish, I stop breathing"; "I take **a bat** and make him eat it, making him believe it is an excellent dish, and after 10 days he dies of the corona virus."

Node 3. Objects. In 217 references, objects appear: a) Generic (161 ref., 74.2%), i.e. *household objects*, *furnishings*, etc.; b) of Movement (29 ref., 13.3%), i.e. *stairs* and means of locomotion such as *skateboards*, *motorbikes*, *planes*, etc.; c) Technological (16 ref., 7.4%), i.e. *computers*, *TV*, *mobiles*, etc.; and d) Weapons (11 ref., 5.1%), *pistols*, *mattock*, *poison*, etc.

Here are some examples: "It was dark, I heard **a door** open, I saw **the window** wide open"; "One day he took me home on **a scooter**"; "I ask my mom if she could give me **the phone** to take a picture and I don't know why I can't"; "I was with my class in an airport, ready to leave for the trip. The identity card controller was our professor. At some point I see that he has **a gun** in his right hand"; "He started pulling out **equipment and chains**, I tried in every way to free myself and run away but nothing could be done, he was stronger than me."

Node 5. Emotions. Terms that explicitly refer to emotions and feelings appear in 201 references. Positive emotions are found in 68 references (33.8%): *serenity, joy, pleasure*, etc. Negative emotions appear in 133 references (66.2%) and are divided into four areas: a) Anxiety/Fear (74 ref., 55.6%):

Table 5. Nodes and Sub-nodes of the Categorical Analyses (1) (N = 235)

Nodes	Sub-nodes			
1. Settings 231 ref.	Indoor 117 ref. (50.6%)		Outdoor 114 ref. (49.4%)	
	Home 97 ref. (82.9%)	School 20 ref. (17.1%)		
2. Characters 498 ref.	Family members 160 ref. (32.2%)	Friends 178 ref. (35.7%)	Unknown/Crowd 125 ref. (25.1%)	Animals 35 ref. (7%)
	Parents, siblings, uncles, cousins 134 ref. (83.7%)	Grandparents 26 ref. (16.3%)		
3. Objects 217 ref.	Generic 161 ref. (74.2%)	Movement 29 ref. (13.3%)	Technological 16 ref. (7.4%)	Weapons 11 ref. (5.1%)

Note: 1639 analyzed references; ref. = references

anxiety, anguish, fear, panic, terror, etc.; b) Frustration (17 ref., 12.8%): s*ense of helplessness, sense of frustration, anger, sense of guilt,* etc.; c) Sadness (10 ref., 7.5%): *unhappiness, sorrow, dejection, regret, depression, misery*; and d) Generic Negative emotions (32 ref., 24.1%): *negative feelings, annoyance, bewilderment,* etc. Often the description of emotions is accompanied by vivid sensory impressions. Only 31 dreams are clearly classifiable as nightmares.

Here are some examples: *"We were on the highway. I was with my boyfriend and another couple of friends. We were going on a vacation and **we were happy**. We sang and joked, carefree"; "I was with my best friend from middle school. We went for a walk in the park and met all our old friends. **I was overjoyed**"; "I was in a park and there was a large tube on the ground. I approached and entered, but I got stuck and I could no longer move. **I was very distressed** and woke up with a start"; "I began to tremble, and **a sense of uneasiness** took hold of me. I tried to run but I was blocked, I could not even take a step, and in the meantime that presence and that laugh became stronger and closer"; "I had gotten a bad grade, I remember **the feeling of fear and anguish** that I felt. I also remember very well the feeling of being sweaty, it was very real"; "I was at my aunt's house, with my cousin. Suddenly I see my deceased grandmother pass by **very nervous**. My cousin and I try to stay close to her, but she won't let us get close. I immediately **feel sad, bad, and strange**. My cousin and I think we are getting closer, but she rejects us a second time"; "I was scared and wanted to call my father, but in the end, I don't do it and I start to leave."*

Node 6. Actions. The categorized actions are 466 and have been divided into: a) Canonical (289 ref., 62%), that is, actions that are part of the routine of daily life; and b) Exceptional (177 ref., 38%), that is, unusual or strange. The Canonical actions were divided as follows: a) Sharing actions (148 ref., 51.2%), which refer to being together (*playing, speaking, walking, fighting*, etc.); b) Body-related (79 ref., 27,3%): sometimes in the sense of affective intimacy (*hugging, kissing, having sex*, etc.) and other times related to bodily perceptions or expressions (*crying, screaming, feeling pain,* etc.); c) of Movement (44 ref., 15.2%), like *going out, running away, traveling*, etc.; and d) Help/Care (18 ref., 6.3%), as in how *to help, cure,* and *protect*. Exceptional actions have been divided into: a) Dangerous actions (55 ref.,

31.1%), in which the dreamer or other characters are threatened by various dangers or indefinite situations, as well as *wars, tornado, falling objects*, etc.; b) Violence/Transgression (50 ref., 28.3%), in which the dreamer witnesses or suffers *robberies, assaults, frauds*, etc.; c) actions Not completed (50 ref., 28.3%), i.e. actions that the dreamer cannot conclude or keep under control (*not being able to run*, etc.); and d) Die (22 ref., 12.3%): in which the dreamer told about the death of characters or animals.

Here are some examples: *"I was on the beach in Palinuro, a very familiar place for me, and I was with my friends. They did what we do every year in the summer, **we played cards** under the beach and then **we went to eat a pizza"; "I meet a man** with a child; **after exchanging a few words** with the child, **I go on and meet a boy**, half Rom, who guides me in **making me get on a kind of table to wade"; "I dreamt of kissing a classmate** of mine who turned out to be in love with me"; "She was crying** maybe about a loss. Then **she starts yelling at me**. Then she calms down and **embraces me, seeks physical contact"; "I was making love** to my girlfriend", "I was in the gym with my volleyball teammates and **we did some exercises"; "I was traveling**, specifically to America, **and photographing** everything"; "He tied me to the cot and began to cut** my tongue, then my fingers; when he was about to cut off my arm I woke up sweaty"; "Suddenly a bomb explodes and nothing is understood. Everyone runs away** and there are many injured and dead. I am very afraid, and **I hide under a table** that has remained standing"; "My friends save me"; "At some point the tree fell apart. I moved my mother** to save her and the trunk fell on my hand"; "I hear a noise in the attic of my house after which **I call my father** to check that everything is ok"; "I began to tremble, a sense of uneasiness took hold of me, I tried to run but **I was stuck, I could not even take a step"; "We were playing cards with my uncle** and suddenly I didn't see him anymore and then I knew **he was dead"; "I was at my house, my father **was dead**, I felt a very strong sense of anguish."*

Node 7. COVID-19. Only in 26 references do dreamers make explicit reference to COVID-19: it is cited as a *virus* causing disease, *contagion, infection*, and various *symptoms* (9 ref., 34.6%), and as a cause of Quarantine and Control actions to which people are subjected (17 ref., 65.4 %),

Table 6. Nodes and Sub-nodes of the Categorical Analyses (2) (N = 235)

Nodes	Sub-nodes							
4. Emotions 201 ref.	Positive 68 ref. (33.8%)				Negative 133 ref. (66.2%)			
			Anxiety/Fear 74 ref. (55.6%)	Frustration 17 ref. (12.8%)		Sadness 10 ref. (7.5%)		Generic 32 ref. (24.1%)
5. Actions 466 ref.	Canonical 289 ref. (62%)				Exceptional 177 ref. (38%)			
	Sharing 148 ref. (51.2%)	Body 79 ref. (27.3%)	Movement 44 ref. (15.2%)	Help/Care 18 ref. (6.3%)	Danger 55 ref. (31.1%)	Violence/Transgression 50 ref. (28.3%)	Not Completed 50 ref. (28.3%)	Die 22 ref. (12.3%)
6. Covid-19 26 ref.	Disease 9 ref. (34.6%)				Quarantine/Control 17 ref. (65.4%)			

Note: 1639 analyzed references; ref. = references

which require compliance with the rules of distancing and meeting with the *police*.

Here are some examples: *"My aunt began to say that she felt a fever. We all looked at each other in terror. We were convinced it was **COVID-19**. Then we called the doctor who, however, said he could not come. Then my father started screaming that someone had to come and swab my aunt right away. It was terrible. We had to act quickly, but nobody came"; "I run out and find **the army** with weapons leveled against the place. **The commander** tells me that there were many sick people with **COVID-19** inside and that they have decided to blow everything up to avoid infection. If I want to survive, I have to do the swab and I will be saved only if I am negative. I panic and wake up"; "I was on the riverside with my friends for a walk. At some point **the army** stops us and ask us for **self-certifications**. Some of us have it and some don't. I don't have it, but I pretend to look for it and say that I must have lost it. **A soldier** begins to get angry and is about to get his gun. I am terrified because I imagine he wants to shoot me. I woke up very distressed"; "The police arrived telling us that **we could not stay there** and that **we were gathering**. Then we began to run away in great anguish because **they could give us a fine**."*

In reporting the Most Recent Dream (mean dream length = 87.9 words; *SD* = 77.2), the majority of participants (50.6%) indicated that the dream occurred during the last week (21.3% last night, 20% last month, and 8.1% the previous month), and that they mainly recalled the dream during the morning (80.4%). Regarding the intensity of emotions, participants reported medium positive emotions (*M* = 1.4; *SD* = 1.2) and high negative emotions (*M* = 1.6; *SD* = 1.2). Regarding realism/bizarreness, participants reported medium realism (*M* = 1.4; *SD* = 1.1). Regarding the presence of sensory impressions, participants reported a high presence (*M* = 1.7; *SD* = .9). (See Table 7). Regarding participants' gender, ANOVA showed small significant differences. Indeed, girls reported significantly higher negative emotions in most recent dreams [$F(1, 333) = 7.83$, $p < .05$, $\eta^2 = .02$; $M_F = 1.7$, $SD = 1.3$; $M_M = 1.3$, $SD = 1.2$] than boys. Finally, results of the correlations analyses between participants' self-ratings and judges' mean ratings showed large significant positive associations, with r values ($p < .01$) ranging from .60 to .83.

4. Discussion

Beyond collecting data from the MADRE Questionnaire, this study examined the most recent dreams collected from Italian adolescents. All dreams were coded by three independent judges to provide a more reliable and complete picture of the extent to which specific themes can be observed in adolescents' dreams in the time of COVID-19.

According to results emerging from recent studies on dreaming in the time of COVID-19 in adult populations (e.g., Barrett, 2020; Iorio, Sommantico, & Parrello, 2020; Pesonen et al., 2020; Schredl & Bulkeley, 2020), also adolescent women showed significantly higher rates of negative emotions (such as anxiety, anger, and sadness), as well as higher rates of references to health and death. Furthermore, always according to these recent studies, also in our adolescent sample participants most strongly affected by the COVID-19 pandemic (personally knowing people infected by or died of COVID-19) reported the strongest effects on their dreams (more negative emotional tone, nightmares frequency, and COVID-19-related dreams), as well as longest dreams.

Consistent with previous research involving preadolescents and adolescents (e.g., Avila-White et al., 1999; Georgi et al., 2012; Karagianni et al., 2013; Maggiolini et al., 2016; Oberst et al., 2005; Riva Crugnola et al., 2008; Saline, 1999; Schredl, Buscher, Haaß, Scheuermann, & Uhrig, 2015; Schredl & Reinhard, 2008, 2011; Strauch & Lederbogen, 1999), girls reported higher emotional intensity and more nightmares (including recurrent ones) than boys. Furthermore, girls more frequently reported a frustrating situation with higher negative emotions in their most recent dreams than boys, while boys reported more aggressive themes in their most recent dreams than girls.

In accordance with previous studies utilizing the MADRE Questionnaire (e.g., Scapin et al., 2018; Schredl et al., 2014; Shahabian et al., 2017; Settineri et al., 2019), participants who recalled their dreams more often also reported more nightmares (including recurrent ones) than others.

In line with previous investigations (e.g., Schredl & Doll, 1998; Schredl, 2002), dream emotions (especially positive ones) were underestimated by judges, in comparison with the dreamers' self-rating. This may be due to the fact that the judges took into account the presence of words that explicitly name emotions. Despite this difference, the corre-

Table 7. Most recent dreams' content

	Girls (N = 172)	Boys (N = 63)	Total sample (N = 235)
Dream length	*M* = 91.1; *SD* = 77.0	*M* = 79.1; *SD* = 77.7	*M* = 87.9; *SD* = 77.2
Last night	22.7%	17.5%	21.3%
Last week	53.5%	42.9%	50.6%
Last month	18%	25.4%	20%
Past month	5.8%	14.3%	8.1%
Positive emotions	*M* = 1.3; *SD* = 1.2	*M* = 1.6; *SD* = 1.1	*M* = 1.4; *SD* = 1.2
Negative emotions	*M* = 1.7; *SD* = 1.3	*M* = 1.3; *SD* = 1.2	*M* = 1.6; *SD* = 1.2
Realism/bizarreness	*M* = 1.4; *SD* = 1.0	*M* = 1.4; *SD* = 1.1	*M* = 1.4; *SD* = 1.1
Sensorial impressions	*M* = 1.7; *SD* = 0.9	*M* = 1.5; *SD* = 1.0	*M* = 1.7; *SD* = 0.9

lations coefficients between judges' ratings and dreamers' self-ratings remain statistically significant.

The qualitative analysis of the most recent dreams has added important data. The settings are both indoor and outdoor; sometimes they refer to the normalcy of the recent past, while other times they are associated with unusual transformations and dangerous situations. This includes situations where one does not feel safe at home, neither at school, nor outdoors, because the threat creeps everywhere. The analysis of the characters in dreams shows a particular concern for others: friends, but above all family members, and, in particular, grandparents. Evidently, this is because of the awareness that these are individuals at risk.

Sometimes the presence of animals as victims or assailants seems to be the result of a clear identification or metaphorization process, as usually happens in childhood (Maggiolini et al., 2016). The presence of a fair percentage of anguish dreams regarding death is also of note: family members, acquaintances, and animals die, and these events are particularly associated with emotions of fear, anguish, and sadness.

Furthermore, the significant number of canonical actions that refer to relationality and to the body also suggests how central this issue is in a condition of forced quarantine/isolation.

Regarding the emotions elicited in the most recent dreams, it is interesting to note that positive emotions (e.g., serenity, pleasantness, happiness, etc.) were significantly less intense than negative emotions (e.g., anguish, fear, panic, terror, etc.). Furthermore, these negative emotions were mainly related to dangerous or violent situations (in which the dreamer is involved as a spectator or as actor), as well as to frustrating situations.

Taken together, these results can be interpreted in the light of the continuity hypothesis of dreaming, especially applied to catastrophic events (e.g., Barrett, 2001; Barrett, 2020; Hartman & Basile, 2003; MacKay & DeCicco, 2020; Iorio, Sommantico, & Parrello, 2020; Pesonen et al., 2020; Rosen, Reynolds, Yeager, Houck, & Hurwitz, 1991; Schredl, 2006; Schredl & Bulkeley, 2020), indicating that the dreams of people living under the isolation measures of the COVID-19 pandemic are mainly characterized by negative emotions and the presence of sensory impressions, as well as dangerous and frustrating situations.

Strengths and Limitations

To our knowledge, this is the first completed Italian study on adolescents' dreaming in the time of COVID-19. The first strength of the present study, following the indication of Schredl (2010a), is the use of both valid and reliable self-rating and dream content scales ratings. Furthermore, specifically regarding the rating scales utilized, the interrater reliability coefficients are high, as well as the confidence levels and the effect sizes (e.g., Hoffman, 2013).

The first general limitation is related to sampling strategy. Indeed, convenience sampling (i.e. snowball sampling), implies specific possible biases, such as volunteers' bias, related to the special characteristics of individuals who voluntarily participate in a study (e.g., Hoffman, 2013). Furthermore, our sample was not balanced with respect to gender. Future research could try to work with more gender-balanced samples. A final limitation is related to generaliz-

ability. Indeed, the cross-sectional study design limits the conclusions that can be drawn.

5. Conclusions

The study was conducted during the hardest phase of the COVID-19 pandemic in Italy, in which mass media communicated the increasing number of sick and dead every day, and continually reminded people of the obligation to social distance, as summarized by the slogan: "I stay home."

According to the continuity hypothesis of dreaming and psychoanalytic theory, our results show how catastrophic events are reflected in dream-life both directly, through explicit references to COVID-19, as well as indirectly and symbolically.

In particular, the element of the pandemic that adolescents' unconscious seems to have picked out the most is the invisible and pervasive threat of the virus: places are not safe, routines and relationships are upset, adults are vulnerable and are not a source of protection, and, indeed, sometimes adolescents are required to protect them. Two dreams are very significant in this regard: one in which the teacher throws herself out of the school window because she does not feel able to protect her pupils (Node 1. *Settings/Indoor/School*); and the one in which the dreamer involuntarily poisons her grandmother (Node 2. *Characters/Family members/Grandparents*). Isolation seems to be perceived as a threat because it lacks the support of peers, which is fundamental in this phase of life.

In conclusion, this study highlights the importance of investigating dreaming through an integrative experimental and clinical perspective, including qualitative and quantitative analysis. A strong contribution to a more comprehensive analysis of dreaming could emerge through references to different theoretical approaches, such as the continuity hypothesis and the psychoanalytic framework.

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