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Is Climate Change Worry Fostering Young Italian Adults' Psychological Distress? An Italian Exploratory Study on the Mediation Role of Intolerance of Uncertainty and Future Anxiety

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Abstract: Climate Change is a phenomenon that has been increasingly investigated in the literature from a psychological perspective for its impact on mental health, particularly that of young adults who, already affected by the COVID-19 pandemic, are highly worried about it. Despite this, few studies have been conducted in the Mediterranean region, especially in southern Italy, and little consideration has been given to the role of other variables in the relationship between environmental emotions and mental health. The present study aims to explore the relationship between Climate Change Worry and Depression, Anxiety, and Stress in a sample of 283 Italian young adults (age range 18–25; $M = 21.3$; $SD = 1.7$) from Southern Italy (91% from Campania), examining the mediating effect that Intolerance of Uncertainty and Future Anxiety have on the target. At the same time, it endeavors to explore the joint effect of the two mediators in the relationship between Climate Change Worry and Psychological Distress. Findings highlighted that Climate Change Worry had a significant positive effect on Anxiety and Stress levels and positively influenced Intolerance of Uncertainty and Future Anxiety; the latter two also increased the impact of Climate Change Worry on Psychological Distress, acting as vulnerability factors in all parallel mediation models performed and, specifically, in the fully mediated Depression model. Furthermore, the findings of the serial model corroborated the joint effect of the two mediators and highlighted how young adults with higher levels of Climate Change Worry experienced more Intolerance of Uncertainty, which positively influenced Future Anxiety levels and, in turn, exacerbated the Global Psychological Distress. Finally, levels of Psychological Distress, Climate Change Worry, and Future Anxiety were significantly higher in women. To conclude, exploring the indirect pathways through which negative environmental emotions affect Psychological Distress seems to be a fertile research area to study in more depth the impact of the climate crisis on new generations.

Keywords: climate change worry; intolerance of uncertainty; future anxiety; young adults; mental health; depression; anxiety; stress; mediation analyses



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1. Introduction

Climate change is a major threat of our time, the effects of which range from increasingly frequent extreme weather events to the increasing number of areas that have become uninhabitable for humans, from the increase in the spread of infectious diseases to the alteration of food systems that severely impact human life and health [1,2]. In the geological epoch of the Anthropocene, which is marked by hypertrophic industrial development, intensive animal husbandry, overpopulation, and massive processes of deforestation, mineral and fossil fuel extraction, human action has profoundly altered the physical, chemical, and biological balance of the Earth ecosystem [3]. Scientists have long questioned the relationship between extreme weather events and climate change, and the scientific community agrees in pointing to anthropogenic activity as the main cause of global warming and its effects on ecosystems and societies [4].

In Europe, the temperature increase has been rising faster than the world average, compared to the pre-industrial period, and disastrous weather phenomena are more and more frequent, as is the number of deaths caused by air pollution [5]. The Mediterranean area of the continent, including Italy, appears even more vulnerable to the effects of climate change [6,7]. In fact, in the year 2023 alone, the accelerating climate crisis and its impact on the social and economic system generated 378 extreme weather events, including floods, overflows, storm surges, and record temperatures in Italy [8,9]. Climate change has long been considered a risk factor for individual physical health in the literature—due to increased malnutrition—and for community health—due to forced migration. Furthermore, its effects on the mental health of individuals and communities directly exposed to environmental disasters, such as posttraumatic syndromes, neuropsychiatric illnesses including depression, dementia, addiction, increased group violence, and suicide rates, are also reported [10–12]. Other studies explored the indirect effects of the climate crisis on the mental health of individuals who were not directly involved in environmental disasters, signaling how awareness of climate change and related worries also affect psychological well-being [13–15].

As far as young adults are concerned, previous research reports a growing awareness of the climate crisis, which has become one of their main worries concerning both the present and the future [16,17]. The anxiogenic way in which mass media often conveys this crisis [18], which goes hand in hand with declining public trust in politics and institutions [16,19], exacerbates this concern. This set of factors contributes to feelings of helplessness, uncertainty, and negative psychoterratic states such as worry, anxiety, and solastalgia that affect psychological well-being [16,20]. Recently, several studies have highlighted how adolescents' and young adults' high involvement in environmental issues exposes them to higher levels of climate worry and anxiety, which impacts their mental health [21–23].

Although the relationship between the climate crisis and mental health is a well-established fact in the literature [13,14], the recent review by Massazza et al. [9] highlighted a specific lack of studies conducted in the Mediterranean region, especially in comparison to those that explored the relationship between the climate crisis and physical health. As for southern Italy, very few studies have been conducted in this area, and only one concerns the region addressed in this study, namely Campania [24].

1.1. A Specific Psychoterratic State: Climate Change Worry

Among the varied emotions associated with climate change [20], those on which empirical research has focused most are eco-anxiety and worry [23,25], the latter being chosen as the central variable in the present work. In general terms, Worry is a mental process that is activated to solve a situation or problem whose outcome is uncertain and, with a high probability, negative [26]. It can take on an adaptive or maladaptive function: in the first case, it plays a central role in problem-solving, directing attention, coping with stressful situations, and implementing action [27]; in the second, it becomes excessive and intrusive, fueling the feeling of inability to cope with a stressful event and the perception of its uncontrollability, and it ends up not only interfering with daily activities and problem-solving skills but also stimulating procrastination of decisive actions by generating its self-perpetuation. In its maladaptive function, worry fuels states of tension, anxiety, irritability, nervousness, and apprehension about the future that go on to negatively affect mental health [26,28]. This dual function was also explored in relation to Climate Change Worry, defined as a mental process that “involves primarily verbal-linguistic thoughts (rather than images) about the changes that may occur in the climate system and the possible effects of these changes” [25] (p. 4). In its adaptive function, Climate Change Worry is moderated and plays a key role in orienting the individual toward pro-environmental behaviors, supporting the process of adaptation to climate change [29]. This function was recently confirmed by a study conducted in the Italian context [30], showing that Climate Change Worry can moderate the association between eco-anxiety and eco-paralysis. In any case, the

impact of Climate Change Worry on mental health has long been reported in the literature. In the general population, increasing awareness of the phenomenon and its consequences has fueled this specific concern, which is significantly related to Stress, Anxiety, and Depression, especially in women [15,31]. More recent studies have also confirmed the incidence of Climate Change Worry on mental health and Psychological Distress [32–34]. Concerning our target audience, research shows that young adults' increasing involvement in environmental issues [16,17] is triggering a catastrophic and apocalyptic perception of the climate crisis, expanding their fear of the unknown, sense of uncertainty, and dark vision of the future [35]. Furthermore, the perceived uncontrollability of an event exacerbates uncertainty, which affects the interpretation of present and future events [36], fueling anxiety and fear [37]. Between the catastrophism with which young people tend to view the future, the lack of trust in institutions, and the increase in fear, uncertainty, and psychological distress, the climate crisis could prove to be a potentially traumatic phenomenon, especially for younger generations, and affect their mental health, as is already the case with other contemporary collective traumatic events [38–40].

1.2. Intolerance of Uncertainty, Climate Change, and Mental Health

The feeling of uncertainty and the fear of the unknown, are mental states linked to the dispositional component of Intolerance for Uncertainty [41], defined as a combination of cognitive, emotional, and behavioral responses activated to cope with ambiguous and uncertain situations [42]; it is a construct that expresses “the tendency to be bothered or upset by the (as yet) unknown elements of a situation, whether the possible outcome is negative or not” [43] (p. 6). Several studies have highlighted how stressful, uncontrollable, and unpredictable events—such as the recent COVID-19 pandemic and contemporary wars—can increase Intolerance for Uncertainty and its impact on mental health [40,44–46]. Although the relationship between climate change, uncertainty intolerance, and mental health appears to be poorly investigated in the literature, the link between climate change and the uncertainty associated with the difficulties of clearly establishing measures for predicting and coping with the effects of future climate alterations has long been highlighted [47]. In keeping up with this, Graaf et al. [48] revealed how the issue of climate change exposes individuals to inherent feelings of uncertainty prompted by the globality of the phenomenon and the difficulty of understanding, on the one hand, what effective actions can be taken to mitigate the climate crisis and, on the other, the impact of one's actions in a problem in which multiple factors are involved. Moreover, despite the fact that scientists are outlining with increasing clarity complex future scenarios regarding the climate crisis, not being able to predict how and to what extent these projections will materialize is becoming an additional factor increasing feelings of worry, future anxiety, uncertainty, and ambiguity [1]. Of course, the construct of Intolerance for Uncertainty can also play an adaptive or maladaptive function; in fact, if it exacerbates the discomfort prompted by threatening information about climate change [49], this may either induce pro-environmental behaviors or facilitate defensive strategies aimed at avoidance. In any case, the suggestion that uncertainty stemming from the influence of climate change on the future can fuel experiences of helplessness and depression [35] appears to be in line with the body of literature that points to the Intolerance of Uncertainty as a crucial factor for many forms of psychological distress in the internalizing sphere [50,51]. Beyond the impact on mental health, Buhr and Dugas [41] (2002) highlighted how the emotional, cognitive, and behavioral constellations that characterize individuals with high intolerance of uncertainty influence the representation of the future, an aspect captured later by Carleton [52] in the dimensions' conceptualization of Prospective and Inhibitory Intolerance of Uncertainty. Indeed, a low ability to tolerate states of uncertainty seems to foster an uncertain, stressful, and pessimistic view of the future. Furthermore, if the Grupe and Nitschke's [53] Uncertainty and Anticipation Model of Anxiety (UAMA) highlighted how, in the face of an ambiguous and uncontrollable threat, uncertainty might increase an anxious response. Miranda and Mennin [54] hypothesized that Intolerance of Uncertainty may foster a distorted

prediction of the future, especially in anxious people or those with generalized anxiety disorder. According to them, Intolerance of Uncertainty would take the form of a cognitive bias, i.e., a risk factor, as it would favor the appearance of a maladaptive representation of the future. Further studies have confirmed the role of Intolerance of Uncertainty in overthinking a future that is centered on negative events and on increasing pessimistic future expectations [55,56].

1.3. Attitudes toward the Future in between Climate Change and Psychological Distress

The growing worry about climate change found in the Italian youth population [17] could also exacerbate apprehension about the future [57] and a negative representation of it detected in this context and beyond [58,59], which has prompted researchers to introduce a specific construct: Future Anxiety. It indicates an attitude toward the future in which negative cognitive and emotional processes prevail over positive ones and in which fear of imminent threats is stronger than hope [60,61]. According to Zaleski [61], Future Anxiety is structured around individuals' life experiences and coping strategies in response to emotions such as fear and worry. At the same time, however, the construct emerged from the need to investigate the impact of different social, economic, and political changes on mental health, thus shedding light on the role of contextual factors in influencing attitudes towards the future [61,62]. Susolowska [63] highlighted how the fear of the future, although already present in adolescence, reached its peak in young adulthood, precisely between the ages of 20 and 29. Moreover, the more recent study by Mutia and Hargiana [64] highlighted how Future Anxiety was a construct specific to young adulthood, an age in which contextual factors take on a pivotal role in facilitating or hindering growth processes.

To our knowledge, the relationship between Climate Change Worry and Future Anxiety has yet to be investigated in the Italian context, presumably due to the recent introduction of the construct [60]. Despite this, a recent thematic review [65] highlighted the extent to which anxiety about climate change is linked to fear and anxiety about the future, which are related to the reduction in natural resources, the increase in extreme climatic phenomena, and climate migration. Similarly, Boluda-Verdu et al. [66] pointed out how the growth of awareness about climate change and the media coverage of the phenomenon are fostering worry about the current and future facts of the climate crisis among younger people. Furthermore, the American Psychological Association highlighted how adolescents and young adults between the ages of 10 and 26 are experiencing increasing stress about the future, also fostered by the climate crisis [67]. Beyond the relationship between climate crisis and future perspective, recent studies have emphasized the role of Future Anxiety in exacerbating the impact of traumatic events such as the COVID-19 pandemic and wars [28,40,68] on mental health and psychological distress as well as its positive relationship with Stress, Anxiety and Depression [60,69,70]. Together, these contributions oriented the choice of exploring the connection between Climate Change Worry and Future Anxiety and hypothesizing a direction in such relationship.

1.4. The Present Study: Aims and Hypotheses

Considering the recent literature on the topic that has confirmed the effect of climate change on mental health [13–15,21,22] and, at the same time, the necessity to further investigate this issue in the Italian context [9], the present study aims to investigate the relationship between Climate Change Worry and Italian young adults' mental health (Depression, Anxiety and Stress). In exploring the relationship between Climate Change Worry and youth Psychological Distress, we also considered the potential mediating role of Intolerance of Uncertainty and Future Anxiety.

These objectives were pursued through multiple mediation analyses consisting of parallel and serial mediation models. The former were aimed at exploring the potential effects of mediators on the relationship between Climate Change Worry and Depression, Anxiety, and Stress. The latter were implemented to investigate the joint effect of mediators in the relationship between Climate Change Worry and Global Psychological Distress.

Considering the abovementioned literature (paragraph 1), the following hypotheses have been formulated:

- H₁:** Women report higher levels of Psychological Distress than men, but also higher levels of Climate Change Worry.
- H₂:** Climate Change Worry positively and significantly effects the Psychological Distress outcomes considered (Depression, Anxiety and Stress).
- H₃:** Intolerance of Uncertainty and Future Anxiety mediate the relationship between Climate Change Worry and Depression, Anxiety and Stress.
- H₄:** Intolerance of Uncertainty and Future Anxiety jointly mediate the relationship between Climate Change Worry and global psychological distress following a specific pathway (see Figure 1 and Section 2.3).

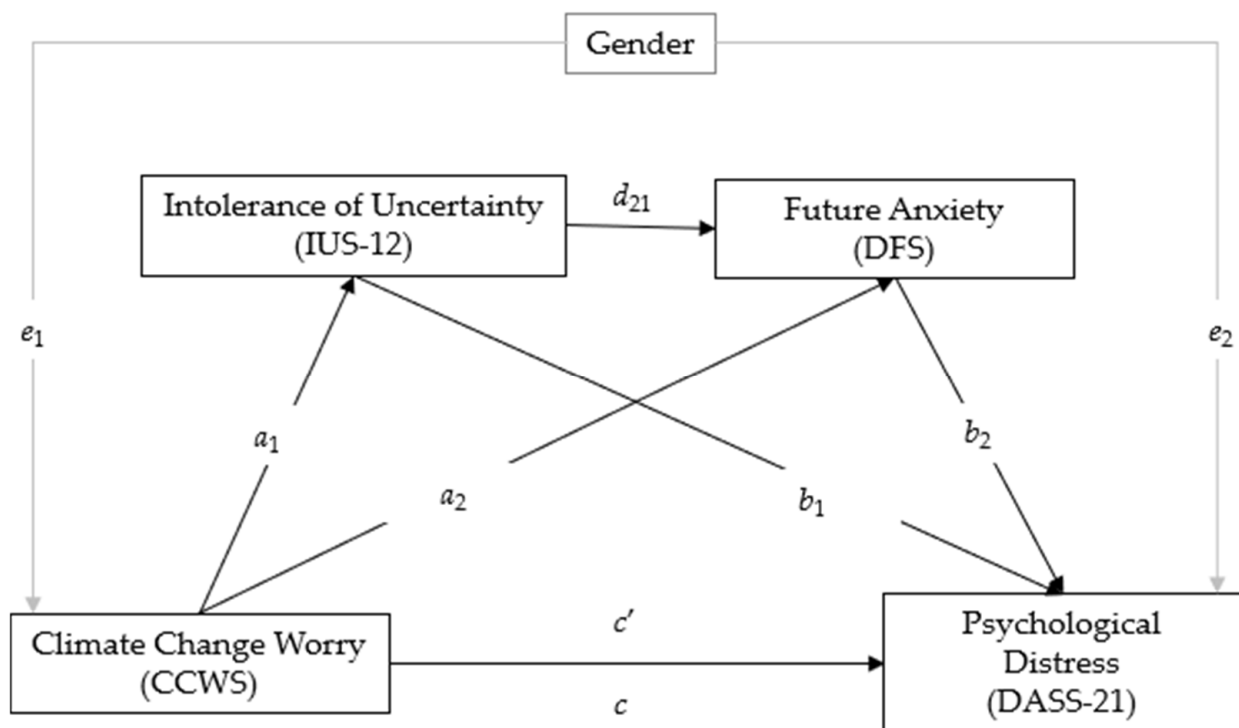


Figure 1. Hypothesized serial mediation model. Notes: e_1 : effect of gender on Climate Change Worry [H₁]; e_2 : effect of gender on Psychological Distress [H₁]; c' : direct effect of Climate Change Worry on Psychological Distress (Depression, Anxiety and Stress) [H₂]; a_1 : effect of Climate Change Worry on Intolerance of Uncertainty; a_2 : effect of Climate Change Worry on Future Anxiety; b_1 : effect of Intolerance of Uncertainty on Psychological Distress; b_2 : effect of Future Anxiety on Psychological Distress; a_1b_1 : mediation role of Intolerance of Uncertainty between Climate Change Worry and Psychological Distress [H₃]; a_2b_2 : mediation role of Future Anxiety between Climate Change Worry and Psychological Distress [H₃]; d_{21} : sequential double mediating effects on the relationship between Intolerance of Uncertainty and Future Anxiety [H₄]; c : total effect of Climate Change Worry and Mediators on Psychological Distress.

Although, to our knowledge, no previous study has yet explored the mediating role of Intolerance of Uncertainty and Future Anxiety in the relation between Climate Change Worry and Depression, Anxiety and Stress, our H₃ arises from studies revealing the association between climate change, feelings of uncertainty, fear, and anxiety about the future in other cultural contexts [35,47,48,65,67] and from theoretical models and

studies reporting the impact of Uncertainty of Intolerance and Future Anxiety on mental health [40,44,50,69,70]. With regard to H₄, our hypothesis arises from theoretical models and research that shed light on the relationship between Intolerance of Uncertainty and negative attitudes toward the future [41,53–55].

2. Materials and Methods

2.1. Participants and Procedure

The study involved 283 Italian young adults (48.3% males, 51.7% females) aged between 18 and 25 years ($M = 21.3$; $SD = 1.7$), predominantly from Campania (91.0%). At the time when the data were collected, 117 participants (41.3%) declared to live in town and 166 (58.7%) in the countryside. Regarding relationship status, 147 (51.9%) participants were single, 134 (47.3%) were in a non-cohabiting relationship, and only 2 (0.07%) were in a cohabiting relationship. As for the educational level, 228 (80.6%) participants had completed secondary school, 47 (16.6%) had completed a university degree, and 8 (2.8%) had completed middle school. In addition, 186 (65.7%) participants were students, 55 (19.4%) of whom were working students, 35 (12.4%) were workers, and 7 (2.5%) were unemployed.

Participants were selected in Italy via the Internet and social media pages between December 2023 and February 2024. All data were obtained through self-report questionnaires, using an Internet-based survey, and snowball sampling was used to improve the web-based sampling. Participants interested in the study were asked to identify other potential respondents in their social network. Participation in this research was voluntary, anonymous, and unpaid, and all people involved were encouraged to answer as truthfully as possible. All participants gave their approval to participate on the first page of the survey, in which information about the aims and procedures of the study was also described. G*Power was used as a preliminary to establish the minimum sample size of 119 participants were indicated to obtain a medium-size effect ($f^2 = 0.15$) with 95% power using linear multiple regression, a fixed model, and R^2 increase ($\alpha = 0.05$). Adopting the bootstrap method to estimate the significance of indirect effects, the MedPower program [71] was also used. A minimum sample size of 243 participants was adequate to obtain an 80% probability of detecting a significant effect at the 0.05 level. Considering our sample size and the bootstrap methodology with 5000 resamples, there are no worries about the sampling power.

2.2. Measure and Tools

Socio-demographic characteristics of participants were assessed using an ad hoc questionnaire concerning gender, relationship status, residence and type of residence (in town or province), level of education, and occupation.

To explore Worry about Climate Change, the *Climate Change Worry Scale* (CCWS) [25,72] was adopted. It is a self-assessment scale consisting of 10 items with a 5-point Likert response range (from 1 = Never to 5 = Always). This scale has a monodimensional structure and assesses worry about climate change, a specific cognitive component of eco-anxiety, understood as a tendency to overthink climate change. The items of the questionnaire attempt to capture the awareness of being worried about climate change, but also the worry for one's future and that of one's loved ones, e.g., "Thoughts about climate change cause me to have worries about what the future may hold" and "I notice that I have been worrying about climate change". In the Italian adaptation and validation study, the scale showed good psychometric proprieties, and high internal consistency [72]. In this study, Cronbach's α was 0.91.

In order to assess Intolerance of Uncertainty, the Short Version of the *Intolerance of Uncertainty Scale* (IUS-12) [36,73] was used. The IUS is a 12 item self-report tool with a 5-point Likert scale assessing two interrelated sub-dimensions of Intolerance of Uncertainty, namely "Prospective Intolerance of Uncertainty" and "Inhibitory Intolerance of Uncertainty". A total score range used in this study ranging from 12 to 60 is also provided by the IUS-12, with a higher score corresponding to a higher Intolerance of Uncertainty. Items of this scale include, e.g., "Uncertainty keeps me from living a full life" and "A small,

unforeseen event can spoil everything, even with the best of planning". Good psychometric properties are reported by the authors [74]. In the current study, Cronbach's α for the overall scale was 0.87.

To measure the negative attitude towards the future, the *Dark Future Scale* (DFS) [60,62] was chosen. The DFS is a 7 item self-report instrument with a 6-point Likert-type scale, ranging from 0 (Definitely Untrue) to 6 (Definitely True) assessing Future Anxiety. This construct captures anxieties and worries about the future as emotional and cognitive processes in which fear dominates over hope. The overall total score ranges from 0 to 30, and higher scores represent higher levels of Future Anxiety. Items in this scale include, e.g., "I am terrified by the thought that in the future I might face crises and difficulties in life". The authors of the scale reported good psychometric proprieties [60]. In the present study, Cronbach's α was 0.88.

The Participant's Psychological Distress was assessed with the *Depression, Anxiety, Stress Scale—21* (DASS-21) [74,75]. This is a 4-point Likert-type scale ranging from 0 (Did not apply to me at all) to 3 (Applied to me very much, or most of the time) that assesses self-report levels of Stress (item example: "I felt like I had nothing to look forward to"), Anxiety (item example: "I felt close to a panic attack") and Depression (item example: "I found it hard to relax") as well as general distress over the previous week. Table 1 shows the cut-offs of the dimensional scores.

Table 1. DASS-21 score interpretation.

Levels	Depression	Anxiety	Stress
Normal	0–9	0–6	0–10
Mild	10–12	7–9	11–18
Moderate	13–20	10–14	19–26
Severe	21–27	15–19	27–34
Extremely Severe	28–42	20–42	35–52

Besides the three scores per dimension, the excellent fit of the bi-factorial model that emerged in the Italian validation study of the tool also allows the use of a total score as an index of global psychological distress [75]. Both the dimensional scores and the global score were considered in the present study. The DASS-21 Italian version reported good internal consistency [75] and in this study, Cronbach's α was 0.89 for Depression, 0.89 for Anxiety, 0.86 for Stress and 0.95 for total score.

2.3. Data Analyses Plan

The Mean, Standard Deviation, and reliability for all psychological variables were calculated. Cronbach's α was considered good when overall values were greater than 0.70. Skewness and Kurtosis were also evaluated to verify the normal univariate distribution of psychological variables, and values ranging from -1.5 to $+1.5$ were considered indicative of a normal distribution of variables [76].

Zero-order correlations were calculated using Pearson's coefficient to explore the association between age, gender, and all psychological variables in this study. To explore gender group differences (H_1) and other sociodemographic group ones, t -tests and ANOVA ($p < 0.05$) were performed. Cohen's d (d ; weak effect < 0.20 ; $0.20 <$ modest effect < 0.50 ; $0.50 <$ moderate effect < 1.00 ; Strong effect > 1.0) and Eta-square (η^2 ; small ≥ 0.01 ; medium ≥ 0.059 ; 0.56 ; large ≥ 0.138) were used to measure effect sizes. At the same time, a median split of the variable was conducted, and subsequently, a comparison was made between participants with high and low Climate Change Worry in relation to Future Anxiety and Intolerance of Uncertainty. Group differences about variable split were verified through the t -test ($p < 0.05$) and Cohen's d .

Preliminarily, Harman's single-factor test was used to evaluate the common method bias derived from self-reported data, and a cut-off of 50% of variance was considered an indication of a common method bias that was not dangerous [77] Subsequently, checks

of multicollinearity between the independent variables, mediators, and residual errors were inspected. The absence of multicollinearity and residual problems was indicated by a Variance Inflation Factor (VIF) below 3, values of tolerance greater than 0.1, and Durbin-Watson values near 2 [78].

Parallel mediation analyses were conducted to explore the direct effect of Climate Change Worry on Italian young adults’ Depression, Anxiety and Stress and the specific indirect effect of the mediators (H₂ and H₃). PROCESS macro 4.2 for SPSS [79] was used. PROCESS model 4 was selected to perform three parallel mediation models for Depression, Anxiety, and Stress as outcome variables (DASS-21 dimensions = Y) and Climate Change Worry was selected as the independent variable (CCWS = X). In each mediation model, Intolerance of Uncertainty (IUS-12 = M₁) and Future Anxiety (DFS = M₂) were selected as mediators. Subsequently, PROCESS model 6 was applied to verify our hypothesis 4 (H₄), i.e., the joint mediating effect of Intolerance of uncertainty and Future Anxiety on the relationship between Climate Change Worry and Global Psychological Distress (Quadrangle pathway: Climate Change Worry → Intolerance of Uncertainty → Future Anxiety → Global Psychological Distress—Ind3). To further test the direction of the link between the two mediators, sensitivity analysis was conducted to test the serial mediation effect by reversing the two mediators (Quadrangle pathway: Climate Change Worry → Future Anxiety → Intolerance of Uncertainty → Global Psychological Distress—Ind3).

The statistical significance of the total indirect effect of mediating variables in all mediation models was tested using bootstrapping methods to estimate bias-corrected asymmetric confidence intervals (CIs) with 5000 resamples with replacement (95% CIs not inclusive of zero indicate a significant effect). The indirect effects of the single mediators on parallel mediation models were further examined with the Sobel Test technique based on a normality assumption ($z > 1.96; p < 0.05$).

Statistical analyses were performed with SPSS 29 [80].

3. Results

3.1. Descriptive Statistics and Zero-Order Correlations

Means, Standard Deviations, Cronbach’s α , Skewness and Kurtosis are shown in Table 2. The mean of CCWS was 3.08 ($SD = 0.95$), that of IUS-12 was 35.13 ($SD = 9.74$), and that of DFS was 19.49 ($SD = 6.76$). Finally, the means for Depression, Anxiety, Stress and Global Psychological Distress were, respectively, 20.97 ($SD = 10.77$), 17.88 ($SD = 11.06$), and 25.72 ($SD = 9.98$). Kurtosis and Skewness values between + 1.5 and −1.5 indicate that the psychological variables showed a normal distribution.

Table 2. Means, Standard Deviations, Minimum and Maximum, Cronbach’s α , Skewness and Kurtosis.

	Males (N = 137)		Females (N = 146)		Total Sample (N = 283)					
	M	SD	M	SD	M	SD	Min–Max	α	Skew.	Kurt.
CCWS	2.87	0.93	3.26	0.93	3.08	0.95	1–5	0.91	−0.23	−0.57
IUS-12	34.05	8.97	36.21	10.37	35.13	9.74	15–60	0.87	0.26	−0.44
DFS	17.56	7.25	21.28	5.75	19.49	6.76	0–30	0.88	−0.67	0.21
DEPRESS.	18.47	10.33	23.20	10.65	20.97	10.77	6–25	0.89	0.14	−0.82
ANXIETY	14.34	9.58	21.06	11.32	17.88	11.06	0–42	0.89	0.26	−0.78
STRESS	21.88	9.43	29.34	9.13	25.72	9.98	0–42	0.86	−0.21	−0.62
GL. DISTR.	54.68	26.53	73.60	27.88	64.57	28.85	0–42	0.95	−0.18	−0.71

Notes: CCWS: Climate Change Worry Scale; IUS-12: Intolerance of Uncertainty Scale; DFS: Dark Future Scale; Depression, Anxiety, Stress, and Global Distress: dimensions and total score of DASS-21.

Zero-order correlations between participants’ age, gender, and psychological variables highlighted a positive and significant correlation between Climate Change Worry (CCWS) and Intolerance of Uncertainty (IUS-12), Future Anxiety (DFS), Depression, Anxiety, and Stress (DASS-21). Age was significantly and negatively correlated with Anxiety and Stress, while Gender was significantly and positively correlated with Climate Change Worry, Future Anxiety, and all outcomes of Psychological Distress considered. All results are shown in Table 3.

Table 3. Zero-order correlations between participants’ age and gender and psychological variables (N = 287).

	1	2	3	4	5	6	7	8	9
1. AGE	--								
2. GENDER	--	--							
3. CCWS	−0.11	0.22 **	--						
4. IUS-12	−0.01	0.10	0.25 **	--					
5. DFS	−0.09	0.28 **	0.33 **	0.50 **	--				
6. DEPRESS.	−0.11	0.23 **	0.25 **	0.45 **	0.55 **	--			
7. ANXIETY	−0.13 *	0.31 **	0.29 **	0.36 **	0.41 **	0.70 **	--		
8. STRESS	−0.16 **	0.36 **	0.32 **	0.44 **	0.54 **	0.75 **	0.75 **	--	
9. GL. DISTR.	−0.15 *	0.33 **	0.32 **	0.46 **	0.55 **	0.90 **	0.91 **	0.91 **	--

Notes: * $p < 0.05$; ** $p < 0.01$.

3.2. Socio-Demographics Group Differences and Variable Split

T-test showed significant gender differences. Indeed, women reported significantly higher scores than males for CCWS ($M_{Female} = 3.26$ vs. $M_{Male} = 2.87$; $t_{(277)} = 3.51$; $p < 0.001$; $d = 0.52$), DFS ($M_{Female} = 21.28$ vs. $M_{Male} = 17.56$; $t_{(279)} = 4.82$; $p < 0.001$; $d = 0.58$), Depression ($M_{Female} = 23.20$ vs. $M_{Male} = 18.47$; $t_{(278)} = 3.78$; $p < 0.001$; $d = 0.45$), Anxiety ($M_{Female} = 21.06$ vs. $M_{Male} = 14.34$; $t_{(279)} = 5.36$; $p < 0.001$; $d = 0.64$) Stress ($M_{Female} = 29.34$ vs. $M_{Male} = 21.88$; $F_{(2, 282)} = 22.70$; $p < 0.001$; $d = 0.14$) and Global Psychological Distress ($M_{Female} = 29.34$ vs. $M_{Male} = 21.88$; $t_{(276)} = 6.74$; $p < 0.001$; $d = 0.80$). Regarding Intolerance of Uncertainty, no significant gender differences were found ($M_{Female} = 36.21$ vs. $M_{Male} = 34.05$; $t_{(279)} = 1.87$; $p = 0.06$). Considering the socio-demographic variables (relationship status, residence and type of residence, level of education, and occupation), no other significant differences were found regarding the variables of interest in the study.

t-test analyses conducted considering the median split of the CCWS variable (Median = 3.12) revealed a significant difference between CCWS, IUS, and DFS. Participants with high levels of Climate Change Worry (CCWS) showed significant higher levels of Intolerance of Uncertainty and Future Anxiety as compared to those with low levels of the abovementioned variable. These results—shown in Table 4—further confirmed those obtained from the correlation analyses.

Table 4. T-tests analyses for split variables.

Variable Split	Intolerance of Uncertainty (IUS)	Future Anxiety (DFS)
	Mean (SD)	Mean (SD)
Low Climate Change Worry (CCWS)	33.38 (8.98)	17.70 (6.69)
High Climate Change Worry (CCWS)	36.83 (10.18)	21.24 (6.38)
$t_{(281)}$	3.02	4.55
p	=0.003	<0.001
d	0.36	0.54

3.3. Preliminary Analyses

Regarding preliminary assumptions, Harman’s single-factor test retrieved 7 factors with eigenvalues greater than 1. The first factor explained 30.71% of the overall variance,

which is below the recommended cut-off of 50%. Furthermore, Variance Inflation Factor (VIF) values ranged from 1.02 to 1.50, tolerance values varied from 0.74 to 0.98, and the Durbin-Watson Values evaluated for the three models on mental health outcomes and Global Psychological Distress ranged from 1.90 to 2.01. These findings confirmed the absence of multicollinearity and residual problems.

3.4. Parallel Mediation Model for Depression

As reported in Figure 2, the overall effect of Climate Change Worry on Depression was significant ($c = 0.21$; $SE = 0.66$; $p < 0.001$), while the direct effect of Climate Change Worry on Depression was not ($c' = 0.04$; $SE = 0.59$; $p = 0.42$). The direct effect of Climate Change Worry on Intolerance of Uncertainty was positive and significant ($a_1 = 0.23$; $SE = 0.61$; $p < 0.001$), as was the direct effect of Climate Change Worry on Future Anxiety ($a_2 = 0.28$; $SE = 0.40$; $p < 0.001$). The results also highlighted a significant total indirect effect (total i.e.) of Climate Change Worry on Depression via Intolerance of Uncertainty and Future Anxiety (total i.e., = 0.16; $SE = 0.03$; 95% CI [0.09, 0.24]). Results also highlighted that the indirect effect of Intolerance of Uncertainty ($a_1b_1 = 0.06$; $SE = 0.02$; 95% CI [0.02, 0.10]; $t_{a_1} = 3.80$, $t_{a_2} = 4.32$; *Sobel* $z = 2.85$; $p = 0.004$) and Future Anxiety ($a_2b_2 = 0.08$; $SE = 0.03$; 95% CI [0.06, 0.16]; $t_{b_1} = 4.93$, $t_{b_2} = 6.45$; *Sobel* $z = 3.91$; $p < 0.001$) were significant. While Age did not significantly impact the overall effect model ($\beta_{age} = -0.07$; $p = 0.17$), Gender covariate was found to be statistically significant on the total effect, indicating that female participants are more likely to experience Depression ($d_1 = 0.18$; $p < 0.001$) and Future Anxiety ($d_2 = 0.21$; $p < 0.001$) in relation to Climate Change Worry, as also revealed by *t*-test analysis.

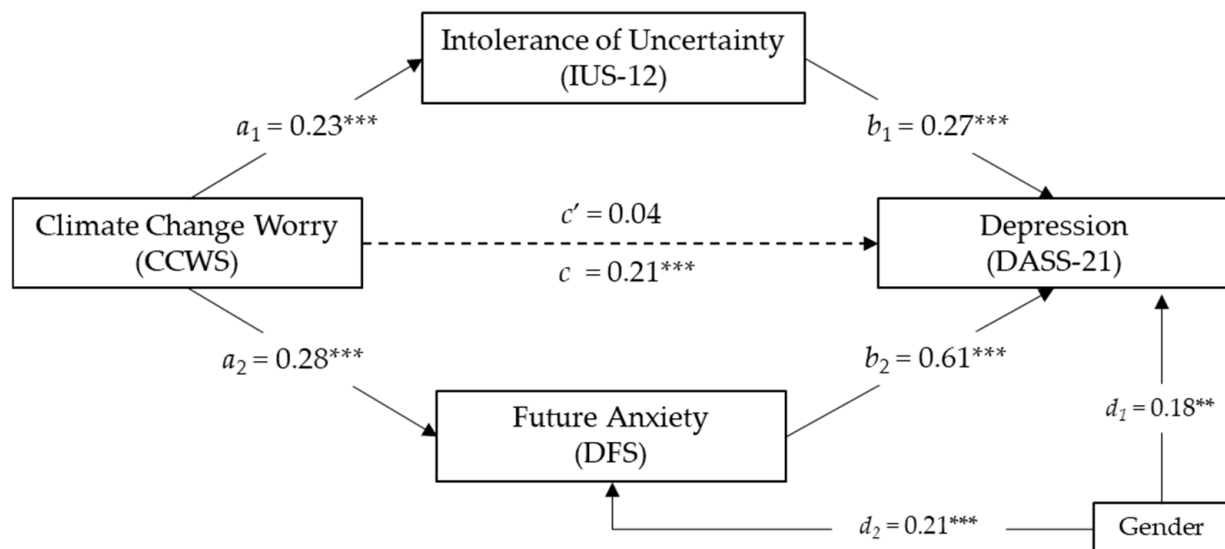


Figure 2. The mediating effects of Intolerance of Uncertainty and Future Anxiety between Climate Change Worry and Depression. Notes: $N = 283$; $*** p < 0.001$, $** p < 0.01$; Standardized effects are reported; Control Variables: Age, Gender; a_1 = effect of CCWS on IUS; a_2 = effect of CCWS on DFS; b_1 = effect of IUS on Depression; b_2 = effect of DFS on Depression; c' = direct effect of CCWS on Depression; c = total effect of CCWS and Mediators on Depression; d_1 = Covariate gender on total effect model; d_2 = Covariate gender on Future Anxiety; Table S1 of the “Supplementary Material” shows the unstandardized coefficients.

Although the direct effect of Climate Change Worry on Depression was not significant, the overall results showed that higher Climate Change Worry was simultaneously associated with more Intolerance of Uncertainty and Future Anxiety which then influenced an increase in Depression with a total mediating effect (H_3).

3.5. Parallel Mediation Model for Anxiety

As presented in Figure 3, the total effect of Climate Change Worry on Anxiety was significant ($c = 0.23$; $SE = 0.66$; $p < 0.001$), as was the direct effect of Climate Change Worry on Anxiety ($c' = 0.12$; $SE = 0.65$; $p = 0.02$) and of Climate Change Worry on the mediators (see Model 1). The results also showed a significant total indirect effect of Climate Change Worry on Anxiety via Intolerance of Uncertainty and Future Anxiety (*total i.e.*, = 0.10; $SE = 0.03$; 95% CI [0.06, 0.16]). Specifically, results showed that the indirect effect of Intolerance of Uncertainty ($a_1b_1 = 0.05$; $SE = 0.02$; 95%; CI [0.01, 0.11]; $t_{a1} = 3.80$, $t_{a2} = 3.47$; *Sobel z* = 2.56; $p = 0.01$) and Future Anxiety ($a_2b_2 = 0.06$; $SE = 0.02$; 95%; CI [0.02, 0.10]; $t_{b1} = 4.93$, $t_{b2} = 3.19$; *Sobel z* = 2.68; $p = 0.007$) were significant. While Age did not have a significant impact on the total effect model ($d = -0.08$; $p = 0.13$), the Gender covariate was found to be statistically significant on the total effect, indicating that female participants are more likely to experience Anxiety ($d_1 = 0.25$; $p < 0.001$) and Future Anxiety ($d_2 = 0.21$; $p < 0.001$) in relation to Climate Change Worry. In addition to the significant direct effect, the overall results showed that Intolerance of Uncertainty and Future Anxiety, positively predicted by Climate Change Worry, influence an increase in Anxiety with a partial mediating effect (H₃).

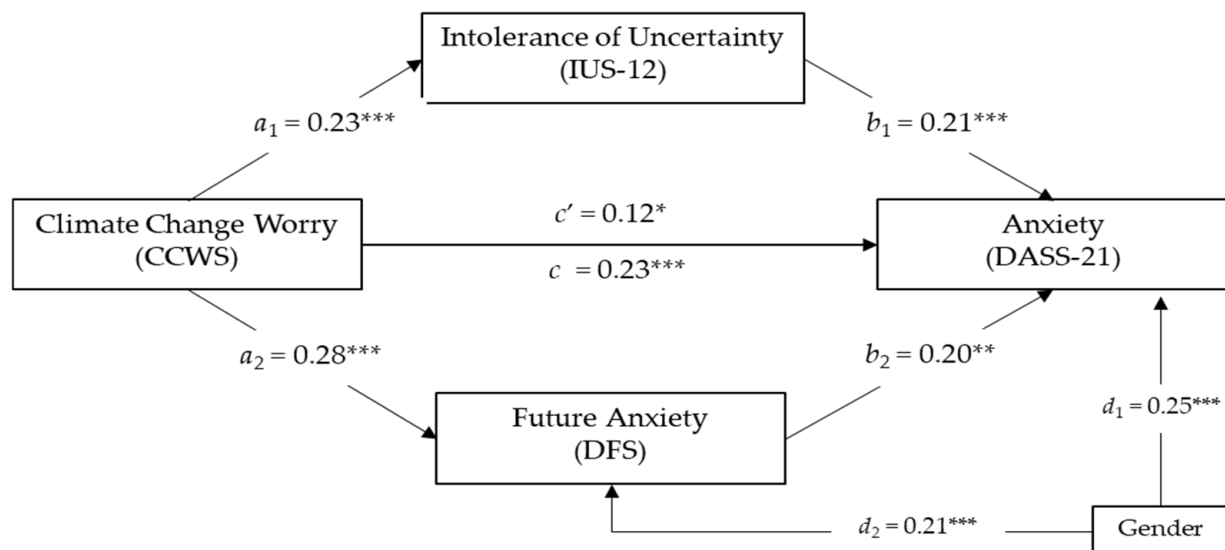


Figure 3. The mediating effects of Intolerance of Uncertainty and Future Anxiety between Climate Change Worry and Anxiety. Notes: $N = 283$; *** $p < 0.001$, ** $p < 0.01$, * $p < 0.05$; Standardized effects are reported; Control Variables: Age, Gender; a_1 = effect of CCWS on IUS; a_2 = effect of CCWS on DFS; b_1 = effect of IUS on Anxiety; b_2 = effect of DFS on Depression; c' = direct effect of CCWS on Anxiety; c = total effect of CCWS and Mediators on Anxiety; d_1 = Covariate gender on total effect model; d_2 = Covariate gender on Future Anxiety; Table S1 of the “Supplementary Material” shows the unstandardized coefficients.

3.6. Parallel Mediation Model for Stress

As reported in Figure 4, the overall effect of Climate Change Worry on Stress was significant ($c = 0.24$; $SE = 0.58$; $p < 0.001$), as was the direct effect of Climate Change Worry on the mediators (see Model 1). The direct effect of Climate Change Worry on Stress was weakly significant ($c' = 0.10$; $SE = 0.53$; $p = 0.05$). Results also showed a significant total indirect effect of Climate Change Worry on Anxiety via Intolerance of Uncertainty and Future Anxiety (*total i.e.*, = 0.14; $SE = 0.03$; 95% CI [0.08, 0.21]). More specifically, results showed that the indirect effect of Intolerance of Uncertainty ($a_1b_1 = 0.05$; $SE = 0.02$; 95%; CI [0.02, 0.09]; $t_{a1} = 3.80$, $t_{a2} = 4.32$; *Sobel z* = 2.85 $p = 0.004$) and Future Anxiety ($a_2b_2 = 0.09$; $SE = 0.02$; 95%; CI [0.04, 0.14]; $t_{b1} = 4.93$, $t_{b2} = 5.68$; *Sobel z* = 3.72; $p < 0.001$) were significant. Age had a significant impact on the total effect model ($d = -0.11$; $p = 0.04$) and Gender

covariate had a significant impact on the total effect, indicating that younger and female participants are more likely to experience Stress ($e_1 = 0.30$; $p < 0.001$) and Future Anxiety ($e_2 = 0.21$; $p < 0.001$) in relation to Climate Change Worry. Beyond the significant direct effect, results showed that Intolerance of Uncertainty and Future Anxiety, positively predicted by Climate Change Worry, influence an increase in Stress with a partial mediating effect (H_3).

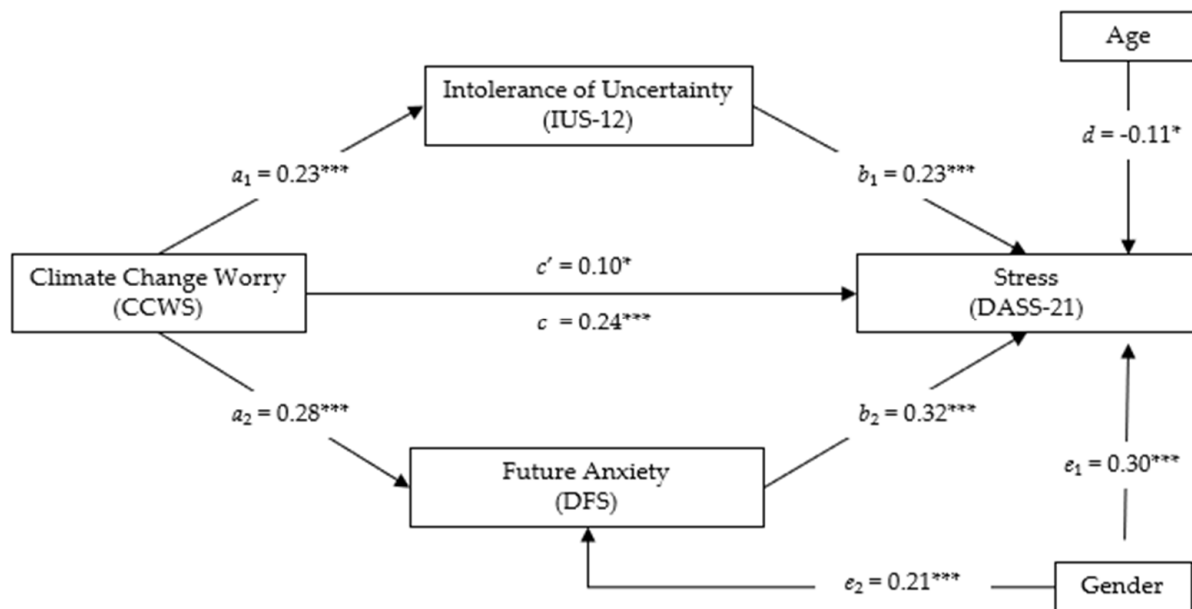


Figure 4. The mediating effects of Intolerance of Uncertainty and Future Anxiety between Climate Change Worry and Stress. Notes: $N = 283$; $*** p < 0.001$, $* p < 0.05$; Standardized effects are reported; Control Variables: Age, Gender; a_1 = effect of CCWS on IUS; a_2 = effect of CCWS on DFS; b_1 = effect of IUS on Stress; b_2 = effect of DFS on Stress; c' = direct effect of CCWS on Stress; c = total effect of CCWS and Mediators on Stress; d = Covariate age on total effect model; e_1 = Covariate gender on total effect model; e_2 = Covariate gender on Future Anxiety; Table S1 of the “Supplementary Material” shows the unstandardized coefficients.

3.7. Serial Mediation Model for Global Psychological Distress and Sensitivity Analysis

As seen in Figure 5, the direct effect of Climate Change Worry on Global Psychological Distress was not significant ($c' = 0.10$; $SE = 0.11$; $t = 1.93$; $p = 0.05$) while the total effect was highly significant ($c = 0.25$; $SE = 0.07$; $t = 9.31$; $p < 0.001$; $CI [0.55, 0.84]$), thus confirming a fully mediated model. In addition to reaffirming the indirect effect of the Intolerance of Uncertainty (Ind1 = 0.06; $SE = 0.02$; 95%; $CI [0.02, 0.10]$) and Future Anxiety (Ind2 = 0.06; $SE = 0.02$; 95%; $CI [0.02, 0.10]$), findings of the serial model showed significant indirect effect of joint mediators (Ind3 = 0.03; $SE = 0.01$; 95%; $CI [0.01, 0.06]$), confirming the hypothesized direction between the two mediators (H_4). Gender was found to be statistically significant on the total effect model ($e_1 = 0.27$; $p < 0.001$) and on Future Anxiety ($e_2 = 0.19$; $p < 0.001$), indicating that female participants experienced more Future Anxiety and Global Psychological Distress compared to their male counterpart in relation to Climate Change Worry, while age covariates did not have a significant impact ($\beta_{age} = -0.09$; $p = 0.07$).

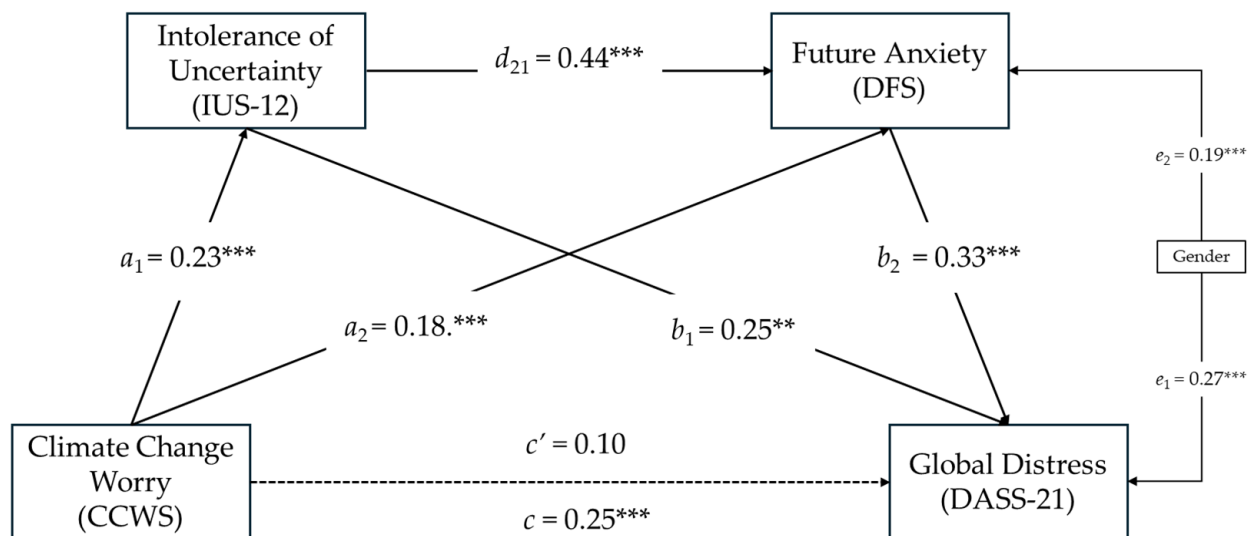


Figure 5. The serial mediating effects of Intolerance of Uncertainty and Future Anxiety between Climate Change Worry and Global Distress. Notes: $N = 283$; $*** p < 0.001$, $** p < 0.01$, $* p < 0.05$; Standardized effects are reported; Control Variables: Age, Gender; a_1 = effect of CCWS on IUS; a_2 = effect of CCWS on DFS; b_1 = effect of IUS on Stress; b_2 = effect of DFS on Stress; c' = direct effect of CCWS on Stress; c = total effect of CCWS and Mediators on Stress; d_{21} = effect of Intolerance of Uncertainty on Future Anxiety; e_1 = Covariate gender on total effect model; e_2 = Covariate gender on Future Anxiety; Table S2 of the “Supplementary Material” shows the unstandardized coefficients.

The sensitivity analysis of the serial mediation model with inverted mediators (Quadrangle pathway: Climate Change Worry → Future Anxiety → Intolerance of Uncertainty → Global Psychological Distress—Ind3) revealed that the effect of Climate Change Worry about Intolerance of Uncertainty was not significant ($a_2 = 0.09$, $p = 0.10$). The analysis also showed the non-significance of the indirect effect of Intolerance of Uncertainty—when included as a second mediator—in the relationship between Climate Change Worry and Global Psychological Distress (Ind2 = 0.02; SE = 0.01; CI [−0.004, 0.05]). It also confirmed the originally hypothesized direction between the mediators (H_4). All standardized and unstandardized coefficients of sensitivity analysis are shown in the Supplementary Materials (Table S3).

4. Discussion

The present study explored the relationship between Climate Change Worry and Psychological Distress in a sample of young Italian adults aged 18 to 25, a target group already reported to have high levels of concern about the climate crisis [16,17]. Drawing inspiration from contributions on the relationship between climate change, experiences of uncertainty heightened by the unpredictability of its effects, and distressing views of the future [35,47,65], we investigated the relationship between Climate Change Worry and mental health by considering the possible mediating role of Intolerance of Uncertainty and Future Anxiety.

The results of this study revealed high levels of Psychological Distress that are also affected by concerns about climate change, reiterating the mental health emergency among young Italian adults already advised in reports [57,70] and research following the COVID-19 pandemic [38,39,68,81].

Consistent with Van Loo’s recent study [82] and confirming our first hypothesis, women show higher levels of Psychological Distress (i.e., Depression, Anxiety and Stress) and Climate Change Worry, which increase the likelihood of experiencing Anxiety and Stress, as confirmed by the results of t -test analyses and mediating models on Stress and Anxiety. These are in line with several contributions reporting greater involvement of women in environmental issues, which, on the one hand, may stimulate the adoption of

pro-environmental behaviors but, on the other, may make the women more vulnerable to negative environmental emotions such as worry or eco-anxiety [21,83]. Levels of Future Anxiety are also found to be higher in women, a finding that could contribute to the impact of Climate Change Worry on Psychological Distress, as highlighted by Searle and Gow [15]. The higher levels of Climate Change Worry detected in women could be related to their greater tendency to internalize [84,85], but also to their greater perception of environmental risk, greater involvement in and sensitivity to environmental issues, as well as their greater ability to understand and express emotional experiences compared to men [86].

The results of the mediation models showed that Climate Change Worry has a positive and significant effect on Anxiety and Stress, and partially support our second hypothesis, in line with recent studies conducted in other contexts by Schwaab et al. [67] and McBride et al. [32]. Our findings show that even in young Italian adults, worry about climate change is associated with greater Depression, Anxiety and Stress impacting their mental health. This enriches the existing body of literature on the subject, which is particularly lacking in Italy and Southern Italy, as already reported. Indeed, it is the functional role of Climate Change Worry in the adoption of pro-environmental behaviors that has been primarily explored in Italy [30], as well as in several studies conducted in other contexts [29,32,34]. On the contrary, our findings highlight the dysfunctional aspect of it, which is exacerbating the psychological distress of young people, perhaps partly due to a growing perception of the climate crisis as catastrophic and uncontrollable [35,48,66].

In addition to its direct effect on Anxiety and Stress, our results show that Climate Change Worry is also indirectly affecting young adults' mental health, to the extent that it is positively associated with Intolerance of Uncertainty and Future Anxiety, two factors that impact all three outcome variables considered. This finding is even more evident in the first parallel mediation model presented, in which Intolerance of Uncertainty and Future Anxiety completely mediate the relationship between Climate Change Worry and Depression, which have no significant direct effect. Specifically, Intolerance of Uncertainty is found to increase the effect that Climate Change Worry has on all mental health outcomes considered. If the inability to manage, predict, and control the climate crisis fuels experiences of uncertainty [1,47,66], feelings of helplessness, and depression [35], our results show that the impact of Climate Change Worry on Depression, Anxiety and Stress is mediated by the ability to tolerate the feeling of uncertainty and uncontrollability elicited by it. That is, Intolerance for Uncertainty is a vulnerability factor in coping with collective events of traumatic or potentially traumatic magnitude, as already highlighted in studies conducted on the COVID-19 pandemic and war [44–46]. In line with the theory of Freeston et al. [43], our results suggest that experiencing uncertainty with aversion and discomfort constitutes a risk factor that hinders functional adaptation to threatening situations; this may prompt the activation of avoidance strategies to reduce the discomfort of uncertainty [49] that eventually affect mental health [50].

Our results show that Future Anxiety also plays a mediating role in all the models described, feeding the impact of Climate Change Worry on Depression, Anxiety and Stress. In a nutshell, climate change, viz. a global phenomenon with traumatic potential given the catastrophic scenarios that it can produce, is intrinsically linked to the dimension of the future [66,67]. Our results report the positive effect of Climate Change Worry on Future Anxiety, confirming that the climate crisis is reinforcing a negative and anxious attitude toward the future in young Italian adults, who are already scarred by the pandemic trauma [38,39,68,82]. This aligns with Soutar and Wan's [65] thematic review reporting that climate change is associated with anxieties, fears, and worries about the future and an apocalyptic vision of it due to the unpredictability of its evolution and the difficulty coping with it. Although, to our knowledge, there are currently no specific studies on the relationship between Climate Change Worry and Future Anxiety, several contributions report that a negative attitude toward the future or a negative representation of it may be a risk factor for mental suffering [69]. Our results indicate that Future Anxiety is fueled by Climate Change Worry, which helps in understanding the increasingly negative views of

the future in young people reported in the literature [58,59,87]. In any case, Future Anxiety appears to be another vulnerability factor for Depression, Anxiety and Stress as already highlighted in research on the impact of traumatic collective phenomena such as pandemics or war [40,68].

Finally, a serial mediation model was carried out to test the joint mediating effect of Uncertainty Intolerance and Future Anxiety in the relationship between Climate Change Worry and Global Psychological Distress, that is, to test our H₄ hypothesis. Apart from some similar findings between the three parallel mediation models previously discussed and the serial mediation model, the analysis of the latter showed, on the one hand, the role of the two mediators in explaining the impact of Climate Change Worry on Global Psychological Distress through a fully mediated model, and, on the other, it confirmed the direction of the link between the two mediators (H₄; Intolerance of Uncertainty → Future Anxiety). The presence of a fully mediated model of the two mediators corroborates the aim of the present study and clearly highlights the usefulness of considering the role of other variables in the relationship between emotions and mental health, especially considering that the psychoterratic states investigated can take on both an adaptive and maladaptive function [25].

In line with Buhr and Dugas [41], our model also confirms the prior role of Intolerance of Uncertainty in influencing the representation of the future. As a matter of fact, the serial model highlighted how Intolerance of Uncertainty may increase the probability of having a negative attitude toward the future. The subsequent sensitivity analysis—in which a new serial model was conducted with inverted mediators (Future Anxiety → Intolerance of Uncertainty) further confirmed the direction we hypothesized. Our results seem to confirm Miranda and Mannini's [54] hypothesis that Intolerance of Uncertainty in addition to fostering a distorted prediction of the future, could be a risk factor acting as a cognitive bias and fostering maladaptive representation of the future as well as pessimistic future expectations [55,56]. For these reasons, our findings suggest that young adults with greater worry about climate change may experience greater intolerance of uncertainty, which is likely to foster an anxious view of the future and, in turn, exacerbate overall psychological distress.

To our knowledge, not only is our study the first Italian one investigating the relationship between Climate Change Worry and mental health, but it is also the first to consider the mediating effect of Intolerance of Uncertainty and Future Anxiety on this relationship. From the results presented, it seems relevant to consider the interaction between multiple variables and constructs in exploring the effect that negative environmental emotions have on youth mental health, as partly already reported by Stewart [25]. Indeed, the addition of the mediators allowed for a more complete understanding of the relationship between Climate Change Worry and all the mental health outcomes considered, especially in the Depression and Serial models where the direct effects were not significant.

Therefore, exploring the indirect pathways through which negative environmental emotions affect youth psychological distress appears to be a fertile and relevant research field that allows us to delve into the impact that the climate crisis is having on the younger generation.

Strengths, Limitations, and Future Research Directions

To our knowledge, this is the first study investigating the relationship between Climate Change Worry and Psychological Distress in the Italian context, and it also considers the mediating effect of Intolerance of Uncertainty and Future Anxiety. Our findings enrich the literature on the impact of climate change on mental health in Italy, a research area that is still lacking, as pointed out in the recent review by Massazza et al. [9].

As for research limitations, they primarily include volunteer bias (linked to the characteristics of those who voluntarily decided to participate), bias related to the use of the mono-method, and the inclusion of mostly young adult students among the target sample. Furthermore, due to the cross-sectional design, the current study does not allow

causal/directional relationships to be established between the variables explored, and even the selected mediators could be influenced by additional unobserved variables. To overcome this limitation, future studies could adopt a multimodal approach and consider other potential intervening variables. Thus, we highly suggest that future studies include other sociodemographic variables (e.g., income, political orientation, etc.) and other categories of participants coming from other regions of Italy as well to allow for better representativeness and generalizability. Furthermore, they should also consider other variables to explore the indirect effect between environmental emotions and psychological distress.

It would also be interesting to better investigate the finding according to which no direct effect between Climate Change Worry and Depression is visible, yet a significant total effect emerges when the mediators of Intolerance of Uncertainty and Future Anxiety are taken into consideration.

5. Conclusions

This study is part of a broader line of research that aims to explore the impact of traumatic or potentially traumatic collective events on youth mental health and investigate contemporary youth malaise by adopting an ecological approach. At the same time, it tries to provide a starting point for the design and implementation of interventions in support of this target group. Specifically, the relationship between Climate Change Worry and Psychological Distress was explored by considering the mediating effect of Intolerance of Uncertainty and Future Anxiety. The results collected show that Climate Change Worry is affecting participants' levels of Anxiety and Stress, but more importantly, that Intolerance of Uncertainty and Future Anxiety constitute vulnerability factors that can fuel the impact of Climate Change Worry on mental health outcomes, particularly Depression. The results of the serial model also confirm the importance of the mediating variables on the impact of Climate Change Worry on Global Psychological Distress and highlight the role of Intolerance of Uncertainty in influencing attitudes towards the future—an aspect that, to our knowledge, had yet to be investigated in the Italian context. We believe that the results of our study enrich the body of literature that has been exploring the relationship between environmental emotions and mental health in Italy and around the world. Our results could be a starting point for the establishment of structured theoretical models aimed at exploring the impact of environmental emotions on mental health. Moreover, having highlighted in a novel form several ways in which Worry about Climate Change may affect psychological distress opens up new trajectories of inquiry into the relationship between environmental emotions and mental health. Indeed, the results presented confirm the importance of considering different variables that could play a pivotal role in enhancing or depowering the effects of environmental emotions on mental health, thus opening fruitful considerations for future research on such a complex and global phenomenon as the climate crisis.

Furthermore, this research can serve as a guide to designing interventions aimed at supporting young adults whose mental health and well-being should be seriously taken into consideration, especially in Italy, given the many recent potentially traumatic collective events. Knowing the different ways through which traumatic collective phenomena are likely to affect youth mental health could be a valuable aid for health and education professionals interfacing with young adulthood in polytraumatic community scenarios that do not support the developmental tasks of this target audience.

To conclude, building spaces for group discussion in which to express and share concerns and anxieties prompted by the climate crisis could support the functional aspect of Climate Change Worry, and implement awareness and understanding of this phenomenon and ways to cope with it. The climate crisis is a global phenomenon that could generate in individuals a sense of loneliness, uncertainty, and helplessness, thus fostering an increasingly negative view of the future in young adults. The group device would thus become a setting where to share, embrace, and transform such mental states in order to facilitate the consolidation of social connections and the taking of an active role in coping

with the climate crisis with small daily actions so as to support individual and group empowerment [88].

Supplementary Materials: The following supporting information can be downloaded at: <https://www.mdpi.com/article/10.3390/cli12080118/s1>. Table S1: Total summary of parallel mediation models with standardized and unstandardized coefficients; Table S2: Total summary of serial mediation model with standardized and unstandardized coefficients; Table S3: Total summary of Sensitivity Analysis of serial mediation model with inverted mediators (standardized and unstandardized coefficients).

Author Contributions: G.M.R.: research design, data collection, analysis, and interpretation of data; manuscript drafting and revising. G.T.: data collection, analysis, and interpretation of data; manuscript drafting and revising. B.D.R.: research design, data collection, analysis, and interpretation of data; manuscript drafting and revising. All authors have read and agreed to the published version of the manuscript.

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Institutional Review Board Statement: The study was conducted in compliance with the Declaration of Helsinki and approved by the Ethics Committee of the University of Naples “Federico II” (Approval Code: protocol number 1-2023; Approval Date: 13 January 2023).

Informed Consent Statement: Informed consent was obtained from all subjects involved in the study, and the data collected will remain anonymous. Privacy laws were observed, and participants could leave the study at any time.

Data Availability Statement: The data that support the findings of this study are available from the corresponding author (BDR), upon reasonable request.

Conflicts of Interest: The authors declare that the research was conducted in the absence of any potential conflicts of interest.

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