

# Maintaining social support while social distancing: The longitudinal benefit of basic psychological needs for symptoms of anxiety during the COVID-19 outbreak

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## Abstract

Although social distancing measures could be potentially perceived as thwarting conditions for basic psychological needs and thus causing psychological distress, off (on)line social support could compensate for this frustration by providing psychological proximity. Using self-determination theory, in this study, we aimed (a) to evaluate the change of perception in need satisfaction over time (before and during home-confinement and after a month of lockdown) and (b) to test the short-term longitudinal association between off(on)line social support, basic needs, and anxiety during social distancing measures in response to the COVID-19 outbreak. During the lockdown period decreed by Italy in March 2019 to confront the COVID-19 emergency, 1344 participants completed an online questionnaire and 131 participants completed a follow-up after 1 month. Results showed a decrease in need satisfaction during home confinement and a further reduction after a month of lockdown. Cross-sectional path analysis showed that both online and offline social support were associated with higher need satisfaction, which, in turn, was related to a lower level of anxiety. Longitudinal paths also confirmed the association between need satisfaction and anxiety. Collectively, these results suggest that maintaining psychological proximity despite social distancing measures may provide important avenues for reducing negative outcomes during forced home confinement.

## KEYWORDS

anxiety, basic psychological needs, off(on)line social support, psychological distress, social distance measures

## 1 | INTRODUCTION

The outbreak of the COVID-19 pandemic led Italy to become the first European country in 2020 to put in place measures of social distancing to try to stem its spread. Italy mounted an energetic response in implementing all the social distancing measures at the individual and group level proposed by the European Centre for Disease Prevention and Control (European Centre for Disease Prevention and Control, 2020). Although these nonpharmaceutical countermeasures are essential to decrease the transmission of the

new coronavirus, the American Psychological Association (APA, 2020) expressed concern about the risk to mental health due to the long periods at home without an opportunity to carry out regular daily activities and in situations of limited resources and social engagement. Furthermore, according to the guidelines of the Mental Health Department of the World Health Organization (WHO, 2020), this crisis could generate high anxiety in the general population, and the negative psychological effects of social distancing measures could be comparable to the consequences shown in previous conditions of quarantine and isolation (APA, 2020; Brooks, et al., 2020).

As COVID-19 was relatively novel and unexplored, its rapid transmission, the higher mortality rate in comparison to other coronaviruses, and concerns about the future could be causes of anxiety (Banerjee, 2020). The most recent systematic review and meta-analysis of mental health in the general population during the COVID-19 pandemic revealed that anxiety was prevalent in the population (Salari et al., 2020). Symptoms of anxiety may be appropriate reactions to the COVID-19 lockdown circumstances, but over time (or with increased intensity), they may become maladaptive and impair functioning (Razai et al., 2020). Considering that an abnormal level of anxiety weakens the body's immune system and consequently increases the risk of contracting viruses (WHO, 2020), it is important to know which factors can mitigate symptoms of anxiety in people who experience challenging situations such as home confinement during a pandemic.

From the perspective of self-determination theory (SDT; Ryan & Deci, 2017), although obligations and rules can also be perceived as autonomous if they are in line with personal values (Ryan & Deci, 2017), the worldwide COVID-19 crisis and the home confinement measures could be potentially perceived as need-thwarting conditions because they may frustrate the basic psychological needs of autonomy, competence, and relatedness (Vansteenkiste et al., 2020; Vermote et al., 2021). Indeed, the obligation to stay at home could be perceived as a restriction of individual freedom that compromises personal feelings of choice and volition (autonomy frustration). Furthermore, the requirement to avoid close contact with people and the prohibition of recreational events and social gatherings could exacerbate feelings of isolation and loneliness that are typical of the frustrating need for relatedness. Finally, not only could the closure of universities and nonessential work activities cause individuals to experience a lack of effectiveness in interacting with their work or educational environment, but the sudden shift to distance working/learning could also be associated with inadequacy and unpreparedness in dealing with this change (competence frustration).

Overall, a multitude of studies that have applied SDT has shown that satisfaction of these three needs promotes well-being and reduces the risk of developing distress and maladjustment, including anxiety (Cordeiro et al., 2016; Queded et al., 2011; Ryan & Deci, 2017). Need satisfaction is particularly salient in hostile contextual conditions and can improve individual well-being in extremely restrictive and unsafe environments (Chen, Van Assche, et al., 2015; Di Domenico & Fournier, 2014; Ryan & Deci, 2017; van der Kaap-Deeder et al., 2017; Weinstein et al., 2016). Considering that the first lockdown during the COVID-19 crisis poses threats in several life domains that could increase the risk for developing anxiety (APA, 2020; WHO, 2020) through the frustration of basic psychological needs, a preliminary process might be to examine the relevant factors that promote need satisfaction. SDT has shown that proximal social contexts could act as "need-supportive contexts" (Vansteenkiste & Ryan, 2013) that promote need satisfaction in several environments and domains (e.g., parenting: Costa, Gugliandolo, et al., 2019; school: Li et al., 2018; sport: Mallia

et al., 2019; work: Y. Liu et al., 2020). Previous studies (Cho et al., 2020; Tian et al., 2016) have indeed shown that receiving social support helps people feel more connected with those around them (need for relatedness), feel more confident in their skills (need for competence), and feel like more willful agents of their choices (need for autonomy). In these contexts, social support is a crucial resource for positive adaptation, development of inner resources, and promotion of well-being. Research has shown that positive social support helps reduce anxiety and increase adjustment (Guilaran et al., 2018; Özmete & Pak, 2020). Specifically, considering the restriction caused by social distancing measures, having the assistance of relevant others around during home confinement may be particularly important to stem negative consequences and maintain psychological proximity. For this reason, social support during home confinement could have a strong role to play in the face of this experience. Furthermore, the opportunity to use an online form of social support through calls, video meetings, social media, and messages may compensate for the inability to maintain in-person social contacts.

The purpose of this study was therefore to evaluate the perception of need satisfaction over time and to replicate a consolidated SDT model (Ryan & Deci, 2017) in a group of Italian participants during social distancing measures in response to the COVID-19 outbreak. Specifically, our first aim was to estimate the difference in perception of need satisfaction over time (before and during the lockdown period in Italy). To achieve this, we asked participants at T1 (the second week of home confinement) to think about the previous week of home confinement and the period before that (the first week of February before any restrictions in Italy), and those at T2 (the second month of home confinement) to think about the previous month of home confinement. Our second aim was to examine the association between off(on)line social support, need satisfaction, and anxiety during home confinement. Our third aim was to verify the short-term longitudinal associations between off(on)line social support, need satisfaction, and anxiety during home confinement to examine the reciprocity and temporality of the associations. In summary, we hypothesized that (a) the perception of need satisfaction would be reduced from the period before the lockdown to the period during the lockdown, and that need satisfaction would continue to decrease after 1 month of lockdown; (b) off(on)line social support would be positively associated with need satisfaction; (c) need satisfaction would be negatively associated with anxiety; (d) off(on)line social support would have a positive cross-lagged effect on need satisfaction; and (e) need satisfaction would have a negative cross-lagged effect on anxiety.

## 2 | METHOD

### 2.1 | Participants

A total of 1344 participants (male = 439; female = 905) with ages ranging between 18 and 35 years ( $M = 23.91$ ,  $SD = 3.59$ ) completed

the entire questionnaire by meeting the following inclusion/exclusion criteria: (a) older than 18 but younger than 35 years, (b) living in Italy, and (c) not having received a diagnosis of COVID-19. Regarding the education of participants, the majority had a high school diploma (49%), 31% a first-level degree, 13% a second-level degree, 5% secondary school certification, and 2% a post-degree. Regarding cohabitation status during the lockdown, 77 participants (6%) reported living on their own, 249 (19%) with another person, 353 (26%) with two other people, 426 (32%) with three other people, 165 (12%) with four other people, 49 (4%) with five other people, 10 (1%) with six other people, and 15 (1%) with seven or more people.

After completing the questionnaires, participants were asked to provide their email addresses in case they wished to be involved in a second evaluation; of the 1344 participants, 352 agreed to do so. Of those who agreed, 131 (33 males, 98 females) replied to an email and completed the study follow-up (T2). This group of participants were between 19 and 35 years old ( $M = 23.79$ ,  $SD = 3.22$ ); 41% had a high school diploma, 37% a first-level degree, 19% a second-level degree, 1% secondary school certification, and 2% a postdegree. Regarding their cohabitation status during the lockdown, 11 participants (8%) reported living on their own, 31 (24%) with another person, 34 (26%) with two other people, 31 (24%) with three other people, 14 (11%) with four other people, six (5%) with five other people, two (1%) with six other people, and two (1%) with seven or more people.

## 2.2 | Procedure

Participants of this study were recruited through an online questionnaire from March 24 to March 28, 2020, during the lockdown period in March 2020 decreed by Italy due to the COVID-19 emergency. We adopted a snowball recruiting technique, with the survey advertised throughout social media groups (e.g., Facebook, WhatsApp) and local online messaging boards. At the end of the questionnaire, participants had the opportunity to optionally provide their availability to be contacted for a second administration. T2 was conducted in April 2020, 1 month after the first administration. All participants received information about the study and gave their online consent before starting the survey. At the end of the survey, participants could provide their availability to be contacted for a follow-up by providing their email address on a separate form not associated with their previous answers that led to an external link. The anonymity of the participants was guaranteed (no personal data or Internet Protocol addresses were collected) and the association between T1 and T2 answers occurred through an anonymous personalized identification code. No compensation was given for participating in the study and the participation was voluntary. The local Ethics Committee of the centre for research and psychological intervention of the University of Messina gave formal approval for this study, including data protection, before the survey. This study was part of a larger research project on the psychological impact

of the COVID-19 outbreak in Italy, and other data not related to the current study have been presented elsewhere (Cellini, et al. 2020).

## 2.3 | Measures

Questionnaires included in the online survey were selected to prioritize instruments that have been validated and for which published versions exist in Italian. In the survey, conducted using Google Form, we asked participants to think about the previous week (T1 was March 17–23, the second week of lockdown; T2 was April 20–26, the seventh week of lockdown). For T1, we also asked participants to think retrospectively about the satisfaction of their basic psychological needs during the first week of February (before home confinement). The order of the questionnaires was fixed for all participants, and the survey was composed of 182 questions across 11 pages/screens. Participants could review their answers before the submission. Before data collection, a pretest was performed by several colleagues of the authors. The survey was then revised according to their comments. The survey followed the Checklist for Reporting Results of Internet E-Surveys (CHERRIES; Eysenbach, 2004) and the checklist can be found in Table S1.

*Online and offline social support* was assessed by using the Italian version of the Offline/Online Social Support Scale (E.S.T. Wang & Wang, 2013, adapted from Leung & Lee, 2005) created by Mazzoni et al. (2016) for their study. Both comprise 11 items addressing the question, "In your online life/offline life if you need it, how often do you have it available?" (questions were based on the previous week for the aim of the present study). The answer is given by selecting one among four points. Both scales are reliable: Cronbach's  $\alpha$  at T1 was 0.95 (95% confidence interval [CI]: [0.95, 0.96]) for offline social support and 0.95 (95% CI: [0.95, 0.96]) for online social support; at T2, it was 0.94 (95% CI: [0.93, 0.96]) for offline social support, and 0.95 (95% CI: [0.94, 0.96]) for online social support.

*Basic psychological needs satisfaction* was measured with the short version (Van Petegem et al., 2017) of the Italian translation of the Basic Psychological Needs Satisfaction and Frustration Scale (Chen, Vansteenkiste, et al., 2015; Costa et al., 2018). It consists of 12 items scored by using a 5-point Likert scale ranging from 1 (*not at all true*) to 5 (*completely true*) to evaluate experienced satisfaction of basic psychological needs in the previous week (during home confinement in March during T1 and in April during T2) and during the first week of February (before home confinement at T1). Cronbach's  $\alpha$  was 0.82 (95% CI: [0.80, 0.83]) during home confinement and 0.80 (95% CI: [0.78, 0.81]) before home confinement for T1, and it was 0.82 (95% CI: [0.77, 0.86]) during home confinement for T2.

*Anxiety* (in the previous week) was assessed by using the 7-item stress subscale of the short-form Depression Anxiety Stress Scale-21 (Lovibond & Lovibond, 1995; Italian version: Bottesi et al., 2015) based on a 4-point Likert scale ranging from 0 (did not apply to me at all) to 3 (applied to me most of the time). The anxiety scale assessed situational anxiety, autonomic arousal, and subjective experience of anxious affect.

Cronbach's alpha was 0.81 (95% CI: [0.79, 0.82]) for T1 and 0.83 (95% CI [0.78, 0.87]) for T2.

## 2.4 | Data analysis

To examine the confounding role of background variables, we conducted a multivariate analysis of covariance with gender as a fixed factor; age, education level, and cohabitation status (number of people living with the individual) as covariates; and all study variables as criteria variables (online support, offline support, total need satisfaction, and anxiety). A repeated measure analysis of variance (ANOVA) was conducted to verify the difference in the criteria variables between the time periods (before home confinement vs. during home confinement). Power analysis was conducted with G\*Power suggesting a minimum sample of 34 participants for a repeated-measures ANOVA (2 time points and one group) considering a medium effect size (0.3), a two-tailed test with  $\alpha = 0.05$ , and a power level of 0.8. The lavaan package (Rosseel, 2012) of the open-source software R (R Development Core Team, 2013) was used to compute the model and estimate parameters. Regarding the cross-sectional design, the pattern of associations specified by the proposed model was analyzed with path analysis by using a single observed score for each variable examined in the model. Standardized parameters were estimated by using the maximum likelihood method (Satorra & Bentler, 1988). To evaluate the overall goodness of fit of the model, we considered the  $R^2$  of each dependent variable and the total variance explained by the model (total coefficient of determination [TCD]; Canale et al., 2019; Jöreskog & Sörbom, 1996). The bootstrapping approach with 5000 bootstrap replication samples was used to evaluate total, direct, and indirect effects and to address for minor violations of data normality. Power analysis conducted with G\*Power suggested a minimum sample of 95 participants for linear multiple regressions with seven predictors considering a medium effect size (0.15), a two-tailed test with  $\alpha = 0.05$  and a power level of 0.8. Finally, with the data of T2, we conducted a cross-lagged path analysis with the observed variables. Included in the model were all the autoregressive paths (in which each observed variable at T1 predicted itself at T2) and the reciprocal cross-lagged paths between predictors (online and offline support) and mediator

(need satisfaction) and between mediator (need satisfaction) and outcome (anxiety). Furthermore, covariances between all study variables at T1 and between all study variables at T2 were modeled to control for shared variance. Power analysis conducted with G\*Power suggested a minimum sample of 109 participants for linear multiple regressions with eight predictors considering a medium effect size (0.15), a two-tailed test with  $\alpha = 0.05$ , and a power level of 0.8.

## 3 | RESULTS

### 3.1 | Descriptive and preliminary analyses

Mean, standard deviation, minimum value, maximum value, skewness, kurtosis, and bivariate correlations (Table 1) were calculated in a preliminary analysis to understand the frequencies and associations between the variables (online support, offline support, total need satisfaction, and anxiety). Online support, offline support, and total need satisfaction had levels of skewness and kurtosis within the range of  $\pm 1$ , while anxiety within the range of  $\pm 3$ . Concerning the check for collinearity, the magnitude of the correlation coefficients was relatively modest, ranging from  $-0.35$  to  $0.46$ . Correlation analyses showed that the associations between online support, offline support, and need satisfaction were all positive and statistically significant, whereas the associations of these variables with anxiety were all negative and statistically significant, except for the association between online support and anxiety, which was not significant. Results of the multivariate analysis of covariance (MANCOVA) showed that there were overall multivariate effects for all background variables: age, Wilks's  $\lambda = 0.97$ ,  $F(5, 1335) = 7.02$ ,  $p < .001$ ,  $np^2 = 0.03$ ; educational level, Wilks's  $\lambda = 0.98$ ,  $F(5, 1335) = 6.50$ ,  $p < .001$ ,  $np^2 = 0.02$ ; gender, Wilks's  $\lambda = 0.94$ ,  $F(5, 1335) = 15.76$ ,  $p < .001$ ,  $np^2 = 0.06$ ; and cohabitation status, Wilks's  $\lambda = 0.99$ ,  $F(5, 1335) = 4.18$ ,  $p = .001$ ,  $np^2 = 0.02$ . For this reason, their effects were controlled in the models with participants at T1, but are not reported for clarity.

An examination of the differences between participants at T1 who did not participate in the study at T2 and those who completed both T1 and T2 showed no differences for most of the background and study variables. The exceptions were education level, as

**TABLE 1** Descriptive and correlational analyses.

	Min	Max	M	SD	Skew	Kurt	1	2	3	4
1. Offline support during home confinement	11.00	44.00	29.38	9.17	-0.16	-0.90				
2. Online support during home confinement	11.00	44.00	33.07	8.42	-0.37	-0.79	0.28**			
3. Need satisfaction before home confinement	12.00	60.00	43.49	7.64	-0.32	0.09	0.18**	0.21**		
4. Need satisfaction during home confinement	13.00	60.00	42.03	7.74	-0.33	0.03	0.32**	0.18**	0.46**	
5. Anxiety during home confinement	0.00	20.00	3.08	3.49	1.58	2.51	-0.08**	-0.01	-0.18**	-0.35**

Note:  $N = 1344$ .

\*\* $p < .01$ .

participants who completed only T1 reported a lower education level than did those who also completed T2 ( $z = 3.28, p = .01$ ), and offline support variables, as participants who completed only T1 reported a higher level than did those who also completed T2,  $t(1342) = 2.31, p = .02$ . In the follow-up sample, the mean, *SD*, minimum value, maximum value, skewness, kurtosis, and bivariate correlations were calculated in a preliminary analysis to understand the frequencies and associations between the variables (online support, offline support, total need satisfaction, and anxiety) at both T1 and T2 (Table 2).

### 3.2 | Repeated measures ANOVA

Results of the repeated measures ANOVA with all participants at T1 showed a significant reduction in need satisfaction,  $F(1, 1343) = 44.85, p < .001, \eta^2 = 0.03$ , from the memory of the period before home confinement ( $M = 43.49, SD = 7.64$ ) to the perception of the period during home confinement ( $M = 42.03, SD = 7.73$ ).

The results of several repeated measures ANOVAs (Table 3) in the group of subjects who participated in the follow-up showed a significant reduction in need satisfaction,  $F(2, 260) = 24.17, p < .001, \eta^2 = 0.16$ , from the memory of the period before home confinement to the perception of the period during home confinement at T1 ( $p = .005$ ), and from the memory of the period before home confinement to the perception of the period during home confinement at T2 ( $p < .001$ ). Furthermore, there was a significant reduction in need satisfaction from the perception of the period during home confinement at T1 to the perception of the period during home confinement at T2 ( $p < .001$ ). There was no statistical difference for the other study variables. All means over time are displayed in Table 3.

### 3.3 | Path analysis

Estimation of the cross-sectional model with the entire sample (Figure 1) showed that the TCD was 0.10 (corresponding to a

correlation of  $r = 0.32$ , which is a medium effect size according to the traditional criteria of Cohen, 1988), and the squared multiple correlations indicated that a modest portion of the variance could be explained by the study variables (3% in offline support, 4% in online support, 14% in total need satisfaction, 14% in anxiety). Moreover, the examination of direct effects (Table 4) showed that both online support and offline support were positively related to total need satisfaction, which, in turn, was negatively related to anxiety. Neither offline nor online social support was associated with symptoms of anxiety. Examination of the indirect effects of offline and online social support on anxiety (Table 4) showed that all associations with total need satisfaction were significant.

### 3.4 | Cross-lagged path analysis

Results of the cross-lagged path analysis (Figure 2) showed that the TCD was 0.90 (corresponding to a correlation of  $r = 0.95$ , which is a large effect size according to the traditional criteria of Cohen, 1988), and the squared multiple correlations indicated that a modest portion of the variance could be explained by the study variables (56% in offline support at T2, 52% in online support at T2, 34% in total need satisfaction at T2, 36% in anxiety at T2). Examination of the cross-lagged paths showed that need satisfaction at T1 predicted a reduction in anxiety at T2. Furthermore, a marginally significant cross-lagged path ( $p = .052$ ) was shown with online support at T1 that predicted increases in need satisfaction at T2. Finally, the examination of the autoregressive paths showed significant stability of all observed variables.

## 4 | DISCUSSION

COVID-19 pandemic had a strong impact on mental health across the globe and psychological consequences are being extensively observed in the general population and in specific groups that could be particularly at risk (Biviá-Roig et al., 2020; Commodari & La

**TABLE 2** Descriptive and correlational analyses

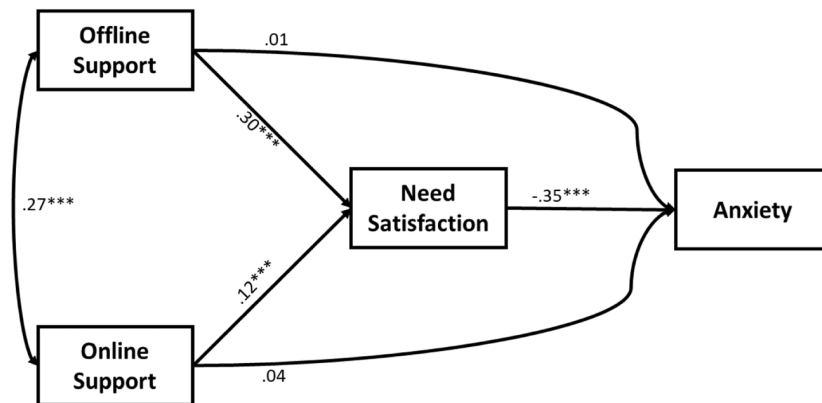
	Min	Max	M	SD	Skew	Kurt	1	2	3	4	5	6	7
1. Offline support—T1	11.00	44.00	27.63	10.10	0.11	-1.08							
2. Online support—T1	11.00	44.00	32.53	8.88	-0.44	-0.70	0.30**						
3. Need satisfaction—T1	20.00	57.00	42.13	7.79	-0.38	-0.13	0.26**	0.23**					
4. Anxiety—T1	0.00	16.00	2.95	3.31	1.50	1.95	0.12	0.11	-0.16				
5. Offline support—T2	11.00	44.00	27.53	9.34	-0.09	-0.93	0.75**	0.24**	0.28**	0.07			
6. Online support—T2	11.00	44.00	32.87	8.26	-0.40	-0.45	0.27**	0.72**	0.22*	0.11	0.40**		
7. Need satisfaction—T2	16.00	57.00	39.47	8.09	-0.28	-0.12	0.17	0.24**	0.56**	-0.17	0.26**	0.19*	
8. Anxiety—T2	0.00	15.00	2.95	3.54	1.42	1.48	0.01	0.06	-0.31**	0.56**	-0.02	0.08	-0.44**

Note:  $N = 131$ .

\* $p < .05$ ; \*\* $p < .01$ .

**TABLE 3** Differences in the Study Variables across Time

	Before home confinement T1		During home confinement T1		During home confinement T2		F	df	p	np <sup>2</sup>
	M	SD	M	SD	M	SD				
1. Offline support	-	-	27.63	10.10	27.53	9.34	0.02	1,130	.88	0.00
2. Online support	-	-	32.53	8.88	32.87	8.26	0.37	1,130	.54	0.00
3. Need satisfaction	44.71	7.71	42.13	7.79	39.47	8.09	24.17	2,260	<.001	0.16
4. Anxiety	-	-	2.95	3.31	2.95	3.35	0.00	1,130	.98	0.00

**FIGURE 1** Graphical representation of the structural model (N = 1344). \*\*\*p < .001**TABLE 4** Total, direct, and indirect paths of the models

	b	p	CI low	CI high	β
Direct effect					
Offline support → Need satisfaction	0.26	<.01	0.21	0.30	0.30
Online support → Need satisfaction	0.11	<.01	0.06	0.16	0.12
Need satisfaction → Anxiety	-0.16	<.01	-0.19	-0.13	-0.35
Offline support → Anxiety	0.01	.79	-0.02	0.03	0.01
Online support → Anxiety	0.02	.17	-0.01	0.04	0.04
Indirect effect					
Offline support → Need satisfaction → Anxiety	-0.04	<.01	-0.05	-0.03	-0.11
Online support → Need satisfaction → Anxiety	-0.02	<.01	-0.03	-0.01	-0.04
Total effect					
Offline support → Anxiety	-0.04	<.01	-0.06	-0.01	-0.10
Online support → Anxiety	-0.01	.96	-0.03	0.03	-0.01

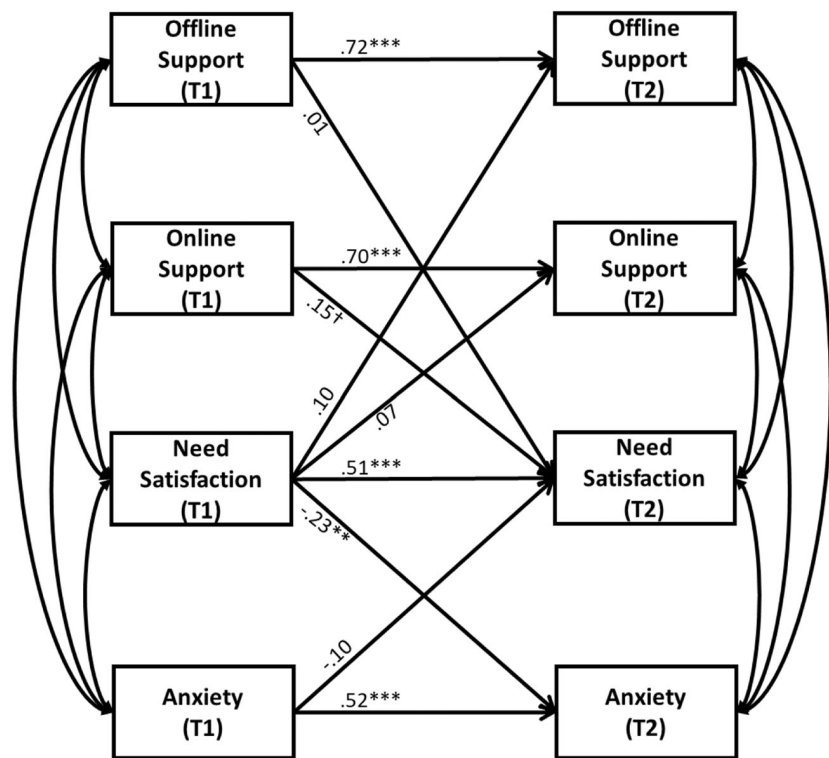
Note: Paths from background variables are not reported for clarity. Abbreviations: CI low, lower level of the confidence interval at 95%; CI high, higher level of the confidence interval at 95%.

Rosa, 2020; X. Liu et al., 2021). This study provides relevant findings, in line with the well-established SDT (Ryan & Deci, 2017), about the essential role of basic psychological needs for psychological well-being in times of uncertainty (Vermote et al., 2021). The reduction in

need satisfaction after the lockdown in Italy could presumably be due to a decreased opportunity to choose activities, to be physically connected to others, and to feel effective at university or work and confirm the higher level of need frustration in the academic context during the distance learning period than before the COVID-19 pandemic (Müller et al., 2021). Furthermore, the implementation of the home confinement restrictions exposed the population to the beginning of a health crisis, creating concern and uncertainty that could decrease the perception of need satisfaction (Vermote et al., 2021). The results of this study confirm the line of research that has shown that financial insecurity (Weinstein & Stone, 2018), low public safety (Chen, Van Assche, et al., 2015), high state-level income inequality, and low household income (Di Domenico & Fournier, 2014) could undermine basic psychological needs becoming need-thwarting conditions. Most of the previous studies (Costa, Sireno, et al., 2019; Garn et al., 2019; Jang et al., 2019) generally focused on the role of the proximal contextual condition in need satisfaction (e.g., parents, teachers, coaches), but recent studies have started to also focus on more distal factors, such as political environments, cultural norms, and economic systems (Ryan & Deci, 2017; Ryan et al., 2017).

Furthermore, the lockdown had an invasive effect in daily life affecting well-being, mostly manifesting in terms of anxiety symptoms (Petzold et al., 2020; Salari et al., 2020; Xiong, et al., 2020). In our study, there were no significant changes in the mean DASS-21 anxiety score between T1 (the second week of lockdown) and T2 (the seventh week of lockdown), and this finding, although unexpected, is consistent with the results of a recent longitudinal study on the mental health of the general population during the COVID-19

**FIGURE 2** Graphical representation of the cross-lagged path analysis ( $N = 131$ ) \*\*\* $p < .001$ ; \*\* $p < .01$ ; † $p < .10$



epidemic in China (C. Wang et al., 2020) and in a 2-month follow-up study in Italy (Roma et al., 2020). It is possible that anxiety levels remained stable after having spiked following the lockdown and the spread of the virus in Italy. The reduction in the levels of need satisfaction between T1 and T2 could have in fact contributed to the maintenance of high levels of anxiety in the participants, without leading to a further worsening. In addition, technology-mediated behaviors (e.g., social media use, watching TV series) could help people to self-regulate their (negative) emotions and to relieve stress and anxiety (Cauberghe et al., 2020; Dixit et al., 2020), which, in turn, can explain the stable levels of anxiety between the two surveys.

Moreover, the validation of the SDT model during social distancing measures against COVID-19 confirms that basic psychological needs maintain their functional role in reducing anxiety independently from home confinement. This result also extends to extreme conditions, such as the lockdown during a pandemic; the findings show the unique role of need satisfaction in influencing well-being in a hostile environment. Previous studies indeed showed that need satisfaction predicts psychological well-being and reduced ill-being in situations characterized by low public safety, socio-economically deprivation, reduced freedom, and extreme vulnerability (Chen, Van Assche, et al., 2015; van der Kaap-Deeder et al., 2017; Weinstein et al., 2016), suggesting that, beyond objective conditions of life, the perception of need satisfaction is fundamental to personal adjustment. Also, results of the cross-lagged path analysis provide important longitudinal confirmation of the results shown with the cross-sectional model at T1, supporting the temporal suggestion of the role of frustration of basic psychological needs in promoting anxiety during the lockdown, as well as providing evidence that

frustration of needs could have long-term effects. The negative association between the experience of need satisfaction at T1 and anxiety level at T2, in addition to the absence of differences in anxiety between T1 and T2, seems to suggest that the worsening of need satisfaction between T1 and T2 could lead to the chronicity of anxiety levels, becoming almost a stable trait during the lockdown. From a practical perspective, these results suggest the necessity to provide the opportunity and resources for people to find need satisfying experiences especially during stressful circumstances and in times of uncertainty (Vermote et al., 2021).

Furthermore, the model showed that both offline and online social support could foster need satisfaction and that need satisfaction mediates the association between off(on)line social support and anxiety. These findings endorse the universal importance of supporting psychological needs and confirm the important protective effects of both offline and online support even in complex situations (e.g., social isolation as a consequence of the lockdown), suggesting that those who do not have access to offline support may use digital contexts such as social media to search for much-needed support. The results of this study confirm that even in hostile conditions, it is necessary to find adequate social support that could promote the need for satisfaction and allow to reduce anxiety and malaise in general. In fact, van der Kaap-Deeder et al. (2017) have shown that even when there are extremely limited conditions of freedom, such as prison, providing small opportunities for choice leads to significant changes in individual well-being. Similarly, these results may suggest that although during the first period of lockdown most people reported being less satisfied with their needs for autonomy, competence, and relatedness, the fact of being able to take advantage of alternative or reduced forms of support can still help to reduce anxiety through need

satisfaction. For this reason, governmental policy should promote the activation of support services for people who do not have proximal support for their psychological needs during emergency situations and positive digital interactions might serve as a useful tool to achieve this goal.

Overall, despite the interesting findings of this study, several limitations need to be taken into account. First, the study sample was homogeneous and could be biased as a result of a self-selective process. Future studies from other hostile environments are needed to deepen the generalizability of these findings. A second consideration is the exclusive use of self-reports that could inflate the correlations because of the common method of measure. Furthermore, because we were not able to check for numerous relevant variables, and considering that people's lockdown experience and perceptions were diversified from a personal, professional, and relational point of view, there is a risk that we did not capture the whole spectrum of the condition. A future qualitative and systematic review is needed to try to integrate these findings into a broader framework. Moreover, in this study, the negative effect of the first lockdown was examined only in terms of internalizing distress; however, the psychological impact of the COVID-19 lockdown could be also observed in problematic addictive behaviors (Higuchi et al., 2020; La Rosa et al., 2021; Rodríguez et al., 2020) that might be the maladaptive compensatory patterns to face against the experiences of need frustration (Vansteenkiste & Ryan, 2013). Future studies in hostile conditions should explore the protective role of social support in the onset of the varied types of negative functioning and vulnerabilities that can develop in response to need frustration. Finally, considering the strong media impact and the invasiveness of the COVID pandemic in everyday life, it is possible that some perceptions have been over-emphasized and that perceptions have been inflated by processes of suggestion and emotional dragging. Future meta-analyses should further investigate the results of this study by comparing them with results in other contexts, situations, and conditions.

Overall, despite the limitations of this study, it provides an extension of a well-validated theory in a new at-risk condition that underlines how psychological proximity can be maintained despite social distancing. This study also highlights that although the lockdown is a necessary measure to counter an epidemic, policy-makers must intervene adequately not only to support the economic and welfare needs of citizens but also to promote the satisfaction of basic psychological needs. Finally, these findings provide some practical implications regarding the opportunity to conduct interventions aimed at supporting basic psychological needs as a protective factor even in the most hostile contexts and environments. This would allow society to always be ready to face any challenge that the future has in store.

#### AUTHOR CONTRIBUTIONS

All authors developed the study concept, contributed to the study design, data collection, data analysis, interpreted the data, drafted the manuscript, and approved the final version for submission.

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#### CONFLICTS OF INTEREST

The authors declare no conflicts of interest.

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## SUPPORTING INFORMATION

Additional supporting information can be found online in the Supporting Information section at the end of this article.

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