

Adaptive behavioural coping strategies as reaction to COVID-19 social distancing in Italy

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Abstract. – OBJECTIVE: Social distancing, as experienced by the Italian population during the COVID-19 outbreak, generated the long-term activation of stress-response in individuals. This has been a crucial opportunity to study the coping strategies that people put in place to adapt their lives and habits to such a unique condition. For this reason, we have investigated both emotion-focused and problem-oriented coping strategies among the Italian population by relating them to other structural factors, such as social, economic and cultural conditions.

MATERIALS AND METHODS: More than 140,000 online interviews were collected in Italy from March 22 to April 2, 2020. This large dataset was used to carry out multivariate statistical data analysis with the aim of creating behavioral profiles, starting from coping parameters and other information. This technique has produced an association, showing a good level of statistical significance, between coping strategies and reactions to social distancing, due to the health emergency, during the data collection phase.

RESULTS: Two coping indicators – problem-oriented and focused on positive emotions coping strategies – were selected as objective variables in a “decision tree” modelling. The results have shown a link between individual factors (i.e., atmosphere at home) and educational and social factors (i.e., compliance with restrictions during the health emergency).

CONCLUSIONS: The reduction of social interaction had quite a significant impact on people's behavior; furthermore, coping strategies have played a crucial role in facing this stressor. For both the selected coping indicators, the best predictor was the atmosphere perceived at home. Moreover, the respondents' previous experiences have played a relevant role in the acceptance of new rules imposed by the government. This information can be useful in planning future social policies, both at national and international level, during such peculiar times.

Key Words:

COVID-19, Coping strategies, Survey, Social distancing, Psychosocial effects, Behavior, Lockdown.

Introduction

The drastic reduction of social interactions, as a global measure for the containment of the COVID-19 pandemic, has produced a radical upheaval of people's habits and lives. It also had side effects on the organization of the labor market and its resilience. Such an exceptional situation generated a condition of prolonged stress among the population, representing an opportunity to explore people's ability to cope with stress in relation to different coping strategies.

Based on Lazarus and Folkman's model¹, coping could be defined as the behavioral and cognitive efforts that people use to manage the internal and external demands due to a stressful situation. Although there are many specific coping strategies, researchers have typically conceptualized coping using one of the following two superordinate distinctions: on the one hand (a) problem-focused (addressing external demands of stressors) vs. emotion-focused (addressing internal demands of stressors)¹; on the other hand (b) approach (acting on the demands of a stressor) vs. avoidance (avoiding or disengaging from the demands of a stressor)². We investigated coping strategies using the division into problem and emotion-focused ones, which is well accepted and widely used in the literature. Furthermore, as some authors suggest, these two categories may characterize both an approach coping, as well as an avoidance coping³, and people use both problem and emotion-focused coping^{4,5} to cope

with the stressors. Specifically, the problem-oriented coping response can be seen as an attempt to modify a stressor, whereas emotion-focused coping response can be considered as an attempt to manage or regulate emotional states that may go along with or result from a stressor¹. The use of these coping strategies depends on an individual's interpretation of the stressor. Generally, subjects rely more on problem-focused coping when facing events perceived as changeable, and more on emotion-focused coping in situations where they see few or any options for influencing the final outcome⁶. Many coping studies have shown that coping strategies play a central role in the stressors-adjustment associations for common life stressors⁷, or traumatic events, such as intimate partner violence⁸, chronic illnesses⁹ and natural disasters¹⁰. Few studies investigated the role of coping strategies during large scale and unpredictable stressors, like the ones occurring during a pandemic, that affect nearly every member of the worldwide society and threaten physical health, but also psychological well-being. In this regard, Gan et al¹¹ examined the coping styles of Chinese University students in response to Severe Acute Respiratory Syndrome (SARS) and found out that during the outbreak, people tended to use more emotion-focused coping strategies. Yeung and Fung¹² investigated age differences in coping and emotional response towards SARS in Hong Kong. They found that younger adults used more emotion-focused coping than middle-aged and older adults did at the peak of SARS. Nonetheless, the greater use of emotion-focused coping at the peak of SARS reduced anger and sadness for all age groups throughout the outbreak. On the other hand, a greater use of problem-focused coping reduced sadness for older adults. Marjanovica et al¹³ found that engaging in avoidance coping behaviors was positively correlated to the time spent in quarantine and negatively related to vigor, organizational support and trust in equipment/infection control initiatives during the SARS crisis in Canada.

Recent studies conducted during the Coronavirus pandemic have shown some interesting results too. Park et al¹⁴ found that among the American population, the most common coping strategies, in the early stages of COVID-19 epidemic, were distraction, active coping, and seeking emotional social support. Furthermore, the female gender was associated with greater use of multiple emotion-focused strategies, such as distraction, emotional and religious support,

and less use of humor. Wang et al's study¹⁵ on Chinese population suggests that coping style was one of the most important influence factors of psychological distress. In particular, the negative coping style was associated to a higher level of psychological distress in the early stages of COVID-19. The aim of this article was to attempt to fill this gap and identify the best predictors of coping strategies associated with social distancing during the lockdown in Italy (i.e., atmosphere at home, educational and social factors, compliance to restrictions during the sanitary emergency). We aimed to verify the role of the home atmosphere, but also of the acceptance of restrictions to predict the use of coping strategies. In this regard, we started from the hypothesis that both of them could be strongly linked to people's adaptation process during an emergency. In particular, we thought that the home atmosphere would be a crucial factor because of the time spent at home without the chance of getting out. This has forced people to experience unprecedented situations of intense and long-lasting cohabitation.

Materials and Methods

A large web-survey was conducted during the lockdown in Italy through an on-line statistical App available for CNR-Irpps and resident in internal server machines. The questionnaire consisted of 37 questions, including 13 structural variables (i.e., gender, age, level of education, occupation, etc.), was divided into several areas of interest. One of these considered two kinds of coping strategies: problem-oriented strategies and emotion-focused coping strategies.

The invite to participate to the survey was sent through the CNR-Irpps website and the related institutional social accounts (Twitter, LinkedIn, Facebook and Instagram). It was also sent through non-institutional channels (WhatsApp and other personal social profiles). The obtained sample is a non-probabilistic statistical one, without a strong balance among population's characteristics (i.e., the proportion of principal demographic characteristics: gender, main territorial areas, education), which did not reflect the Italian population in general, except for the age class distribution. For this reason, a system of *a posteriori* weighting was applied to the dataset, to obtain a re-balancing of structural population characteristics.

For our purpose, we used a battery of 11 questions to detect coping strategies. We executed a Multidimensional Scaling application (MDS)¹⁶ to confirm the validity of the reduction to two dimensions corresponding to the two coping indicators. The application of this technique to our dataset demonstrates that the two considered indicators are adequate to measure coping strategies.

For the data analysis process, we started from a descriptive mono and bivariate statistical analysis, based on the study of the two groups of questions associated to the coping strategies variables in relation with the other observed information. In this phase, a number of information was re-codified into standard variables with the objective of making useful information on behavioral, demographic and social characteristics of the interviewees. Then, a multidimensional data analysis¹⁷ was carried out using a decision tree method for classification. This method was chosen to intercept the behavioral profiles of respondent in relation with coping strategies and to use as predictors the re-codified variables that we previously described. No data standardization was required because of the homogeneity of re-codified data.

This analysis method is one of the most commonly used, in particular, because it grants an easy interpretation and explanation to non-technical users. In addition, it is not affected by non-linear relations between parameters (i.e., it is not necessary to assure any linearity assumptions). The risk of using a decision trees model lies in the fact that it tends to overfit the training data producing poor predictors (i.e., if the tree growth is not limited, or, if a proper pruning is not adopted). For this reason, we chose to limit the trees' extension, but also because, having a large sample available, the possibility to build a large tree was actual.

For all the decision trees we have used the following predictors: gender, geographical area, education (medium-low and high level), home atmosphere (a synthesis, on a scale range between -6 to +6, of three variables related to cooperation, affection and peaceful relationships), acceptance of restrictions (a variable from an answer-scale question), age class (four age classes: up to 29, 30-49, 50-69, more than 70), parenthood (not to be parent, to be the parent of under 12 years old children, to be parent of over 12 years old children), job-related risks due to the sanitary emergency, economic difficulty (in terms of difficulty in cop-

ing with food security if the emergency will continue). The results are really interesting because even if we used a large number of variables, only two of them resulted crucial in predicting the coping strategy indicators.

To answer the research questions, we first had to consider the frequencies distribution of the two variables related to coping strategies. We then selected just four subsamples related to the first and last quartiles of the two variables. In this way, we were able to investigate the differences between people with high and low levels of coping strategies, also comparing the couples of the obtained trees.

Results

First, the quartiles for the two distributions of levels of coping strategies were calculated. For both, the first quartile is positioned exactly at 0 points. The last quartile is slightly different for the two coping indicators: the *problem-oriented* coping strategy indicator (variable Ac1) has this quartile at 0.85 points, whereas the one related to the coping strategy focused on positive emotions (variable Ac2) has the last quartile at 1 point. In this way, it is possible to identify the quartiles of the sample with the lowest and the highest levels of coping strategies for both the variables used. All the levels indicated have a statistically significant improvement, and, of course, the variable used for the division into groups corresponds to the best choice following the algorithm and the rules used. To better illustrate the results, we do not show all the statistical details of the tree, but all the results shown are statistically validated. Figure 1 shows the results for the variable Ac1, which is the target variable relative to the two sub-samples considered. Both for the first ($Ac1 \leq 0$) and the last quartiles ($Ac1 \geq 0.85$), the most important variable for the division of the sample is the atmosphere at home. In any case, the reaction index based on a problem-oriented coping strategy depends on the family situation in terms of collaboration, affection and peaceful relationships. The division into two groups at the first level of the tree is at point 1.5 in a range of -6 to +6, so we have described this situation as a bad atmosphere at home vs. a good atmosphere at home. Secondly, the acceptance of restrictions, due to the health emergency, marks the difference in terms of coping strategies based on problem-oriented behaviors.

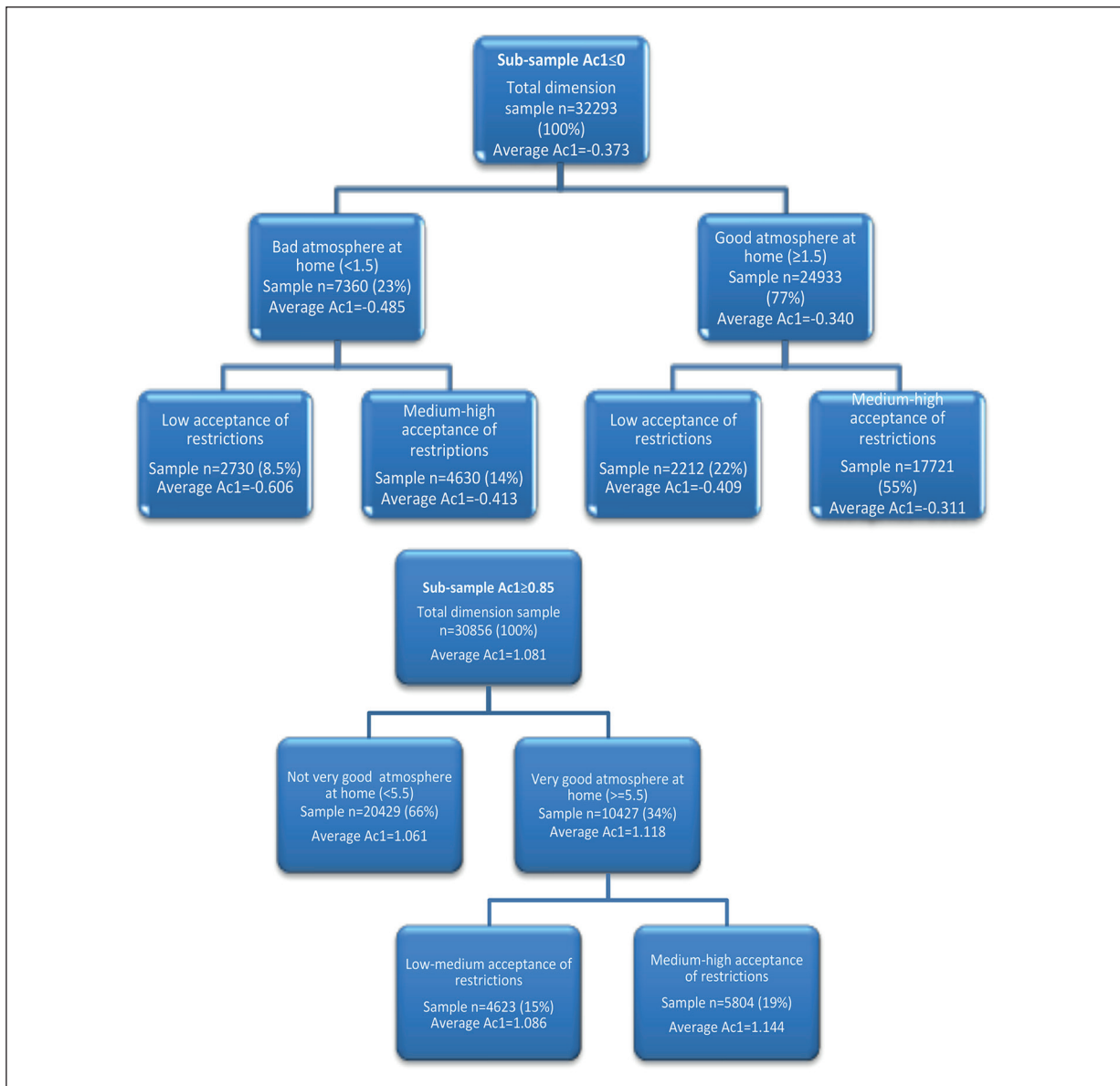


Figure 1. Decision tree for the problem-oriented coping strategy indicator for the two sub-samples of the first and last quartile.

This scheme does not change for high levels of the target variable. Furthermore, in this case, the first level of the decision tree depends on the atmosphere at home. But the split point is 5.5, which is close to the maximum level of this variable. Therefore, we have described this situation as not very good compared to a very good atmosphere at home. The second one refers to the ability to accept the restrictions imposed by the government. The conjunction of a better atmosphere at home and of a greater ability to accept the restrictions leads to a better ability to react to the national and international situation using a problem-oriented coping strategy.

As regards the indicator of coping strategies focused on positive emotions (Ac2), that is the target variable for the second application of the decision tree, the result is actually comparable with the previous one (Figure 2): the upper part is relative to the first quartile of the variable Ac2 ($Ac2 \leq 0$) and the second one is relative to the last quartile ($Ac2 \geq 1$). Furthermore, in this case, the two most important variables that can help predict the coping strategy indicator are the atmosphere at home and the level of acceptance of the restrictions. The only difference is the division of the atmosphere at home variable: for the first tree, the one relative to the first quartile

of the variable Ac2, the division point is 0.5, the minimum observed in these trees. We have described the variable as critical compared to not very bad atmosphere at home. The second tree in this figure shows an opposite performance of atmosphere at home variable, as the split point in this case is, again, 5.5. Therefore, these decision trees show extreme levels for this important variable in the sample split in the first levels of decision trees.

Conclusions

In the last few months, a very unexpected event caused severe and sudden changes in both individual and collective behavioral spheres. Italian people were invited to drastically reduce any mutual contact, and all the economic and social activities were limited starting from 9 March 2020. The aim of this study was to investigate the use of coping strategies of adult

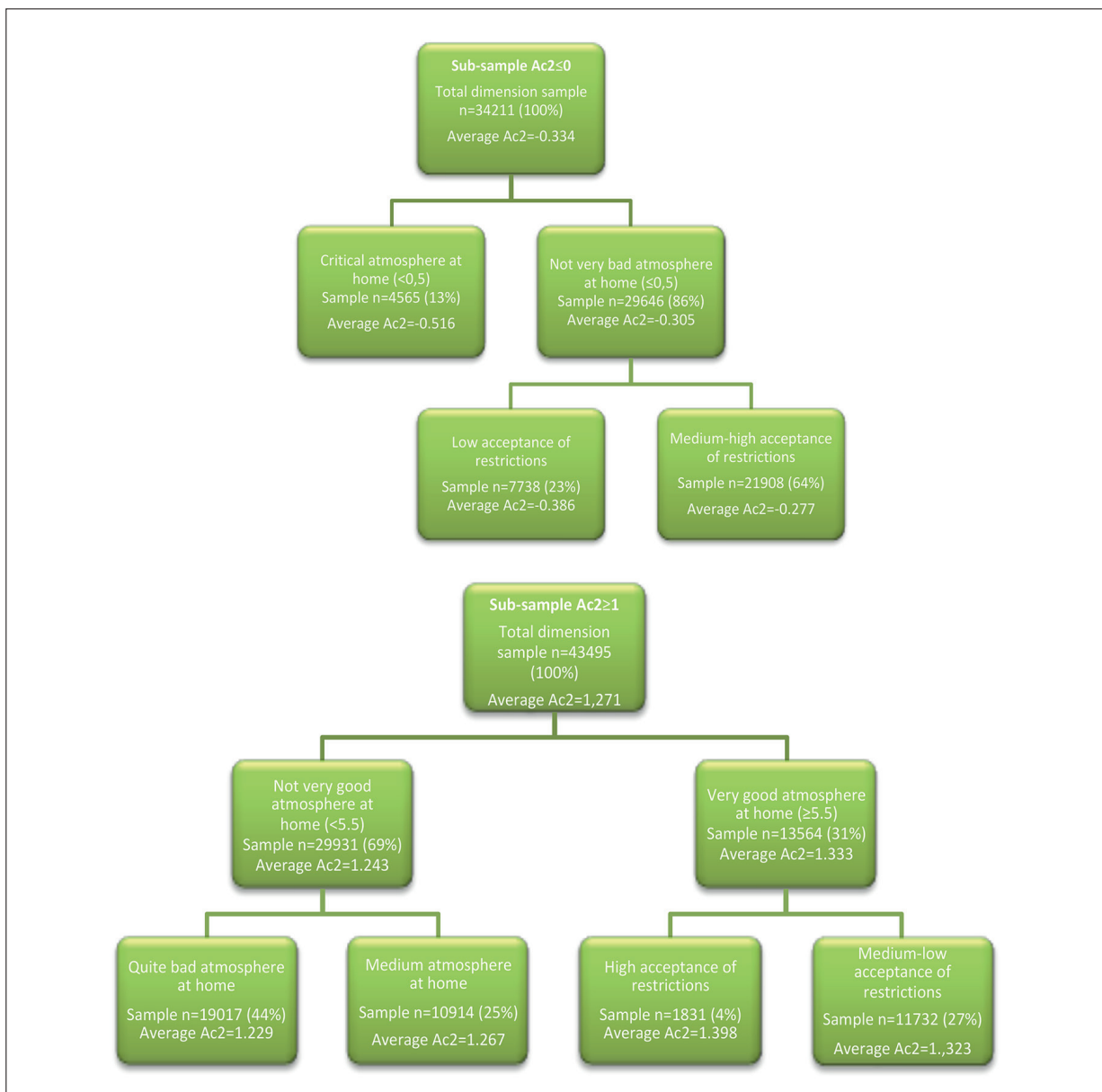


Figure 2. Decision tree for the indicator of the coping strategy focused on positive emotions for the two subsamples relating to the first and last quartile.

population in the context of Italian lockdown. For this purpose, a wide national survey was conducted only two weeks after the beginning of social distancing in Italy to capture the reactions of the adaptation process. Most importantly, we aimed at understanding the best predictors of the use of coping strategies, particularly emotion and problem-focused strategies. Despite the large number of variables investigated, for both problem-oriented and emotion-focused coping strategies, the most important predictors of their use were the home atmosphere and acceptance of restrictions. In other words, the way people interacted at home, being it collaborative, peaceful or affectionate, was very important in determining the use of coping strategies. A possible explanation for this result is that forced cohabitation had a very important role in amplifying the family dynamics showing that behaviors, both at individual and collective level, are strongly influenced by family relationships. In fact, the first bi-dimensional statistical analysis revealed coping strategies to be different for some groups of subjects (for example, male and female). In this multidimensional analysis, this assumption was brought back to a broader level. Only two main factors were able to absorb and synthesize the majority of complexity in the behavioral models: one at individual level – the atmosphere at home, depending on the composition of the family and the personal relation with other cohabitants – and another one at social level, linked to the acceptance of restrictions, but also depending on personal stories, such as the influence of the family, social and cultural context.

This framework induces a very important reflection at social level because, once again, social structure and family dynamics seem to be the most important factors in terms of overcoming difficulties, even if at a global level, as COVID-19. New studies are underway, and they are desirable to produce some more, especially in countries currently affected by a large spread of COVID-19 and lockdown rules. This would be important in order to verify whether the correlations and the observed variables described here are confirmed as predictors of future strategies of coping over time, being replicable also in other social and geographical contexts.

Conflict of Interest

The Authors declare that they have no conflict of interests.

Ethics Approval and Consent to Participate

The study was approved by the National Ethics Committee of the National Institute for Infectious Diseases Lazzaro Spallanzani I.R.C.C.S. of Rome, Italy.

Availability of Data and Material

All the data considered in this paper were obtained from OSC COVID-19 by CNR.

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Authors' Contribution

CL, CG, CM, LLF, TA, AV conceived and designed the study, consulted literature, collected data and wrote and edited the paper. CL did the statistical data analysis, CG and TA did the sociological interpretation, CM, LLF and AV did the psychological contribution. All authors read and approved the manuscript.

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