









## RESEARCH ARTICLE

# Perceptions of domestic and extra-domestic environment during the COVID-19 pandemic in an Italian representative sample

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## Abstract

Perception of domestic and extra-domestic environment plays a key role in structuring reality, representing the boundary between private and public life. COVID-19 pandemic led to changes both inside and outside domestic borders, modifying those reciprocal perceptions. The aim of this study was to assess perceptions of domestic and extra-domestic environments after the first wave of COVID-19 pandemic on a representative Italian sample, and how such perceptions were related to individuals' well-being at individual, family and social levels. Participants filled an online self-report questionnaire in July 2020. Cluster analyses were conducted on domestic and extra-domestic environment perceptions, leading to the identification of four clusters. Clusters were compared in terms of sociodemographic characteristics, and individual, family and social factors. Identified clusters report different levels of well-being at each level. The role of factors is identified, and possible implications are discussed.

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#### KEYWORDS

environment perceptions, sociopsychological factors, well-being

## 1 | INTRODUCTION

COVID-19 pandemic was an unparalleled occurrence in modern history. The outbreak of COVID-19 and the subsequent containment measures have entirely disrupted individuals' daily routines, resulting in repercussions for mental well-being that persist, after years, as escalated vulnerability to mental health disorders within the global population (Bower et al., 2023). Italy was among the earliest and most severely impacted by COVID-19 pandemic. In response to the first pandemic wave, the Italian government executed a nationwide comprehensive lockdown spanning from 25 March to 3 May 2020 (DPCM, 2020). During this period, Italians, like other citizens worldwide, experienced a stringent confinement, with measures including the closure of all non-essential businesses, childcare services and schools included, strict travel limitations and the enforcement of social distancing protocols (Bosa et al., 2021). Due to this, Italian families were confined to their homes, with limited opportunities for interaction with the outside world, leading to a significant shift in how they experienced and perceived both domestic and extra-domestic environments.

The boundaries and the perceptions of domestic environment, symbolizing the personal and familial realm, and extra-domestic environment, signifying the communal and societal sphere, hold significant importance within psychological literature, as a preliminary distinction in structuring reality (Sixsmith, 1986). Home represents not only a physical location, but also a psychological concept often perceived as positive, warm, secure, away from the pressures of employment and public life (Bowlby, Gregory, & McKie, 1997). The idea of home is clearly differentiated from public space, away from public scrutiny and surveillance (Mallett, 2004), in such a strong way that the term *home* is almost comparable to that of *family*, as reflected by the term's overlap in many Western languages (Allan & Crow, 1989; Bernardes, 1987; Oakley, 2018).

Being home the most, and sometimes only, environment experienced and lived throughout the first lockdown period, domestic spaces and dynamics among family members within the household held significant importance. In fact, having adequate space, especially outdoor space, had a unique buffering effect on the level of stress perceived, such that those who endorse having enough space report less distress (Balling, Napolitano, Lane, & Samuel, 2021; Lades, Laffan, Daly, & Delaney, 2020). Moreover, spending more time with children after the schools' closure (Lades et al., 2020) or with their partner (Balzarini et al., 2022; Donato et al., 2021) enhanced people's well-being and protected them from the negative consequences of the pandemic.

However, home can evoke security in one context and confinement in another (Jackson, 1995). Especially during the lockdown, home could have been perceived as a distressing environment, in particular having public life activities to be carried out within the home. Above all, working from home and home-schooling were found to be difficult challenges for families (Allen, Merlo, Lawrence, Slutsky, & Gray, 2021; Kerman, Korunka, & Tement, 2022; Moscardino, Dicataldo, Roch, Carbone, & Mammarella, 2021; Rudolph et al., 2021; Shockley, Clark, Dodd, & King, 2021; Spinelli, Lionetti, Setti, & Fasolo, 2021). All family members, indeed, were forced to share the same spaces within their homes with sometimes insufficient, overcrowded space for professional, school and private activities (Cavazza, Russo, Colloca, & Roccato, 2021; Spinelli et al., 2021).

Simultaneously, during the initial pandemic wave, the perception of the extra-domestic environment was marked by ambivalence: the extra-domestic environment was longed for as the realm for social interactions and leisure, yet

concurrently associated with substantial concerns regarding the fears of contracting COVID-19 (Serafini et al., 2020). Relationships outside the household (e.g. with community members) exhibited ambiguity: an initial period of positive feelings, encompassing emotional exchange, social connection and solidarity, transitioned into a subsequent depressive phase marked by emotional uncertainty for many people (Marzana et al., 2021).

Moreover, even after the easing of restrictions, reconnection with extra-domestic environment remained potentially distressing. Gullo, Misici, Teti, Liuzzi, and Chiara (2021), in fact, found that the worry related to social withdrawal decreased more rapidly than the one for re-connecting to the social world, thereby showing how the extra-domestic space could be perceived as threatening. Nevertheless, the perception of connection with significant others outside home and social support during the lockdown, even in the sole online form, was found enhancing overall well-being in individuals during COVID-19 pandemic (Esposito et al., 2021).

Finally, the perceptions of the community, not only intended as interpersonal relationships, but also considered as trust in local and national institution, was found to mitigating feelings of resignation and helplessness in COVID-19 crisis context (Arcidiacono, Di Napoli, Esposito, & Procentese, 2022). However, although at least in the initial phase Italians exhibited a commendable level of trust in institutions and governmental actions (Falcone et al., 2020), infodemic and infection control preventive measures should have led to a general mistrust in institution (Jakovljević, Bjedov, Mustač, & Jakovljević, 2020).

In sum, the COVID-19 pandemic and the measures taken to contain it have led to a complete upheaval in the perception of both the domestic and extra-domestic environments. There were reasons to expect both positive and negative perceptions of both the domestic and the extra-domestic space after the first pandemic wave, and to expect that this perception was related to different levels of well-being. Understanding how people perceived domestic and extra-domestic environment is even more important considering that different perceptions of the world within and outside the family, along with the organization and cohesion within the family unit, could play a crucial role in magnifying or mitigating the impact that stressful events, such as the COVID-19 pandemic and subsequent economic crisis, exert on the psychological well-being of all family members (Beavers & Hampson, 2000).

To date, however, no study has focused on how people perceived the domestic and extra-domestic spaces, whether individuals could be distinguished based on the combination of these two perceptions, as well as on whether and how such perceptions were related to people's well-being. Examining perceptions of the environment internal and external to one's home, and possible factors associated with such perceptions, could be crucial in recognizing the families and individuals most at risk during COVID-19 quarantine and over, in order to identify the main factors that can be promoted to successfully overcome the COVID-19 as well as future emergencies.

## 1.1 | The present study

The main aims of the present study will therefore be to: (1) examine whether participants could be clustered around their perceptions of the domestic and extra-domestic environment, thereby identifying different profiles; (2) investigate whether the resulting profiles are related to sociodemographic variables, as well as individual, family and social factors.

Variables that were found to be influent in adjustment over COVID-19 pandemic were identified by a literature review, such as living with a partner (Donato et al., 2021), having children (Moscardino et al., 2021), financial well-being (Codagnone et al., 2020), characteristics related to the house dimension (Cavazza et al., 2021), presence of outside spaces in the home (Balling et al., 2021) and attitude towards government and community (Han et al., 2021). Finally, variables of psychological well-being, attitude towards life and sources of family and social support were evaluated.

## 2 | METHOD

### 2.1 | Participants and procedure

Participants were recruited as part of a larger longitudinal study, titled 'The Family at the time of COVID-19', developed by [MASKED FOR REVIEW] and conducted in collaboration with the Human Highway Society. The study focuses on Italians' challenges and changes during COVID-19 pandemic using a representative sample of Italian individuals. Data were collected from 1 July 2020 to 12 July 2020, during the easing of restrictions between Italian COVID-19 wave 1 and wave 2, through a Qualtrics online questionnaire. Participants were 2,191 Italian individuals, aged from 18 to 82 years old. The sample was mostly female (65.8% female, 34.2% male). The 69.9% of the responders were aged from 35 to 54 ( $N_{35-44} = 688$ , 31.4%;  $N_{45-54} = 647$ , 29.5%;  $N_{25-34} = 397$ , 18.1%;  $N_{55-64} = 304$ , 13.9%;  $N_{\text{Over } 65} = 109$ , 5.0%;  $N_{18-24} = 46$ , 2.1%), with an average age of 45 ( $SD = 11.44$ ). Most of the sample lived with their partners at the time of the survey (68.1%). The 56.2% of the sample were parents, and 88.1% of those parents had at least one child living at home with them. The sample was equally distributed in the different Nielsen's Italian area, reflecting Italian density population (ISTAT, 2021): 29.1% in the North-West of Italy, 21.9% in the South of Italy, 19.5% in Central Italy, 16.8% in the North-East of Italy and 12.8% in the Islands.

### 2.2 | Measures

The self-administered questionnaire was composed of various scales focusing on sociodemographic, individual, family and social variables. Reliability analyses were conducted calculating the McDonald's Omega (Hayes & Coutts, 2020).

#### 2.2.1 | Perception of the domestic and extra-domestic environment

To assess the perception of domestic and extra-domestic environments, an ad hoc Semantic Differential (SD; Osgood, Suci, & Tannenbaum, 1957; Ploder & Eder, 2015) was used. Participants were asked to think about their domestic and extra-domestic environments, and to describe their perceptions using 10 antithetic couples of adjectives (e.g., unwelcoming-welcoming; comprehensible-confusing) evaluated on a 7-point bipolar scale. McDonald's Omega was optimal for both domestic ( $\omega = .96$ ) and extra-domestic environment ( $\omega = .96$ ).

#### 2.2.2 | Sociodemographic factors

In addition to structural data, such as sex (i.e. male/female), age, number of children and cohabitation with a partner, the following scales were used to measure sociodemographic variables:

##### *Subjective financial well-being*

Subjective financial well-being was assessed through three items (e.g. 'I feel comfortable in my financial situation'.) of the Multidimensional Subjective Financial Well-being Scale's factor named *general subjective financial well-being* (MSFWBS; Sorgente & Lanz, 2019). Items selected assess participants' self-perceived general financial well-being on a 5-point Likert scale (1 = *absolutely false*, 5 = *absolutely true*). McDonald's Omega:  $\omega = .94$ .

### *Quarantine's home characteristics*

Participants were asked to indicate features of the house in which they lived during the quarantine. These features included: rooms' number and presence/types of outside environments, such as backyard, terraces or balconies.

## 2.2.3 | Individual factors

### *Psychological well-being*

Psychological well-being was assessed using four items of The Short Form (12) Health Survey (SF-12; Jenkinson et al., 1997; Italian version: Apolone & Mosconi, 1998; Apolone et al., 2001). SF-12 asks participants to evaluate how often they felt in different ways, emotionally or physically, using a 6-point Likert scale (1 = *never*, 6 = *always*; e.g. 'In the last week, how many times did you feel calm and peaceful'). McDonald's Omega:  $\omega = .94$ .

### *Positivity over life*

Positivity, defined as the tendency to view life and experiences with a positive outlook, was measured through the 8-item Positivity Scale (P Scale; Caprara et al., 2012). P scale asks participants to evaluate their agreement with some statements about the tendency to look positively at the present and at the future on a 5-point Likert scale (1 = *strongly disagree*, 5 = *strongly agree*; e.g. 'I have great faith in the future'). McDonald's Omega:  $\omega = .85$ .

## 2.2.4 | Family factors

### *Family support*

Subjectively assessed social support received from the family was assessed using the Multidimensional Scale of Perceived Social Support (Zimet, Dahlem, Zimet, & Farley, 1988) family sub-scale. Participants were asked to assess their agreement/disagreement with four items regarding family member support, on a 7-point Likert scale (1 = *very strongly disagree*; 7 = *very strongly agree*; e.g. 'I can talk about my problems with my family'). McDonald's Omega:  $\omega = .93$ .

### *Negative changes affecting the family*

The negative effect of changes related to COVID-19 pandemic was assessed through a 13-items ad hoc scale. Participants were asked to assess their agreement with sentences regarding negative changes related to COVID-19 pandemic on a 5-point Likert scale (1 = *strongly disagree*, 5 = *strongly agree*; e.g. 'We argue more often'). McDonald's Omega:  $\omega = .90$ .

## 2.2.5 | Social factors

### *Friends support*

Subjectively assessed social support received from friends was assessed using Multidimensional Scale of Perceived Social Support (Zimet et al., 1988) friends sub-scale. Participants were asked to assess their agreement/disagreement with four items regarding support from friends, on a 7-point Likert scale (1 = *very strongly disagree*; 7 = *very strongly agree*; e.g. 'I can talk about my problems with my friends'). McDonald's Omega:  $\omega = .93$ .

### *Support from the government*

Participants perceived support for their family resulting from government's decisions was assessed using five ad hoc items. Participants had to evaluate their agreement with statements regarding how government's choices supported

families, in practical and emotional terms, using a 5-point Likert scale (1 = *totally disagree*, 5 = *totally agree*; e.g. 'The decisions made by the government have prevented family members from coming into conflict with each other'). McDonald's Omega:  $\omega = .94$ .

## 2.3 | Data analyses

To reach our first aim, namely, to identify participants' profiles regarding perceptions about domestic and extra-domestic environments, person-centred analysis was required to identify patterns, clusters or profiles that group individuals based on similarities in their characteristics. The indicators used to perform this analysis were perception of domestic environment and perception of extra-domestic environment, assessed with two distinct 7-item Likert scale. Considering 7-item Likert scale as continuous variables, the choice of analysis could fall on either a Latent Profile Analysis (LPA; Spurk, Hirschi, Wang, Valero, & Kauffeld, 2020) or a K-means cluster analysis (Hair Jr. & Black, 2000). Nonetheless, even with a substantial sample size, employing a more advanced LPA with just two indicators could potentially constrain the analysis from effectively capturing meaningful subgroups within the data set. In fact, even with a large sample size, LPA requires at least up to four indicators (Wurpts & Geiser, 2014).

Recognizing the limitation posed by the use of only two indicators, the decision was thus made to opt for a more flexible approach, k-means cluster analysis. Multiple k-means cluster analyses were conducted on the data derived from participants' responses to the semantic differential. Various cluster solutions were explored to identify the most comprehensive and meaningful representation. To validate the accuracy of the obtained clusters, a two-step cluster analysis was also conducted.

After cluster analysis, Chi-square tests and one-way ANOVAs were conducted to check for any differences between the emerged clusters in terms of sociodemographics (sex, age, presence of children, financial well-being, living with a partner, features of the house in which they lived during quarantine) and individual (psychological well-being, positivity over life), family (family support, negative changes affecting the family) and social factors (friends support and support from the government).

In addition, in order to understand the extent to which the set of clusters and each cluster respectively predict individual variables (i.e. psychological well-being and positivity over life), while controlling for social (i.e. government and friend support), and familial factors (i.e. family support and negative changes affecting family related to COVID-19), multivariate regression analyses were conducted (see Data S1).

## 3 | RESULTS

As a first result, k-means cluster analysis resulted in participants being assigned to four groups. Cluster 1, labelled '*Positive-all-around*', comprised 449 participants who perceived a high quality of both the domestic ( $M = 5.81$ ) and the extra-domestic ( $M = 5.18$ ) environment. Cluster 2, labelled '*On-the-fence*', comprised 684 participants who perceived a medium quality of both the domestic ( $M = 3.98$ ) and the extra-domestic ( $M = 3.79$ ) environment. Cluster 3, labelled '*Cocooning*', comprised 499 participants who perceived a high quality of the domestic environment ( $M = 5.49$ ) but a low quality of the extra-domestic environment ( $M = 2.64$ ). Cluster 4, labelled '*Negative-all-around*', comprised 559 participants who perceived a low quality of both the domestic ( $M = 2.24$ ) and the extra-domestic ( $M = 2.13$ ) environment. Two-steps cluster analysis showed very similar results, with a silhouette separation and cohesion measure of 0.5 (at the boundary between fair and good).

With regard to the second objective, Chi-square tests and one-way ANOVAs conducted on the resulting clusters allowed to find significant differences among the clusters and obtain a descriptive profiling of them. Regarding sociodemographic variables, analyses showed that *Positive-all-around* ( $M = 46.49$ ;  $SD = 12.27$ ) were older than *On-the-fence* [ $M = 44.15$ ;  $SD = 12.23$ ;  $p = .011$ , 95% C.I. = (.37, 4.31)] and *Negative-all-around* [ $M = 44.03$ ;  $SD = 10.22$ ;

$p = .004$ , 95% C.I. = (.55, 4.37)], but not than *Cocooning* ( $M = 45.90$ ;  $SD = 10.65$ ;  $p = .966$ ). *Negative-all-around* were significantly younger than *Cocooning* [ $M = 45.90$ ;  $p = .023$ , 95% C.I. = (-3.57, -.17)]. Regarding sex, *Negative-all-around* was found more likely to be women (68.77%;  $z = 2.28$ ), while *Positive-all-around* was found more likely to be male (39.87%;  $z = -2.85$ ) [ $\chi^2$  ( $df = 3$ ,  $N = 2,191$ ) = 11.95,  $p = .008$ ]. No significant differences were found for presence of children ( $p = .072$ ) and living with a partner ( $p = .055$ ).

*Positive-all-around* ( $M = 3.17$ ;  $SD = 1.15$ ) were also characterized by higher subjective financial well-being than the other groups (*On-the-fence*:  $M = 2.82$ ;  $SD = 1.05$ ;  $p < .001$ , 95% C.I. = [.17, .53]; *Cocooning*:  $M = 2.72$ ;  $SD = 1.20$ ;  $p < .001$ , 95% C.I. = [.24, .65]; *Negative-all-around*:  $M = 2.56$ ;  $SD = 1.10$ ;  $p < .001$ , 95% C.I. = [.42, .80]), while *Negative-all-around* had significant lower level of subjective financial well-being than *On-the-fence* ( $M = 2.82$ ;  $p < .001$ , 95% C.I. = [-.42, -.10]). Furthermore, regarding the characteristics of the house in which participants lived during the lockdown, a first significant difference in the house's features regarded number of rooms of the house in which they lived during the quarantine: *Positive-all-around* ( $M = 3.95$ ;  $SD = 1.22$ ) lived in a houses that had, on average, more rooms than *On-the-fence* [ $M = 3.75$ ;  $SD = 1.20$ ;  $p = .035$ , 95% C.I. = (.01, .40)] and *Negative-all-around* [ $M = 3.72$ ;  $SD = 1.24$ ;  $p = .015$ , 95% C.I. = (.03, .44)]; the same result was obtained for *Cocooning* ( $M = 4.02$ ;  $SD = 1.19$ ) when compared to *On-the-fence* [ $M = 3.75$ ;  $SD = 1.20$ ;  $p = .001$ , 95% C.I. = (.08, .45)] and *Negative-all-around* [ $M = 3.72$ ;  $SD = 1.24$ ;  $p < .001$ , 95% C.I. = (.08, .45)]. A second significant difference in quarantine home's feature regarded quality of outside spaces. *Negative-all-around* (31.84%;  $z = 2.39$ ) was found more likely to live in a house with a non-habitable balcony, while *Cocooning* (22.44%;  $z = -3.10$ ) to not have it [ $\chi^2$  ( $df = 3$ ,  $N = 2,191$ ) = 11.97,  $p = .007$ ]; moreover, *Positive-all-around* (36.08%;  $z = 2.89$ ) resulted more likely to live in a house with a terrace.

Finally, analyses conducted highlighted significant differences among the groups in all the individual, relational and social factors variables. With regard to individual factors, across all comparisons *Positive-all-around* scored significantly higher than the other three groups, the *Cocooning* scored higher than the *On-the-fence* and the *Negative-all-around*, who were not significantly different from each other.

In particular, *Positive-all-around* ( $M = 4.20$ ;  $SD = .85$ ) reported a significantly higher level of psychological well-being than the other groups [*On-the-fence*:  $M = 3.54$ ;  $SD = .74$ ;  $p < .001$ , 95% C.I. = (.53, .79); *Cocooning*:  $M = 3.83$ ;  $SD = .92$ ;  $p < .001$ , 95% C.I. = (.22, .52); *Negative-all-around*:  $M = 3.43$ ;  $SD = .91$ ;  $p < .001$ , 95% C.I. = (.63, .92)]. *Cocooning* scored significantly higher level of psychological well-being than *On-the-fence* [ $p < .001$ , 95% C.I. = (.15, .42)] and *Negative-all-around* [ $p < .001$ , 95% C.I. = (.24, .55)]. In addition, *Positive-all-around* reported a significantly higher level of positivity over life ( $M = 3.86$ ;  $SD = .58$ ) than the other three groups [*On-the-fence*:  $M = 3.38$ ;  $SD = .62$ ;  $p < .001$ , 95% C.I. = (.38, .57); *Cocooning*:  $M = 3.61$ ;  $SD = .66$ ;  $p < .001$ , 95% C.I. = (.14, .35); *Negative-all-around*:  $M = 3.36$ ;  $SD = .73$ ;  $p < .001$ , 95% C.I. = (.39, .61)]. *Cocooning* scored significantly higher level of positivity over life than *On-the-fence* [ $p < .001$ , 95% C.I. = (.13, .33)] and *Negative-all-around* [ $p < .001$ , 95% C.I. = (.14, .36)].

With regard to family factors, *Positive-all-around* reported a significantly higher level of family support ( $M = 4.11$ ;  $SD = .84$ ) than *On-the-fence* [ $M = 3.57$ ;  $SD = .88$ ;  $p < .001$ , 95% C.I. = (.41, .68)] and *Negative-all-around* [ $M = 3.54$ ;  $SD = 1.03$ ;  $p < .001$ , 95% C.I. = (.42, .73)]. *Cocooning* ( $M = 3.98$ ;  $SD = .96$ ) scored significantly higher than *On-the-fence* [ $p < .001$ , 95% C.I. = (.27, .55)] and *Negative-all-around* [ $p < .001$ , 95% C.I. = (.28, .60)]. In addition, *Positive-all-around* scored significantly lower level of negative changes on the family related to COVID-19 ( $M = 2.39$ ;  $SD = 1.01$ ) than *On-the-fence* [ $M = 2.95$ ;  $SD = .83$ ;  $p < .001$ , 95% C.I. = (-.71, -.41)] and *Negative-all-around* [ $M = 2.98$ ;  $SD = .89$ ;  $p < .001$ , 95% C.I. = (-.75, -.43)]. *Cocooning* ( $M = 2.37$ ;  $SD = .93$ ) scored significantly lower level of negative changes than *On-the-fence* [ $p < .001$ , 95% C.I. = (-.72, -.44)] and *Negative-all-around* [ $p < .001$ , 95% C.I. = (-.76, -.46)].

With regard to social factors, *Positive-all-around* reported a significantly higher level of friends support ( $M = 3.63$ ;  $SD = .94$ ) than the other groups [*On-the-fence*:  $M = 3.29$ ;  $SD = .90$ ,  $p < .001$ , 95% C.I. = (.18, .49); *Cocooning*:  $M = 3.39$ ;  $SD = 1.09$ ,  $p = .001$ , 95% C.I. = (.07, .40); *Negative-all-around*:  $M = 3.17$ ;  $SD = 1.00$ ,  $p < .001$ , 95% C.I. = (.29, .61)]. *Cocooning* scored significantly higher in friend's support than *Negative-all-around* [ $M = 3.17$ ;  $p = .002$ , 95% C.I. = (.055, .37)]. In addition, *Positive-all-around* reported a significantly higher level of government support ( $M = 2.86$ ;  $SD = 1.10$ ) than *Cocooning* [ $M = 2.56$ ;  $SD = 1.06$ ,  $p < .001$ , 95% C.I. = (.13, .47)]

and *Negative-all-around* [ $M = 2.66$ ;  $SD = .96$ ,  $p = .010$ , 95% C.I. = (.03, .37)]. *On-the-fence* ( $M = 2.81$ ;  $SD = .90$ ) scored significantly higher in government support than the *Cocooning* [ $M = 2.56$ ;  $p < .001$ , 95% C.I. = (.09, .40)].

Finally, to test how clusters, and each cluster, predict psychological well-being and positivity over life, controlling for each family and social variables, two different multivariate linear regression models were compared. The initial model, in which family support, negative changes affecting the family, friends support and support from the government were included as predictors, and psychological well-being and positivity over life were entered as outcome variables, was found to account for 30.9% ( $F[4, 2,191] = 245.35$ ;  $p < .001$ ) of the observed variance regarding positivity over life and 23.2% ( $F[4, 2,191] = 166.17$ ;  $p < .001$ ) regarding psychological well-being. The second model, including dummy variables representing clusters and using *Positive-all-around* as a comparison group, explained 32.9% ( $F[7, 2,191] = 155.32$ ;  $p < .001$ ) of the observed variance related to positivity over life and 26.4% ( $F[7, 2,191] = 113.16$ ;  $p < .001$ ) of the observed variance related to psychological well-being. Thus, the model with clusters included accounted for a greater percentage of variance observed both for psychological well-being and positivity over life. Moreover, each of the clusters included, as well as the intercept (i.e. *Positive-all-around*), contributed significantly to the multivariate regression model both for positivity over life, both for psychological well-being (see Data S1).

## 4 | DISCUSSION

The aims of this study were to broaden the investigation into individuals' perceptions of the domestic and extra-domestic environments during the COVID-19 pandemic, and an account for this perception was related to different factors at individual, family and social level. This was achieved by exploring the possibility of clustering distinct profiles within our sample based on perceptions related to these two domains, and examining whether these clusters could account for variations in sociodemographic, individual, family and social variables.

### 4.1 | Clusters description

Our findings show that the sample could be divided into four significantly distinct groups. Even with the limitation of using just two indicators, the obtained clusters exhibited distinctive characteristics and showed significant differences in their relationship with the investigated variables. Moreover, multivariate regression models showed that cluster inclusion explains a significant percentage of the variance observed regarding psychological well-being and positivity over life, even controlling for family and social factors (see Data S1).

With regard to clusters description, the most represented cluster in our sample was the one composed by participants who had an average perception of both the domestic and extra-domestic environment (*On-the-fence*), followed by those who had a negative vision of both domestic and extra-domestic environments (*Negative-all-around*), then by participants who had a positive vision of the domestic environment together with a negative vision of the extra-domestic one (*Cocooning*) and, finally, those who had a positive vision of both domestic and extra-domestic environments (*Positive-all-around*). Perceptions of domestic and extra-domestic environments, therefore, describe different meaningful groups of individuals facing the COVID-19 health emergency, thereby confirming the importance of how individuals experienced and perceived these two contexts in the first phases of the COVID-19 pandemic (Gullo et al., 2021). Our data, however, also show that these four groups differed in terms of relevant aspects.

#### 4.1.1 | Sociodemographic and individual factors

In terms of sociodemographic variables, the *Positive-all-around* group reported significantly higher levels of perceived financial well-being, the *On-the-fence* reported average values, while the *Cocooning* and especially the *Negative-all-around*



were the most concerned about their economic situation. This finding points to the possibility that negative perceptions of the extra-domestic environment could be partially due to the financial concerns that the *Cocooning* and *Negative-all-around* groups were experiencing, being financial worries a major source of stress and anxiety during COVID-19 (Codagnone et al., 2020). However, in line with Spinelli et al. (2021), it seems that SES (i.e. socioeconomic status) alone is not enough to explain family's and individual's stress related to the COVID-19 pandemic consequences, but that also the organization and satisfaction with the family and social environment represent a relevant factor in coping with unpredictable and outstanding stressors, such as those related to the pandemic. We will see below, in fact, that *Cocooning* participants showed higher resources than *On-The-Fence* and *Negative-all-around* ones, especially with regard to individual and family variables.

Moreover, a greater economic well-being of *Positive-all-around* and *Cocooning* groups would seem to be suggested by the characteristics of the house in which participants lived during quarantine established in the first phase of COVID-19 pandemic. In fact, these two groups are more likely to have lived in houses with more rooms than those of *On-The-Fence* and *Negative-all-around*, while *Positive-all-around* showed higher probability of having a terrace. Conversely, *Negative-all-around* were more likely to have an inhabitable balcony. These results, not only integrate data obtained regarding participants' financial well-being, but are particularly important when compared to those obtained by previous research that emphasize the importance that living in homes with adequate spaces (Cavazza et al., 2021; Spinelli et al., 2021) and with outdoor domestic environments (Balling et al., 2021; Lades et al., 2020) during the lockdown had on well-being. *Positive-all-around* and *Cocooning*, in fact, showed better psychological and relational well-being than the other groups, as discussed below.

Finally, it was found that, on average, *Positive-all-around* were significantly older than *On-the-Fence* and *Negative-all-around* groups (though not than *Cocooning*). Although the average age do not vary considerably across groups, it seems that younger participants have a negative perception of both the domestic and extra-domestic environments, and increasing age improves the perception of the extra-domestic and domestic environments. A possible explanation of these results could be found in the study of Ceccato et al. (2021), in which older adults reported lower negative emotions, related to the pandemic, as they were found to be more confident about COVID-19-related information, and more favourable towards the lockdown measures, than young and middle-aged adults.

In relation to individual variables, *Positive-all-around* were found to report higher levels of psychological well-being and a greater sense of positivity over life than the other three groups. Moreover, *Cocooning* scored significantly higher in these individual resources than *On-the-fence* and the *Negative-all-around*, who were not significantly different from each other. This pattern of results highlights that those who reported a more positive perception of both domestic and extra-domestic environments also showed highest level of individual resources. It also highlights that, in terms of individual resources, a highly positive perception of the domestic environment can compensate for less positive perceptions of the extra-domestic one, allowing *Cocooning* to display greater resources than *Negative-all-around* and *On-the-fence*.

#### 4.1.2 | Family factors

In relation to family variables, *Positive-all-around* and *Cocooning* reported significantly higher levels of all family variables, compared to *On-the-fence* and *Negative-all-around*, in terms of feeling more support from the family, and perceptions of less negative family changes due the pandemic.

Interestingly, *Cocooning* group have obtained, on average, higher scores in individual and family resources than those obtained by *On-the-fence*, the ones who supposedly have a balanced vision of family and social environment, both in terms of similarity between perceptions of the two contexts and in terms of the moderate -rather than extreme- level of such perceptions. This seems in contrast with what could be expected based on Beaver's model for centripetal families which share a similar pattern of domestic and extra-domestic perceptions as our *Cocooning* group (Beavers & Hampson, 2000). Beavers Systems Model of Family Functioning (Beavers & Hampson, 2000), indeed,

presents a spectrum of stylistic attributes within families, spanning from centripetal to centrifugal. These polarities exhibit an inverse correlation with both the family's overall well-being and the health of its individual members. Particularly, centripetal families convey to family members that individual and relational satisfaction derives from within the family itself, whereas centrifugal families convey that external sources offer greater potential for fulfilment. It is worth noting, however, that Beaver's model distinguishes between more or less functional families on the bases of multiple factors, in addition to the centripetal versus centrifugal patterns, and that both centripetal and centrifugal families can display good or bad functioning, depending on those factors (Beavers & Hampson, 2000). Moreover, several of the studies carried out during the first phases of the COVID-19 pandemic have pointed out the risk of a pandemic-related retreat to domestic life (Bailey et al., 2021), connected to the difficulty in reintroducing themselves into the extra-domestic environment and the fear of reconnecting with world, perceived as threatening (see the so-called *cabin fever effect*; Gullo et al., 2021). A possible explanation of our findings is that those who have a positive view of the environment within their home and a negative view of the extra-domestic environment, since these data refer to a stage that was soon after the first very challenging lockdown in Italy, and still characterized by limited social contacts, could have found themselves more comfortable and positive about the situation than those who have a balanced vision of family and social environment. It could be, however, that this retreat within domestic environment could have been functional in the short run. Future studies should investigate whether this strategy could backfire in the longer run.

#### 4.1.3 | Social factors

In relation to social variables, *Positive-all-around* reported higher levels of friend support and government support than the other three groups (with the only exception of the *On-the-fence* group in government support). Moreover, *On-the-fence*, which for many individual and family factors was not different from *Negative-all-around*, reported significantly higher perceptions of support from the government than *Cocooning* and *Negative-all-around*. According to Han et al. (2021), trust in government represents a key factor in coping with a pandemic, such that higher trust was found to be associated with higher adoption of health behaviours and prosocial behaviours. Our results seem to suggest that in addition to these factors, trust in government is also associated with a better perception of the extra-domestic environment. In a group like *On-the-fence*, which has reported relatively low resources in relation to individual or family factors, greater trust in the government would therefore represent a potentially important protective factor.

#### 4.1.4 | General discussion

With regard to the overall picture that these findings depict, we can observe that a great part of the sample, *On-the-fence* and *Negative-all-around*, had on average negative or no particularly positive perceptions of either environments, and this may perhaps be seen as a signal of the very challenging and distressing situation lived by the Italian population during the first months of the COVID-19 pandemic, in line with the literature (Galea, Merchant, & Lurie, 2020; Pfefferbaum & North, 2020; Wallace, Wladkowski, Gibson, & White, 2020; Williams, Armitage, Tampe, & Dienes, 2020). Moreover, these two groups score similarly, compared to each other, on the individual and family resources and significantly lower than *Positive-all-around* and *Cocooning* groups, thereby suggesting that a positive perception of at least the home environment is necessary for maintaining a proficient level of individual and family resources. The fact that those reporting moderate perceptions of both environments shows relatively low resources, not different from those reported by individuals with negative perceptions of both domains, points to the idea that the average perceptions reported by the *On-the-fence* group do not reflect a healthy and balanced view of their life contexts, but it is rather a reflection of resource deprivation at the end of the first lockdown in Italy.

The only exceptions of *On-The-Fence* participants scoring higher than *Negative-all-around* in financial well-being and government support, thereby suggesting a lower impact of the COVID-19 pandemic socioeconomic consequences on this group as compared to the *Negative-all-around* one as well as a higher trust in formal and informal social institutions. These patterns probably explain the clustering of these participants into two distinct groups.

Secondly, three groups present similar perceptions between domestic and extra-domestic spaces, though at various levels (negative: *Negative-all-around*; average: *On-the-fence*; positive: *Positive-all-around*), while only one group presented an unbalanced view of these environments, with positive perceptions of the domestic one and negative perceptions of the extra-domestic space (*Cocooning*). According to Beavers Systems Model of Family Functioning (Beavers & Hampson, 2000), this unbalanced cluster may seem to endorse a 'centripetal' style in the management of boundaries between the domestic and extra-domestic domains. It is worth noting that, although the *Cocooning* group presents similar levels of individual and family resources as the *Positive-all-around* group, it is also characterized by lower levels of perceived financial well-being (similarly to that of *Negative-all-around* and *On-The-Fence* participants) as well as of government support. This highly resourceful, though financially and socially challenged group may have reacted to the COVID-19 situation through self-serving perceptions and self-enhancing group-serving bias, with participants somehow preserving a positive perception of the home space, as closer to the self (Heine & Lehman, 1997), by contrasting it with a negative perception of what is outside. The question remains on whether this strategy could be functional or rather backfire in the longer run. Besides that, *Cocooning* group was found to be more likely to know people infected by COVID-19, thereby negative perception of the world outside the home could depend, at least in part, on a possible consequence related to the fear of contagion or a fear of COVID-19 itself. Interestingly, we did not find the reverse unbalanced group (negative perceptions of domestic environment and positive perceptions of extra-domestic environment), even among younger participants. This finding should be interpreted in light of the fact that our sample is composed mainly of relatively well-functioning individuals, while we do not know whether different findings could be found in dysfunctional households (e.g. in the case of intimate partner violence), where the lockdown may have exacerbated perceptions of the domestic environment as particularly negative or threatening and of the extra-domestic environment as particularly positive and relieving, as it has been for a growing number of individuals, especially female, during the lockdown (Kourti et al., 2021). Moreover, in terms of age, our sample was composed mostly of participants ranging from 35 to 54, with very few young adults ( $F\%_{24-25} = 2.1\%$ ), who could be, given their lifecycle phase, particularly attracted by the extra-domestic environment. In fact, during this developmental stage the involvement and engagement in peer relationship and with society are more likely, and they are more prone to see the domestic environment as constraining (Panarese & Azzarita, 2021).

## 4.2 | Limitation and future directions

The findings of the present study should be considered in light of the following limits. First, this study returns a picture of a specific moment of the pandemic, which may be different in subsequent phases of the health emergency. Second, given the correlational nature of this study, no causal relationship can be established between the perception of domestic and extra-domestic environments and the presence of resources or difficulties from an individual, family and social point of view. Direction of effect could be both ways or even reciprocal. Finally, although the semantic differential has proven a good reliability and the clusters created have been able to account for the variability between groups in our sample, it was designed ad hoc for this study and clusters were made using just two indicators. Future research should evaluate the validity and reliability of this tool in different samples and in different situations.

Despite these limitations, this study has several strengths to be acknowledged: First, it is one of the first to examine perceptions of domestic and extra-domestic environment during COVID-19 pandemic in interaction with variables from individual, family and social levels. Second, the present data, nonetheless, offer useful suggestions in terms of identifying specific at-risk groups as well as protective and detrimental factors for individuals' adjustment to the COVID-19 and future emergencies.

## 5 | CONCLUSION

The present findings have also some relevant implications for government, policymakers and professionals operating in prevention. First and foremost, this study reaffirms the profound connection between the levels identified by Bronfenbrenner's Ecological Systems Theory (Bronfenbrenner, 1977).

In addressing the crisis conveyed by COVID-19, individuals have encountered challenges at every level—individual, familial and societal. Similarly, what made a difference in how individuals coped were not just individual resources, but also the resources they possessed at each level, also at family and community levels. Despite their correlational nature, according to the evidence showed by the data, to limit future negative consequences for individuals and the society, relevant foci of attention in prevention programmes should be on promoting individual, family and social resources as well as improving perceptions of the family and social environment. A key target for interventions in this emergency situations seems therefore working not only on individuals' skill training, but also on raising their awareness on the meaning individuals attribute to these two contexts, as proposed in non-emergency situations as well (Bertoni, Donato, Morgano, lafrate, & Rosnati, 2017).

Furthermore, the inability for many to access resources within their community has highlighted their significance. In addition to individual-focused health prevention and promotion programmes, governments and mental health professionals should work to promote the connection among members of local communities and facilitate access to the resources they offer, as evidenced in research (see Vezzali et al., 2022).

Finally, this study underscores how a simple yet integrated approach, based on the mere profiling of individuals' perceptions of their domestic and extra-domestic environments, can identify profiles most vulnerable and affected by crises, while also pinpointing protective factors that should be promoted. Unfortunately, this study reveals how categories with fewer resources are the ones most impacted across individual, familial and societal levels (i.e. *Negative-all-around*). Simultaneously, it emphasizes that a moderate level of well-being is not as protective during times of crisis, as evident from the *On-the-fence* profile.

Considering that the consequences of the pandemic continue to impact mental well-being, and that the crisis caused by COVID-19 was immediately followed by the conflict in Ukraine, it appears crucial to reiterate the importance of health promotion at every level so that unforeseen events do not severely affect the population (Bower et al., 2023).

### DATA AVAILABILITY STATEMENT

The data that support the findings of this study are available on request from the corresponding author. The data are not publicly available due to privacy or ethical restrictions.

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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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