Young adults’ coping strategies against loneliness during the COVID-19-related quarantine in Greece

Adrianos Golemis, Panteleimon Voitsidis, Eleni Parlapani *, Vasiliki A. Nikopoulou, Virginia Tsiropoulou, Panayiota Karamouzi, Aikaterini Giazkoulidou, Aikaterini Dimitriadou, Christina Kafetzopoulou, Vasiliki Holeva, and Ioannis Diakogiannis

1st Department of Psychiatry, School of Medicine, Faculty of Health Sciences, Aristotle University of Thessaloniki, General Hospital “Papageorgiou”, Ring Road Thessaloniki, N. Efkarvia, 54603 Thessaloniki, Greece

*Corresponding author. E-mail: eparlapa@auth.gr

Summary

COVID-19 and the related quarantine disrupted young adults’ academic and professional life, daily routine and socio-emotional well-being. This cross-sectional study focused on the emotional and behavioural responses of a young adult population during the COVID-19-related quarantine in April 2020, in Greece. The study was conducted through an online survey. A total of 1559 young adults, aged 18–30 years, completed Steele’s Social Responsibility Motivation Scale and the De Jong Gierveld Loneliness Scale, and answered questions about compliance with instructions, quarantine-related behaviours and coping strategies. According to the results, participants displayed a relatively high sense of social responsibility (M = 16.09, SD = 2.13) and a trend towards moderate feeling of loneliness (M = 2.65, SD = 1.62); young women reported significantly higher levels of loneliness than men. The majority complied with instructions often (46.4%) or always (44.8%). Significantly more women created a new social media account and used the social media longer than 5 h/day, compared with men. Resorting to religion, practicing sports and sharing thoughts and feelings about COVID-19 with others predicted higher levels of social responsibility; humour, practicing sports and sharing thoughts and feelings about COVID-19 with others predicted lower levels of loneliness. Conclusively, COVID-19 is expected to have a significant psychological impact on young adults. Currently, Greece is going through the second quarantine period. This study raises awareness about loneliness in young adults during the COVID-19-related quarantine and highlights the importance of developing online programmes, attractive to younger people, to nurture adaptive coping strategies against loneliness.

Summary

Young adulthood is a critical developmental period, related with significant changes in life roles. COVID-19 disrupted young adults’ academic and professional life, daily routine and socio-emotional well-being. This cross-sectional study investigated social responsibility, compliance with health guidelines, loneliness, coping strategies and quarantine-related behaviours in a sample of 1559 young adults during the COVID-19-related quarantine.
adults, aged 18–30 years, during the first COVID-19-related quarantine in April 2020, in Greece. According to the results, participants displayed a relatively high sense of social responsibility and complied often/always with guidelines. A trend towards moderate feeling of loneliness was observed; young women reported significantly higher levels of loneliness than men. Significantly more women created a new social media account, and used the social media for longer hours, compared with men. Humour, practicing sports and sharing thoughts and feelings about COVID-19 with others predicted lower levels of loneliness. Currently, Greece is going through the second COVID-19-related quarantine, which has no foreseeable end. This study raises awareness about loneliness in young adults, a negative emotional state that should not be overlooked during this novel public health crisis. The COVID-19 pandemic offers the opportunity to develop online programmes nurturing adaptive coping strategies to reduce loneliness in young adults.

Key words: COVID-19, loneliness, coping strategies, social media

INTRODUCTION

The main preventive measures undertaken in early 2020 by governments against the spread of COVID-19, included, among others, restriction of movement and quarantine at home, i.e. continuous confinement at one’s living quarters for the better part of the day (Balanzá-Martínez et al., 2020; Chew et al., 2020). In Greece, a national lockdown was imposed in less than a month, after the first COVID-19 case had been reported on 27 February 2020. Restriction of movement was timely enacted on 23 March, while 695 COVID-19 positive cases and 17 COVID-19-related deaths had been declared. The quarantine period lasted for 6 weeks (National Public Health Organization, 2020). During that period, Greek citizens experienced a novel situation, since restriction measures had last been necessary for the containment of an epidemic/pandemic a century ago, when the Spanish flu had afflicted Greece (Patterson and Pyle, 1991).

Apart from the measures imposed at a national level, the governments encouraged personal and social responsibility as the cornerstone to avoid uncontrolled spreading of the virus (Malkoutzis, 2020). Personal responsibility refers to everyone being responsible for their own health by taking precautions to protect themselves from contracting the virus, such as restricting physical contact, a behavioural response to avoid contamination (Parlapani et al., 2020b). Social responsibility underscores the shared obligation to prevent the spread of the virus, so as to protect those who are at high risk for severe COVID-19 illness (American Psychological Association (APA), 2020a). Therefore, social responsibility is related with how fervently and trustingly a population abides by the guidelines provided by local or international authorities, i.e. with compliance (Parlapani et al., 2020b).

Based on previous experience with infectious disease outbreaks, quarantine is an unpleasant experience, involving separation from loved ones, uncertainty, increased mental stress (Brooks et al., 2020), anger and irritability (Décamps and Rosnet, 2005; Brooks et al., 2020; Chew et al., 2020; Torales et al., 2020), depressive and somatic symptoms, insomnia, lack of motivation and loneliness (Décamps and Rosnet, 2005; Brooks et al., 2020; Chew et al., 2020; Torales et al., 2020; Voitsidis et al., 2020; Seo, 2021). Loneliness, a negative emotion related with the discrepancy between desired and existing relations, may be emotional or social (Weiss, 1973); emotional loneliness is described as a subjective experience resulting from the absence of a close bonding with a person, whereas social loneliness reflects an objective lack of contacts and social networks (De Jong Gierveld and Van Tilburg, 2006). Loneliness has been linked to depression in both older (Doménech-Abella et al., 2019) and younger adults (Richard et al., 2017).

Humans respond to stressful situations using coping strategies, a series of actions or thought processes aiming at a conscious and direct approach to problems (APA, 2020b). Coping strategies can be adaptive, i.e. active and stress-resolving, or maladaptive/avoidant, providing a temporary escape from stress, without solving the issue. Adaptive strategies include religion, social support, self-distraction and helping others, while dependency and substance use are considered maladaptive (Thompson et al., 2018; Baral and Bhagawati, 2019). During quarantine related with the SARS, Ebola and H1N1 epidemics, seeking alternatives and social support were commonly used coping strategies (Chew et al., 2020). Other adaptive strategies against confinement-related stressors are leisure activities (Décamps and Rosnet, 2005), focus on work or keeping busy (Kanas...
and Manzey, 2003), religion or spiritual practice (Chew et al., 2020), sports and exercise (Balanzá-Martínez et al., 2020), sharing/social support (Chew et al., 2020) and connecting with others remotely/using social media (Seo, 2021). Nowadays, the involvement of social media in communication during crisis periods is of particular importance, especially when it comes to young adults in developed countries, the first generation growing up with social media use in everyday life. People turn to social media during emergencies to retrieve information about safety instructions, news updates and damage reports as well (Seo, 2021). Therefore, a pandemic-related quarantine may evoke behavioural responses related with changes in social media use (Sahni and Sharma, 2020; Singh et al., 2020).

Although older adults are considered a vulnerable population during public health emergences (Parlapani et al., 2020a), younger age, particularly the age range 18–24 years, was shown to be a risk factor for increased psychological burden imposed by a public health crisis and the quarantine-related restrictions (Brooks et al., 2020). Similarly, although loneliness has been traditionally related with older ages (Dykstra, 2009), younger adults up to the age of 25 may experience loneliness (Child and Lawton, 2019) at a high rate (Lim et al., 2019), while there is also evidence that younger individuals may suffer more often from loneliness compared with older adults (Richard et al., 2017). Taken together, loneliness is a crucial issue among young adults, related with poorer mental health outcomes, i.e. increased risk for depression and social anxiety (Lim et al., 2019). Furthermore, behavioural responses (Parlapani et al., 2020b) and coping strategies may differ according to age (Rokach, 2001). For instance, younger adults were

Table 1: Demographics

| Variable                  | n     | %     |
|---------------------------|-------|-------|
| Gender                    |       |       |
| Female                    | 1142  | 73.2  |
| Male                      | 384   | 24.6  |
| Missing                   | 33    | 2.12  |
| Age                       | 1559  | 100   |
| 18–30                     |       |       |
| Education                 |       |       |
| PhD                       | 8     | 0.51  |
| MSc                       | 212   | 13.6  |
| University degree         | 791   | 50.7  |
| High school               | 535   | 34.3  |
| Secondary school          | 7     | 0.4   |
| Elementary school         | 1     | 0.06  |
| Missing                   | 5     | 0.3   |
| Living arrangements       |       |       |
| Living alone              | 225   | 14.4  |
| Living with people I love | 1215  | 77.9  |
| Living with people I dislike | 106  | 6.8   |
| I live in danger          | 6     | 0.3   |
| Missing                   | 7     | 0.4   |
| Employment status         |       |       |
| Full-time employment      | 436   | 28.0  |
| Part-time employment      | 467   | 30.0  |
| Unemployed                | 532   | 34.1  |
| Students                  | 115   | 7.4   |
| Missing                   | 9     | 0.5   |
| Residential area          |       |       |
| Urban                     | 1155  | 74.0  |
| Rural                     | 206   | 13.2  |
| Small city                | 192   | 12.3  |
| Missing                   | 6     | 0.4   |

Note: Due to rounding errors, percentages may not equal 100%.
reported to use more emotion-focused coping at the acute phase of an infectious disease outbreak (Chew et al., 2020).

Young adulthood is a critical life stage related with undertaking new socioeconomic roles and becoming independent. Disruption of daily routine, academic, professional and social life during the pandemic is expected to have a significant psychological impact on young adults (Silva Junior et al., 2020). Taken together, this study focused on a younger population (18–30 years old) during the COVID-19-related quarantine in Greece and aimed to investigate (i) social responsibility, loneliness, compliance with guidelines, quarantine-related behaviours and coping strategies; (ii) potential predictors of social responsibility and loneliness.

METHODS

Participants

This study was part of a greater online survey targeting the Greek general population (Parlapani et al., 2020b). The survey was generated using the Qualtrics online survey platform (Qualtrics, 2020) and was distributed from 10 April to 13 April 2020, i.e. 3 weeks after a national lockdown had been imposed in Greece, through the social media.

The survey’s homepage provided information about the study’s purpose and usefulness. Before taking the survey, participants were requested to consent to their participation before filling in the survey. Acceptance to participate was a prerequisite for study inclusion. Participation was anonymous and voluntary; participants were free to withdraw at any time.

A total of 1559 Greek citizens by ethnic origin, aged 18–30 years, responded to the survey and were therefore included in the study. Ethical approval was received from Papageorgiou General Hospital Review Board (563/2020).

Measures

The survey began with basic sociodemographic questions, including age, gender, educational level, living arrangements, employment status and residential area. In addition, respondents completed the Greek versions of two psychometric scales:

1. Steele’s Social Responsibility Motivation Scale (SRMS) (Steele et al., 2008), a four-item self-administered tool, was used as a proxy measure for motivation to undertake social responsibility. Items are rated on a 5-point scale (1 = not at all important; 5 = very important). Total scores range from 4 to 20; the higher the score, the greater the social responsibility motivation. Although there are no specific SRMS cut-off point scores to depict differences in social responsibility, according to Steele et al. (Steele et al., 2008), mean SRMS score close to the maximum value of 20 (M = 15.84, SD = 3.31) indicated high social responsibility motivation. The items for SRMS had a Cronbach’s alpha coefficient based on standardized items of 0.70.

2. The De Jong Gierveld Loneliness Scale (JGLS) (De Jong Gierveld and Van Tilburg, 2006), a six-item self-administered tool derived from the original 11-item JGLS (De Jong Gierveld and Kamphuls, 1985), was used to assess loneliness. The scale consists of a three-item subscale assessing emotional loneliness and a three-item subscale assessing social loneliness. Total scores for both subscales range from 0 to 3 (0 = not emotionally/socially lonely; 1–3 = emotionally/socially lonely). Total scores for the JGLS scale range from 0 to 6 (0 = not lonely; 2–6 = lonely). Overall, higher scores indicate higher levels of loneliness (Van Tilburg and De Jong Gierveld, 1999; De Jong Gierveld and Van Tilburg, 2020). The items for JGLS had a Cronbach’s alpha coefficient based on standardized items of 0.70.

Lastly, three different sets of questions investigated compliance with instructions, quarantine-related behaviours and coping strategies:

1. Compliance with instructions was investigated by two questions, the first exploring how frequently respondents comply with the health instructions issued by the World Health Organization (WHO), and the second exploring compliance with the Hellenic National Health Organization (NHO). The four possible responses to both questions were ‘always’, ‘often’, ‘rarely’ and ‘never’.

2. One question explored restriction from physical contact, e.g. kisses, hugs, sex (possible answers were ‘yes’ or ‘no’), while six questions investigated quarantine-related behaviours, namely: (i) creation of a social media account for the first time (possible responses were ‘yes’ or ‘no’); (ii) contacting family/friends, e.g. via video calls (possible responses were ‘some days of the week’, ‘every day’, ‘rarely’ or ‘never’); (iii) time spent on social media use (possible responses were ‘0–2 h’, ‘3–5 h’, ‘>5 h’ per day); (iv) communicating with people with whom there was not much contact prior to COVID-19 (possible responses were ‘yes’ or ‘no’); (v) watch the news about COVID-19 (possible responses were ‘more than once a day’, ‘daily’, ‘rarely’, ‘never’); and (vi) time spent on
screen, e.g. TV, internet, gaming entertainment (possible responses were ‘0–2 h/day’, ‘3–5 h/day’, ‘>5 h/day’).

3. Coping strategies were explored by responding ‘I don’t do it at all’, ‘I do it a bit’, ‘I do it a lot’ or ‘I do it very much’ to each of the following five coping strategies: (i) resorting to religion/spiritual activity; (ii) using humour; (iii) practicing sports; (iv) sharing thoughts and feelings about COVID-19 with others and (v) consuming alcohol.

Data analysis

All analyses were conducted in the SPSS (Statistical Product and Service Solutions) software (IBM Corp., 2019). Demographic and clinical data were compared using t-tests for continuous variables and \( \chi^2 \) (chi-square) for categorical variables. Linear regression models were used to identify predictors of the SRMS and JGLS scale scores.

RESULTS

Demographics

Most of the participants were female (\( n = 1142, 73.2\% \)), quarantined together with loved ones (\( n = 1215, 77.9\% \)), in an urban area (\( n = 1155, 74\% \)). The majority was university graduates (\( n = 791, 50.7\% \)) and unemployed (\( n = 532, 34.1\% \)). Questionnaires not stating the respondents’ gender (\( n = 33, 2.12\% \)) were not included in the statistical analysis exploring gender-related differences in compliance with instructions, quarantine-related behaviours and coping strategies (Table 1).

Social responsibility and loneliness

The average score of the SRMS scale was estimated at 16.09 (SD = 2.13), indicating a relatively high sense of social responsibility. The average score of the JGLS scale was 2.65 (SD = 1.62), reflecting a trend towards moderate feeling of loneliness. Specifically, the emotional loneliness subscale’s mean score was 1.85 (SD = 0.95), while the social loneliness subscale’s mean score was 0.79 (SD = 1.07).

Female participants reported a slightly higher level of social responsibility (\( M_{female} = 16.15 \) versus \( M_{male} = 15.91 \), \( t(1518) = -1.889, p = 0.059 \)), and significantly higher levels of loneliness (\( M_{female} = 2.71 \) versus \( M_{male} = 2.46 \), \( t(1524) = -2.562, p = 0.011 \) (Table 2).

Compliance with instructions

Most young adults reported that they comply with WHO instructions ‘often’ (\( n = 724, 46.4\% \)) or ‘always’ (\( n = 698, 44.8\% \)), and with the NHO guidelines ‘always’ (\( n = 980, 62.9\% \)) or ‘often’ (\( n = 533, 34.2\% \)). The results of the \( \chi^2 \) (chi-square) test for the relation of ‘Gender’ with ‘Compliance with WHO instructions’ were significant based on an alpha value of 0.05, \( \chi^2(3) = 46.02, p < 0.001 \). Similar results were observed for ‘Gender’ and ‘Compliance with NHO guidelines’ based on an alpha value of 0.05, \( \chi^2(3) = 54.59, p < 0.001 \) (Table 3).

Restriction from physical contact and quarantine-related behaviours

The vast majority of the respondents restricted themselves from physical contact (\( n = 1135, 74.8\% \)). Several created a social account for the first time during the quarantine (\( n = 270, 17.7\% \)). About half of the respondents reported video-calling ‘some days of the week’ (\( n = 724, 47.5\% \)), and 32.7% (\( n = 499 \)) reported doing so every day. Again, about half of the respondents were using their social media accounts for more than 5 h/day (\( n = 717, 47\% \)), while 64.8% (\( n = 1011 \)) stated that they communicated with people with whom they did not have a lot of contact before the COVID-19 outbreak. More than half were watching the news daily to

Table 2: Gender differences in social responsibility and loneliness

| Scales                     | Gender | n    | M   | SD  | t   |
|----------------------------|--------|------|-----|-----|-----|
| SRMS                       | Male   | 382  | 15.91 | 2.2 | -1.889 |
|                            | Female | 1138 | 16.15 | 2.0 |     |
| JGLS                       | Male   | 384  | 2.46 | 1.6 | -2.562** |
|                            | Female | 1142 | 2.71 | 1.6 |     |
| JGLS emotional loneliness subscale | Male   | 384  | 1.61 | 0.95 | -5.837** |
|                            | Female | 1142 | 1.93 | 0.93 |     |
| JGLS social loneliness subscale | Male   | 384  | 0.86 | 1.08 | 1.322  |
|                            | Female | 1142 | 0.77 | 1.06 |     |

Note: Due to rounding errors, percentages may not equal 100%.
SRMS, Social Responsibility Motivation Scale; JGLS, De Jong Gierveld Loneliness Scale.
get the latest information about COVID-19 \((n = 833, 53.4\%)\), while 41.1\% \((n = 642)\) spent more than 5 h/day in front of a screen for entertainment purposes, i.e. watching TV, surfing the internet or playing videogames. Significantly more female participants restrained themselves from physical contact, created a new social media account during the quarantine, regularly video-called family and friends, used the social media longer than 5 h/day, and watched the news to get informed about COVID-19, compared with male participants (Table 4).

### Coping strategies
The majority of young adults did not turn to religion or spiritual activities to cope with COVID-19-related stress \((n = 917, 60.2\%)\), used humour ‘a bit’ \((n = 665, 43.9\%)\) or ‘a lot’ \((N = 532, 35\%)\), practiced sports ‘a bit’ \((n = 610, 40\%)\), and shared thoughts and feelings about COVID-19 with others ‘a lot’ \((n = 598, 41.6\%)\) or ‘a bit’ \((n = 548, 38.1\%)\), to cope with COVID-19-related problems. Lastly, the vast majority of participants \((n = 910, 59.9\%)\) reported never resorting to alcohol consumption as a coping strategy. Female respondents showed a significantly greater tendency towards sharing thoughts and feelings with others, as well as a stronger resistance to resorting to alcohol to cope with COVID-19-related stress, compared with males (Table 5).

### Regression analysis
Two simple linear regressions analyses were conducted to explore if coping strategies could predict the SRMS and JGLS scale scores. All variables were entered simultaneously.

The first model predicting SRMS was significant \([F(6,1506) = 9.543, p < 0.001, R^2 = 0.03]\) with ‘Resorting to religion/spiritual activity’ \((B = 0.19, p = 0.005)\), ‘Practicing sports’ \((B = 0.21, p < 0.001)\) and ‘Sharing thoughts and feelings about COVID-19 with others’ \((B = 0.24, p < 0.001)\) being significant positive predictors of SMRS (Table 6).

The second model predicting JGLS was significant \([F(6,1510) = 6, p < 0.01, R^2 = 0.26]\) with ‘Using humour’ \((B = -0.18, p < 0.001)\), ‘Practicing sports’ \((B = -0.13, p = 0.002)\) and ‘Sharing thoughts and feelings about COVID-19 with others’ \((B = -0.11, p = 0.034)\) being significant negative predictors of JGLS. Gender (female) \((B = 0.21, p = 0.027)\) was a positive predictor of loneliness (Table 7).

### DISCUSSION
Young adulthood is a critical developmental period. Neurobiologically, cognitive skills, involving competence for decision making and self-regulation, continue to develop in early adulthood. Moreover, the transition from adolescence to young adulthood brings on significant changes in life roles. Young individuals leave home to study, while others enter the labour market aiming at financial independence. In addition to academic and work life, socialising and romantic relationships are a cornerstone of young individuals’ development and life satisfaction (Bonnie et al., 2015). During the quarantine in Greece, closure of all universities was a preventive measure against the spread of COVID-19. As a result, incoming students, who had put great effort into fulfilling university entry requirements, missed the experience of an independent student life, while senior students...
missed graduation day, a significant life event. Many young adults may have lost their salaries or even their jobs due to the national lockdown; in March 2020, around one-third of the Greek population was economically inactive (Fortune Greece, 2020). Altogether, the novel COVID-19 situation disrupted daily routine, studying, professional life, finances, and imposed physical distance and restraining from social life, affecting young adults’ intimate relationships and socio-emotional well-being (Centers for Disease Control and Prevention, 2020). In the USA, the highest levels of COVID-19-related psychological distress were reported in young adults aged 18–29 years (McGinty et al., 2020). Considering that the impact on young adults is expected to be significant (Silva Junior et al., 2020), this study focused on the emotional and behavioural responses of young adults, aged 18–30 years, during the COVID-19-related quarantine in Greece in April 2020.

The risk for severe COVID-19 illness is lower at younger ages. Nonetheless, younger people may contribute to the spread of the virus, if they don’t abide by the guidelines and measures. People displaying social responsibility, an ethical concept, are eager to support others during crises (Parlapani et al., 2020b). Younger adults with higher social responsibility were shown to engage consistently in social distancing and to avoid hoarding, a behaviour related with products shortage (Oosterhoff and Palmer, 2020). Although there was evidence that younger adults within the age range 18–30 years may display less social responsibility

| Table 4: Quarantine-related behaviours and gender differences |
|-------------------------------------------------------------|
| **n** | **%** | **Gender** | **χ²** | **df** | **p** | **Vcramer** |
| | | | Female | | Male | |
| Restriction from physical contact (kisses, hugs, sex) | | | | | | |
| Yes | 1135 | 74.8 | 974 [974.99] | 161 [160.01] | 16.50 | 1 | <0.001 | 0.000 |
| No | 383 | 25.2 | 330 [329.01] | 53 [53.99] | | | |
| Created social media account for the first time | | | | | | | |
| Yes | 270 | 17.7 | 218 [202.19] | 52 [67.81] | 5.99 | 1 | 0.016 | 0.014 |
| No | 1251 | 82.2 | 921 [936.81] | 330 [314.19] | | | |
| Contacting family/friends (video calls) | | | | | | | |
| Some days of the week | 724 | 47.5 | 555 [541.57] | 169 [182.43] | 23.41 | 3 | <0.001 | 0.000 |
| Every day | 499 | 32.7 | 385 [373.27] | 114 [125.73] | | | |
| Rarely | 242 | 15.9 | 170 [181.02] | 72 [60.98] | | | |
| Never | 59 | 3.9 | 30 [44.13] | 29 [14.87] | | | |
| Using social media | | | | | | | |
| >5 h/day | 717 | 47.0 | 563 [536.46] | 154 [180.54] | 16.63 | 2 | <0.001 | 0.000 |
| 0–2 h/day | 240 | 15.7 | 157 [179.57] | 83 [60.43] | | | |
| 3–5 h/day | 568 | 37.2 | 421 [424.98] | 147 [143.02] | | | |
| Communicating with people with whom they did not have much contact prior to COVID-19 | | | | | | | |
| Yes | 1011 | 64.8 | 726 [739.11] | 410 [396.89] | 2.65 | 1 | 0.104 | 0.104 |
| No | 539 | 34.6 | 261 [247.89] | 120 [133.11] | | | |
| Watching news about COVID-19 | | | | | | | |
| >Once a day | 255 | 16.4 | 169 [186.46] | 80 [62.54] | 18.10 | 3 | <0.001 | 0.000 |
| Daily | 833 | 53.4 | 647 [614.81] | 174 [206.19] | | | |
| Rarely | 385 | 27.7 | 272 [278.57] | 100 [93.43] | | | |
| Never | 85 | 5.5 | 54 [62.15] | 29 [28.85] | | | |
| TV/internet/gaming entertainment | | | | | | | |
| >5 h/day | 642 | 41.1 | 430 [437.79] | 155 [147.21] | 2.79 | 2 | 0.247 | 0.247 |
| 3–5 h/day | 598 | 38.3 | 247 [235.73] | 68 [79.27] | | | |
| 0–2 h/day | 319 | 20.4 | 465 [468.47] | 161 [157.53] | | | |

Note: Due to rounding errors, percentages may not equal 100%. Values formatted above as: observed [expected].
compared with older adults (Parlapani et al., 2020a), current results indicated a relatively high sense of social responsibility. In accordance with previously reported data (Parlapani et al., 2020b), roughly three out of four respondents restricted from physical contact and around nine out of the ten respondents showed sufficient compliance with the guidelines by WHO and NHO. Young women displayed more social responsibility, restrained themselves from physical contact to a greater extent and showed higher compliance with guidelines, compared with men.

According to a report by the European Commission’s JRC, the prevalence of loneliness is higher in Eastern/Southern Europe than in Western/Northern Europe. In Greece, one in ten residents report feeling lonely frequently (d’Hombres et al., 2018). According to a report by the Mental Health Foundation, loneliness may affect younger adults, aged 18-34 years, to a greater extent.

Table 5: Coping strategies and gender differences

| Resorting to religion/spiritual activity | n  | %     | Gender | χ² | df | P    | Vcramer |
|----------------------------------------|----|-------|--------|----|----|------|---------|
|                                        |    |       | Female |    |    |      |         |
| I don’t do it at all                   | 917| 60.2  | 670 [686.8] | 247 [230.2] | 5.99 | 3 | 0.133 | 0.133 |
| I do it a bit                          | 444| 29.2  | 342 [332.6] | 102 [111.4]  |     |   |       |       |
| I do it a lot                          | 109| 7.2   | 84 [81.6]   | 25 [27.4]    |     |   |       |       |
| I do it very much                     | 52 | 3.4   | 44 [38.9]   | 8 [13.1]     |     |   |       |       |
| Using humour                          |    |       |         |    |    |      |         |
| I don’t do it at all                   | 147| 9.7   | 115 [110.1] | 32 [36.9]    | 6.51 | 3 | 0.089 | 0.065 |
| I do it a bit                          | 665| 43.9  | 514 [498.0] | 151 [167.0]  |     |   |       |       |
| I do it a lot                          | 532| 35.1  | 384 [402.0] | 148 [134.9]  |     |   |       |       |
| I do it very much                     | 172| 11.3  | 121 [128.8] | 51 [43.2]    |     |   |       |       |
| Practising sports                     |    |       |         |    |    |      |         |
| I don’t do it at all                   | 306| 20.1  | 223 [228.9] | 83 [77.1]    | 3.39 | 3 | 0.334 | 0.047 |
| I do it a bit                          | 610| 40.0  | 464 [456.3] | 146 [153.7]  |     |   |       |       |
| I do it a lot                          | 410| 26.9  | 313 [306.7] | 97 [103.3]   |     |   |       |       |
| I do it very much                     | 198| 12.9  | 140 [148.1] | 58 [49.9]    |     |   |       |       |
| Sharing thoughts and feelings about COV1D-19 |    |       |         |    |    |      |         |
| I don’t do it at all                   | 160| 11.1  | 94 [112.3]  | 56 [37.7]    | 14.09 | 3 | 0.003 | 0.003 |
| I do it a bit                          | 548| 38.1  | 486 [484.9] | 62 [163.1]   |     |   |       |       |
| I do it a lot                          | 598| 41.6  | 460 [447.5] | 138 [150.5]  |     |   |       |       |
| I do it very much                     | 130| 9.0   | 102 [97.3]  | 28 [32.7]    |     |   |       |       |
| Consuming alcohol                     |    |       |         |    |    |      |         |
| I don’t do it at all                   | 910| 59.9  | 717 [681.0] | 193 [229.0]  | 20.21 | 4 | <0.001 | 0.000 |
| I do it a bit                          | 287| 18.9  | 202 [214.8] | 85 [72.2]    |     |   |       |       |
| I do it a lot                          | 237| 15.6  | 163 [177.4] | 74 [59.6]    |     |   |       |       |
| I do it very much                     | 83 | 5.5   | 55 [62.1]   | 28 [20.9]    |     |   |       |       |

Note: Due to rounding errors, percentages may not equal 100%. Values formatted above as: observed [expected].

Table 6: Predictors of Social Responsibility Motivation Scale

| Source                          | B   | SE  | Beta | t    | Sig. |
|---------------------------------|-----|-----|------|------|------|
| Corrected model                 | 13.752 | 0.357 |      | 38.485 | 0.000 |
| Religion/spiritual activity     | 0.197 | 0.070 | 0.072 | 2.810 | 0.005 |
| Humour                          | 0.124 | 0.066 | 0.048 | 1.869 | 0.062 |
| Sport                           | 0.213 | 0.058 | 0.094 | 3.657 | 0.000 |
| Sharing thoughts and feelings   | 0.240 | 0.069 | 0.089 | 3.459 | 0.001 |
| Alcohol                         | 0.138 | 0.057 | 0.062 | 2.426 | 0.065 |
| Gender                          | 0.231 | 0.125 | 0.047 | 1.841 | 0.066 |
compared with individuals over 55 years of age (Griffin, 2010). Similarly, the prevalence of loneliness in a Swiss population was higher in younger individuals, showing a peak at around 25–29 years of age (Richard et al., 2017), while according to the UC Berkeley Social Network Study, young adults (21–30 years old) reported twice as many days feeling lonely compared with middle-aged adults (50–70 years old) (Child and Lawton, 2019).

During the COVID-19 pandemic, the overall prevalence of loneliness remained unaltered (Luchetti et al., 2020) or slightly increased (McGinty et al., 2020). In the USA, loneliness significantly increased from April to September 2020 throughout the country, affecting more individuals under lockdown restrictions (Killgore et al., 2020a). Several studies revealed that the pandemic induced loneliness in younger adults. Specifically, American younger adults (18–39 years old) reported higher levels of loneliness compared with older ones (Luchetti et al., 2020). Another study showed that loneliness significantly increased in young adults (18–23 years old) from January to April/May 2020 (Lee et al., 2020). According to the COVID-19 Psychological Wellbeing study, an online survey conducted in the UK to assess the impact of COVID-19 on mental health, younger age was related with more severe loneliness; the prevalence of loneliness was much higher in young adults aged 18–24 years (41%) and 25–34 years (28%), compared with adults over the age of 35. Overall, younger adults were four to five times more likely to report loneliness, compared with older adults (Groarke et al., 2020). Accordingly, in a sample of 1013 individuals in the USA, aged 18–35 years, the prevalence of loneliness was estimated at 43% (Killgore et al., 2020b). In this sample, results indicated a trend towards moderate levels of loneliness, with women reporting significantly more feelings of loneliness compared with men.

Although extensive internet and social media use during the pandemic raised concerns due to their potential contribution to ‘infodemic’ (Drouin et al., 2020), the internet has been extensively used for academic and professional purposes, the social media provided a great advantage for immediate dissemination of COVID-19-related protocols and educational material, while they also facilitated news update and communication, reducing the sense of isolation (González-Padilla and Tortolero-Blanco, 2020; Singh et al., 2020) and promoting social support (Saud et al., 2020). In Greece, roughly one to two out of four social media users are 18–34 years of age. The percentage of users increased from February to May 2020, by 2–6.5% (NapoleonCat Stats, 2020). Based on this study, 17.7% of the respondents, the majority women, created a social media account for the first time. Furthermore, women used the social media for longer hours and video-called family and friends more frequently than men. Considering the importance of communicating with family and friends during a crisis (Brooks et al., 2020), as well as the fact that people use technology to cope with loneliness (Seepersad, 2002), women may have engaged in these quarantine-related behaviours to a greater extent due to higher levels of loneliness, particularly emotional loneliness, compared with men. During quarantine, when imposed social distancing makes face-to-face communication hard or impossible, social media allow people to remotely connect with others and to share thoughts and feelings, a coping strategy (Brooks et al., 2020).

The strategies used to cope with loneliness differ across the various life stages (Rokach, 2001). Common strategies used by young adults to cope with loneliness, such as re-establishing of a social support network and increasing activity to daily pursuit of responsibilities (Rokach, 2001), were difficult to activate during the quarantine. Furthermore, cultural influences were shown to modify coping strategies against loneliness as well (Seepersad, 2002). In this sample, the most abundant coping mechanism used during the quarantine was sharing thoughts and feelings about COVID-19 with

---

Table 7: Predictors of the De Jong Gierveld Loneliness Scale

| Source                           | B    | SE   | Beta  | t     | Sig.  |
|----------------------------------|------|------|-------|-------|-------|
| Constant*                        | 3.253| 0.273| 11.916| 0.000 |       |
| Religion/spiritual activity      | 0.074| 0.054| 0.035 | 1.373 | 0.170 |
| Humour                           | −0.183| 0.051| −0.093| −3.616| 0.000 |
| Sport                            | −0.139| 0.044| −0.081| −3.130| 0.002 |
| Sharing thoughts and feelings    | −0.113| 0.053| −0.055| −2.127| 0.034 |
| Alcohol                          | −0.019| 0.043| −0.011| −0.446| 0.656 |
| Gender                           | 0.212| 0.096| 0.057 | 2.210 | 0.027 |

* $R^2=0.026$ (adjusted $R^2 = 0.022$).
others, a mechanism used significantly more by women. Sharing thoughts and feelings about COVID-19, practicing sports and using humour predicted lower levels of loneliness. This finding is interpretable, considering that sharing thoughts and feelings with others is an effective mechanism against loneliness (Seepersad, 2002), and humour showed the potential to relieve distress (Chiodo et al., 2020) and promote psychological well-being during the COVID-19 pandemic (Malakar, 2020). Similarly to other studies (Lee et al., 2020), female gender predicted higher levels of loneliness.

Lastly, sharing thoughts and feelings about COVID-19 with others, practicing sports and resorting to religion/spiritual activity predicted high levels of social responsibility motivation. This finding is interpretable, considering that sharing thoughts and feelings about COVID-19 raises awareness about the pandemic’s severity and may therefore promote the sense of social responsibility, while sports are in any case interrelated with teamwork and respect for the others (Vargas-Mendoza et al., 2018). Finally, although religion is a coping mechanism that may not be favoured by young adults (Rokach, 2001), it has a significant social responsibility aspect that involves respecting others (Smit et al., 2017).

Study’s usefulness, implications and limitations
COVID-19, the greatest public health crisis of the 21st century, is expected to bring grave psychosocial consequences on young adults (Power et al., 2020; Silva Junior et al., 2020). Studies across different populations are required to gain a global understanding of the pandemic’s psychological and behavioural impact. This was the first study investigating social responsibility and loneliness in Greek young adults during the COVID-19-related quarantine in April 2020.

In Greece, the first COVID-19 wave in March–April 2020, displayed a benign trajectory due to the timely imposed national lockdown. The second wave though hit hard, putting a strain on the Greek health system, so that on 7 November, a national lockdown was imposed anew. Currently, the second COVID-19-related quarantine period has no foreseeable end. Considering that previous experience with epidemics/pandemics may be used to confront the challenges imposed by COVID-19 (Chew et al., 2020), this study raises awareness about loneliness, a common negative emotional state among young adults with an impact on physical and emotional well-being. During the current quarantine, in addition to the various national telephone psychosocial support services, programmes nurturing adaptive coping strategies to reduce loneliness should be developed online (Rokach, 2018), since young adults are well-acquainted with digital platforms. The latter could provide standard therapies, such as cognitive behavioural therapy, in an adapted mode, attractive to young people, e.g. in the form of video games (Power et al., 2020). In addition, practicing sports, a commonly used coping mechanism against the quarantine-related loneliness and psychological distress (Violant-Holz et al., 2020), could be further investigated with regard to type, frequency and duration of physical activity to improve mental health outcomes. To date, practicing team sports while maintaining physical distance was shown to improve feelings of loneliness (Lippke et al., 2021). Therefore, promoting online group exercise and fitness programs may mitigate young adults’ sense of social distancing and loneliness during the quarantine (Bentlage et al., 2020).

The present study had though some limitations. The cross-sectional design did not allow the elucidation of causal relationships. Data were obtained based on self-report information and may therefore suffer from bias. In addition, restriction from physical contact was broadly explored, instead of distinguishing differences based on level of intimacy and type of relationship. Due to the strict restriction measures, an online survey was conducted to obtain adequate amount of data. Therefore, the study may suffer from the so-called ‘volunteer-effect’, while socially disadvantaged groups may be underrepresented. Lastly, women were overrepresented, something that may have influenced results, because women were shown to suffer from loneliness more than men (Lim et al., 2019; Lee et al., 2020).

CONCLUSION
This study focused on the emotional and behavioural responses of Greeks aged 18–30 years during the COVID-19-related quarantine in April 2020. Women displayed higher levels of loneliness and more social responsibility than men. Sharing thoughts and feelings with others and practicing sports predicted lower levels of loneliness and higher levels of social responsibility. Humour predicted less loneliness, whereas resorting to religion/spiritual activity predicted more social responsibility. Young adults, a vulnerable population, are in need of psychosocial interventions promoting adaptive coping strategies against the novel COVID-19 crisis.

ETHICAL APPROVAL
Ethical approval was granted from the Papageorgiou General Hospital Review Board (563/2020). The study
was conducted in accordance with the Declaration of Helsinki. The participation in the survey was voluntary, anonymous and confidential. All respondents provided informed consent for their participation, data extraction and publication of the results prior to their enrolment.

ACKNOWLEDGEMENTS
The authors would like to thank the survey respondents.

CONFLICT OF INTEREST STATEMENT
None declared.

REFERENCES
American Psychological Association. (2020a) Social Responsibility. In APA Dictionary of Psychology. https://dictionary.apa.org/social-responsibility-norm (last accessed 14 September 2020).

American Psychological Association. (2020b) Coping Strategy. In APA Dictionary of Psychology. https://dictionary.apa.org/cop ing-strategy (last accessed 13 September 2020).

Balanzá-Martínez, V., Atienza-Carbonell, B., Kapczinski, F. and De Boni, R. B. (2020) Lifestyle behaviours during the COVID-19-time to connect. Acta Psychiatrica Scandinavica, 141, 399-400.

Baral, I. A. and Bhagawati, K. C. (2019) Post traumatic stress disorder and coping strategies among adult survivors of earthquake, Nepal. BMC Psychiatry, 19, 118.

Bentlage, E., Ammar, A., How, D., Ahmed, M., Trabelsi, K., American Psychological Association. (2020a) Social, Emotional, and Mental Well-being of Young Adults during COVID-19. https://dictionary.apa.org/cop ing-strategy (last accessed 13 September 2020).

Child, S. T. and Lawton, L. (2019) Loneliness and social isolation among young and late middle-age adults: associations with personal networks and social participation. Aging & Mental Health, 23, 196–204.

Chioido, C. P., Broughton, K. K. and Michalski, M. P. (2020) Caution: wit and humor during the COVID-19 pandemic. Foot & Ankle International, 41, 763–764.

d’Hombres, B., Schnept, S., Barjaková, M. and Teixeira, F. (2018) Loneliness - An Unequally Shared Burden in Europe (Policy Brief JRC113146). European Commission. https:// ec.europa.eu/jrc/en/news/how-lonely-are-europeans (last accessed 14 September 2020).

De Jong Gierveld, J. and Kamphuls, F. (1985) The development of a Rasch-type loneliness scale. Applied Psychological Measurement, 9, 289–299.

De Jong Gierveld, J. and Van Tilburg, T. (2006) A 6-item scale for overall, emotional, and social loneliness: confirmatory tests on survey data. Research on Aging, 28, 582–598.

De Jong Gierveld, J. and Van Tilburg, T. (2020) Manual of the Loneliness Scale 1999. Vrije Universiteit Amsterdam. https://home.fsw.vu.nl/TG.van.Tilburg/manual_loneliness_scale_1999.html (last accessed 12 September 2020).

Décamps, G. and Rosnet, E. (2005) A longitudinal assessment of psychological adaptation during a winter-over in Antarctica. Environment and Behavior, 37, 418–435.

Domènech-Abella, J., Mundó, J., Haro, J. M. and Rubio-Valera, M. (2019) Anxiety, depression, loneliness and social network in the elderly: longitudinal associations from The Irish Longitudinal Study on Ageing (TILDA). Journal of Affective Disorders, 246, 82–88.

Drouin, M., McDaniel, B. T., Pater, J. and Toscos, T. (2020) How parents and their children used social media and technology at the beginning of the COVID-19 pandemic and associations with anxiety. Cyberpsychology, Behavior, and Social Networking, 23, 727–788.

Dykstra, P. A. (2009) Older adult loneliness: myths and realities. European Journal of Ageing, 6, 91–100.

Fortune Greece. (2020) The first real data about how quarantine affected unemployment. Fortune Greece, June 11. https:// www.fortunegreece.com/article/ta-prota-pragmatika-stichia gia-to-poso-epireasein-energia-i-karantina/ (last accessed 14 September 2020).

González-Padilla, D. A. and Tortolero-Blanco, L. (2020) Social media influence in the COVID-19 pandemic. International Brazilian Journal of Urology, 46, 120–124.

Griffin, J. (2010) The Lonely Society! Mental Health Foundation. https://www.mentalhealth.org.uk/sites/default/
current-state-of-covid-19-outbreak-in-greece-and-timeline-of-key-containment-events/ (last accessed 14 September 2020).

Oosterhoff, B. and Palmer, C. A. (2020) Attitudes and psychological factors associated with news monitoring, social distancing, disinfecting, and hoarding behaviors among US adolescents during the coronavirus disease 2019 pandemic. JAMA Pediatrics, 174, 1184.

Parlapani, E., Holeva, V., Nikopoulou, V. A., Sereslis, K., Athanasiadou, M., Godosidis, A. et al. (2020a) Intolerance of uncertainty and loneliness in older adults during the COVID-19 Pandemic. Frontiers in Psychiatry, 11, 842.

Parlapani, E., Holeva, V., Voitsidis, P., Blekas, A., Glias, I., Porfyri, G. N. et al. (2020b) Psychological and behavioral responses to the COVID-19 pandemic in Greece. Frontiers in Psychiatry, 11, 821.

Patterson, K. D. and Pyle, G. (1991) The geography and mortality of the 1918 influenza pandemic. Bulletin of the History of Medicine, 65, 4–21.

Power, E., Hughes, S., Cotter, D. and Cannon, M. (2020) Youth mental health in the time of COVID-19. Irish Journal of Psychological Medicine, 37, 301–305.

Qualtrics. (2020) Experience Management Software Platform (Version April 2020). Qualtrics. https://www.qualtrics.com/.

Richard, A., Rohrmann, S., Vandelue, C. L., Schmid, M., Barth, J. and Eichholzer, M. (2017) Loneliness is adversely associated with physical and mental health and lifestyle factors: results from a Swiss national survey. PLoS One, 12, e0181442.

Rokach, A. (2001) Strategies of coping with loneliness throughout the lifespan. Current Psychology, 20, 3–17.

Rokach, A. (2018) Effective coping with loneliness: a review. Open Journal of Depression, 07, 61–72.

Sahni, H. and Sharma, H. (2020) Role of social media during the COVID-19 pandemic: beneficial, destructive, or reconstructive? International Journal of Academic Medicine, 6, 70–75.

Saud, M., Mashud, M. I. and Ida, R. (2020) Usage of social media during the pandemic: seeking support and awareness about COVID-19 through social media platforms. Journal of Public Affairs, 20, e02417.

Seepersad, S. (2002) Analysis of the relationship between loneliness, coping strategies and the internet (Corpus ID: 50741649). Master thesis. University of Illinois at Urbana-Champaign. https://www.semanticscholar.org/ (last accessed 14 September 2020).

Seo, M. (2021) Amplifying panic and facilitating prevention: multifaceted effects of traditional and social media use during the 2015 MERS crisis in South Korea. Journalism & Mass Communication Quarterly, 98, 221–240.

Silva Junior, F. J. G. D., Sales, C. F. E. S., Monteiro, C., Costa, A. P. C., Campos, L. R. B., Miranda, P. I. G. et al. (2020) Impact of COVID-19 pandemic on mental health of young people and adults: a systematic review protocol of observational studies. BMJ Open, 10, e039426.
Singh, S., Dixit, A. and Joshi, G. (2020) Is compulsive social media use amid COVID-19 pandemic addictive behavior or coping mechanism? *Asian Journal of Psychiatry, 54*, 102290.

Smit, J., Siwila, L. and Chetty, D. (2017) Editorial: religion and social responsibility. *Alternation Interdisciplinary Journal for the Study of the Arts and Humanities in Southern Africa, 19*, 1–11.

Steele, W. R., Schreiber, G. B., Guiltinan, A., Nass, C., Glynn, S. A., Wright, D. J., S. *et al.* (2008) The role of altruistic behavior, empathetic concern, and social responsibility motivation in blood donation behavior. *Transfusion, 48*, 43–54.

Thompson, N. J., Fiorillo, D., Rothbaum, B. O., Ressler, K. J. and Michopoulos, V. (2018) Coping strategies as mediators in relation to resilience and posttraumatic stress disorder. *Journal of Affective Disorders, 225*, 153–159.

Torales, J., O’Higgins, M., Castaldelli-Maia, J. M. and Ventriglio, A. (2020) The outbreak of COVID-19 coronavirus and its impact on global mental health. *The International Journal of Social Psychiatry, 66*, 317–320.

Van Tilburg, T. G. and De Jong Gierveld, J. (1999) Cesuurbepaling van de eenzaamheidsschaal [Reference standards for the loneliness scale]. *Tijdschrift Gerontologie Geriatrie, 30*, 158–163 (Article in Dutch; English version available at https://home.fsw.vu.nl/tg.van.tilburg/Cut-off%20points%20for%20the%20De%20Jong%20Gierveld%20loneliness%20scale.pdf)

Vargas-Mendoza, N., Fregoso-Aguilar, T., Madrigal-Santillán, E., Morales-González, A. and Morales-González, J. A. (2018) Ethical concerns in sport: when the will to win exceed the spirit of sport. *Behavioral Sciences, 8*, 78.

Violant-Holz, V., Gallego-Jiménez, M. G., González-González, C. S., Muñoz-Violant, S., Rodríguez, M. J., Sansano-Nadal, O. *et al.* (2020) Psychological health and physical activity levels during the COVID-19 pandemic: a systematic review. *International Journal of Environmental Research and Public Health, 17*, 9419.

Voitsidis, P., Gliatas, I., Bairachtari, V., Papadopoulou, K., Papageorgiou, G., Parlapani, E. *et al.* (2020) Insomnia during the COVID-19 pandemic in a Greek population. *Psychiatry Research, 289*, 113076.

Weiss, R. S. (1973) *Loneliness: The Experience of Emotional and Social Isolation*. The MIT Press, Cambridge, MA.