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LONELINESS AND FEAR OF COVID-19 IN POLISH ADULTS. THE MEDIATING ROLE OF GENERALIZED MOOD

SAMOTNOŚĆ I LĘK PRZED COVID-19 U DOROSŁYCH POLAKÓW. MEDIACYJNA ROLA UOGÓLNIONEGO NASTROJU

Abstract

Aim:
Since the end of 2019 the COVID-19 pandemic has been determining the ways in which nations, institutions, and individuals function. As of now, despite a growing body of research, little is known about the effects of the pandemic in the area of psychosocial functioning of an individual. An analysis of the results of the studies conducted so far implies that the feeling of loneliness, caused or exacerbated by pandemic

regimes, may increase fear of COVID-19. To provide effective psychological support to persons suffering from fear of the coronavirus relationships between the feeling of loneliness and fear of the COVID-19 must be understood. Both clinical experience and research results show that generalized mood may be a mediator in the postulated relationships. The present work studies the relationship between loneliness and fear of COVID-19, and the generalized mood as a mediator in this relationship in adults.

METHODS:
The studies were performed on a sample of 298 adults from Poland, aged 20 to 90. The mediation analysis with bias-corrected bootstrapping method confirmed that the relation between loneliness and fear of COVID-19 is mediated by generalized mood.

RESULTS:
The results show an indirect effect of loneliness via generalized mood on fear of COVID-19.

CONCLUSIONS:
The feeling of loneliness and depressed generalized mood are risk factors for fear of COVID-19. Health care and welfare workers should be aware of health threats to socially isolated adults and those with a depressed mood. It is important to develop, as soon as possible, a simple, universal counseling package aimed at improving the clients' generalized mood, a package that would be conducive to the development of social relations and would include education in adapting to the COVID-19 situation.

KEYWORDS: *loneliness, generalized mood, fear of COVID-19, adulthood*

INTRODUCTION

The coronavirus (COVID-19) pandemic exerts an effect on health and well-being of people around the world (e.g. . Torales et al., 2020). The members of the public are afraid of getting infected with the disease, but also of the consequences of the transformation of their daily lives. Social distancing measures taken in the vast majority of countries to contain the spread of the virus may lead to the co-existing "loneliness epidemic" (Klein, 2020). The global community is undoubtedly concerned with the COVID-19 disease and its long-term consequences for health and health care, welfare, job market, the economy etc. Currently, countries and international organizations are focusing on controlling and mitigating the effects of the pandemic through

identification of its numerous changing aspects (Kumar, Rajasekharan Nayar, 2020). "To assist national and global efforts to end the COVID-19 emergency worldwide, WHO updated the COVID-19 Global Preparedness, Readiness and Response plan in 2022 and outlined two strategic objectives. First, reduce the circulation of the virus by protecting individuals, especially vulnerable individuals at risk of severe disease or occupational exposure to the virus. Second, prevent, diagnose and treat COVID-19 to reduce deaths, disease and long-term consequences" (https://www.who.int/emergencies/diseases/novel-coronavirus-2019/covid-19-policy-briefs. 13.10.22).

Consequences of fear of COVID-19

Fear was one of the first emotional reactions to the COVID-19 pandemic. As a consequence, individuals developed both rational and irrational fears of getting infected (Montemurro 2020; Ornell et al., 2020). Fear is a fundamental emotion that ensures the survival of an individual (Butter 2012; Öhman 2008). However, when experienced at an excessively high level, fear may result in maladaptive behavior (Lum and Tambyah 2020; van Meurs et al., 2014). Isolation-related precautions introduced by national authorities during the COVID-19 pandemic have made people spend a lot of time in loneliness due to the quarantine and refraining from direct social contacts. Fear of COVID-19 and precautions taken in response to the pandemics have caused stronger feeling of loneliness in individuals (Armitage i Nellums 2020; Xiang et al. 2020a). Understanding a thus far unexplored relationship between loneliness and fear of COVID-19, and generalized mood as a mediator in this reaction in adults has serious implications for health care and social policies, in particular in consideration of the rise in cases, the increasingly severe course of the disease, and a prolonged period of remote work or education without contacts with other people. The coronavirus (COVID-19) pandemic has drastically changed the way in which people work, and numerous employees work in isolation and in difficult conditions (Andel et al., 2021). Maintaining social distance has become the main principle of functioning in the contemporary society (Geirdal et al., 2021).

The emocional, poznawcza and behavioral response to COVID-19 pandemic is multifactorial. A significant increase in feelings of functional impairment, boredom, stigma, worry, phobia, frustration and anger has been observed. In the pandemic background, stressors also must be considered in the assessment of the impact. These mainly include COVID-19-related circumstances, such as potential exposure to the virus and loss of loved ones, as well as secondary adversities due to economic difficulties, unavailability of food, psychosocial effects, disruption of future plans and underlying physical and psychological conditions (Pedrosa at all., 2020).

Lonelinnes in human life

Loneliness is a subjective feeling of social isolation, resulting from the perceived lack of closeness in interpersonal relationships (de Jong-Gierveld, 1987; Hawkley & Cacioppo, 2010). Subjectivity of loneliness means that some people may live alone but do not feel lonely or, alternatively, others may live relatively socially rich lives but experience loneliness (Cornwell & Waite, 2009; Hawkley & Cacioppo, 2010). Inequalities in physical and social environments may additionally increase the risk of experiencing loneliness in some individuals (Marmot et al., 2020; Wilkinson & Marmot, 2003). There are numerous factors that may contribute to the feeling of loneliness, and to the risk of social isolation. Risk factors with relatively consistent associations with loneliness were depression/depressed mood and an increase in depression (Dahlberg, et al., 2021). Loneliness may appear at any moment in a lifetime, may affect anyone regardless of age, gender or other socio-demographical considerations, and frequently is subject to key triggers and points of transition including changes that adversely affect social networks (Kantar Public, 2016; Victor et al., 2002).

Chronic perceived isolation (i.e., loneliness) is characterized by impairments in attention, cognition, affect, and behavior that take a toll on morbidity and mortality through their impact on genetic, neural, and hormonal mechanisms (Hawkley, Cacioppo, 2010).

Relationships between fear of COVID-19, loneliness and mood

Previous studies indicate that loneliness is related to fear (Wong & Waite, 2017). During the pandemic loneliness is considered as a health-related emotional reaction which occurs in relation to the implementation of COVID-19 containment policy (Okruszek et al., 2020). Loneliness is an emotion which is worth analyzing, and methods of coping with it are worth identifying because loneliness is related to numerous health effects (Fuschia, Owens, 2021). A strong feeling of loneliness may cause depressed mood and may trigger various mental disorders Ben-Zur & Michael 2016; Cacioppo et al., 2010; Cacioppo et al., 2017; Dahlberg et al., 2015; Donovan et al., 2017; Lim & Kua 2011). Because disease epidemics may cause numerous mental disorders (Bowman et al., 2021; Hong-Tao Song et al., 2021), coping with fear and loneliness during the COVID-19 pandemic may help in protecting mental health. During the epidemic individuals either started living alone or stayed at home with family members. Furthermore, even welfare and health care workers avoided direct contacts to prevent the spread of COVID-19. As a consequence, self-isolation, social distancing, and "stay-at-home" order were implemented, social interactions were severely limited, which exacerbated loneliness in many individuals (Geirdal et al., 2021). Negative psychological symptoms intensified due to the impossibility of sharing one's daily experiences, emotions, and fears related to COVID-19 with one's relatives (Plomecka et al., 2020) C.

Based on the above findings, it can be presumed that the level of loneliness is related to a higher level of fear of COVID-19 via a generalized mood. We have focused on generalized mood and fear, which are most frequently observed mental health results during natural adversities (Steel et al., 2009). In connection with the theoretical considerations presented above and the results of previous research, it seems reasonable to ask the following research question: is generalized mood a mediator in the relationships between the loneliness and fear of COVID-19 in adulthood? We formulated a general hypothesis (H), according to which generalized mood mediates the relationships between the loneliness and fear of COVID-19 in adulthood. In the present study, we will

be testing the model of the direct and indirect effect of the loneliness on fear of COVID-19 through generalized mood (see Fig. 1).

Figure 1. Model of the direct and indirect effect of loneliness on fear of CO-VID-19 through generalized mood
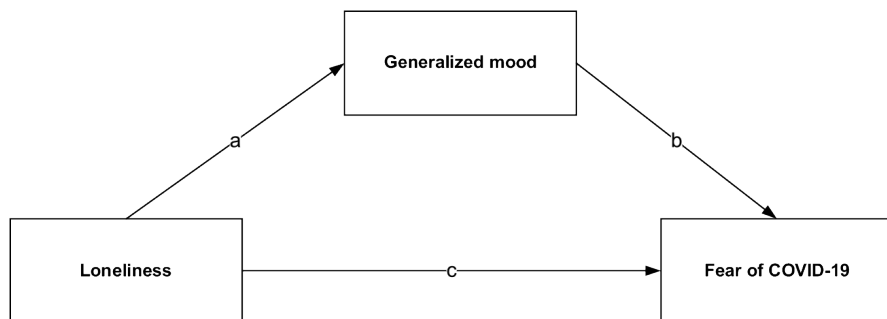
Source: own elaboration.

Methods

Data were gathered from 298 participants aged 20 to 90 (M = 45.0; SD = 20.62). The study included 219 women (73.5%) and 79 men. It was conducted in several Polish cities and villages. Participants mostly came from cities n=164 (55.0%). One hundred thirty four respondents (45.0%) were inhabitants of rural areas. The vast majority of the participants declare that they live with other house-dwellers (n=249; 83.6%). The participants used a five-point scale (where 1 = *I cannot expect support from others; 5= I have great support from others*) to evaluate a degree to which they can expect support from other persons. The mean obtained was M=4.12 (SD=1.05). Of all the participants, 63 persons (21.14%) stated that they had been quarantined, and 38 persons (12.75%) declared that they had had COVID-19. All the respondents were Roman Catholic.

Adults from various regions of Poland were recruited using the snowball sampling method to take part in the study. The study started at the beginning of March 2021, before the Government of the Republic of Poland announced the lockdown in response to the so-called third wave of the COVID-19 pandemic,

and concluded in June the same year. The research was carried out in the form of a paper-and-pencil questionnaire. The questionnaire was anonymous. The participants did not disclose their personal details (e.g. full name, date of birth etc.) Participation in the study was voluntary and the participants did not receive any reward, apart from the feedback concerning the final research results that was delivered to the individuals who wished to receive it. During the study the participants self-described themselves with regard to loneliness, generalized mood, fear of the coronavirus, and demographical data.

The participants described their loneliness using the de Jong Gierveld Loneliness Scale (De Jong Gierveld Lonelinees Scale – DJGLS) as adapted into Polish by Grygiel et al. (2013). This tool consists of 11 statements, five of which refer to social contacts with positive connotations, and six statements refer to emotional state describing negative feelings. The participants indicate the extent to which each statement is true for them (1= *yes!*, 5= *no!*). The psychometric properties of the tool are good. In the presented studies the reliability of the entire scale measured using the Cronbach's alpha was .91

Generalized mood of the participants was evaluated using the Generalized Mood Scale by Wojciszke & Baryła (2004). This tool consists of 10 items phrased in such a manner as to express generalized positive or negative mood, rather than specific emotions. The participant's task is to define to what degree each statement is true for them. Evaluation is based on a five-point scale (1 = *I do not agree*; 5 = *I agree*). The general result of the scale is the mean of the evaluations of individual rating scales (therefore, the result can range from one to five). The psychometric properties of the tool ate satisfactory. In the presented studies the reliability of the scale measured using the Cronbach's alpha was $\alpha = .89$.

Fear of the COVID-19 pandemic was characterized using the Fear of COVID-19 Scale – FCV-19S by Ahorsu et al. (2020) as adapted into Polish (Lewicka-Zelent & Czerski, in print). The tool consists of 7 statements. The participant evaluates (on a five-point scale: 1 = *strongly disagree*, 5 = *strongly agree*), w which statement is true for them. The tool makes it possible to obtain a general result. The psychometric properties of the method are satisfactory. In the presented studies the reliability of the method measured using the Cronbach's alpha was $\alpha = 91$.

Data Analysis Strategy

Before commencing statistical calculations, considering the fact that all variables were measured using questionnaires, it was assumed that the study may be burdened with a common method bias (Podsakoff et al., 2003; 2012). To verify this assumption, the Harman's single factor test was used. The actions conducted revealed that one factor explains 38.67% of variations (i.e. clearly below the acceptable threshold of 50%), whereas all positions individually create five variants. Therefore, it can be inferred that the common method bias does not apply to the presented study. In the next stage of statistical activities, after calculating the descriptive statistics and correlations among the variables, mediation analyses were conducted to check whether generalized mood mediates in the relation between loneliness and fear of COVID-19. For this purpose *IBM SPSS Statistics* 25.0 *PROCESS* macro 3.4. was used. Model 4 (see Figure 1) was tested. Mediation was assessed by evaluating indirect effects between the mood and fear of COVID-19. Standard errors for indirect effects were bootstrapped (10,000 samples), which provides a more accurate evaluation of mediation tests. For the interpretation of the results, it was assumed that if the 95% coefficient interval (CI) for a coefficient does not include zero, it indicates a statistically significant indirect effect (Hayes, 2017).

Descriptive statistics and correlations among variables

Following preliminary analyses regarding the verification of the common method bias, calculations of descriptive statistics regarding the analyzed variables were conducted. Table 1 presents the values of descriptive statistics – means *(M)*, standard deviations (*SD*), skewness (*ske*), and kurtoses (*k*) – of the distributions of the results in each of the scale, and the the Kolmogorov–Smirnov test (*K-S*) results of the consistency of those distributions with the normal distribution for a specific sample.

The mean score on the loneliness was 2.53 (*SD* = .84), which is below the scale midpoint *more or less*. Therefore, one can assume that the participants

were characterized by a lower-than-average level of loneliness. The mean ratings of generalized mood were slightly above the value of 3, which means that the participants were characterized by moderately positive mood. The mean score for fear of COVID-19 was $M = 2.42$ ($SD = .98$), which is below the scale midpoint *yes and no*. This means that the participants were characterized by relatively low fear of the COVID-19 pandemic (see Table 1).

Table 1. Descriptive statistics and correlations among variables

| Variables	M	SD	ske	k	K-S	Score range	1.	2.	3.
1. Loneliness	2.53	.84	.99	2.24	.06***	1 – 5			
2. Generalized mood	3.35	.81	−.38	−.24	.09***	1 – 5	−.47***		
3. Fear of COVID-19	2.42	.98	.62	−.12	.09***	1 – 5	.32***	−.46***	

Note: ***$p < .001$

Source: own elaboration.

The correlations among the loneliness, generalized mood and fear of COVID-19 were examined. As hypothesized, generalized mood is negatively correlated with loneliness and fear of COVID-19 ($r = −.47$ and $r = .46$, respectively). Furthermore, loneliness shows statistically significant positively relationships with fear of COVID-19 ($r = .32$).

MEDIATION ANALYSES

Next, the mediation analysis was performed to test whether generalized mood mediates the relationship between loneliness and fear of COVID-19. Results of the bootstrapped regression analysis show that loneliness is a significant and negative predictor of generalized mood. Moreover, generalized mood

predicts fear of COVID-19 among adult people (see Figure 2). The results show an indirect effect of loneliness via generalized mood on fear of COVID-19 (.297, CI = .19 – .42). The perceived effect is small. The 95% CI does not include zero, which confirms mediation effects (Hayes, 2017). Additionally, Sobel test ($z = 5.71$; $p < .001$), proved to be statistically significant, thus confirming the mediating role of generalized mood in the effect of loneliness on the fear of COVID-19. The revealed pattern of results suggests that adult individuals who experience loneliness are also characterized by a depressed mood. In turn, experiencing a negative mood, they are more afraid of the consequences of contracting the SARS-Cov-2. Moreover, the inclusion of generalized mood in the analysis of the psychosocial functioning of adults causes that loneliness loses its direct impact on the fear of COVID-19.

Figure 2. The final mediational model of generalized mood in the relation between loneliness and fear of COVID-19 (standardized coefficients)
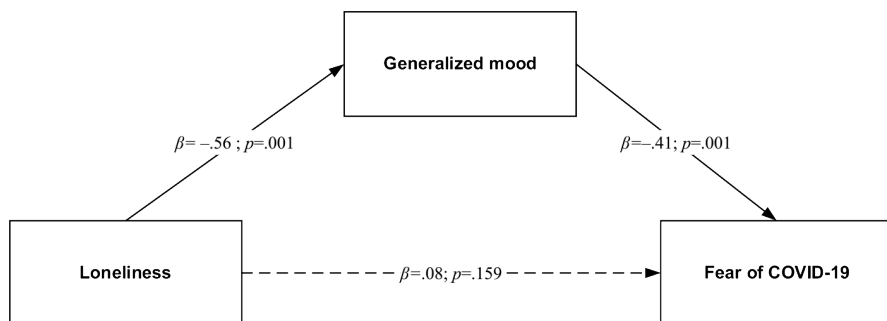
Source: own elaboration.

Results

The present study examines the mediational role of generalized mood in the relations between loneliness and fear of COVID-19 in adults. In those conditions, the key findings were as follows:

Loneliness is a significant and negative predictor of generalized mood, (2) generalized mood predicts fear of COVID-19 among adult people, (3) an

indirect effect of loneliness via generalized mood on fear of COVID, and (4) the mediating role of generalized mood in the effect of loneliness on the fear of COVID-19.

The results proved the hypothesis of the study. Greater loneliness was related to increased fear of COVID-19 via low generalized mood. Experience of loneliness affected fear of COVID-19, which was described elsewhere (Armitage & Nellums 2020; Okruszek et al., 2020; Xiang et al., 2020a). Fear of COVID-19 was assumed to adversely affect (generalized) mood (Gavin et al., 2020), and the studies showed that loneliness adversely affected (generalized) mood (Ben-Zur & Michael 2016; Cacioppo et al., 2010; Cacioppo et al., 2017; Dahlberg et al., 2015; Donovan et al., 2017; Lim i Kua 2011). Loneliness, as shown by previous results, is related to negative states, e.g. . hopelessness (Gum et al., 2017), increased feelings of uselessness, increased nervousness (Aartsen & Jylhä, 2011).

Fear of COVID-19 may lead to self-isolation, which may result in increased sense of loneliness. Loneliness experienced as a result of decreased social interactions adversely affects mood. Therefore, the research conducted herein support the conclusion that increased fear of COVID-19 is related to lowered mood. Thus, these findings are consistent with theoretical opinions (e.g., Armitage & Nellums 2020; Okruszek et al., 2020) regarding the effects of fear of COVID-19 and previous studies (e.g,. Ben-Zur & Michael 2016; Gavin et al., 2020), and ensure an integrated picture of relations among the variables studied.

It is worth to focus future studies on persons subjected to a quarantine because, as indicated by previous analyses, the incidence of depression and fear in those persons was significantly higher than in the participants not subjected to a quarantine. One can assume that the former group is particularly prone to experiencing negative mental effects (see Lei et al., 2020;Teng et al., 2021).

Future research which will deal with longer periods of the pandemic may reveal the occurrence of new processes related to social isolation and loneliness, as they are synergistic constructs interacting with one another (Beller & Wagner, 2018). Intensity of institutional actions aimed at strengthening social relations may decrease, leading to more loneliness and depressed generalized mood. Alternatively, considering that most individuals are resilient and adapt

to new circumstances, mood improvement and weakening the sense of loneliness may become more visible over longer periods.

This study constitutes the first, as of now, analysis of the mechanisms of relations between loneliness and fear of COVID-19 mediated by generalized mood. No previous study dealt with relation between fear of COVID-19 and loneliness and (generalized) mood. However, previous studies indicate that fear of COVID-19 may cause increased loneliness in individuals (Okruszek et al. 2020), which adversely affects well-being (Ornell et al. 2020). Additionally, epidemics are known to have a negative effect on well-being (Kwon et al. 2017; Lau et al. 2008). Consequently, the results herein prove the conceptual view related to loneliness and fear of COVID-19. Loneliness negatively affects emotions of individuals – their fear of COVID-19 via depressed mood.

The present study, apart from offering scientifically valuable findings, also has its limitations. First, the study is cross-sectional. This means that although we were able to test the pathways specified in the model, we could not determine the temporal order of the associations or establish the direction of the cause-and-effect relationhips/establish whether they were cause-and-effect relationships. The empirical assumptions made confirm the relaibility of the pathways of effect specified in the proposed model, however, a longitudinal study with a larger representative sample carried out on a national scale is needed to see whether our results are replicable. Secondly, the study included only Roman Catholics, which significantly narrows the scope of the religious meaning system and its impact on other psychological variables. In future studies, it is also worth considering other Christian denominations and other religions. Thirdly, all the psychological instruments used in this study were self-report measures, and so, the results may be affected by variable social approval. It is, therefore, possible that a measurement of loneliness and generalized mood with other instruments would produce different results. Fourthly, the sample was not representative. Data were collected by non-random sampling using the snowball method. When planning future research, it is worth paying special attention to the representativeness of the sample. This will make it possible to generalize the conclusions to the entire Polish population. Lastly, it is not clear whether the patterns observed here will continue to exist as the pandemic develops or subsides. For example, when

the pandemic-related shock eases off, and people return to good health and adjust to the "new normal", individuals with strong sense of loneliness may no longer feel deep fear of COVID-19.

The results of the analysis of the mediational role of (generalized) mood in relations between loneliness and fear of COVID-19 indicate that loneliness and fear of COVID-19 are a growing problem in the times of the pandemic, whereas requirements faced by the health care and welfare system are not only increasing but also they are changing. Therefore, further studies are needed to gain a better understanding of the processes of mood boosting, alleviating the fear of COVID-19, and strengthening social relations during the pandemic. Especially that in the area of social relations we are witnessing today one of the most severe effects of the COVID-19 pandemic. For example, O'Donnell and colleagues (2022) found that levels of neighborhood social relations were strongly negatively associated with mental health symptoms. A significant interaction between lockdown and neighborhood social relations suggests that lockdown increased depressive symptoms by 21% for people with average perceived neighborhood relations, compared with a 9.7% increase for people whose perceived relations is one standard deviation greater than average.

These results are worth using for education of future professional helpers (e.g., nurses, doctors, social workers, psychologists) who, as yet, have not been prepared for work during a pandemic nor for using remote support tools on as large a scale as needed now. Recent research reports suggest that these educational activities should be directed at strengthening in adults their personality resources such as optimism (Alves et al., 2022), hope (Marciano et al., 2022), resilience (Satici et al., 2022), humor (Saricali et al., 2020; Torres-Marín et al., 2022) and wisdom (Brudek & Steuden, 2022; Fowers et al., 2021). It turns out that these mental resources have helped adult individuals coping with pandemic stress. They have reduced the fear of COVID-19 and positively influenced the mood during the difficult time of the pandemic and lockdown.

It is important to develop a simple counseling package which can be provided by professional helpers to individuals experiencing loneliness and fear, at their homes or in health care facilities. Specific guidelines on how and to whom to provide support should be specified and clarified in cooperation with scientists, local government officials and practitioners in the field of helping.

This cooperation will allow to define and undertake adequate forms of support for people in need of help. The package should cover a range of areas, such as methods of coping with fear and depressed mood for individuals suffering from the disease, members of their families, and even to those who fear being infected; education in the course and treatment of COVID-19, and the offer covering possibilities of establishing social relations in institutions tasked with organizing free time for adults (directly or remotely). Establishing online services in the area of mental health and counseling in hospitals, health care facilities, and welfare institutions as well as at university departments of social sciences may be an opportunity for solving potential crises (Liu i in., 2020).

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