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Free sharing with family members in times of crisis is linked with fewer internalizing symptoms: A network analysis

Abstract

The mental health of individuals depends on the quality of their communication with family members. Despite the general positive links between satisfaction with communication within the family and internalizing symptomatology, less is known about the particular communication behaviors and internalizing symptoms. In a study conducted during the crisis of the COVID-19 pandemic, we collected reports of family communication (e.g., the possibility to freely share opinions, making decisions together, valuing the role of communication), depression, and anxiety symptoms from 267 adult participants (65.17% women). We analyzed the network of associations between particular communication behaviors and symptoms. We showed that feeling free to share one's opinions with family members had the highest expected influence on all the symptoms included in the analysis. Additionally, we showed that individuals enjoying time with family members had fewer suicidal ideations, whereas people satisfied with communication with family members reported less pathological worrying.

Keywords: family communication, family crisis, network analysis, mental health, depression and anxiety.

1. Background

Mental disorders are among the most important causes of health burden worldwide (Global Burden of Diseases – GBD Mental Disorders Collaborators, 2022, p. 141). Internalizing psychopathological symptoms such as depression or anxiety contributes to a major proportion of mental health problems significantly impairing individual functioning (Whiteford *et al.*, 2013, p. 4). The recent COVID-19 pandemic crisis, in fact, has further aggravated the risk of occurrence of internalizing symptomatology in the general population (Kumar and Nayar, 2020, p. 1; Necho *et al.*, 2021, p. 899). The social distancing measures imposed to slow down the spread of the pandemic highlighted the role of psychological resources such as close social bonds. Communication within families has been found to be an important protective factor against the worsening of mental health during the global health crisis (Magson *et al.*, 2021, p. 52). The quality of family communication is a well-known predictor of mental health in children (Siegenthaler, Munder and Egger, 2012, p. 8), adolescents (Hughes and Gullone, 2008, p. 106), and adults (Schrodt and Ledbetter, 2007, p. 345). Studies conducted in various societies have shown that good family communication protects against psychopathological symptoms (Bai *et al.*, 2022, p. 7; Cassinat *et al.*, 2021, p. 1607). Although an abundant number of studies have focused on the correlates of mental health during the pandemic in Poland (e.g., Gambin *et al.*, 2023, p. 8), there have been relatively fewer investigations into the role of family ties for mental health in the Polish society. Thus, the goal of the present study was to investigate the role of communication behaviors during the pandemic for the personal experiences of internalizing symptoms in adults.

The recently introduced network approach to psychopathology (Borsboom and Cramer, 2013, p. 91) treats mental problems as resulting from the causal interplay between symptoms rather than as a reflection of latent psychopathological process (e.g., depression). This approach also suggests that an individual's psychopathological symptoms can be inhibited or activated by the processes existing between the members of the family system, perceived as an extended network of psychopathology (Borsboom and Cramer, 2013, p. 103). Previous studies focused on the associations between global dimensions of family communication (e.g., parental confirmation and affection; Schrodt, Ledbeter and Ohrt, 2007, p. 33). However, less is known about the role of particular communication behaviors for the mental health of the family members. The present study used the extended network approach to examine the associations between the perceived quality of family communication and internalizing symptoms (e.g., depressed mood, suicidal ideation) in a sample of adults within the families studied. The

aim of the study, namely to distinguish the protective communication behaviors which might reduce the risk of internalizing symptoms occurrence, could lead to more tailored interventions in family therapy and counseling (Desautels, Touchette and Pauzé, 2020, p. 2).

2. Internalizing symptomatology

Traditional taxonomies of mental disorders are limited by the blurred and arbitrary boundaries between psychopathology and normal functioning as well as between the various psychopathological symptoms (Forbes *et al.*, 2021, p. 139; Kent, Markon and MacDonald, 2023, p. 225). The alternative Hierarchical Taxonomy of Psychopathology (HiTOP) theory proposed that psychopathological symptoms be organized in spectra such as somatoform, internalizing, thought disorders, externalizing, and detachment (Kotov *et al.*, 2017, p. 9). In this influential approach in contemporary psychopathology, the internalizing spectrum is the widest of the above and includes fear (e.g., social phobia, obsessive-compulsive disorder), distress (e.g., dysthymia, major depression disorder, generalized anxiety disorder), but also eating psychopathology (e.g., bulimia and anorexia nervosa), as well as sexual problems (e.g., low desire, difficulties with arousal) (Kotov *et al.*, 2017, p. 11). From the developmental psychopathology perspective, distress and fear are the factors most influenced by the maladaptive family functioning (Hankin *et al.*, 2016, p. 994).

3. Family communication: wide dimensions and particular behaviors

Communication is one of the basic family processes (Buhler, 2020, p. 145). In general, family communication could be defined as an "ability to communicate and interact with one another in positive and constructive ways" (Dunst, 2021, p. 213). Family communication is frequently treated as a unidimensional feature of the family system (Dunst, 2021, p. 214). Family communication patterns theory suggests that conformity orientation and conversation orientation are broad and influential dimensions of communicational behaviors within the family (Koerner and Fitzpatrick, 2006, p. 57). Other theories distinguished between positive (e.g., support, trust, open expression of needs) and negative (e.g., disapproval, anger, distrust) communication behaviors (McGuigan, Vuchinich and Tang, 2014, p. 105). These dimensions of communication are nested in the fundamental characteristics of a family: cohesion (affective bonds between family members)

and flexibility (a capacity of the family to change its structure in response to the family's situation and development; Olson, 2000, p. 145).

A wide operationalization of communication behaviors between family members may give only broad image of the family functioning and, therefore, impede translation of the empirical findings into family therapy and counseling. Particular communication behavior (e.g., asking questions) may be saturated by different levels of openness and autonomy. Thus, in the present study, we focused on the specific communication behaviors instead of investigating broad dimensions of communication patterns.

In the present study, we used a measure of family communication developed during the pandemic crisis (Geçer and Yıldırım, 2023, p. 206). This measure encompassed positive communication behaviors such as sharing feelings, valuing positive communication with family members, making decisions together, enjoying spending time with the family, and motivating each other to keep a great family environment. Thus, we focused on the positive communication behaviors which could constitute preventive factors against risks for mental health such as chronic stress.

4. Family communication and internalizing symptomatology

Family communication was proved to predict mental health in the general population (Elgar, Craig and Trites, 2013, p. 436) and in specific sub-populations (e.g., cancer patients, Mallinger, Griggs and Shields, 2006, p. 358). Meta-analytical studies have clearly shown that good communication within the family is associated with better mental health, and well-being of its members (Dunst, 2021, p. 219). The preventive role of better family communication was particularly highlighted in times of the COVID-19 pandemic (Chan, Piehler and Ho, 2021, p. 775; Geçer, and Yıldırım, 2023, p. 206). For example, people experiencing high family functioning reported being less lonely during the pandemic (Pan *et al.*, 2021, p. 5). Good family communication is a preventive factor against suicidal ideations (Lensch *et al.*, 2021, p. 945), depression (Dorrance Hall, Meng and Reynolds, 2020, p. 5), and anxiety (Lo Cascio *et al.*, 2013, p. 144). Existing studies on the associations between family communication and internalizing symptoms focused again on the broad dimensions of communication and on the sum scores of internalizing symptoms (e.g., depression, anxiety). Such approach makes it difficult to distinguish particular communication behaviors which are influential for the particular internalizing symptoms, and could be addressed by tailored family counseling interventions.

5. Objectives

The goal of the present study was to investigate the associations between family communication behaviors and internalizing symptomatology at the level of particular behavioral acts and symptoms. Thus, we used a network approach to psychopathology as well as extended psychopathological networks to examine the complex patterns of relationships between communication behaviors and internalizing symptoms (Borsboom and Cramer, 2013, p. 103). We computed the centrality measures of the components of the extended networks to highlight the most important bridges between communication within the family and the respective family members' internalizing symptoms. By doing so, we aimed to distinguish the communication behaviors which could be stimulated in family counseling to foster the psychological resilience of the family members.

6. Methodology

6.1. Participants and procedure

Two hundred sixty-seven adult Poles participated in an on-line study (174 women and 93 men). The mean age of the participants was 40.7 (SD = 11.07, min = 18, max = 74). The majority of the participants declared average socioeconomic status (SES; N = 221; 82.77%), whereas thirty-seven declared higher (13.86%) and nine participants declared lower than average SES (3.37%). The majority of the participants were professionally active during the study (N = 261; 97.75%), whereas six persons declared not being professionally active (2.25%). Two hundred sixty-four participants had a child or children (98.88%), whereas three individuals did not have any children (1.12%). The participants were invited to the study using a snowball technique. The advertisements were disseminated via social media (e.g., Facebook). The inclusion criteria were: (a) age over 18 years, and (b) having a family indicated e.g., by having a romantic partner or a child. The study was conducted in December 2022. The participants were informed about the study aims and provided informed consent. They received no remuneration for their participation. The study was approved by the Institutional Review Board of the University of Silesia in Katowice.

6.2. Measures

6.2.1. The Family Communication Scale (FCS; Geçer and Yıldırım, 2023, p. 219) was used to assess the perceived communication behaviors within the participant's family with particular focus on positive communication. Each statement (see Table 1) was rated using a 4-point Likert type scale ranging from 1 (*Strongly disagree*) to 4 (*Strongly agree*). Before applying the study, the FCS was translated and checked for accuracy via a back-translation procedure with the presence of the authors of the original scale. Internal consistency of the FCS was high in the present study (Cronbach's α = .90).

6.2.2. The Patient Health Questionnaire-9 (PHQ-9; Kroenke, Spitzer and Williams, 2009, p. 613) was used to assess depressive symptoms. The questionnaire consists of nine items (Table 1) rated on a 4-point scale (0 – "not at all", 3 – "nearly every day"). Each item reflects specific diagnostic criteria of major depressive disorder included in the Diagnostic and Statistical Manual of Mental Disorders, Fifth Edition (DSM-5) and records symptoms over the preceding two weeks. Internal consistency of the scale was appropriate in the present study (Cronbach's α = .92).

6.2.3. The Generalized Anxiety Disorder-7 questionnaire (GAD-7; Spitzer *et al.*, 2006, p. 1094) was used to assess anxiety symptoms. The GAD-7 consists of seven items (Table 1) rated on a 4-point scale (0 – "not at all", 3 – "nearly every day"). Each item reflects specific diagnostic criteria of generalized anxiety disorder included in the DSM-5 and records symptom presence in the preceding two weeks. Internal consistency of the scale was appropriate in the present study (Cronbach's α = .92).

6.3. Statistical analysis

First, we calculated descriptive statistics, internal consistency, and zero-order correlations for all family communication behaviors and internalizing symptoms. We planned to use non-paranormal transformation to normalize variable distribution in the potential case of stronger deviations from normal distribution (Liu, Lafferty and Wassermann, 2009, p. 2296). Next, we used R version 4.3.1 to conduct network analysis. In terms of network psychometrics, variables are referred to as nodes and the associations between nodes are referred to as edges (weights). We estimated a Gaussian Graphical Model (GGM; Epskamp, Borsboom and Fried, 2018, p. 198). Estimation of a network in a GGM consists in

regularized partial correlations for each variable, where all other nodes are entered to estimate the edges connected to that variable. Regularization refers to shrinking the lowest partial correlation to zero to avoid spurious correlations in the resulting network (graphical least absolute shrinkage and selection operator; GLASSO; Epskamp, Borsboom and Fried, 2018, p. 198). We used the EBIC method implemented in the *bootnet* package to control the parameters of penalization in regularization (Epskamp and Fried, 2018, p. 5).

We visualized the GGM using the *qgraph* package (Epskamp *et al.*, 2012, p. 1). The Fruchterman–Reingold algorithm (Fruchterman and Reingold, 1991, p. 1131) was used to plot the estimated GGM. In the plot, circles refer to nodes (variables), whereas edges are represented by blue (positive edge) or red (negative edge) lines. Line thickness represents the strength of the association between two nodes. Strongly connected nodes are placed in the center of the plot, whereas less associated nodes are placed in the periphery of the model.

Centrality of the nodes was estimated using the *bootnet* package (Epskamp and Fried, 2018, p. 196). Because we expected both positive and negative edges, we used expected influence (sum of the values of the weights on the edges representing overall positive connectivity in networks with both positive and negative edges). In networks based on partial correlations or regression weights, an edge with a positive value indicates that an increase in activation of one node is associated with an increase in activation of the node connected to it. In contrast, a negative edge indicates that an increase in the first node is associated with a decrease in the second node (Jones, Ma and McNally, 2019, p. 1). Considering the possible clinical relevance of the findings, we decided to focus on the centrality indices which signify the role of a given node in deactivation or activation of other nodes in the network (namely expected influence and bridge expected influence).

The stability of the network estimations was ensured using bootstrap procedures (Epskamp *et al.*, 2018, p. 199). We used a case-dropping procedure to estimate the stability of centrality indices. The resulting index of stability is referred to as the correlation coefficient (CS) and provides information on how much the order of the node's centrality remains similar to the initial order when the number of sampled subsamples decreases. A significant CS should be higher than .25, but preferably higher than .50 (Epskamp *et al.*, 2018, p. 200). Stability of the edges was investigated by producing 95% confidence intervals in edges based on 500 bootstrap samples. Bootstrap procedures were also used to calculate differences in centrality within the nodes. The number of participants was determined in line with the statistical literature suggesting that a network of 20 nodes can be estimated with sufficient sensitivity and specificity in a sample of at least 250 to 350 participants (Constantin and Cramer, 2018, p. 1).

7. Results

Descriptive statistics for the family communication behaviors as well as depressive and anxiety symptoms are presented in Table 1. The distribution of all variables did not differ substantially from normal; thus, we did not use any transformations. Correlation coefficients between the study variables are given in Figure 1 and Table S1 in the Supplementary material. Our inspection of the correlation coefficients indicated that nodes regarding family communication were positively associated, as were items assessing depressive and anxiety symptoms. Communication behaviors were negatively associated with less internalizing symptomatology (r = [–.34 to –.17]).

Next, we computed partial correlation network analysis with EBICglasso regularization. In the resulting network, 106 edges out of 231 were significant (sparsity = 0.54; Figure 2, Table S2 and Figure S1 in the Supplementary material). The indices of centrality ($CS_{\text{expected influence}}$ = .52) and edges (CS_{edges} = .67) were stable (See Figures S2–S4 in the Supplementary material). The nodes formed two clusters; one included the items reflecting family communication, and the other reflected internalizing symptoms (depression and anxiety symptoms). The clusters were associated via several significant edges. Persons enjoying spending time with the family (FCS-5) had fewer suicidal ideations (PHQ-9; pr = –.14). Those satisfied with family communication (FCS-3) also reported higher ability to stop or control worrying (GAD-2; pr = –.09).

The most influential node among communication behaviors in terms of expected influence was *free sharing of opinions with family members* (FCS-1; EI = 1.62; Figure 3), whereas the most influential internalizing symptoms were *feeling down, depressed* (PHQ-2; EI = 1.16), *little energy* (PHQ-4; EI = 1.13), and *feeling bad about oneself* (PHQ-6; EI = 1.12). FCS-5 (*enjoying spending time with the family*) and PHQ-9 (*suicidal ideations*) were the most marginal in terms of expected influence (EI = –1.88, and –1.59, respectively; see also Figure S5 in the Supplementary material for significant differences in the node expected influence).

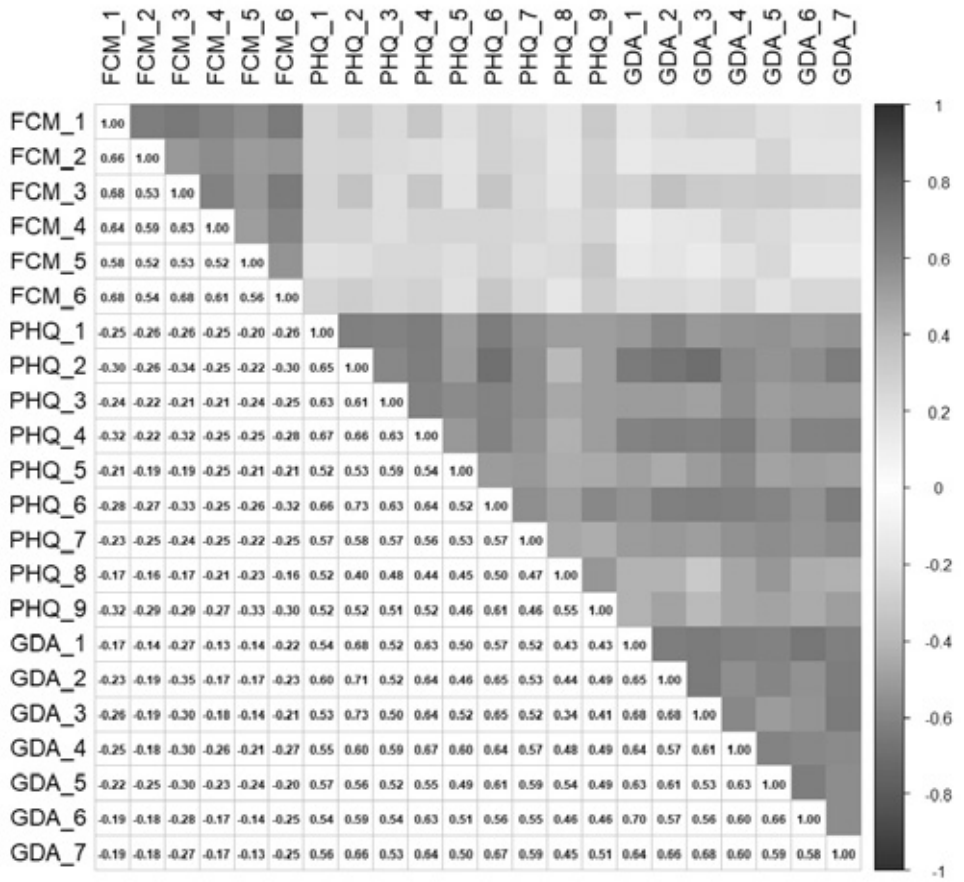
8. Conclusions

The quality of family communication emerged as one of the most protective factors in times of the pandemic crisis (Bai *et al.*, 2022, p. 7). Individuals satisfied with their family relationships and reporting fewer negative communication behaviors during the pandemic had better mental and somatic health (Gayatri and Irawaty, 2022, p. 137; Monin *et al.*, 2020, p. 1306). Despite these promising findings,

Table 1. Items, acronyms, and descriptive statistics for the nodes in the networks

Node	Acronym	M	SD	skewness	kurtosis
Family communication					
Freely sharing opinions with family members	FCS-1	3.13	0.80	−0.77	0.30
Understanding the value of communication within the family	FCS-2	3.31	0.67	−0.83	1.02
Satisfaction with communication within the family	FCS-3	2.99	0.80	−0.51	−0.15
Making decisions together	FCS-4	3.10	0.75	−0.71	0.60
Enjoying time spending time with the family	FCS-5	3.43	0.67	−1.07	1.25
Mutual motivation to create a great family environment	FCS-6	3.09	0.74	−0.54	0.17
Depression					
Little interest in doing things	PHQ-1	0.96	0.87	0.64	−0.28
Feeling down, depressed	PHQ-2	1.08	0.97	0.59	−0.59
Trouble falling or staying asleep	PHQ-3	1.02	0.99	0.59	−0.74
Little energy	PHQ-4	1.36	0.97	0.33	−0.84
Poor appetite or overeating	PHQ-5	0.85	0.94	0.89	−0.18
Feeling bad about oneself	PHQ-6	0.91	0.98	0.78	−0.48
Trouble concentrating on things	PHQ-7	0.95	0.95	0.68	−0.53
Moving or speaking slowly or restlessness	PHQ-8	0.55	0.80	1.31	0.81
Suicidal ideations	PHQ−9	0.44	0.79	1.76	2.16
Anxiety					
Feeling nervous, anxious	GAD-1	1.12	0.95	0.59	−0.49
Not being able to stop or control worrying	GAD-2	0.97	0.98	0.64	−0.70
Excessive worrying	GAD-3	1.33	1.00	0.38	−0.91
Trouble relaxing	GAD-4	1.13	0.96	0.45	−0.77
Being restless	GAD-5	0.80	0.91	0.95	0.05
Being easily annoyed or irritable	GAD-6	1.05	0.97	0.62	−0.57
Feeling afraid	GAD-7	1.02	0.97	0.59	−0.67

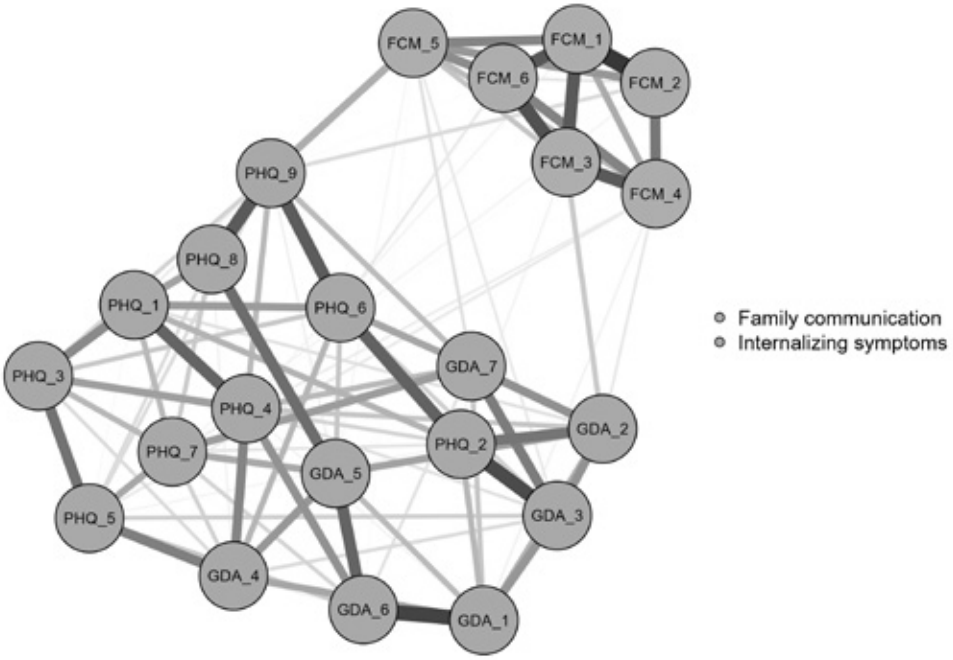
Figure 1. Zero-order correlations between the study variables



little was known about particular communication behaviors that could protect against increased internalizing symptomatology, prevalent during the pandemic crisis (Necho *et al.*, 2021, p. 899). The present study showed that positive perceived communication with family was associated with less internalizing symptomatology. Moreover, using a network analytic approach, we identified important communication behaviors associated with particular internalizing symptoms.

The most influential node in the network formed with family communication behaviors and internalizing symptoms involved feeling that one could freely share opinions with other family members. This item correlated positively with other communication behaviors. Thus, those feeling able to express themselves in contact with family members without hesitation and feeling unsafe find it easi-

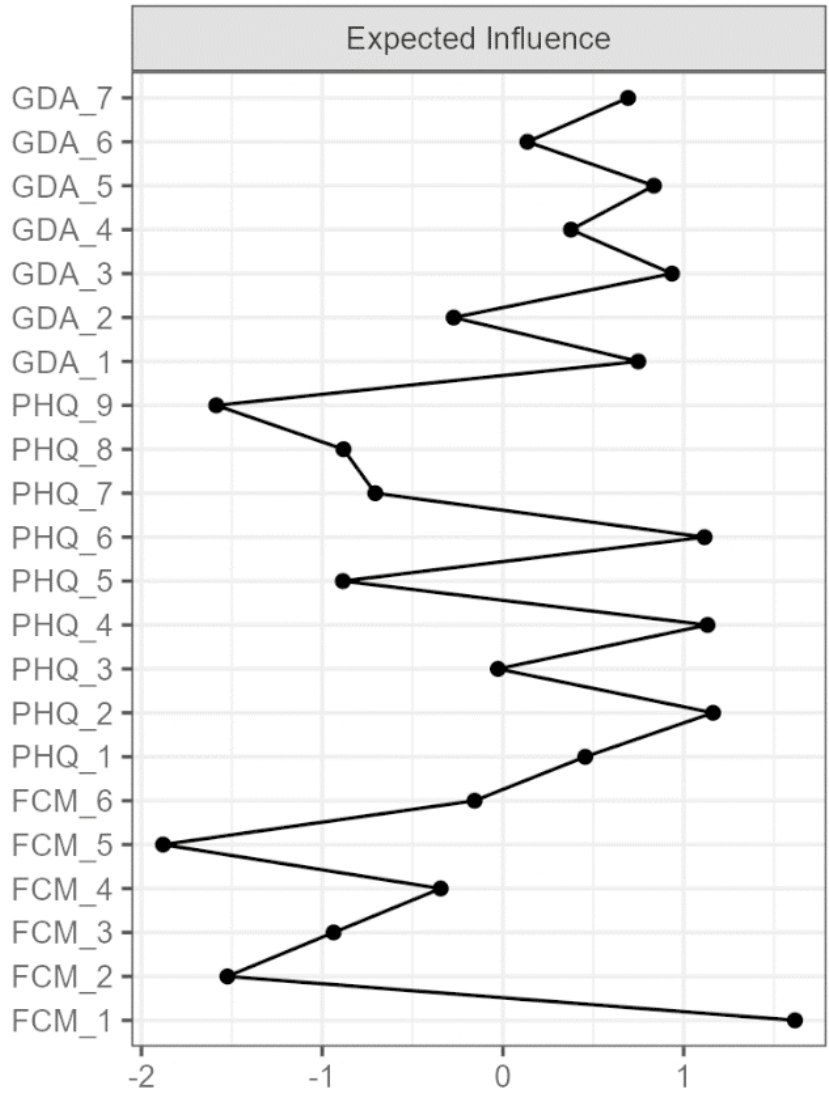
Figure 2. GGM network



er to develop other positive communication behaviors. For example, persons high on free sharing with other family members understood the value of communication and were more eager to motivate other family members to maintain a good family environment and to enjoy spending time together. This result shows that meeting basic needs within the family (such as security) fosters communication adjustment with family members, which may help them to maintain good mental health (Lo Cricchio, Costa and Liga, 2020, p. 196).

The most significant connections between family communication behaviors and internalizing symptoms were those between enjoying spending time with the family and suicidal ideations, and between being satisfied with family communication and the ability to control worrying. These associations showed that quality time spent with family members could protect against the suicidal syndrome (Schuck *et al.*, 2019, p 3). One of the prominent processes in the suicidal syndrome is social withdrawal. Thus, being connected with the family and spending time with its members could stop social distancing which might lead to cognitive rigidity and consequently foster suicidal attempts (Schucs *et al.*, 2019, p. 4). Because of the cross-sectional design of the study, it is also possible that people high on suicidal ideations could have problems with establishing

Figure 3. Expected influence of network nodes



and maintaining quality relationships with their families. They could be so concentrated on their negative, repetitive thoughts that initiation of communication with others became difficult. Previous studies showed that prospectively, social support predicted fewer suicidal ideations (Scardera *et al.*, 2020, p. 5; Ziker and Snopkowski, 2020, p. 10). Suicidal ideations are relatively stable (Reifman and Windle, 1995, p. 343). Although a longitudinal design is needed to examine

the directionality of the associations, we believe that our result shows that good family communication could protect against suicidal thoughts.

The second association showed that people satisfied with family communication were less involved in excess worrying, a transdiagnostic process that could lead to numerous mental health problems (Akbari and Khanipuor, 2018, p. 167). People satisfied with their communication with family members may be more involved in exchanging opinions and engaging in emotional encounters, which in turn protects that against rumination. Positive communication could also divert their attention from negative to positive content. This result seems to be particularly important in Poland, where the culture of complaining was found to be prevalent (Szymków, Wojciszke and Baryła, 2003, p. 47). Again, people high on worrying could have difficulties in establishing good communication bonds within their families. For example, they might undermine the value of family communication or lower their satisfaction by raising expectations. Previous studies support the proposition that a negative family environment would be associated with future anxiety symptoms (Grover, Ginsburg and Ialongo, 2005, p. 143). People feeling lonely have accompanying feelings of social anxiety (Danneel *et al.*, 2020, p. 2253). Thus, previous studies suggested that communication behaviors and feeling of social inclusion could precede anxiety symptoms such as worrying.

Although the most significant association in the network was that between spending time with family members and suicidal ideations, these two nodes were the most peripheral ones in the network. In the network approach, peripheral nodes are less affected by other nodes in the network. The result obtained may suggest that suicidal ideation may be a relatively isolated symptom in the network. Thus, the detected communication behavior which correlated with suicidal ideation may be of particular interest in suicide prevention. Developing ties with family members perceived by the individual as worth spending time with could potentially prevent suicidality. For example, during psychotherapy the therapist could explore whether there are any activities which the patient enjoys engaging in with their family members. Planning such activities may prevent the development of the suicidal syndrome.

The present study had some limitations. First, the cross-sectional design forbids strict causal inferences. Thus, future studies should investigate the associations established in the network in a longitudinal design to identify causal associations. Second, the central nodes detected in the present study could be manipulated, for example by interventions focused on the node which could better test its causal role. Next, family communication was measured by self-report. As the perceived quality of family relationships may play a role for mental

health, future studies could use observational or peer-rated methods to examine the identified associations. Lastly, a broader list of communication behaviors could be investigated. In the present study, we focused on positive communication behaviors. However, negative behaviors such as chaotic communication could play a more important role in terms of worsening the mental health of family members (Bai *et al.*, 2022, p. 7).

The present study investigated the role of particular communication behaviors within the family for the mental health of adult Poles during the pandemic crisis. We showed that the most influential node in the network of communication behaviors and internalizing symptoms was the feeling that a participant could freely share their opinions with their family members. In terms of direct associations, enjoying spending time together with family members was associated with fewer suicidal ideations, whereas being satisfied with family communication was associated with better control over worrying. Family counselors and therapists could focus on helping patients and families to develop enjoyable activities together and to foster behaviors which provide a safe environment to share intimate opinions and experiences with family members.

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