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ORIGINAL

Network analysis of subjective happiness, hope and resilience in the Paraguayan general population during the post-COVID-19 pandemic period

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Abstract

Introduction/objective: In this cross-sectional study, the connections between indicators of subjective happiness, hope, and resilience were investigated in 591 adult Paraguayans (average age 37.7 years; *SD* = 11.35) during the COVID-19 post-pandemic period, using network analysis for the first time. **Method:** The indicators of subjective happiness, hope, and resilience were assessed using the Subjective Happiness Scale, the Adult Hope Scale, and the 10-item Connor-Davidson Resilience Scale, respectively. **Result:** The results indicated that "Enjoy life in spite of it all," "Pursuing goals," and "Coping with stress" were the most central indicators of the resilience, hope, and subjective happiness network. While stronger conditional relationships were observed between indicators of the same network variable, potential bridge indicators were also noted that could link resilience, hope, and subjective happiness, such as "I am a strong person," "Enjoy life in spite of it all," "Pursuing goals," and "I have been successful in life." **Conclusions:** The results suggest that timely and multilevel interventions targeted at central and bridge indicators can help promote positive emotions that impact mental health.

Keywords: Network analysis, hope, happiness.

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Análisis en red de felicidad subjetiva, esperanza y resiliencia en la población general paraguaya en la pospandemia del COVID-19

Resumen

Introducción/objetivo: En este estudio transversal se investigaron las conexiones entre los indicadores de felicidad subjetiva, esperanza y resiliencia en 591 paraguayos adultos (edad promedio 37.7 años; *DE* = 11.35) en el período pospandemia del COVID-19 utilizando análisis de redes por primera vez. **Método:** Los indicadores de felicidad subjetiva, esperanza y resiliencia se evaluaron utilizando la Escala de Felicidad Subjetiva, la Escala de Esperanza del Adulto y la Escala de Resiliencia de Connor-Davidson de 10 ítems, respectivamente. **Resultados:** Los resultados indicaron que "Disfrutar la vida a pesar de todo", "Perseguir metas" y "Afrontar el estrés" fueron los indicadores más centrales de la red de resiliencia, esperanza y felicidad subjetiva. Si bien se observaron relaciones condicionales más fuertes entre indicadores de la misma variable de red, también se observaron posibles indicadores puente que podrían vincular la resiliencia, la esperanza y la felicidad subjetiva, como "Soy una persona fuerte", "Disfruta la vida a pesar de todo", "Persiguiendo metas" y "He tenido éxito en la vida". **Conclusiones:** Los resultados sugieren que las intervenciones oportunas y multinivel dirigidas a indicadores centrales y puente pueden ayudar a promover emociones positivas que impacten la salud mental.

Palabras clave: Análisis de red, esperanza, felicidad.

The COVID-19 pandemic has generated a significant psychological burden on the global population (Costa et al., 2022), increasing the prevalence of mental health problems in previously healthy individuals and exacerbating preexisting mental disorders (Moreno et al., 2020). Previous studies have reported that psychiatric symptoms were more severe after the COVID-19 outbreak, especially in healthy individuals, compared to the pre-pandemic period (Pan et al., 2021). This situation has generated the need to better understand the mental health protective factors after the end of the pandemic and develop specific preventive interventions targeting these factors. These personal resources allow for better coping with life's difficulties, establishing satisfying relationships with others, and fostering psychological and physical well-being (Torales et al., 2023). Among the protective factors for developing positive mental health are hope, resilience, and happiness, which facilitate the promotion of well-being and psychological health (Yıldırım & Arslan, 2022).

In recent years, the study of subjective happiness has received increased attention from researchers and policymakers worldwide as it is considered an indicator of good health (Satici et al., 2023). Subjective happiness refers to the balance between positive and negative feelings and life satisfaction over a specific period (Diener et al., 2009; Şimşek, 2009). In this regard, the more positive an individual experiences and is satisfied with their life, the greater their happiness. Subjective happiness can become an intervening dimension in ensuring better well-being and quality of life during the post-pandemic period.

On the other hand, hope is an individual's perceived ability to achieve a particular goal with a positive motivational state (Snyder, 2000). Moreover, hope acts as a psychological force that protects and helps reduce life stressors by increasing trust in the future (Gasper et al., 2020). Hope has two interrelated cognitive components: pathways and agency (Cheavens et al., 2006). Pathways are viable action routes to achieve their desired goals, whereas agencies are capable of achieving the desired goals (Snyder et al., 2002). Similarly, resilience has been defined as personal resources and contextual factors that allow individuals to cope and adapt positively in the face of various stressors that may appear throughout life (Bhamra et al., 2011). Resilience has been consistently shown to be inversely related to psychological distress, especially during periods of crisis such as the earthquake in Haiti (Blanc et al., 2016) and hurricane Katrina (Osofsky & Osofsky, 2013).

The current study

Evidence suggests that the COVID-19 pandemic has caused a wave of mental health issues (Costa et al., 2022). Therefore, it is important to identify factors that protect people's mental health and how they relate to each other. The relationship between subjective happiness, hope, and resilience is complex. It has been suggested that people with high levels of hope are more resilient to stress and have strong beliefs in finding ways to cope with the disease and its consequences, protecting themselves from fear, which improves their mental health and results in a greater experience of subjective happiness (Satici et al., 2023). Additionally, hope is associated with higher levels of well-being, better perceived emotional control, and lower levels of anxiety and stress due to COVID-19, suggesting that hope is associated with resilience to pandemic-related stressors (Gallagher et al., 2021). Another recent study indicated the presence of high levels of hope, resilience, and subjective happiness in a Paraguayan sample after the pan-

demic (Torales et al., 2023). Thus, in a post-pandemic period characterised by crises and complex experiences of loss, experiencing hope, resilience, and happiness is urgently needed (Gross, 2020).

An alternative to examining the relationships among subjective happiness, resilience, and hope is the analysis of psychological networks (Van der Hallen et al., 2020). Traditionally, it has been assumed that symptoms are indicators that equally reflect an underlying latent variable, and total scores from a scale are used to describe the different symptoms (Bollen, 2002). However, this traditional approach not may result in significant relationships between individual symptoms (Cai et al., 2022). As an alternative to the latent variable model, network analysis assumes that behaviours or symptoms can be understood as the psychological construct itself. That is, symptoms are not interchangeable indicators or reflections of an underlying latent variable; rather, the relationships between symptoms constitute the latent variable itself (Schmittmann et al., 2013). Under the previous assumptions, network analysis allows the estimation and visualisation of a network of behaviours or symptoms (called nodes) and their relationships (called edges) without assuming an underlying dimensional structure (Dalege et al., 2017). The relationships between nodes allow the estimation of the role of each individual node within a network, expressed through network parameters, the strength of the node, the proximity between nodes, or the centrality of the node (Epskamp et al., 2018).

Previously, relationships between subjective happiness, resilience, and hope have been evaluated in a Paraguayan sample using models based on direct scores (Torales et al., 2023). However, unlike other models of relationships between variables, network analysis provides a better understanding of complex psychological phenomena through an analysis of different symptoms or behaviours and their relationships (Borsboom & Cramer, 2013). Additionally, network analysis allows the identification of the most influential symptoms or behaviours (or bridge symptoms) within the network, which could guide the development of different therapeutic interventions (Opsahl et al., 2010).

To the best of our knowledge, the relationships between subjective happiness, resilience, and hope have not yet been investigated using network analysis. Therefore, the present study aimed to investigate the relationships between indicators of hope, resilience, and subjective happiness in the general Paraguayan population during the post-COVID-19 period, based on cross-sectional network analysis.

Method

Procedure and participants

This study was a cross-sectional observational survey. A secondary analysis was performed on a subset of data from a larger previous research project aimed at measuring general mental health and its protective factors, titled "Hope, Resilience, and Subjective Happiness: Their Impact on the Mental Health of the General Population in Paraguay". This project was approved by the Chair of Medical Psychology at the Faculty of Medical Sciences, National University of Asunción, under Resolution No. 0708 00 2022 of the Faculty's Board of Directors, Article 2, which refers to the ethical approval process for non-experimental studies. The recommendations of the Declaration of Helsinki regarding the treatment of data were followed with confidentiality, equality, and justice.

Non-probabilistic sampling was used for participant selection. Data were collected between January and May 2023 through an online survey disseminated via social media and official channels at the Faculty of Medical Sciences, Universidad Nacional de Asunción, Paraguay. All participants provided informed consent detailing the study objectives, data collection procedures, privacy, and data processing. None of the participants received compensation for completing the online survey. The study included 591 adult Paraguayans with an average age of 37.7 years (*SD* = 11.35), predominantly female (81.56%). Most participants were married (53.98%), followed by the single sample (38.07%). 90.69% had university education, 77.33% were not working at the time of the study, most lived in urban areas (79.36%), 30.29% indicated money as their main source of stress, 28.09% cited work, and 26.90% mentioned intimate and/or family relationships. Most participants reported not having been diagnosed with a mental disorder (77.33%) or had been under the care of a healthcare professional (77.83%). Table 1 presents detailed information on the sociodemographic and health characteristics of the participants. Table 1 presents the sociodemographic characteristics of the sample more specifically.

Table 1. Participants' demographic characteristics

	***n* (%)**
Age	37.70 ± 11.35
Gender	
Female	482 (81.56)
Male	109 (18.44)
Marital status	
Partnered – married	319 (53.98)
Separated – divorced	37 (6.26)
Single	225 (38.07)
Widowed	10 (1.69)
Education	
Primary Education	2 (0.34)
Secondary Education	53 (8.97)
University Education	536 (90.69)
Employed	
No	457 (77.33)
Yes	134 (22.67)
Area of residence	
Urban	469 (79.36)
Rural	122 (20.64)
Sources of stress	
Money	179 (30.29)

(*Continued*)

	n (%)
Study	38 (6.43)
None	41 (6.94)
Intimate/family relationships	159 (26.90)
Job	166 (28.09)
Place of residence	8 (1.35)
Diagnosed with a mental disorder	
No	457 (77.33)
Yes	134 (22.67)
Under care of health professional	
No	460 (77.83)
Yes	131 (22.17)

Instruments

Adult Hope Scale (AHS). The AHS was developed by Snyder et al. (1991) to measure cognitive indicators of dispositional hope. The AHS consists of 12 items, four of which comprise the Agency subscale, which represents goal-directed energy, and another four from the Pathways subscale, which are the planned routes to goal achievement. The remaining 4 items are fillers. Each item has eight Likert-type response options ranging from "definitely false" to "definitely true". This study used the adapted and validated version of Paraguay by Vuyk and Codas (2019). The AHS showed adequate reliability for the total scale (ω = .92), pathways (ω = .85), and agency (ω = .88) subscales.

The 10-item Connor-Davidson Resilience Scale (10-item CD-RISC). This is a version derived from the original 25-item CD-RISC (Connor & Davidson, 2003), which assesses a person's mental resilience over the past month. Each item had five Likert-type response options, ranging from 0 (never) to 4 (almost always). The Spanish version adapted by Broche Pérez et al. (2012) was used in this study. The unidimensional model of the 10-item CD-RISC showed an adequate fit to the data (CFI = .98, RMSEA = .06 [90% CI: .05, .08], SRMR = .03) and adequate reliability (ω = .87).

The Subjective Happiness Scale (SHS). The SHS was developed by Lyubomirsky and Lepper (1999) to measure global subjective happiness based on four items where participants self-rate or compare themselves to others. The first item measures the degree to which a person perceives themselves as happy, with seven response options (from 1 = not very happy to 7 = very happy). The second item measures how happy a person feels compared to others, with seven response options (from 1 = less happy to 7 = happier). Finally, items 3 and 4 measure the degree to which a person tends to be very happy or not very happy, respectively, with seven response options ranging from 1 = not at all to 7 = a lot. The version adapted and validated for the Spanish-speaking population by Extremera and Fernández-Berrocal (2014) was used in this study. In this study, the unidimensional SHS model had an adequate fit to the data (CFI = .99, RMSEA = .07 [90% CI: .02, .12], SRMR = .01) and acceptable reliability (ω = .70).

Data analysis

Statistical analysis was conducted in several phases following the protocol for psychological network analysis using cross-sectional data (Burger et al., 2023). Rstudio version 4.3.2 software was used. The database used in this study can be downloaded at the link: https://osf.io/xwcu8/.

Prior to constructing the network, two preliminary steps were carried out: the first involved identifying redundant nodes using the networktools package and the goldbricker function for potentially redundant node pairs (r > .50) (Jones, 2021). In the second step, a community detection process was carried out using the Walktrap algorithm through the EGAnet package and EGA function to identify the community structures of nodes in the network (Golino & Epskamp, 2017).

Subsequently, the network structure was estimated in three phases. In the first phase, an unregularised network model is estimated using the Bootnet package and estimateNetwork function. In this function, the ggmModSelect algorithm and Spearman correlation method (Isvoranu & Epskamp, 2023) were employed. ggmModSelect performs an iterative process of 100 random models to select the best Gaussian graphical model based on the extended Bayesian information criterion (EBIC) (Isvoranu & Epskamp, 2023). Networks were visualised using the qgraph package and the Fruchterman-Reingold algorithm, where nodes are represented as circles and edges are the conditional associations connecting the nodes (Epskamp et al., 2012). The positive and negative edges are shown in blue and red, respectively. The thicker and more saturated the edge, the stronger the conditional association between pairs of nodes.

In the second phase, the local and global properties were estimated. Local properties were reported as expected influence (EI) using the centrality function of the qgraph package, which estimates the cumulative importance of nodes and summarises the sum of the values in opposite directions of the edges (Epskamp et al., 2012). The bridge expected influence (BEI), which assesses the bridge symptom between communities of distant nodes according to a percentile > .80, was obtained using the bridge function of the networktools package (Jones, 2021). Finally, predictability with explained variance (R2) was quantified through the prediction function and mgm package to determine which nodes could be predicted by all their neighbouring nodes, representing the practical relevance of each node (Haslbeck & Waldorp, 2020). Regarding global properties, density (D), which represents the strength of nodes connected between pairs; transitivity (CΔ), which estimates the global clustering of the nodes; the average length of the shortest path (APL), reflecting how information is transmitted between pairs of nodes; and the small-world index (S > 1), analysing the association between nodes, were estimated (Isvoranu et al., 2022). Global properties were obtained using the small-worldindex function of the qgraph package (Epskamp et al., 2012).

Finally, in the third phase, for precision and stability of the network structure, a non-parametric bootstrap

approach was adopted (Burger et al., 2023). Regarding stability analysis, a case-deletion subset bootstrap was used, where the stability of the EI and BEI indices was evaluated after re-estimating the network with fewer cases (Isvoranu et al., 2022). To quantify the stability, the correlation stability coefficient (CS) was used, which is the maximum proportion of cases that can be discarded, and the CS value should be higher than .25 (Burger et al., 2023).

Results

Global network properties

The network structure density was recorded at .045, meaning that out of the 153 possible edges, 45 (29.4%) were identified, with 42 being positive and three negative. The clustering of nodes was good (CΔ = .34, Random CΔ = .28), and the transmission of information among the dynamics of node pairs averaged 1.90. The S index value was 1.24, indicating that the symptom network possessed small-world properties.

Local network properties

Descriptive statistics and local properties are presented on Table 2. In terms of the arithmetic mean, lower values were found for "Failures do not discourage me" (*M* = 2.29) and "Optimism" (*M* = 2.31), while higher values were recorded for "Problem solving" (*M* = 6.65) and "Search for solutions" (*M* = 6.57). In the redundancy analysis of the nodes, overlapping node pairs were identified across the three scales. In the AHS, items 6 and 8 ("Achieving my life priorities") and 9 and 12 ("The Experience has prepared my future") were combined. In the CD-RISC, items 2 and 4 ("Coping with stress"), and in the SHS, items 1 and 3 ("Enjoy life in spite of it all") were combined. Community detection using the Walktrap algorithm identified three groups: clustering nodes within each construct.

The network structure and matrix of partial correlations are shown in figure 1. Notably, the strongest conditional associations were between "Enjoy life in spite of it all" and "Comparison with others" (*r* = .66), "The Experience has prepared my future" and "I have been successful in life" (*r* = .45). The weakest conditional associations were focused on the node "Not being happy" in relation to "Failures do not discourage me" (*r* = -.13), "Enjoy life in spite of it all" (*r* = -.16).

Concerning local property, nodes with low expected influence (EI) included "Optimism" (EI = .39) and "Not being happy" (EI = .45). High values were seen in "Enjoy life in spite of it all" (EI = 1.06), "Pursuing goals" (EI = 1.07), and "Coping with stress" (EI = 1.23). In bridge expected influence (BEI), major bridge symptoms at the .80 percentile included: "I am a strong person," "Enjoy life in spite of it all," "Pursuing goals," and "I have been successful in life." (Table 2).

Precision and stability of the network structure

The precision of the edges is shown in Figure 2. Notably, the confidence intervals (CIs) surrounding the original sample and resample mean were narrow and stable across most edges, although some edges showed no CIs, indicating a minor difference in resampling. The stability

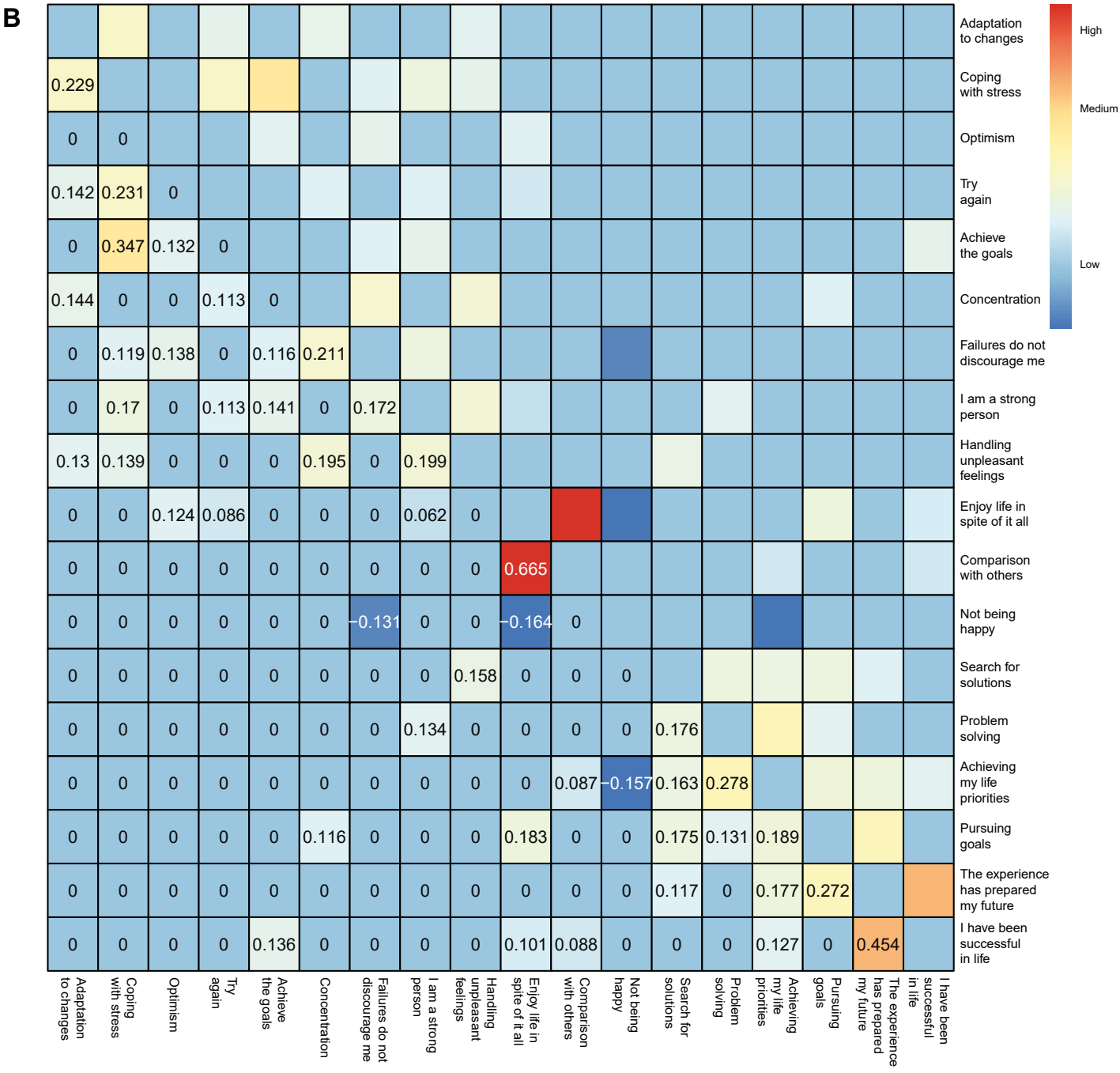
Table 2. Descriptive measures and properties of the local network

Symptoms	Descriptive		Local properties		
	M	*DE*	*EI*	*BEI*	*P*
Adaptation to changes	2.97	1.18	.64	.00	33.7%
Coping with stress	2.85	1.10	1.23	.00	60%
Optimism	2.31	1.25	.39	.12	20.4%
Try again	2.88	1.17	.68	.08	37.1%
Achieve the goals	2.95	1.21	.87	.14	49.5%
Concentration	2.45	1.16	.78	.11	32.1%
Failures do not discourage me	2.29	1.26	.63	-.13	35.4%
I am a strong person	2.76	1.24	.99	.20	49.7%
Handling unpleasant feelings	2.64	1.19	.82	.16	38%
Enjoy life in spite of it all	4.92	1.67	1.06	.55	79.1%
Comparison with others	5.01	1.76	.84	.17	74.3%
Not being happy	3.15	2.32	.45	-.29	24.6%
Search for solutions	6.57	1.35	.79	.16	48.7%
Problem solving	6.65	1.33	.72	.13	47.1%
Achieving my life priorities	6.41	1.38	.86	-.07	66.7%
Pursuing goals	6.22	1.64	1.07	.30	64.1%
The Experience has prepared my future	6.25	1.54	1.02	.00	69.9%
I have been successful in life	5.66	1.85	.90	.32	64.9%

Note. *M*: mean; *SD*: standard deviation; EI: expected influence; BEI: bridge expected influence. P: predictability.

Figure 1. Network structure of resilience, happiness, and hope among Paraguayan adults. B. Unregularised partial correlation matrix

(*Continued*)



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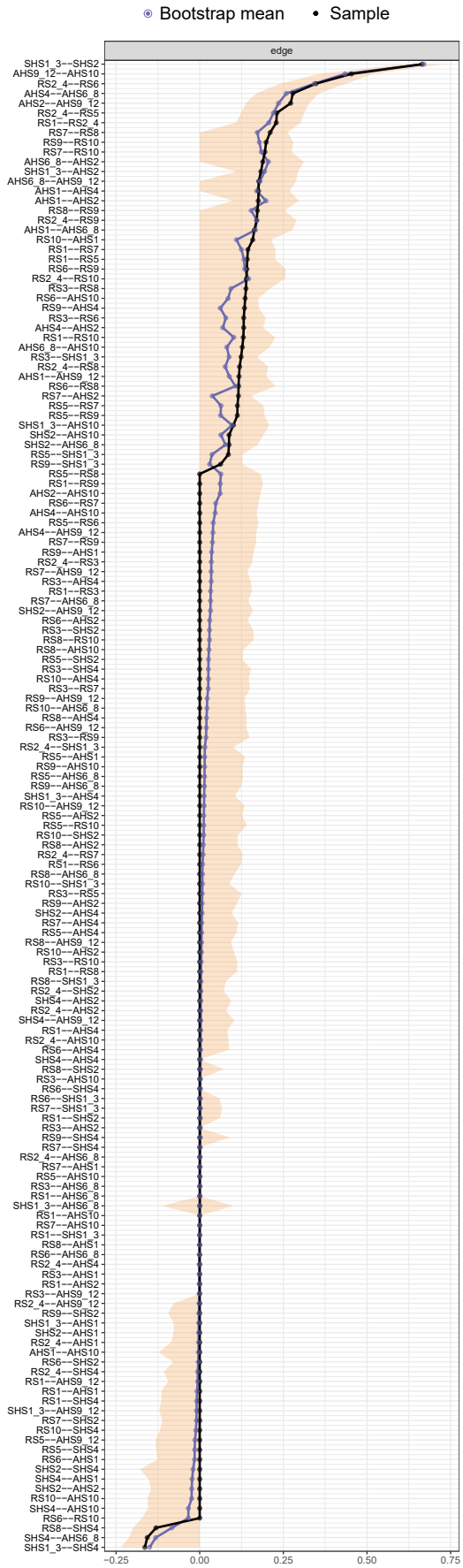

Figure 2. Nonparametric bootstrapping confidence intervals of estimated edges for the network structure

of EI and BEI is demonstrated in Figure 3, where the resampling method of the original data and the percentages of cases removed proved stable for both EI (CS = .75) and BEI (CS = .52), suggesting the robustness and interpretability of our findings.

Discussion

This study aimed to investigate the network configuration of indicators related to resilience, hope, and subjective happiness in adult Paraguayans. Network estimation revealed complex interactions between the indicators of resilience, hope, and subjective happiness. Generally, this suggests that some relationships between indicators are stronger than others and that indicators vary in importance within the same network variable. However, no strong association was observed among the indicators of resilience, hope, and subjective happiness.

The most central indicators or nodes were "Enjoy life in spite of it all," "Pursuing goals," and "Coping with stress.". Responses to happiness queries have been suggested to measure the extent to which a respondent enjoys life (Veenhoven, 2011). Additionally, enjoying life is a happiness indicator across different life periods, where younger people enjoy life before experiencing real responsibilities and older individuals learn to adapt to certain limitations and rediscover enjoyment in life (Nordheim & Martinussen, 2020). Regarding "Pursuing goals," it is an important indicator for defining hope as a cognitive and motivational state that drives people to pursue goals and develop actions to achieve them (Snyder et al., 2002). In this sense, people are driven by goals, and their ability to set and pursue goals is a determinant of future well-being (Duncan et al., 2021). Finally, the centrality of the "Coping with stress" indicator aligns with the definition of resilience as the capacity of individuals to adaptively handle stress (Sinclair & Wallston, 2004).

Identifying these central symptoms is valuable as they may have a greater influence on the entire network of indicators because of their high degree of interconnection. In this context, the strongest conditional associations were observed between "Enjoy life in spite of it all" and "Comparison with others," corresponding to subjective happiness. This finding indicates a strong relationship between how people characterise themselves based on ratings relative to their peers and their degree of personal happiness and enjoyment. This is an expression of self-perception and comparison with others, which is key to individual perceptions of subjective happiness (Lyubomirsky & Lepper, 1999). Furthermore, a strong conditional association was observed between "The Experience has prepared my future" and "I have been successful in life," which are hope nodes. Both nodes belong to the agency subscale that describes a person's perception of their ability to achieve their goals (Snyder, 2002). Specifically, these indicators reflect the future ("My past experiences have prepared me well for my future") and the past ("I have been quite successful in life") of a successful sense of goal-related determination, aligned with the cognitive model of hope (Snyder et al., 1991). Thus, people perceive past experiences as a preparation for the future and success in life.

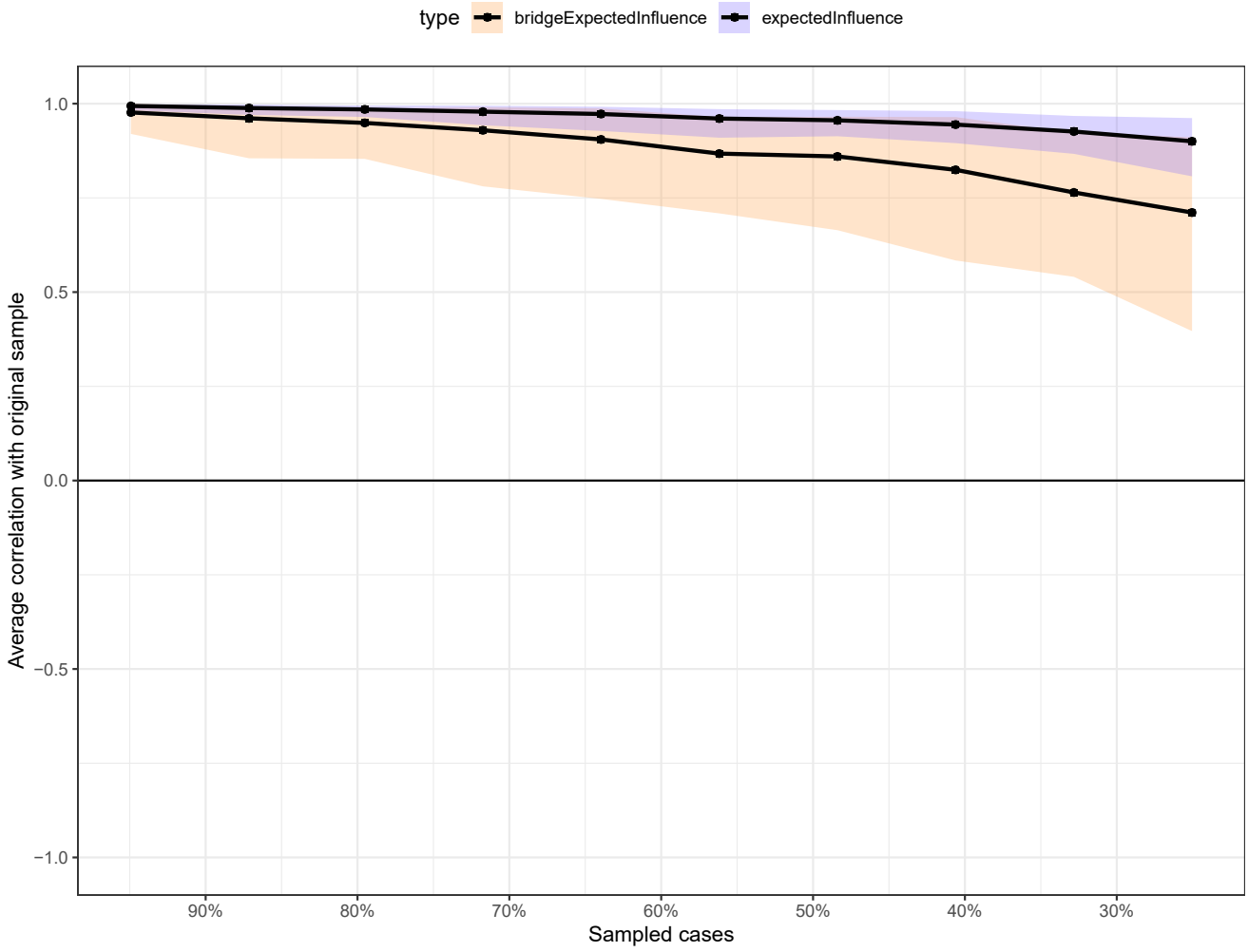

Figure 3. Stability of the expected influence centrality index

This finding is consistent with another study that reported that previous initiatives positively impact subsequent successful outcomes (Deichmann & Ende, 2014). Finally, there was a strong conditional association between "Coping with stress" and "Achieve the goals," corresponding to resilience indicators. This suggests that handling stress is associated with achieving goals set by individuals. This could be expected, as those with high resilience often exhibit strong goal orientation (Splan et al., 2011), explained by the internal locus of control and self-efficacy. In this sense, individuals with a strong internal locus of control believe they directly affect them, whereas those with greater self-efficacy believe they can achieve the desired outcomes (Schunk & Zimmerman, 2006).

On the other hand, the strongest bridge symptoms between subjective happiness, resilience, and hope reported in this study were "I am a strong person," "Enjoy life in spite of it all," "Pursuing goals," and "I have been successful in life," which reflect strength, enjoyment of life, goal pursuit, and success in life. From a clinical perspective, bridge symptoms or indicators are considered transdiagnostic; therefore, interventions targeting them could be effective in promoting subjective happiness, resilience, and hope.

The strengths of this study include the use of a novel and sophisticated analytical approach, along with a rich dataset on variables associated with mental well-being. Although the study presented significant findings, some limitations must be acknowledged. First, the study sample was selected through non-probabilistic sampling; therefore, the results cannot be generalised to the entire Paraguayan population. A second limitation is that data were collected using self-report measures, which could confound the results due to social desirability bias. Third, information was not available on whether the participants had been infected with coronavirus before the study. Participant infection could have influenced the results, as resilience to the disease has been associated with fewer somatic symptoms during the pandemic (Nishimi et al., 2023). Changes in hope and happiness have also been observed in individuals infected with COVID-19 (Karataş et al., 2021). Finally, a cross-sectional network model was used, which did not allow for the determination of the causal relationship of connections between nodes. However, cross-section-

al networks are exploratory and useful for identifying potential causal pathways, without relying on the strict assumptions of other methods (Epskamp et al., 2018).

These findings have various implications for mental health providers in Paraguay. First, interventions to promote resilience, hope, and happiness could be more efficient if their actions were directed at the central and bridging symptoms that could activate other symptoms and contribute to individual treatment. Therefore, addressing indicators such as "Enjoy life in spite of it all," "Pursuing goals," "I am a strong person," "I have been successful in life," and "Coping with stress" could be more influential in promoting positive emotions and reducing negative emotions. There are interventions that address most of these indicators to promote mental health, improving well-being to reach a state of flourishing mental health and reducing negative emotions (Schotanus-Dijkstra et al., 2017). This is because individuals with flourishing mental health are more resilient and experience higher levels of subjective happiness and hope (Satici et al., 2023; Torales et al., 2023). Conducting interventions that promote positive emotions is more important in a context where the pandemic has left deep repercussions on people's mental health, not only in Paraguay but worldwide.

In conclusion, it was reported that "Enjoy life in spite of it all," "Pursuing goals," and "Coping with stress" were the most central symptoms of the resilience, hope, and subjective happiness network in a Paraguayan sample. While stronger conditional relationships were observed between indicators of the same network variable, potential bridge indicators were also observed that could relate resilience, hope, and subjective happiness, such as "I am a strong person," "Enjoy life in spite of it all," "Pursuing goals," and "I have been successful in life".

Authorship contribution statement

TC-R and JT provided the initial conception, organisation, and main writing of the text. JB-Ch analysed the data and prepared all figures and Tables. MO', AV, JMC-M, IB, LH-O, MR-B and LWV were involved in data collection and acted as consultants and contributors to research design, data analysis, and text writing. The first draft of the manuscript was written by TC-R and JT, and all authors commented on previous versions of the manuscript. All authors read and approved the final manuscript.

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Declaration of competing interest

The authors have no competing or conflicting interests.

Informed consent statement

Informed consent was provided by all participants.

Data availability statement

The database used in this study can be downloaded at the link: https://osf.io/xwcu8/.

Additional information

No additional information is available for this paper.

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Tomás Caycho-Rodríguez and Julio Torales contributed equally to this work.

Permission of the original creators of the instrument

No permission was necessary.

Ethics approval

A secondary analysis was performed on a subset of data from a larger previous research project aimed at measuring general mental health and its protective factors, entitled "Hope, Resilience, and Subjective Happiness: Their Impact on the Mental Health of the General Population in Paraguay". This project was approved by the Chair of Medical Psychology at the Faculty of Medical Sciences, Universidad Nacional de Asunción, under Resolution No. 0708 00 2022 of the Faculty's Board of Directors, Article 2, which refers to the ethical approval process for non-experimental studies.

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