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Network Analysis of Mental Health Factors in Female Students: The Role of Personality, Social Alienation, and Emotional Blackmail

Abstract:

Objective: This study employed network analysis to examine the structural interrelations among key psychological constructs linked to mental health functioning in a sample of female university students. By mapping the interplay between dispositional traits, emotional vulnerabilities, and interpersonal dynamics, the study sought to identify central variables that may serve as leverage points for psychological intervention.

Method: A total of 214 female university students completed validated self-report measures assessing goal pursuit, perceived self-esteem, sociability, integration with the opposite sex, social alienation, depression, neuroticism, extraversion, emotional threat, manipulation, and emotional surrender. Data were analyzed using a regularized partial correlation network estimated via EBICglasso in JASP (version 0.19.3). Network centrality metrics, strength, closeness, betweenness, and expected influence, were computed to determine the psychological prominence of each variable.

Results: The resulting network was moderately sparse (sparsity index = 0.491), comprising 11 nodes and 28 non-zero edges. Depression emerged as the most central construct, exhibiting the highest strength and expected influence, thereby functioning as a core emotional hub. Manipulation, a dimension of emotional blackmail, also demonstrated substantial centrality, underscoring its role in psychosocial dysregulation. In contrast, variables such as emotional surrender and goal pursuit occupied peripheral positions, indicating limited influence within the psychological perspective. Notably, perceived self-esteem demonstrated a strong negative expected influence, suggesting a protective or buffering role. Sociability and cross-gender integration occupied moderately central positions, potentially contributing to emotional resilience.

Conclusion: The network structure revealed a psychologically dense and clinically informative configuration in which depression and manipulation act as central drivers of emotional distress, while self-esteem and sociability may serve as key resilience factors. These findings highlight the utility of network analysis in identifying targets for intervention and advancing personalized approaches to mental health support among young adult populations.

Keywords: *Network analysis, Depression, Emotional blackmail, Self-esteem, Sociability, Female University Students, Psychological resilience.*

INTRODUCTION:

University students often face multiple psychological challenges during their academic journey, including stress, emotional instability, and difficulties in social relation-

ships. Female students, in particular, may experience unique pressures related to gender roles, social expectations, and emotional demands, which can increase their risk for mental health problems such as depression, low self-esteem, and social alienation. Understanding how



these psychological factors interact is essential for supporting student well-being and guiding effective interventions.

Traditional psychological studies often examine these factors separately or assume that one main issue causes the rest using structural equation modeling. However, recent advances in psychology emphasize that mental health is better understood as a system of interconnected experiences. In this view, emotions, personality traits, and social behaviors influence one another directly, forming a network of relationships rather than being effects of a single underlying cause (Ali Moussa & Khretan Alenezi, 2022; Alenezi et al., 2024a, b).

This study employs network analysis, a modern statistical approach that maps the connections between psychological variables to explore the mental health of female university students. It focuses on key areas such as personality traits (like neuroticism and extraversion), self-esteem, sociability, social alienation, and a less frequently studied but important concept: emotional blackmail. Emotional blackmail includes behaviors like manipulation, threats, and emotional surrender in close relationships, which can strongly affect emotional health and self-image. By analyzing how these variables relate within a network, the study identifies which factors are most central or influential. Depression and manipulation emerged theoretically as the most connected and influential factors in the network, suggesting they may play a key role in maintaining emotional distress. On the other hand, self-esteem and sociability can appear to serve as protective factors that could help reduce the effects of stress and negative emotions in this psychological perspective. Network analysis helps psychologists understand not only what problems exist, but also how they interact, and where support and interventions might be most effective. This study may lead to more targeted and meaningful variables that support CBT interventions for female students struggling with emotional and relational difficulties during university life.

LITERATURE REVIEW:

Humans function within intricate social and cultural systems, yet their motivations and behavioral responses to these systems often diverge. In many cases, the pursuit of personal gain and material advantage takes precedence over mutual respect and collective well-being. This self-centered orientation underpins the phenomenon of *emotional blackmail*, a manipulative relational strategy wherein one individual exerts psychological pressure on another to ensure compliance (Al-Kreimeen et al., 2022).

At its core, emotional blackmail exploits intimate emotional bonds to coerce a target into actions that contradict their own will. This form of psychological violence often surpasses the impact of physical or verbal abuse by targeting the individual's conscience and eroding their sense of self-worth. Prolonged exposure to such manipulation may result in persistent feelings of inadequacy and low self-esteem, often culminating in person-

ality disturbances, heightened emotional reactivity, and psychological distress (Al-Kreimeen et al., 2022).

Emotional blackmail is a covert strategy that typically arises in the context of close interpersonal relationships (Karnani & Zelman, 2019). Like other coercive dynamics, it revolves around a tacit or explicit threat: If you don't do what I want, something bad will happen (Abbaspour et al., 2019). Al-Khatib and Tashtoush (2024) describe emotional blackmail as a form of psychological exploitation in which the blackmailer leverages intimate knowledge of the victim to apply direct or indirect emotional pressure.

This manipulative process is inherently dyadic, requiring the presence of both a perpetrator and a target. The blackmailer issues threats and engages in emotional bargaining, while the victim becomes increasingly subject to psychological duress. As Bartol and Bartol (2018) argue, both parties bring unique psychological backgrounds that interact to shape the course of the manipulation.

Psychologically, the blackmailer may appear outwardly composed and emotionally regulated. Internally, however, they often experience the world through a lens of insecurity and distortion. Liu (2010) asserts that emotional blackmailers typically operate from a profound fear of loss or abandonment. Minor interpersonal frustrations are magnified and interpreted as existential threats, prompting compulsive behaviors aimed at controlling the relationship. Forward and Frazier (2019) categorize emotional blackmailers into four prototypical types:

- The Punisher: Issues explicit threats of harm, whether physical, emotional, or relational.
- The Self-Punisher: Threatens self-harm or self-deprecation to elicit compliance.
- The Sufferer: Evokes guilt by implying that their pain is the direct result of the victim's inaction.
- The Tantalizer: Manipulates through intermittent rewards, such as promises of love or approval, contingent upon submission.

These tactics are often rooted in deep psychological vulnerability. For the blackmailer, the fear of rejection, loss, or losing control can become intolerable. As Al-Kreimeen et al. (2022) note, these core fears drive the cycle of manipulation and emotional dependence.

Equally significant is the psychological profile of the victim. Often characterized by submissiveness, emotional dependency, and low self-efficacy, the blackmailed individual may struggle with setting boundaries or asserting personal agency. They are typically prone to heightened emotional sensitivity, indecision, and internalized guilt. Without sufficient psychosocial support or opportunities for self-empowerment, such individuals may experience learned helplessness, generalized anxiety, and diminished psychological well-being (Vashistha et al., 2019).

Forward and Frazier's (2019) model outlines a cyclical process of emotional blackmail, further elaborated by Al-Kreimeen et al. (2022), which unfolds through six stages:

1. Demand: A rigid or manipulative request is issued by the blackmailer.

2. Resistance: The target expresses discomfort or hesitancy.
3. Pressure: Emotional tactics are employed to undermine resistance, often reframed as concern or affection.
4. Threats: Consequences are introduced, such as emotional withdrawal or rejection.
5. Compliance: The target submits, often rationalizing their acquiescence to preserve the relationship.
6. Repetition: The cycle resumes, reinforcing dependency and control.

This cycle fosters enduring emotional dependency and undermines the victim's psychological integrity. In the case of women, such manipulation can have particularly insidious effects, impairing identity development, self-agency, and relational autonomy. Understanding the psychological underpinnings of emotional blackmail among women is, therefore, essential to advancing gender-sensitive clinical frameworks and designing targeted interventions that promote resilience, assertiveness, and emotional self-protection.

PROBLEM STATEMENT:

Female university students face unique psychological challenges as they transition into adulthood within academically demanding and socially complex environments. This critical life stage often involves heightened exposure to emotional stressors such as academic pressure, shifting identity roles, interpersonal conflicts, and increased autonomy, all of which can influence their mental health and coping mechanisms. Amid these challenges, certain psychological patterns, such as depression, low self-esteem, social alienation, and manipulative relational dynamics, can become deeply embedded in their emotional and interpersonal functioning. Emerging research suggests that emotional blackmail, a relational strategy involving guilt induction, threat, or withdrawal to control others, may not only be experienced by female students but also employed as a coping or survival strategy. This raises a complex psychological duality: female students may simultaneously function as victims and agents within emotionally coercive interactions, often without conscious awareness. Despite the increasing prevalence of such dynamics, most psychological assessments treat these constructs in isolation, overlooking how they co-occur and influence one another within the student psyche. There is a pressing need to adopt an integrative, network-based approach to map these interrelationships and better understand the internal psychological ecosystems of female students. Such an approach is essential for identifying key psychological leverage points, enhancing resilience, and informing more targeted interventions that support emotional well-being and healthy relational development in university settings. The study can answer this question: How do personality traits, social alienation, and emotional blackmail dynamics interact to shape the mental health network of female university students, and which factors serve as central nodes of psychological vulnerability or resilience?

METHOD:

Approach and data analysis:

This study aimed to investigate the structural interrelations among key psychological constructs relevant to mental health functioning in female university students. A cross-sectional design was employed, with data collected via an online self-report survey administered through Google Forms. Participants were recruited voluntarily and were required to provide informed consent before participation. All procedures adhered strictly to ethical guidelines concerning anonymity, confidentiality, and the voluntary nature of participation, per institutional review board standards.

The psychological constructs assessed in the study encompassed a range of emotional, interpersonal, and dispositional variables. Specifically, these included goal pursuit, perceived self-esteem, sociability, integration with the opposite sex, social alienation, depression, neuroticism (NEO), extraversion (Extra), emotional threat, manipulation, and emotional surrender. Each construct was measured using previously validated, psychometrically robust self-report scales. Before analysis, all responses were screened for completeness; incomplete or inconsistent responses were excluded. The final dataset was cleaned and formatted to ensure suitability for advanced statistical modeling.

To model the complex interdependencies among the psychological variables, network analysis was conducted using JASP version 0.19.3. This platform offers an intuitive interface for implementing psychometric network estimation based on the Extended Bayesian Information Criterion Graphical Least Absolute Shrinkage and Selection Operator (EBICglasso). The EBICglasso method applies regularization techniques to produce sparse, interpretable networks by minimizing spurious associations and enhancing structural clarity. This is particularly suited for psychological data where multicollinearity and overlapping constructs are common.

The resulting network consisted of 11 nodes, each representing a distinct psychological construct, and 28 non-zero edges out of a possible 55, yielding a sparsity index of 0.491. This figure indicates a moderately dense psychological perspective, wherein nearly half of all potential inter-variable connections are retained, suggesting both the presence of meaningful psychological interdependencies and a level of structural independence among certain variables.

In the network visualization, edges correspond to regularized partial correlation coefficients, controlling for the influence of all other variables. Edge directionality is not depicted, but edge polarity and strength are indicated: blue lines represent positive associations, red lines denote negative associations, and edge thickness reflects the magnitude of the relationship. This graphical representation provides a nuanced map of psychological linkages, supporting the identification of key relational pathways within the network. To evaluate the prominence and functional role of each node, standard centrality indices

were calculated. Strength centrality refers to the cumulative magnitude of direct associations between a node and all others. Closeness centrality captures how efficiently a node can influence or be influenced by the rest of the network. Betweenness centrality quantifies the extent to which a node functions as a bridge or conduit between other nodes along the shortest paths. Lastly, Expected Influence extends the concept of strength by accounting for the valence (positive or negative) of each connection, offering insight into whether a variable amplifies or suppresses psychological activation across the perspective.

Participants:

The study sample consisted of 214 female undergraduate students enrolled in various academic disciplines at a public university. The decision to focus exclusively on female participants was methodologically in the aim at exploring the psychological and social correlates of emotional blackmail within a gender-specific context, acknowledging that women may exhibit distinct emotional processing and interpersonal experiences in university settings.

Participants' ages were categorized into three groups: 1.40% ($n = 3$) were aged 18 years or younger, 85.98% ($n = 184$) fell within the 19–22 age range, and 12.62% ($n = 27$) were 23 years or older. This age distribution reflects a population predominantly composed of emerging adults, a developmental stage characterized by identity exploration, increased emotional reactivity, and heightened vulnerability to peer influence, factors pertinent to the investigation of emotional blackmail.

Regarding residential background, 18.69% ($n = 40$) of the participants resided in rural areas (coded as 1), whereas the majority, 81.31% ($n = 174$), lived in urban environments (coded as 2). This urban predominance is consistent with national trends in access to higher education, where students from cities often represent a larger proportion of university populations.

In terms of perceived family economic status, participants responded using a three-point Likert-type scale: low (1), moderate (2), and high (3). Most participants, 88.79% ($n = 190$), identified as belonging to moderate-income families, with 6.08% ($n = 13$) and 5.14% ($n = 11$) reporting low and high economic status, respectively. This economic homogeneity may contribute to reducing the potential for confounding socioeconomic effects in the psychological analyses.

Importantly, the dataset was free from missing values across all demographic indicators, thereby satisfying the assumptions required for the application of network analysis and ensuring the robustness and integrity of subsequent statistical inferences as studied by Moussa and Ismail Al-Nersh (2025).

Measures

Neuroticism (NEO) – Single-Item Assessment: Neuroticism was assessed using a single-item measure adapted from established trait-based personality frameworks, such as the NEO Personality Inventory. Partici-

pants were asked to respond to the statement: “To what extent do you consider yourself to be a person who is emotionally sensitive, easily worried, or tends to feel negative emotions easily?” Responses were recorded on a 10-point Likert scale, ranging from 1 (Strongly Disagree) to 10 (Strongly Agree). This item was designed to capture the essential features of neuroticism, namely, emotional reactivity, anxiety, and susceptibility to negative affect.

Extraversion (Extra) – Single-Item Assessment: Extraversion was evaluated using a parallel single-item format. Participants rated the extent to which the following statement applied to them: “To what extent do you see yourself as an outgoing, energetic, and sociable person?” Responses were recorded on the same 10-point Likert scale (1 = Strongly Disagree to 10 = Strongly Agree). This item was intended to capture the core facets of extraversion, including social engagement, assertiveness, and positive affectivity.

Integration with the Opposite Sex – Single-Item Assessment: Participants' perceived level of ease and openness in engaging with members of the opposite sex was assessed using a single-item, self-report measure. The item was stated as: “How comfortable and open are you in social, academic, or emotional interactions with members of the opposite sex?” Responses were recorded on a 10-point Likert scale, ranging from 1 (Not at all comfortable) to 10 (Extremely comfortable). This measure was developed to capture variations in gender-based social integration, an interpersonal construct hypothesized to be relevant in the context of emotional blackmail, social influence, and cross-gender relational dynamics within university settings. The use of a 10-point response format was intended to enhance response granularity and allow for the detection of subtle individual differences in comfort levels that may be overlooked by more restrictive scale formats.

Goal Pursuit – Single-Item Assessment: Goal-directed motivation was assessed using a single-item self-report measure that asked participants: “To what extent do you actively set, strive for, and work toward personal or academic goals in your life?” Responses were recorded on a 10-point Likert scale, ranging from 1 (Not at all) to 10 (To a very great extent). This item reflects self-regulatory orientation, capturing motivational persistence and the intentional pursuit of achievement-related objectives. Despite its brevity, single-item indicators of goal pursuit have shown acceptable construct utility in assessing motivational tendencies in university populations.

Depression – Single-Item Assessment: Depressive symptoms were measured using the item: “In general, how often do you feel sad, hopeless, or experience a lack of interest or pleasure in daily activities?” Participants responded on a 10-point scale, with 1 indicating no depressive feelings and 10 indicating extreme or frequent depressive feelings. This item was designed to capture core affective symptoms aligned with diagnostic criteria for depressive mood, including anhedonia and emotional despondency. Single-item depression scales have been validated in large-scale epidemiological studies where comprehensive screening tools are not feasible.

Sociability – Single-Item Assessment: Sociability was evaluated with the prompt: “How sociable do you consider yourself to be in social or group settings?” Participants responded on a 10-point scale, ranging from 1 (Not sociable at all) to 10 (Extremely sociable). This measure reflects the respondent’s perceived comfort and engagement in social interactions, capturing key elements of interpersonal expressiveness and social initiative. In non-clinical samples, single-item sociability assessments have been found to correlate strongly with broader extraversion-related traits.

Perceived Self-Esteem – Single-Item Assessment: Self-esteem was assessed using a single-item prompt: “How much self-worth and confidence do you generally feel about yourself?” Responses were provided on a 10-point Likert scale, ranging from 1 (Very low self-esteem) to 10 (Very high self-esteem). This item aims to capture a global evaluation of self-worth, reflecting the individual’s perceived sense of confidence and personal value. Although limited in depth, such global self-esteem items have demonstrated predictive validity across a range of psychological outcomes, particularly in student populations.

Social Alienation – Single-Item Assessment: Social alienation was assessed using a single-item measure designed to capture participants’ subjective sense of emotional and interpersonal detachment. The item was phrased as: “To what extent do you feel isolated, detached, or disconnected from people around you or from society in general?” Responses were recorded on a 10-point Likert scale, ranging from 1 (Not at all alienated) to 10 (Extremely alienated). This item targets perceived social estrangement, a construct associated with emotional dysregulation, loneliness, and diminished sense of belonging, factors of particular relevance within the psychosocial environment of university students. Single-item assessments of alienation have been used in prior research to efficiently capture broad psychosocial risk without overburdening respondents in multi-variable survey contexts.

Emotional Blackmail – Multi-Item Scale: The Emotional Blackmail Scale (EBS) is a multidimensional, psychometrically validated instrument designed to assess the frequency, intensity, and typology of emotionally manipulative behaviors occurring within interpersonal relationships. Comprising 24 items rated on a 5-point Likert scale (1 = Never to 5 = Always), the scale captures the respondent’s experience or recognition of relational coercion and emotional control mechanisms. The EBS is structured around three theoretically grounded and empirically supported dimensions: Emotional Threat (Items 1–8), Emotional Manipulation (Items 9–16), and Emotional Surrender (Items 17–24). The Emotional Threat subscale reflects the deployment of intimidation, fear induction, and emotional pressure, strategies often employed to compel compliance by evoking psychological vulnerability or distress. Emotional Manipulation captures more covert tactics, including guilt-tripping, deception, and emotional distortion, which undermine personal agency and foster emotional dependency. In contrast,

Emotional Surrender reflects the internalization of manipulative dynamics, whereby individuals willingly forgo emotional boundaries in pursuit of acceptance, validation, or the avoidance of conflict. Collectively, the scale provides a comprehensive framework for examining the cognitive-affective architecture of emotional blackmail, offering critical insight into the relational power imbalances and psychological compromises that define manipulative interactions. The EBS has demonstrated utility in both clinical and research settings, supporting its application in the identification of maladaptive relational patterns and in the development of preventative and therapeutic interventions aimed at promoting emotional autonomy and relational health.

Ethical consideration:

The study was conducted in accordance with the ethical principles governing psychological research involving human participants, including respect for autonomy, voluntary participation, and the protection of privacy and confidentiality. The research employed a non-invasive, cross-sectional design based on an anonymous online self-report survey and involved no experimental manipulation or collection of identifying information. Under the institutional and national regulations applicable at the time of data collection, formal approval from an ethics committee was not mandatory for minimal-risk social and behavioral research of this nature. Nevertheless, all ethical safeguards were carefully implemented. Participants were provided with clear information about the study’s aims, procedures, and their rights as research participants, including the right to discontinue participation at any point without consequence. Informed consent was obtained electronically before participation. All data were collected anonymously, stored securely, and analyzed in aggregated form. The study posed no foreseeable risks beyond those typically encountered in everyday psychological reflection. All procedures adhered to established ethical standards in psychology research and were consistent with the principles of the Declaration of Helsinki.

RESULTS:

Network Analysis of Psychological Constructs in Female University Students

The network analysis conducted on a sample of female university students revealed a moderately sparse yet intricately structured psychological perspective, with an overall sparsity index of 0.491. This indicates that nearly half of all potential edges among the psychological variables were non-zero, suggesting the presence of distinct, meaningful interrelations while maintaining a degree of structural independence across nodes. Such a configuration reflects a perspective wherein certain psychological constructs exert significant influence, while others remain peripheral or contextually bound. To provide a clearer picture of how each psychological construct functions within the network, Table 1 presents the

Table 1. Centrality Indicators of Psychological Constructs Among Female University Students.

Variable	Network			
	Betweenness	Closeness	Strength	Expected influence
Social Alienation	-0.983	-0.350	0.103	-0.009
Extraversion (Extra)	1.402	1.247	-0.198	-0.259
Manipulation	1.402	0.553	1.403	0.762
Neuroticism (NEO)	-0.983	-0.689	-0.731	0.497
Surrender	-0.983	-1.179	-1.113	-0.904
Threat	-0.983	-0.737	0.074	0.181
Integration with the opposite sex	0.448	0.848	0.503	0.172
depression	0.766	0.732	1.533	1.463
goal pursuit	-0.983	-1.803	-1.862	-0.316
perceive self-esteem	0.289	0.412	-0.068	-2.331
sociability	0.607	0.967	0.358	0.744

centrality indicators that show the level of connection and influence each variable holds among female university students.

Among all measured constructs, depression emerged as the most central node within the network, exhibiting the highest values in both strength centrality (1.533) and expected influence (1.463). This prominence underscores its role as a core hub within the psychological profile of participants, suggesting that depression is not only widely co-activated with other variables but also actively drives psychological interactions within the perspective. Its centrality implies that depressive symptomatology may serve as a key entry point for therapeutic interventions, particularly due to its dynamic connections to emotional blackmail dimensions, sociability, and intrapersonal traits such as self-esteem and neuroticism.

The construct of manipulation, representing one of the primary dimensions of emotional blackmail, also demonstrated substantial centrality (strength = 1.403; expected influence = 0.762). This suggests that manipulative relational patterns are deeply embedded in the students' psychosocial functioning, potentially operating as both antecedents and consequences of emotional dysregulation and interpersonal strain. In contrast, the emotional blackmail components, emotional threat, and emotional surrender were markedly less central. Notably, surrender was the most peripheral construct in the network (strength = -1.113; expected influence = -0.904), indicating minimal relational influence. This isolation may suggest that surrendering behaviors are internally managed and less visible within the broader emotional ecology, or that they function more as individual coping styles rather than relational catalysts.

The personality trait extraversion presented a nuanced profile. While its betweenness and closeness centralities were relatively high, indicating a bridging role between otherwise disconnected constructs, its negative strength

(-0.198) and expected influence (-0.259) suggest that its direct relationships may not confer psychological benefits in this context. This paradox may reflect a compensatory dynamic in which high extraversion masks latent emotional struggles, especially within socially complex university environments. Such findings challenge traditional assumptions regarding extraversion's protective role and warrant further investigation into its context-dependent functions.

Conversely, neuroticism and social alienation, despite their theoretical relevance, showed consistently low centrality scores across all metrics. Neuroticism yielded negative or near-zero values across strength, closeness, and expected influence, implying weak integration within the emotional system. Similarly, social alienation, while conceptually related to depressive symptomatology, remained statistically peripheral, possibly due to its latent or context-contingent activation. These findings suggest that although these constructs may be clinically significant, their influence in this particular network is more subtle and indirect.

Particularly disconnected within the network were goal pursuit and emotional surrender, both of which recorded the lowest centrality metrics across the board. Their isolation suggests that they may function as trait-like or background variables, exerting little influence on moment-to-moment psychological dynamics. The marginal role of goal pursuit may reflect motivational disengagement, potentially shaped by elevated levels of emotional distress, particularly depression and low self-efficacy.

An especially noteworthy observation was the role of perceived self-esteem, which, despite a relatively neutral strength value (-0.068), exhibited a strongly negative expected influence (-2.331). This pattern implies that self-esteem may serve a buffering or dampening role, reducing the overall activation of distress-related constructs in the network. Its inverse influence suggests a protective

capacity, wherein higher self-esteem may inhibit the emergence of maladaptive emotional states, including susceptibility to manipulation and depressive symptoms.

In contrast, sociability and integration with the opposite sex occupied moderately central and positively influential positions within the network. Both constructs demonstrated consistent positive values across centrality indicators, reflecting their role in promoting adaptive interpersonal functioning. Their integration into the emotional landscape suggests that students who report higher levels of social engagement and comfort in cross-gender interactions may exhibit greater resilience to the emotional risks embedded in manipulative or coercive relational patterns.

Collectively, these findings underscore a psychologically dense network in which depression and manipulation constitute the most influential hubs, suggesting they are pivotal in shaping emotional dynamics among female university students. Meanwhile, variables such as self-esteem, sociability, and interpersonal integration appear to act as potential protective factors, capable of mitigating the spread or intensity of psychological risk from this perspective. These results hold critical implications for psychological assessment and intervention: targeting high-centrality nodes like depression and manipulation may yield cascading improvements across multiple domains, while bolstering protective constructs such as self-esteem and sociability may enhance emotional resilience and interpersonal stability within this population.

Interpretation of Centrality Plot: Structural Insights into Psychological Dynamics

The centrality plot offers a compelling visual confirmation of the numerical findings, elucidating the relative structural importance of psychological constructs within the emotional and interpersonal network of female university students. Each centrality index, betweenness, closeness, strength, and expected influence, provides

a distinct lens through which to understand the dynamic interrelations among these variables. As shown in Figure 1, manipulation and extraversion emerge as pivotal bridge nodes, exhibiting the highest values among all variables.

In terms of betweenness centrality, manipulation and extraversion emerge as pivotal bridge nodes, exhibiting the highest values among all variables. These constructs serve as critical intermediaries, facilitating communication and relational influence across otherwise disconnected parts of the network. Their high betweenness suggests that they function as psychological “brokers,” whose removal would likely fragment the network and reduce the efficiency of information flow. This highlights their strategic significance in shaping both emotional regulation and relational dynamics among participants.

The closeness centrality panel, which reflects the average distance of a node from all other nodes in the network, positions extraversion, sociability, and integration with the opposite sex as highly accessible constructs. Their elevated closeness values indicate that these traits can exert psychological influence rapidly and diffusely across the network. In contrast, goal pursuit and emotional surrender show low closeness scores, underscoring their limited reach and more isolated functional roles within the perspective. These findings suggest that the former traits play an active part in relational and emotional exchange, whereas the latter may represent more static or trait-bound dispositions.

Concerning strength centrality, which captures the cumulative absolute value of a node’s direct connections, depression emerges as the most dominant variable. Its high strength score confirms its role as a central emotional hub, tightly linked to multiple psychological domains. Manipulation also ranks highly on this metric, reinforcing its integral role in the students’ psychosocial architecture. By contrast, constructs such as goal pursuit, surrender, and neuroticism are among the weakest in terms of strength,

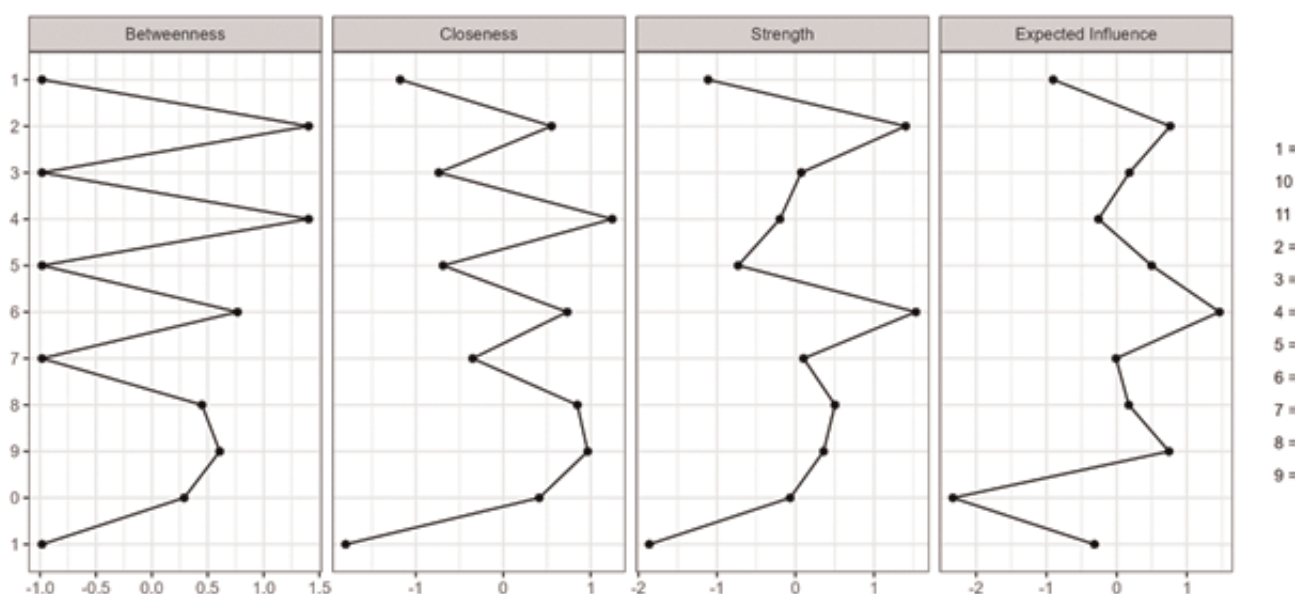


Figure 1 Interpretation of Centrality Plot as Structural Insights into Psychological Dynamics

implying minimal direct engagement with the broader emotional system.

Perhaps most revealing is the expected influence metric, which integrates both the strength and directionality of a node's connections. Here, depression again holds the strongest positive expected influence, indicating its potential to propagate distress across the network. Manipulation and sociability also exhibit strong positive influence, pointing to their dual role as both socially embedded and emotionally potent constructs. Notably, perceived self-esteem shows a substantially negative expected influence, suggesting it may act as a psychological buffer that dampens the activation of more maladaptive variables. Similarly, surrender and goal pursuit exhibit negative expected influence, potentially reflecting their associations with passive coping and motivational disengagement, respectively.

The spatial configuration revealed in the centrality plot aligns with theoretical models of emotional blackmail and internalizing psychopathology. Manipulative relational strategies and depressive symptomatology form a tightly interwoven emotional core, around which variables such as sociability, extraversion, and self-esteem orbit with varying degrees of regulatory or amplifying influence. The peripheral placement of goal pursuit and emotional surrender may reflect latent constructs, traits, or dispositions that, while meaningful, exert their effects in more stable or background ways.

Mapping the emotional blackmail and other study variables

The visual structure of the estimated network reflects a complex and interconnected psychological landscape among female university students, wherein emotional, cognitive, and interpersonal variables form a dense web of mutual influence (see Figure 2). Each node in the network represents a distinct psychological construct, and the edges reflect partial correlations between variables after controlling for all others, offering insight into their unique associations. The edges are color-coded to signify directionality (blue for positive, red for negative) and

scaled in thickness to reflect the magnitude of the relationships.

Figure 2. Estimated Psychological Network among Female University Students: Node Interrelations and Edge Strengths. Notes. 1= Extraversion, 2= Integration with the Opposite Sex, 3= manipulation, 4= Neuroticism, 5= Social alienation, 6= surrender, 7= Threat, 8= depression, 9= goal pursuit, 10= Perceive self-esteem, 11= Sociability.

At the network's core, depression (Node 8) emerges as a dominant and highly interconnected hub, demonstrating robust positive associations with both neuroticism (Node 4) and social alienation (Node 5). These findings are consistent with longstanding empirical and theoretical work suggesting that trait neuroticism predisposes individuals to internalizing psychopathology, while perceived social disconnection exacerbates negative affective states. The co-occurrence of these variables may reflect a self-reinforcing loop, whereby heightened emotional reactivity and social withdrawal reciprocally exacerbate depressive symptomatology. Depression also displays a strong negative edge with perceived self-esteem (Node 10), affirming cognitive models such as Beck's theory of depression, in which negative self-schemas contribute to and are maintained by depressive affect.

Manipulation (Node 3), a central construct in the emotional blackmail framework, also exhibits strong centrality and functions as a key relational hub. It shares strong positive connections with threat (Node 7) and surrender (Node 6), thereby forming a theoretically coherent triad that supports the multidimensionality of emotional blackmail. This triadic structure suggests that manipulation may not occur in isolation but rather operates in tandem with coercive threat-based tactics and submissive yielding, all of which contribute to maladaptive interpersonal dynamics. Furthermore, manipulation is positively associated with sociability (Node 11) and weakly linked with integration with the opposite sex (Node 2), hinting at a more socially nuanced profile. These associations could reflect a form of maladaptive social intelligence, wherein interpersonally skilled individuals may leverage those abilities in manipulative ways, either strategically or as a learned relational pattern, consistent with social-cognitive theories of interpersonal functioning.

The trait of extraversion (Node 1) is positively linked to sociability (Node 11) and goal pursuit (Node 9), reinforcing its classical conceptualization as an approach-oriented personality trait associated with social engagement and motivational drive. However, the presence of a moderate negative association between extraversion and integration with the opposite sex introduces an intriguing cultural nuance. In sociocultural contexts characterized by conservative gender norms, greater general extraversion may not necessarily translate into ease or confidence in cross-gender interactions, possibly due to structural or normative constraints that moderate the behavioral expression of extraverted tendencies.

Another meaningful link is observed between surrender (Node 6) and low self-esteem (Node 10), suggesting that individuals with a diminished sense of self-worth may

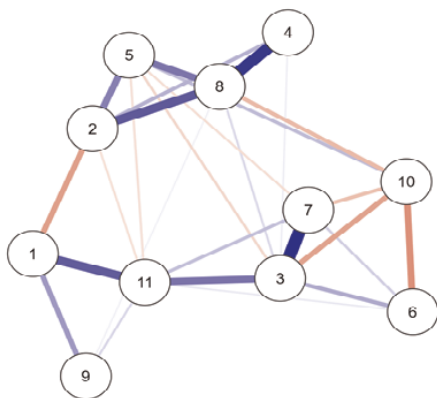


Figure 2 Psychological Network among Female University Students

be more prone to acquiescent or passive relational behaviors. This association aligns with models of learned helplessness and passive coping, where individuals defer control in interpersonal contexts due to low self-efficacy. Additionally, the positive association between goal pursuit and sociability suggests that social integration may serve as a motivational scaffold that supports higher engagement with personal and academic aspirations, consistent with research on social capital and goal-directed self-regulation.

Taken together, the network structure reveals several distinct yet interconnected psychological constellations: (1) an internalizing symptom cluster (depression, neuroticism, alienation), (2) a manipulation-driven interpersonal triad (manipulation, threat, surrender), and (3) a motivational-extraverted cluster (extraversion, sociability, goal pursuit). These clusters do not operate in isolation; rather, they exhibit bridging connections that suggest a fluid and dynamic interplay between emotional vulnerabilities, interpersonal strategies, and trait-level dispositions.

This network-based approach provides a granular understanding of how psychological constructs are embedded in a broader emotional-structural system. The central roles of depression and manipulation position them as key intervention targets, given their potential to cascade influence across the network. Conversely, self-esteem emerges as a potential psychological buffer, showing strong inverse associations with key risk factors and offering a promising point of entry for preventative or therapeutic strategies. Variables such as sociability and goal pursuit may further support resilience by enhancing social embeddedness and motivational engagement.

DISCUSSION:

The present network analysis contributes a nuanced, empirically grounded lens through which the psychological positioning of female university students within emotionally coercive dynamics can be understood. Consistent with prior conceptualizations of emotional blackmail as a dyadic and recursive phenomenon (Forward & Frazier, 2019; Al-Kreimeen et al., 2022), the findings illuminate the dual roles that women may occupy, simultaneously as victims and, in some cases, as agents of coercive relational strategies. Rather than constituting a paradox, this duality reflects the systemic interplay between intrapersonal vulnerabilities (e.g., low self-esteem, depressive cognition) and interpersonal adaptations (e.g., manipulation, surrender), shaped by broader socialization processes during a critical phase of psychosocial development.

At the core of the network, depression emerged as a highly central construct, exerting strong positive associations with neuroticism and social alienation, and a robust negative connection with self-esteem. These associations reinforce Beck's et al. (1976) cognitive model, wherein negative self-schemas and distorted cognitions amplify affective dysregulation and maladaptive relational behavior. Specifically, depression in this network appears not merely as an emotional outcome but

as an active amplifier of relational vulnerability. Individuals with lower perceived self-worth may struggle to maintain psychological boundaries, thereby becoming more susceptible to emotional exploitation. As noted in prior work (Al-Kreimeen et al., 2022), this erosion of agency facilitates the internalization of victimhood, as individuals gradually accept coercive dynamics as normative or inescapable. Within this framework, self-esteem operates as a crucial affective buffer; its inverse relationship with depression suggests that fostering positive self-regard could mitigate both the internalization and perpetuation of emotional blackmail.

Simultaneously, manipulation was identified as a structurally central node within the network, closely linked to threat and surrender, two defining elements of the emotional blackmail cycle (Forward & Frazier, 1997). This triadic configuration reflects a coercive script wherein individuals may alternate between resisting emotional demands and adopting manipulative behaviors as a relational defense. While manipulation is often conceptualized as a strategic tool for control, the present findings suggest it may also function as a compensatory mechanism, particularly for individuals grappling with insecurity, fear of abandonment, or a lack of relational agency. In line with social-emotional socialization theories (Liu, 2010), such behaviors may be unintentionally enacted as adaptive responses to emotional deprivation, designed to preserve attachment or avoid relational rupture, even if such strategies ultimately reproduce coercive dynamics.

A particularly noteworthy finding is the positive association between manipulation, sociability, and cross-gender integration. While sociability is generally viewed as protective, enhancing access to support and emotional capital, its convergence with manipulation complicates this interpretation. The findings align with research on Machiavellianism and emotional intelligence (Austin et al., 2007), which acknowledges the dual potential of social acuity to foster either authentic connection or covert control. Among female students navigating relational contexts marked by cultural conservatism or gendered expectations, heightened sociability may be weaponized, consciously or not, to manage emotional ambiguity, maintain status, or influence outcomes. Such dynamics highlight how socially sanctioned behaviors can become vehicles for less visible, yet equally coercive, relational tactics.

Peripheral yet theoretically revealing constructs include goal pursuit and surrender, both of which showed reduced centrality within the network. The marginal position of goal pursuit may indicate motivational disengagement, a tendency aligned with learned helplessness theory (Seligman, 1975), wherein repeated exposure to emotionally constraining dynamics leads to apathy, diminished initiative, and reliance on external validation. Similarly, the inverse relationship between surrender and self-esteem suggests that acquiescence may serve a short-term protective function, but ultimately erodes autonomy and fosters internalized subordination. These findings reflect the cyclical nature of emotional blackmail, as theorized by Forward and Frazier (2019),

where demands, threats, compliance, and repetition create psychological loops that entrench emotional dependence.

Another construct of interest is extraversion, which displayed mixed associations. On one hand, extraversion correlated positively with sociability and goal pursuit, suggesting that expressive individuals may be more relationally active and motivated. On the other hand, extraversion's interplay with integration into cross-gender settings may be complicated by normative constraints. In conservative cultural contexts, where female assertiveness or social engagement is policed or misinterpreted, extraversion may be redirected into performative or compensatory behaviors (Hochschild, 1983). As such, extraverted students may experience internal dissonance, resorting to emotional manipulation or compliance to reconcile social expectations with personal needs.

From a broader theoretical standpoint, the present findings offer an important bridge between classical psychological models and contemporary network-based conceptualizations of mental health. Traditional personality theories and dominant models of depression have typically relied on latent-variable assumptions, wherein stable traits (e.g., neuroticism, extraversion) or enduring cognitive schemas are posited as underlying causes that generate emotional symptoms and behavioral expressions. While such frameworks have yielded substantial explanatory value, they tend to privilege unidirectional causality and hierarchical organization. In contrast, the network approach adopted in this exploratory study reconceptualizes these same constructs as mutually interacting components of a self-organizing psychological system, where symptoms, traits, and interpersonal behaviors directly influence one another over time. Within this perspective, depression emerges not merely as a downstream manifestation of personality vulnerability but as a structurally central node capable of amplifying, maintaining, and transmitting psychological distress across emotional and relational domains. Similarly, personality traits such as neuroticism and extraversion do not function as invariant causal substrates; rather, their psychological impact appears contingent upon their structural embedding and connectivity within the broader network. The relatively peripheral positioning of certain classical constructs underscores a key implication of network theory: theoretical importance does not necessarily translate into structural centrality, particularly when more proximal affective and interpersonal processes dominate system dynamics. Importantly, this does not invalidate classical approaches but extends them by shifting the explanatory focus from static latent causes to dynamic patterns of interdependence. Such an integrative framework allows for a more nuanced understanding of how enduring dispositions, emotional states, and relational strategies co-constitute mental health functioning, thereby offering clinically relevant insights into potential intervention targets among female university students.

Taken together, the network structure revealed here challenges traditional, binary distinctions between victim and perpetrator within emotionally coercive relationships.

Instead, the findings advocate for a processual, systems-based model in which emotional blackmail is understood as a dynamic interplay of vulnerability, adaptation, and relational learning. For university-aged women, positioned at the intersection of identity exploration, emotional experimentation, and autonomy development, such relational patterns may serve as both expressions of psychosocial need and precursors to longer-term dysfunction.

LIMITATIONS:

Despite the strengths of the present study, several methodological limitations warrant careful consideration. First, the reliance on single-item measures for several psychological constructs may have influenced the estimation of network edges and centrality indices, as measurement error directly affects partial correlations in network models. Although single-item indicators have demonstrated acceptable construct validity in non-clinical and large-scale research, they may underestimate variance and structural prominence relative to multi-item scales. This issue is particularly relevant given the inclusion of the multi-item Emotional Blackmail Scale alongside single-item indicators, which may introduce psychometric asymmetry within the network. Second, the cross-sectional design precludes any causal or temporal inference; thus, network centrality should be interpreted as reflecting structural connectedness rather than causal influence or clinical priority. Finally, network stability and accuracy analyses were not conducted, limiting conclusions regarding the robustness of specific edges and centrality estimates. Accordingly, the present network should be regarded as exploratory and hypothesis-generating, with future research needed to replicate and validate the observed structure using longitudinal designs, multi-item measures, and bootstrap-based stability procedures.

CONCLUSION:

The present study provides an exploratory network-based perspective on the interrelations among personality traits, emotional blackmail dimensions, social functioning, and depressive symptoms in female university students. The findings highlight depression and manipulation as structurally central components within the estimated network, while self-esteem and sociability appear to occupy potentially protective positions. However, these interpretations must be considered considering important methodological constraints, including the use of single-item measures, the absence of network stability analyses, and the cross-sectional nature of the data. As such, centrality should not be equated with clinical severity or intervention efficacy. Rather, the network structure offers a context-specific and provisional map of psychological interdependence that may inform future theory-driven and longitudinal research. Further studies employing more robust measurement models and temporal designs are necessary to establish the stability, generalizability, and practical significance of these network patterns.

IMPLICATIONS:

These findings carry substantial implications for feminist-informed psychological practice and prevention, particularly in addressing the relational ambivalence experienced by university-aged women navigating emotionally coercive dynamics. The simultaneous presence of victimization and agentic manipulation within the same psychological space challenges binary frameworks of power versus submission, calling for a more nuanced understanding of how intrapersonal vulnerabilities, such as diminished self-esteem, depressive affect, and emotional insecurity, intersect with gendered relational strategies like manipulation and surrender. Effective interventions must prioritize the cultivation of relational self-awareness, enabling women to critically examine their roles within asymmetrical emotional exchanges and to disrupt internalized patterns of compliance and covert control. Therapeutic and psychoeducational efforts should emphasize assertive communication, emotion regulation, and boundary-setting as foundational tools for resilience. Crucially, these initiatives must be situated within a broader sociocultural context that interrogates the normative expectations placed on women to preserve relational harmony, often at the expense of personal agency. By equipping women with both psychological competencies and a critical consciousness of emotional labor and gendered relational scripts, such programs can foster not only individual empowerment but also collective resistance to the subtle mechanisms of emotional domination.

DISCLOSURE STATEMENT:

The authors declare that there are no potential conflicts of interest concerning the research, authorship, and/or publication of this article.

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