

# Emotion regulation correlates of depressive symptoms and well-being: A cross-sectional network analysis of responses to positive affect and interpersonal emotion regulation

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## Research Article

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# Abstract

## Background

Depressive symptoms and well-being are related but distinguishable aspects of mental health. It remains unclear whether their associations with intrapersonal and interpersonal emotion regulation are uniformly opposite. This study examined the conditional associations among cognitive responses to positive affect, interpersonal regulation, depressive symptoms, and well-being.

## Methods

A cross-sectional analysis was conducted using matched questionnaire data from 2,766 students at a vocational college in Inner Mongolia, China. An unregularized partial correlation network included three responses to positive affect, four interpersonal regulation dimensions, well-being, and depressive symptoms. Edge uncertainty was estimated using 2,000 bootstrap samples. Centrality was examined exploratorily, and sensitivity analyses assessed rank-based estimation, adjustment for sex, omission of the suicidal ideation item, and regularized network estimation.

## Results

Regulation tendencies across positive and negative contexts were positively associated (partial  $r = .36$ ), as were perceived efficacies (.30). Emotion-focused and self-focused positive rumination had the strongest positive edge (.54). Well-being and depressive symptoms were negatively associated ( $- .36$ ). Dampening, self-focused positive rumination, negative-context regulation tendency, and positive-context efficacy showed opposite-direction associations with the two mental health indicators. Emotion-focused rumination and positive-context tendency had clearer associations with well-being, whereas negative-context efficacy had a clearer association with depressive symptoms. Positive-context tendency was negatively associated with well-being ( $- .09$ ), and negative-context efficacy was positively associated with depressive symptoms (.12); both signs differed from their zero-order correlations. The main edge pattern was broadly similar across sensitivity analyses.

## Conclusions

The emotion regulation correlates of well-being and depressive symptoms were partly, but not fully, opposite. Positively associated regulation characteristics could have opposite conditional associations with the same mental health indicator. These exploratory findings distinguish willingness to involve others, perceived interpersonal benefit, and specific responses to positive affect; they do not establish causal effects or differences in edge strength.

# Background

Mental health research increasingly addresses both psychological distress and positive psychological experience. The dual-continuum model treats mental illness and positive mental health as related but distinguishable dimensions rather than opposite ends of a single continuum [1]. Knowing that someone experiences little distress therefore does not fully describe their positive psychological state. Higher depressive symptoms commonly coexist with greater negative affect, lower positive affect, and poorer well-being. These patterns do not imply, however, that well-being is simply the reverse of depressive symptoms or that fewer symptoms necessarily entail abundant cheerfulness, calmness, and vitality. Positive experience may relate not only to the amount of positive affect experienced but also to how people respond to it. Attention to pleasant feelings, positive self-evaluation, and sharing positive events have been associated with different indicators of well-being [2, 3, 4]. Understanding the relationship between depressive symptoms and well-being therefore requires attention to how people interpret positive events, respond to positive feelings, seek others' involvement in emotion regulation, and evaluate the help obtained through interaction.

Emotion regulation refers to the processes through which people influence which emotions they experience, when they experience them, and how they experience and express them [5]. Such processes may involve intrapersonal activities, including cognition, or interpersonal interactions through which people regulate their own emotions [6].

The present study focuses on three cognitive responses to positive affect: dampening, which involves devaluing or diminishing positive feelings; emotion-focused positive rumination, which involves sustained attention to pleasant feelings; and self-focused positive rumination, which involves attention to the positive personal qualities or achievements reflected in an experience [7].

Research on depression has examined these responses to positive experience. In a community sample of 345 adults, Nelis et al. [8] found that dampening was associated with greater depressive symptoms, whereas positive rumination was associated with less anhedonia; lower self-focused positive rumination was also associated with greater subsequent anhedonia. In a 14-day ecological momentary assessment study of 108 adults, Vanderlind et al. [9] found that people with higher depressive symptoms reported more dampening and less positive rumination on average. Less positive rumination and more dampening were also associated with lower momentary positive affect. A dot-probe meta-analysis by Winer and Salem [10] identified depression-related attentional avoidance of positive information. This attentional finding concerns a different processing level and does not by itself establish deliberate avoidance or the use of dampening. Together, these studies suggest that depression-related difficulties extend to the processing of positive experience. Nevertheless, associations with anhedonia, momentary positive affect, and overall depressive symptoms should not be treated as interchangeable, and the distinct contributions of the two positive-rumination dimensions require clarification.

Research on well-being likewise suggests that the content of positive-affect responses matters. Attention to ongoing positive experience has been associated with higher positive affect [2], and self-

focused savoring has predicted subsequent well-being in adolescents [11]. In a 14-day diary study, Wong and Zhao [4] found that, when multiple strategies were considered, days with higher-than-usual emotion-focused positive rumination were characterized by greater positive affect and life satisfaction; higher-than-usual self-focused positive rumination was associated with greater positive affect. These findings connect attention to pleasant feelings and positive self-meaning with positive psychological experience. However, savoring, positive rumination, positive affect, life satisfaction, and recent well-being are related but non-equivalent constructs. Findings across different measures and levels of analysis do not establish that each response has exactly opposite associations with well-being and depressive symptoms.

Interpersonal regulation of one's own emotions involves using social interaction, such as seeking comfort when distressed or sharing positive experiences when happy [6]. Williams et al. [12] distinguished regulation tendency and perceived efficacy in negative and positive emotional contexts, yielding four dimensions: negative tendency, negative efficacy, positive tendency, and positive efficacy. Tendency concerns the propensity to involve others, whereas perceived efficacy concerns the extent to which such interactions are experienced as helpful.

Associations between interpersonal regulation and depression have not been uniform. In a survey of 93 university students, McFarland and Hay [13] found that participants reporting greater depression, anxiety, and stress also reported greater use of online and in-person interpersonal regulation. Greater use may therefore accompany greater regulation needs rather than necessarily indicating less distress. In a three-wave study of 492 adults over six months, Peker and Akkuş [14] found that depressive symptoms predicted subsequent increases in interpersonal regulation tendency, but tendency and efficacy did not predict subsequent changes in depressive symptoms, and depression did not predict changes in perceived efficacy. Zhao et al. [15] found weak, nonsignificant correlations between depressive symptoms and the four valence-specific interpersonal regulation dimensions. Differences across these studies cannot be attributed to emotional valence alone because samples, measures, and designs also differed. Collectively, the evidence does not support a simple, uniform association between involving others and lower depressive symptoms.

Studies of well-being highlight both participation in interaction and perceived interpersonal benefit. Sharing positive events has been associated with greater daily positive affect and well-being, while active, constructive responses have been associated with better relationship experiences [3, 16]. These findings distinguish sharing from the responses it elicits. Heiland et al. [17] separately assessed the frequency and perceived efficacy of seeking regulation from social network members in 147 participants. Perceived efficacy was positively associated with well-being, whereas the association with seeking frequency was not significant. Frequency is not identical to a general regulation tendency, but the findings illustrate why participation and perceived helpfulness provide different information. Distinguishing tendency from efficacy in both positive and negative contexts may clarify which aspect of interpersonal regulation is associated with well-being.

Overall, the literature suggests some opposite-direction associations with depressive symptoms and well-being, but does not establish complete correspondence. Dampening is associated with greater depressive symptoms, whereas positive rumination generally relates to more favorable emotional experience. Yet the distinct associations of self-focused and emotion-focused rumination with both mental health indicators remain insufficiently specified. Similarly, the positive association between perceived interpersonal efficacy and well-being has not consistently been mirrored by an association with fewer depressive symptoms, and findings for interpersonal regulation tendency or frequency vary. A joint analysis of specific cognitive responses, interpersonal tendencies, perceived efficacies, and both mental health indicators can examine this correspondence while accounting for their shared variation.

We used a cross-sectional partial correlation network to describe conditional associations among these variables. Three exploratory questions guided the analysis: (1) Do regulation tendencies across positive and negative contexts, and perceived efficacies across the two contexts, remain positively associated after accounting for the other nodes? (2) Which interpersonal regulation dimensions are connected to emotion-focused positive rumination, self-focused positive rumination, and dampening? (3) Do these regulation characteristics show opposite or only partly corresponding conditional associations with well-being and depressive symptoms? The network provides a joint descriptive model; it does not establish causal or temporal pathways.

## Methods

### Study design and participants

This cross-sectional study used data collected from students at a vocational college in Inner Mongolia, China, between 17 and 24 September 2026. The analysis included 2,766 participants whose records could be matched across the relevant questionnaire exports. All item responses used to construct the nine analyzed scores were present in this matched sample. Demographic information was linked to student registry records rather than relying on system-default dates of birth in the questionnaire platform. The sample comprised 1,863 male and 903 female students. The mean age was 18.35 years ( $SD = 0.64$ ; range, 16–23 years). Participant characteristics are presented in Table 1.

Table 1  
Participant characteristics (N = 2,766)

| Characteristic            | n (%) or summary |
|---------------------------|------------------|
| Sex, male                 | 1,863 (67.35)    |
| Sex, female               | 903 (32.65)      |
| Age, years, mean (SD)     | 18.35 (0.64)     |
| Age range, years          | 16–23            |
| Age < 18 years            | 64 (2.31)        |
| Age ≥ 18 years            | 2,702 (97.69)    |
| Ethnicity, Han            | 2,238 (80.91)    |
| Ethnicity, Mongol         | 401 (14.50)      |
| Ethnicity, other          | 127 (4.59)       |
| Registry cohort, 2026     | 2,733 (98.81)    |
| Registry cohort, 2025     | 33 (1.19)        |
| Program duration, 3 years | 2,695 (97.43)    |
| Program duration, 2 years | 71 (2.57)        |

The study was approved by the Ethics Review Committee of Baotou Vocational and Technical College (approval no. 2026091701).

## Measures

### Interpersonal emotion regulation

Interpersonal emotion regulation was assessed using the Chinese version of the Interpersonal Regulation Questionnaire (C-IRQ), originally developed by Williams et al. [12] and translated and validated among Chinese college students by Zhao et al. [15]. The questionnaire assesses individuals' tendency to involve others in regulating their own emotions and the perceived efficacy of doing so. Its 16 items comprise four subscales, each containing four items: negative tendency (NT), negative efficacy (NE), positive tendency (PT), and positive efficacy (PE). Items are rated on a seven-point Likert scale ranging from 1 (strongly disagree) to 7 (strongly agree). Mean item scores were calculated for each subscale, with higher scores indicating greater regulation tendency or perceived efficacy in the corresponding emotional context. Perceived efficacy reflects subjective interpersonal helpfulness rather than objectively measured emotional improvement. In the present study, Cronbach's alpha coefficients were .865, .837, .879, and .863 for NT, NE, PT, and PE, respectively.

## Cognitive responses to positive affect

The Responses to Positive Affect questionnaire (RPA) assesses cognitive responses to positive feelings [7, 18]. Its 17 items comprise emotion-focused positive rumination (EF; five items), dampening (D; eight items), and self-focused positive rumination (SF; four items). Items were scored from 1 to 4, and mean scores were calculated for each dimension. Higher scores indicate more frequent endorsement of the corresponding response.

## Well-being

The World Health Organization-Five Well-Being Index (WHO-5) assesses positive psychological experience over the preceding two weeks [19]. The five items concern cheerfulness, calmness, vitality, feeling rested, and interest in daily life. Standard item scores range from 0 to 5. Items were summed to give a total of 0–25, with higher scores indicating greater recent well-being. This operational definition is narrower than some broader conceptualizations of psychological well-being.

## Depressive symptoms

Depressive symptoms were assessed using the Chinese version of the Beck Depression Inventory–II (BDI-II) [20, 21]. The analyzed score comprised 21 items scored from 0 to 3 and summed to a total of 0–63, with higher scores indicating greater depressive symptoms. The score was treated as a continuous symptom indicator rather than a clinical diagnosis.

## Statistical analysis

Analyses used the same matched sample ( $N = 2,766$ ) and were conducted in R 4.4.2. Means, standard deviations, observed ranges, skewness, Cronbach's alpha, and Pearson zero-order correlations were calculated, and the correlation matrix was checked for positive definiteness. The nine nodes were the four IRQ dimension scores, three RPA dimension scores, WHO-5 total, and depression total.

The primary model was an undirected, unregularized partial correlation network estimated from the Pearson correlation matrix. The matrix was inverted, and off-diagonal elements were negated and standardized by the corresponding diagonal elements. Each of the 36 possible edges therefore represents the linear association between two nodes conditional on the remaining seven. Unregularized estimation was used to retain small coefficients rather than setting them to zero in advance; regularized estimation was examined as a sensitivity analysis [22]. Edges were interpreted as linear conditional associations, not causal effects or general conditional independence relations.

Edge uncertainty was estimated using 2,000 case-resampling bootstrap samples, with the 2.5th and 97.5th percentiles defining pointwise 95% confidence intervals (CIs) [23]. These intervals were not adjusted for multiple comparisons. Centrality analyses were exploratory. Strength was calculated as the sum of absolute incident edge weights, and one-step expected influence as their signed sum, using the

complete estimated network. Case-dropping stability was evaluated by removing 10%–90% of cases in 10-percentage-point increments, with 500 random subsamples at each level. Pearson correlations compared the nine centrality values in each subsample with those in the full sample. The grid-based correlation stability coefficient,  $CS(.70)$ , was the largest tested deletion proportion at which at least 95% of replications retained a correlation of .70 or higher [23]. No edge-weight or centrality difference tests were conducted.

Four sensitivity analyses were performed: estimation from the Spearman correlation matrix after average-rank transformation; estimation using residuals after regressing each node on sex; replacement of the depression node with a 20-item total excluding item 9; and graphical least absolute shrinkage and selection operator estimation selected using the extended Bayesian information criterion (EBICglasso;  $\gamma = .50$ ) [24]. The qgraph threshold = TRUE option was also examined separately. Edge-selection frequencies were described using 500 bootstrap samples and were not interpreted as probabilities that an edge exists.

The network was visualized using a fixed layout. For readability, the main network plot displays only edges with absolute partial correlations of at least .05; this display threshold did not affect estimation or centrality calculation. Node locations do not indicate temporal order or causal priority. Network estimates were obtained in R, and figures were drawn in Python.

## Results

### Descriptive statistics and zero-order correlations

Internal consistency coefficients ranged from .84 to .92 (Table 2). Across emotional contexts, interpersonal regulation tendencies and perceived efficacies were positively correlated ( $r = .62$  and  $.59$ , respectively). Emotion-focused and self-focused positive rumination were positively correlated ( $r = .69$ ). Well-being and depressive symptoms were negatively correlated ( $r = -.54$ ).

Table 2  
Descriptive statistics and internal consistency

| Node | Items | Mean  | SD   | Range | $\alpha$ |
|------|-------|-------|------|-------|----------|
| NT   | 4     | 4.36  | 1.26 | 1–7   | .865     |
| NE   | 4     | 5.53  | 0.98 | 1–7   | .837     |
| PT   | 4     | 5.03  | 1.18 | 1–7   | .879     |
| PE   | 4     | 5.36  | 1.06 | 1–7   | .863     |
| EF   | 5     | 2.81  | 0.73 | 1–4   | .899     |
| D    | 8     | 1.77  | 0.67 | 1–4   | .917     |
| SF   | 4     | 2.56  | 0.79 | 1–4   | .906     |
| WHO  | 5     | 17.03 | 5.98 | 0–25  | .922     |
| DEP  | 21    | 5.54  | 7.53 | 0–51  | .910     |

N = 2,766. IRQ and RPA scores are item means; WHO and DEP are totals. Ranges are observed sample ranges; the theoretical DEP range is 0–63. Alpha describes internal consistency and does not establish version equivalence or structural validity. Abbreviations are defined in Fig. 1.

## Partial correlation network

The nine-node network is shown in Fig. 1. All 36 edge estimates and pointwise 95% CIs are reported in Supplementary Table S1 and Supplementary Fig. S2. The strongest positive edge connected emotion-focused and self-focused positive rumination (partial  $r = .54$ , 95% CI [.50, .57]); the strongest negative edge connected well-being and depressive symptoms (partial  $r = -.36$ , 95% CI [–.39, –.32]). All partial correlations among the four interpersonal regulation dimensions were positive. The cross-valence NT–PT and NE–PE edges were .36 and .30, respectively, and the PT–PE edge was .29. Dampening was positively associated with self-focused positive rumination (.16), whereas its association with emotion-focused positive rumination had a CI including zero. The largest IRQ–RPA edge connected positive efficacy and emotion-focused positive rumination (.17); other cross-instrument edges were smaller.

## Associations of regulation dimensions with well-being and depressive symptoms

Associations with the two mental health indicators are presented in Table 3 and Fig. 2. Among RPA dimensions, dampening was positively associated with depressive symptoms (partial  $r = .30$ ) and negatively associated with well-being (–.10). Emotion-focused positive rumination was positively associated with well-being (.26), whereas its association with depressive symptoms had a CI including zero. Self-focused positive rumination had a small positive association with well-being (.10) and a small negative association with depressive symptoms (–.06).

Among IRQ dimensions, negative tendency was positively associated with well-being (partial  $r = .12$ ) and negatively associated with depressive symptoms ( $-.11$ ). Positive efficacy was positively associated with well-being ( $.07$ ) and negatively associated with depressive symptoms ( $-.12$ ). In contrast, positive tendency was negatively associated with well-being ( $-.09$ ), and negative efficacy was positively associated with depressive symptoms ( $.12$ ). These last two associations had the opposite signs to their corresponding zero-order correlations. The CIs for positive tendency with depressive symptoms and negative efficacy with well-being included zero.

Table 3  
Associations of regulation dimensions with well-being and depressive symptoms

| Edge   | Zero-order $r$ | Partial $r$ | 95% CI         |
|--------|----------------|-------------|----------------|
| NT-WHO | .341           | .120        | [.081, .160]   |
| NT-DEP | -.258          | -.114       | [-.155, -.073] |
| NE-WHO | .245           | -.005       | [-.043, .035]  |
| NE-DEP | -.125          | .117        | [.077, .157]   |
| PT-WHO | .230           | -.090       | [-.127, -.051] |
| PT-DEP | -.158          | .029        | [-.015, .074]  |
| PE-WHO | .382           | .074        | [.034, .111]   |
| PE-DEP | -.308          | -.115       | [-.157, -.077] |
| EF-WHO | .537           | .262        | [.225, .299]   |
| EF-DEP | -.340          | -.026       | [-.059, .007]  |
| D-WHO  | -.188          | -.104       | [-.139, -.070] |
| D-DEP  | .332           | .301        | [.270, .335]   |
| SF-WHO | .430           | .100        | [.063, .134]   |
| SF-DEP | -.270          | -.064       | [-.094, -.031] |

Partial correlations control for the other seven nodes. CIs are pointwise percentile intervals from 2,000 bootstrap samples, without adjustment for multiple comparisons. An interval including zero does not demonstrate absence of an association.

## Stability and sensitivity analyses

Of the 36 edges, nine had pointwise 95% CIs including zero (Supplementary Fig. S2). Emotion-focused positive rumination had the highest numerical strength (1.15) and expected influence (1.10). The grid-based CS(.70) for strength was .60; expected influence met the stability criterion even at the largest

tested deletion proportion of 90%. Centrality estimates and case-dropping results are reported in Supplementary Table S2 and Supplementary Fig. S1, respectively.

Omitting depression item 9 changed edge weights by at most .0020, and adjustment for sex changed them by at most .0116. The mean and maximum absolute differences between rank-based and Pearson partial correlations were .0162 and .0576. Standard EBICglasso ( $\gamma = .50$ ) retained 33 edges, whereas enabling threshold = TRUE retained 27. Relative to the primary model, standard EBICglasso had a mean absolute edge difference of .0095, a maximum difference of .0264, and an edge-weight Spearman correlation of .998. Selection frequencies across 500 bootstrap samples ranged from .274 to 1.00. Detailed sensitivity results are provided in Supplementary Tables S1 and S3.

In relation to the three research questions, cross-valence tendencies and efficacies retained positive conditional associations; the three responses to positive affect had different patterns of connection with interpersonal regulation dimensions; and associations with well-being and depressive symptoms were generally opposite in direction but not fully corresponding.

## Discussion

The findings are consistent with the dual-continuum model: well-being and depressive symptoms showed a moderate negative conditional association, but their associations with emotion regulation dimensions were not mirror images. Although these associations were generally opposite in direction, this pattern did not extend to all dimensions. This suggests that regulation characteristics associated with less psychological distress do not fully capture those associated with greater positive psychological well-being. Furthermore, some positively interrelated regulation dimensions showed conditional associations in opposite directions with the same psychological outcome. Thus, co-occurring regulation characteristics may be associated with more or less psychological distress and with higher or lower well-being, depending on their specific content. Understanding these patterns requires distinguishing how individuals respond to positive feelings, whether they tend to involve others in regulating their emotions, and how they appraise the helpfulness of interpersonal interactions. The following discussion addresses three aspects: the patterns of association with well-being and depressive symptoms, the distinct implications of co-occurring regulation characteristics, and the connections between intrapersonal and interpersonal processes.

## Partly opposite associations with well-being and depressive symptoms

Dampening was associated with both higher depressive symptoms and lower well-being. Devaluing positive feelings or expecting pleasure to end [7] may be relevant to both distress and reduced positive experience. This pattern accords with a meta-analysis linking dampening to depression and experimental evidence that dampening appraisals can reduce positive affect during positive activities [25, 26]. A recent analysis highlighted links between depressive symptoms and specific dampening

thoughts, including feeling undeserving of positive experiences and expecting them not to last [27]. Such findings suggest that dampening can involve negative judgments about the self or the future, not merely less attention to pleasant feelings. In the present network, its symptom association remained after accounting for well-being and the other regulation dimensions.

Self-focused positive rumination, negative tendency, and positive efficacy showed the reverse pattern: each was associated with higher well-being and lower depressive symptoms. The association of self-focused rumination with less anhedonia [8], together with longitudinal evidence connecting self-focused savoring to well-being [11], suggests that positive self-meaning may be relevant to both reduced difficulties in experiencing pleasure and greater positive experience. Savoring and positive rumination are not identical, however. For interpersonal regulation, research distinguishing general distress sharing from co-rumination shows that the content of interaction matters [28]. This provides indirect context for the negative-tendency finding, rather than a direct replication of this IRQ dimension. Likewise, studies of interpersonal efficacy and well-being [12, 17] help contextualize positive efficacy, but do not establish that perceived positive efficacy reduces depression. The present findings describe distinct dimensions associated with both mental health indicators under the same statistical conditions.

The remaining dimensions did not show equally clear opposite-direction links. Emotion-focused positive rumination was positively associated with well-being, while its CI for depressive symptoms included zero. Experimental work in an anhedonic sample found that attending to sensory and bodily aspects of positive memories yielded more positive affect than analytical processing [29]; daily-life research also connects positive rumination with momentary positive affect [9]. These findings make a connection with positive experience plausible, without demonstrating that focusing on pleasant feelings is unrelated to depressive symptoms. Positive tendency, in contrast, had a negative conditional association with well-being, while its symptom association remained uncertain. Positive tendency and positive efficacy therefore contributed differently to the conditional pattern: greater well-being corresponded to greater perceived helpfulness, not simply greater willingness to involve others in positive emotion regulation. Negative efficacy was positively associated with depressive symptoms, while its association with well-being was uncertain. These patterns distinguish attention to pleasure, willingness to seek positive interaction, and confidence in others' ability to help with distress.

## **Covarying regulation characteristics carry differentiated mental health information**

Several positively associated regulation characteristics had opposite conditional associations with the same mental health indicator. The following comparisons concern edges in the full nine-node model, not separate three-variable networks or mediation pathways. They suggest that characteristics that tend to co-occur can nevertheless differ in their participation component, appraisal content, or emotional context.

First, negative tendency and negative efficacy were positively associated, yet had negative and positive associations with depressive symptoms, respectively. Conditional on efficacy and the other nodes,

greater willingness to involve others was associated with fewer symptoms; conditional on tendency and the other nodes, greater perceived helpfulness was associated with more symptoms. A 14-day experience-sampling study of 215 adults by Thompson et al. [30] distinguished circumstances associated with initiating regulation, including unpleasant events and goal obstruction, from interpersonal features associated with improvement, including the interaction partner and warm responses. This distinction provides a possible framework for understanding why seeking help and evaluating help should not be conflated. A person might recognize that some interactions are helpful while continuing to experience substantial depressive symptoms. This possibility explains how perceived help and distress could coexist, but does not by itself explain the reversal of the negative-efficacy association after statistical adjustment.

Second, positive and negative tendencies covaried but had negative and positive associations with well-being, respectively. Both involve approaching others, yet seeking help during distress and sharing pleasure address different emotional needs. Greater willingness to share is not equivalent to more positive experience. Across five experiments, Slepian et al. [31] found that autonomously keeping positive secrets could be energizing, showing that positive experience may be enjoyed without immediate disclosure. This does not demonstrate that sharing positive events harms well-being. In a daily-experience study of 67 cohabiting couples, Maisel and Gable [32] found that the correlates of received support depended on responsiveness to the recipient's needs. Together, these studies motivate attention to sharing motives and actual responses, neither of which was measured here. Importantly, positive tendency had a positive zero-order association with well-being; its negative sign appeared only after adjustment. The result should therefore not be translated into advice to conceal good news.

Third, positive and negative efficacies were positively associated but had negative and positive associations with depressive symptoms, respectively. General confidence in interpersonal help can thus coexist with context-specific symptom correlates. Hershenberg et al. [33] reported that women with higher depressive symptoms could show larger immediate emotional benefits from supportive discussion of positive events. Such immediate improvement is not equivalent to a subsequent reduction in depressive symptoms. Matovic et al. [34] linked positive-event capitalization processes with fewer depressive symptoms, providing context for the relevance of positive interpersonal experience rather than a direct test of IRQ positive efficacy. Research separating seeking frequency from perceived efficacy also underscores that subjective helpfulness is a distinct appraisal [17]. One possible interpretation of the negative-efficacy result is that recognition of short-term relief can coexist with ongoing symptoms. However, none of these studies establishes that greater negative efficacy increases depression, and the positive adjusted association in this study requires replication and closer measurement of actual benefits, regulation needs, and shared variance with the other dimensions.

Fourth, self-focused positive rumination and dampening were positively associated, yet had negative and positive symptom associations, respectively. Affirming the self-related meaning of an achievement and limiting the pleasure it evokes may address different evaluative targets. Miyamoto and Ma [35] linked dialectical beliefs about positive emotion with savoring and dampening, indicating that prolonging

pleasure is not always the sole regulatory goal. A goal-directed account further proposes that dampening may serve self-motivational, social, or self-verification goals [36]. A person could therefore recognize their competence while limiting pleasure for other reasons. These ideas offer a possible explanation for the positive SF–D association, but regulation goals were not measured, and a between-person partial correlation does not demonstrate that both responses occur within the same person during the same event.

Together, these patterns distinguish willingness to participate from perceived helpfulness, coping with distress from enhancing pleasure, and positive self-meaning from acceptance of pleasant feelings. Understanding depressive symptoms may require asking both whether people value interpersonal help and whether distress persists, and both whether they affirm their abilities and whether they devalue positive feelings. Understanding well-being similarly requires attention to experienced pleasure and perceived interpersonal benefit rather than participation alone. These are implications for assessment and future hypotheses, not established intervention targets. In particular, the two sign reversals describe associations conditional on overlapping regulation characteristics; they do not show that sharing positive experiences or benefiting from help causes poorer mental health.

## **Content-specific connections between intrapersonal responses and interpersonal regulation**

Emotion-focused positive rumination was connected to positive tendency and efficacy, self-focused positive rumination to negative efficacy, and dampening positively to negative tendency and negatively to positive efficacy. Several other cross-instrument edges were small. These patterns suggest possible connections between the content of intrapersonal responses and how interpersonal emotion regulation is approached and appraised.

The links of emotion-focused rumination with positive tendency and efficacy may reflect a common orientation toward elaborating pleasant experiences. Peters et al.'s capitalization model [37] describes how a sharer's expression and a listener's response contribute to the elaboration of positive experience. Telling someone about a positive event may prompt recollection of pleasant details, while an engaged response may sustain attention to them. In a follow-up study of 165 students who received favorable examination grades, Hovasapian and Levine [38] linked sharing to more time thinking about the event and longer-lasting positive affect, particularly when listeners were perceived to emphasize the event's importance and uniqueness. Attention to pleasant feelings may thus occur both privately and during sharing. This provides a conceptual connection between emotion-focused rumination and positive interpersonal regulation, without establishing their causal ordering in the present data.

The small positive connection between self-focused rumination and negative efficacy links positive self-meaning with perceived help in managing distress. Slotter and Gardner [39] found that, following self-threat, reminders of past instances affirming the threatened attribute could restore confidence in that attribute more effectively than general emotional support. Interpersonal help can therefore involve retrieving information that supports a positive self-concept. Marigold et al. [40, 41] also showed that self-

esteem is relevant to receiving and appraising support, including difficulties accepting positive reframing and perceiving responsiveness. These studies suggest a possible connection between self-related appraisals and the evaluation of interpersonal help. They did not test self-focused positive rumination or the present edge directly, so the proposed explanation remains tentative.

Dampening was positively associated with negative tendency but negatively associated with positive efficacy. People more inclined to diminish positive feelings were therefore not uniformly less willing to involve others: they reported greater tendency to seek regulation in negative contexts alongside lower perceived help in positive contexts. Everaert et al. [42] found experimentally that induced dampening was followed by greater difficulty revising negative interpretations of ambiguous social situations. This offers a possible link between dampening and the processing of interpersonal information, which could be relevant to perceived positive efficacy. It does not establish that this mechanism explains the observed connection. Future research could examine whether dampening relates to seeking help while having difficulty using positive interpersonal information to revise prior appraisals.

## **Limitations and future directions**

This exploratory cross-sectional study cannot establish causal direction, temporal ordering, or psychological mechanisms. Comparisons between the two mental health indicators were descriptive: no edge-difference tests were conducted, and pointwise CIs were not adjusted for multiple comparisons. A CI including zero is not evidence of absence, and differences in interval inclusion do not establish differences in effect size. Centrality was exploratory and does not identify clinical importance or intervention priorities. The sample came from a single vocational college and was predominantly male, limiting generalizability to other populations and clinical settings. All psychological variables were self-reported, leaving common-method effects possible. Composite-score nodes can obscure item-level differences and cannot reveal event-specific dynamics. Moreover, the intrapersonal measures concerned positive affect, whereas the interpersonal measures covered both valences; the network cannot compare the overall importance of intrapersonal and interpersonal regulation. Independent replication should particularly examine small edges and sign reversals, while longitudinal, daily-life, and observed-interaction studies could test the explanations proposed here.

## **Conclusions**

Well-being and depressive symptoms showed partly opposite, but not fully corresponding, conditional associations with emotion regulation. Interpersonal tendencies and efficacies covaried across emotional contexts, and specific cognitive responses to positive affect had different connections with interpersonal regulation. Positively related regulation characteristics could nevertheless have opposite associations with the same mental health indicator. Assessments may therefore benefit from distinguishing willingness to involve others from perceived helpfulness, and positive self-focused processing from attention to pleasure and dampening. Whether these distinctions identify useful intervention targets requires prospective and experimental testing.

## Abbreviations

|                                                                                                                                     |  |
|-------------------------------------------------------------------------------------------------------------------------------------|--|
| BDI-II                                                                                                                              |  |
| Beck Depression Inventory–II                                                                                                        |  |
| CI                                                                                                                                  |  |
| Confidence interval                                                                                                                 |  |
| CS                                                                                                                                  |  |
| Correlation stability coefficient                                                                                                   |  |
| D                                                                                                                                   |  |
| Dampening                                                                                                                           |  |
| EBIC                                                                                                                                |  |
| Extended Bayesian information criterion                                                                                             |  |
| EF                                                                                                                                  |  |
| Emotion-focused positive rumination                                                                                                 |  |
| IRQ                                                                                                                                 |  |
| Interpersonal Regulation Questionnaire                                                                                              |  |
| NE                                                                                                                                  |  |
| Negative efficacy                                                                                                                   |  |
| NT                                                                                                                                  |  |
| Negative tendency                                                                                                                   |  |
| PE                                                                                                                                  |  |
| Positive efficacy                                                                                                                   |  |
| PT                                                                                                                                  |  |
| Positive tendency                                                                                                                   |  |
| RPA                                                                                                                                 |  |
| Responses to Positive Affect questionnaire                                                                                          |  |
| SD                                                                                                                                  |  |
| Standard deviation                                                                                                                  |  |
| SF                                                                                                                                  |  |
| Self-focused positive rumination                                                                                                    |  |
| WHO-5                                                                                                                               |  |
| World Health Organization-Five Well-Being Index. In figures and tables, WHO denotes well-being and DEP denotes depressive symptoms. |  |

## Declarations

### Ethics approval and consent to participate

This study was approved by the Ethics Review Committee of Baotou Vocational and Technical College (approval No. 2023091701) and was conducted in strict accordance with the Declaration of Helsinki. Written informed consent was obtained from all participants before participation.

# Consent for publication

Not applicable. This manuscript presents aggregate findings and does not include identifiable individual data.

## Availability of data and materials

The participant-level dataset is not publicly available because it contains sensitive psychological assessment information. Institutional authorization for external sharing of the dataset has not been obtained; therefore, the author cannot currently provide participant-level data to external researchers.

## Competing interests

The author declares no competing interests.

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## Authors' contributions

SL conceptualized and designed the study, curated the data, conducted the analyses, interpreted the results, and drafted and revised the manuscript. The author read and approved the final manuscript.

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## Figures

**Partial correlation network**

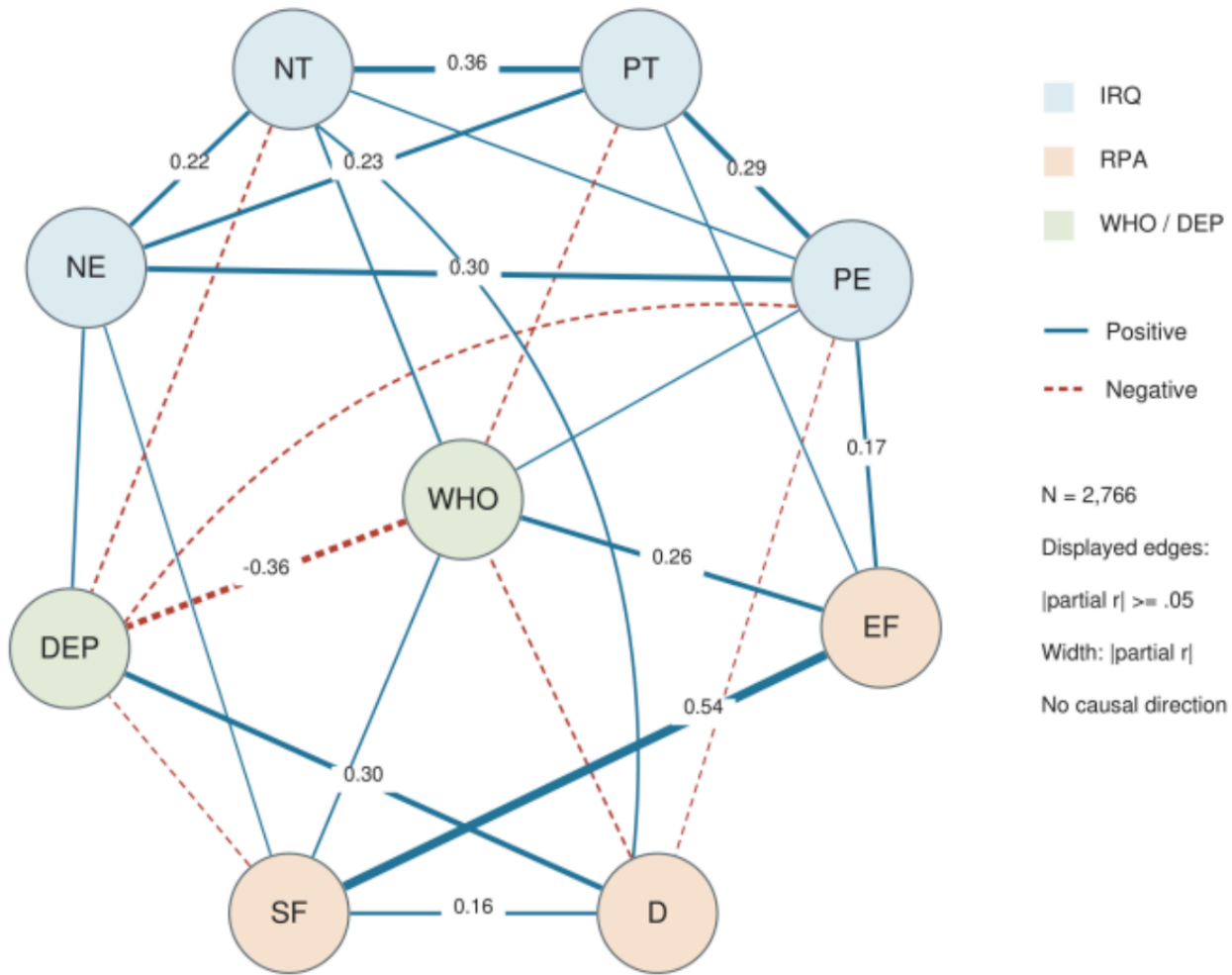


**Figure 1**

Nine-node partial correlation network. Blue solid and red dashed lines indicate positive and negative partial correlations, respectively; line width represents absolute edge weight. Only edges with  $|\text{partial } r| \geq .05$  are displayed, and numerical labels are shown for  $|\text{partial } r| \geq .15$ . NT, negative tendency; NE, negative efficacy; PT, positive tendency; PE, positive efficacy; EF, emotion-focused positive rumination; D, dampening; SF, self-focused positive rumination; WHO, well-being; DEP, depressive symptoms. Node locations and curved edges are for presentation only, not causal ordering.

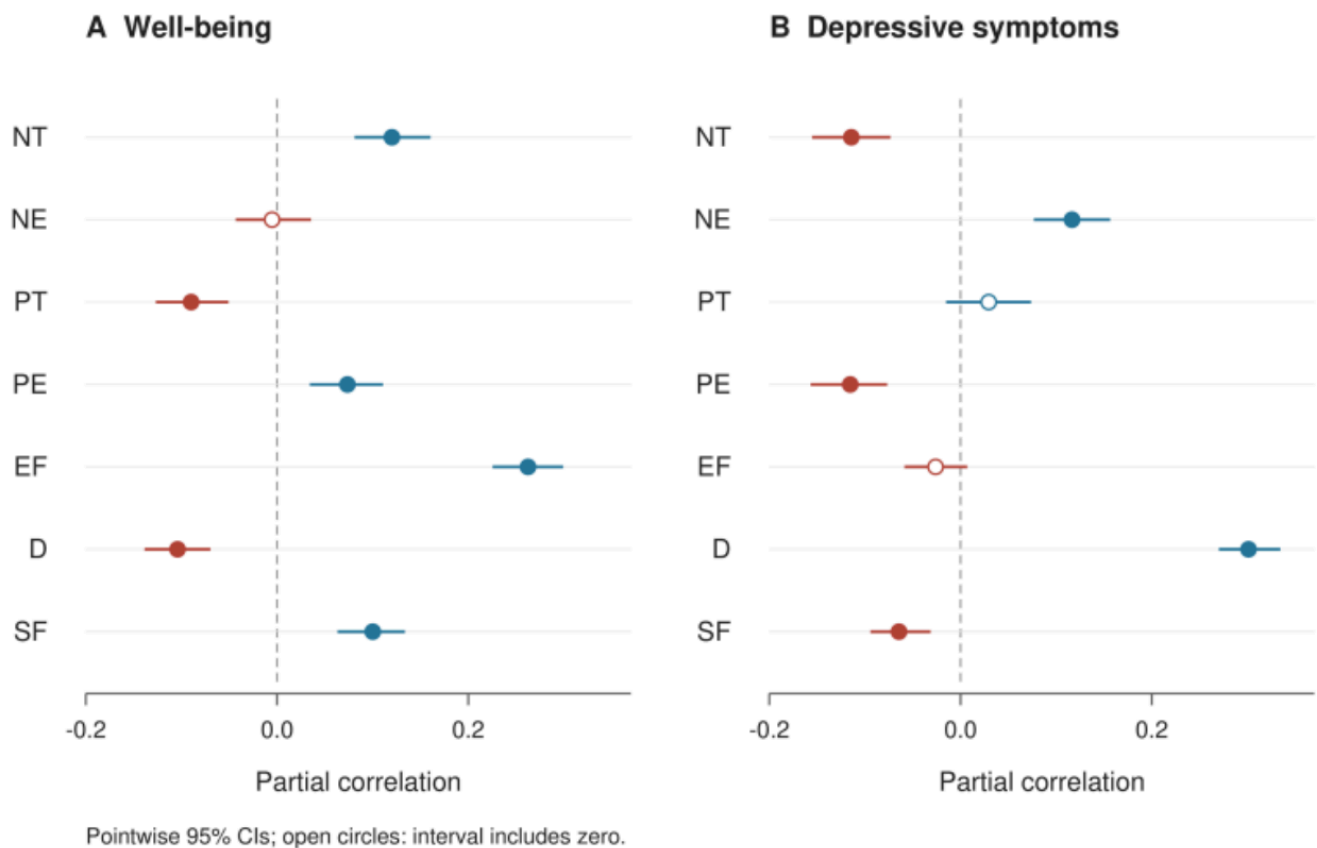


**Figure 2**

Conditional associations of regulation dimensions with well-being and depressive symptoms. The panels use the same horizontal scale. Points are partial correlations; horizontal lines are pointwise 95% percentile CIs from 2,000 bootstrap samples. Open points indicate CIs including zero. Intervals are unadjusted for multiple comparisons, and differences between panels were not formally tested. Colors indicate association direction, not beneficial or harmful effects. Abbreviations are defined in Fig. 1.

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