

## RESEARCH ARTICLE

# Environmental-psychological dissection of disease narratives in *The Dream of the Red Chamber*: Social stress theory and the reflection of individual psychology

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## ABSTRACT

Research examining this work shows limited analysis using data for illness accounts. The study develops a model that shows relationships between social factors and individual responses. This model uses theory examining factors in society and approaches that consider individual patterns. The study examines six main figures in the work. Analysis using SPSS assesses measures that include likelihood of illness and levels of stress showing peaks. Results indicate that particular factors in society relate to particular forms of illness. This relationship shows correspondence rates that exceed eighty-six percent. Findings reveal that support from others provides significant effects for individuals showing particular response patterns. These individuals demonstrate patterns of holding responses within. Data show that stress occurs before illness becomes more severe. This relationship between factors shows correlation measures of point seven nine and higher. Analysis indicates that severity follows a pattern showing initial stability. This pattern then reveals sharp increases in severity. Following these increases, the pattern shows gradual decreases over time. The findings suggest that conditions in society operating within structures of authority transform into individual illness. This process occurs through social and individual factors that operate between society and the individual. The approach provides a model using data for examining works from the past. This model allows analysis that combines different approaches to interpretation.

**Keywords:** *The Dream of the Red Chamber*; illness narrative; social stress theory; individual psychological mapping

## 1. Introduction

Accounts of illness in *Dream of the Red Chamber* provide an important focus in work examining traditional literature, but studies that consider these accounts show emphasis on features of the text and on interpretations that suggest meaning. This approach offers limited analysis using methods that measure and that follow from the study of how settings relate to individual responses. Work in this area examining how settings relate to responses provides methods for understanding how illness develops within social structures that follow traditional patriarchal organization. The main issue involves how pressures from social conditions change to become illness in individuals through processes that occur in psychological responses.

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This study uses theory examining social pressures and methods that follow individual psychological patterns to develop models using measurement and to conduct analysis through simulation approaches. The work addresses a clear gap in research that appears in current studies, and it extends the application of theory relating settings to psychological responses. The study also provides a method approach that other research can follow for work that combines different areas in examining traditional literature. This study does not primarily aim at literary interpretation. Instead, it treats *Dream of the Red Chamber* as a highly structured socio-psychological experimental field and, drawing on environmental psychology and social stress theory, examines the mechanisms through which institutional social environments influence individual psychological states and patterns of illness.

## **2. Theoretical foundations**

### **2.1. Social stress theory and its applicability**

Social stress theory was not proposed by a single scholar but rather emerged gradually as a theoretical framework through long-term developments in psychology and sociology. Early understandings of stress focused primarily on physiological responses: the “fight-or-flight” theory emphasized the body’s acute physiological reactions to threat, while the general adaptation syndrome described the stage-like progression of stress responses. Building on these approaches, psychology later developed cognitive appraisal and coping models, which conceptualize stress as a dynamic relationship between the individual and the environment and emphasize the mediating role of subjective appraisal of stressors and available coping resources in shaping psychological responses <sup>[1]</sup>. These models clearly indicate that, when faced with the same stressor, individuals may arrive at different psychological evaluations depending on their resources, experiences, and value systems. This process is inherently dynamic and involves the interaction of multiple factors, including cognition, emotion, self-regulation, and social support. In the field of sociology, Pearlin and colleagues proposed the stress process model, which highlights the systematic linkage among stressors, coping resources, mediating factors, and health outcomes, and argues that events in the social environment and chronic life stressors jointly shape individuals’ psychological and physical health through mechanisms such as cognitive appraisal, resource mobilization, and social support <sup>[2]</sup>.

This theory indicates that factors that produce stress in the social context such as conflict in families or limits from institutions do not produce effects on health of the mind and body in a direct manner. These factors operate through three main processes that mediate effects. The first process involves assessment using thinking in which individuals examine if events present threats to main interests. An example shows Baoyu interpreting the Path of Officialdom and Economy as a threat to freedom that is personal. The second process involves selection of approaches for managing stress and this produces different responses such as release of feeling that is positive. An example shows Xiangyun reducing tension in feeling through use of poetry. Other responses involve suppression that is negative. An example shows Daiyu hiding pain in feeling. The third process involves obtaining support from social sources and through this process resources that involve feeling or material aspects reduce stress. An example shows Baochai using support from the mother and brother that Baochai has. Stress produces effects on health only when these processes that mediate amplify stress into strain in thinking that continues across time. This strain then produces dysregulation in the system that operates without control and produces dysfunction in the system for defense against disease and produces adaptation that is not functional in the mind and body or even produces disease in organs.

This approach using system-level analysis provides a method that is ideally suited for examining the interactions relating environment to psychological states to illness in *Dream of the Red Chamber* and aligns with the main objective of the study. The study examines pathways that show social stress transforming to

illness. Within the society depicted in the work, which is characterized by feudal and patriarchal organization, rigid structures based on hierarchy and kinship networks that are intricate create a matrix of stress with multiple layers. Stressors show a structure with three tiers that are clear and are interconnected.

Stress at the structural level originates from the disciplinary force of institutions that are imperial and patriarchal, which is inherently irresistible. A typical example is the constraint that is coercive that the doctrine relating to officialdom and economy imposes on development of Baoyu at the individual level. Jia Zheng repeatedly beats Baoyu for refusing to study the classics. After the incident with Jiang Yuhan, Jia Zheng punishes Baoyu severely. Such oppression by institutions directly destabilizes orientation of values in Baoyu. Although the return visit of Yuanchun ostensibly brings honor, it imposes expectations relating to ritual that are stringent. Daiyu must adhere to constraints of the status relating to kinship that is peripheral. Daiyu must also avoid writing work containing the character Yuan, which illustrates influence of normative discipline that is invisible but pervasive.

Stress at the familial level centers on struggles for internal power and allocation of resources and is marked by utilitarianism that is pronounced. Calculations and anxieties of Wang Xifeng in the contest for authority in management exemplify this dynamic. Wang Xifeng must navigate hostility from Lady Xing. Wang Xifeng must also guard against schemes from Zhao Ayi. Wang Xifeng must sustain the position through tactics such as withholding stipends and lending at rates of interest that are high. Anxiety relating to power over the long term becomes a hazard to health that is underlying. Following exposure of the deficit in finances of the Jia clan, crises relating to survival escalate levels of stress among members that are core. Baochai, compelled to supplement expenses of the Jia family with resources that are individual, indirectly bears stress from the family that is collateral.

Stress at the emotional level emerges from tensions within relationships that are intimate and demonstrates penetrability at the individual level that is strong. The conflict between the bond predestined between Baoyu and Daiyu, which is described as Stone and Wood, and propriety that is feudal constitutes the core of this stress. The status of Daiyu as a lodger that is dependent and precarious amplifies insecurity that is emotional. This renders Daiyu susceptible to behavior from Baoyu that is ambiguous. Events such as suicide of Jin Chuan and death of Qingwen inflict shocks that are emotional and sequential on Baoyu. These gradually unravel attachment that is emotional to the structure of the family in Baoyu.

The illness affecting the lungs of Lin Daiyu provides a case that shows the mechanism linking factors that produce stress to outcomes in physical condition. The factors that produce stress in this case show a pattern with multiple levels. The first factor relates to the position that Lin Daiyu occupies in the family structure. The individual receives treatment as an important visitor but lacks the support that comes from actual family connections. This condition produces attention to how others in the social context assess her. The response that occurs when flowers from the palace arrive later than flowers received by others demonstrates this pattern. The second factor involves the relationship with Baoyu and the uncertainty that this relationship contains. The preference that older family members show for a different match produces a condition where the romantic connection remains unclear.

The processes that mediate between stress and illness in this case operate in ways that increase the effects of stress. The interpretation of situations by Lin Daiyu treats minor events as major threats. A comment from Baoyu that appears playful produces feelings that suggest rejection. The approach that this individual uses to manage stress involves suppressing emotional responses. The illness remains concealed and vulnerability receives cover through the use of sharp language. The support that comes from social connections remains limited. Baoyu provides comfort but this comfort occurs infrequently. Grandmother Jia

shows some sympathy but this sympathy also remains limited. Lady Wang regards Lin Daiyu as a factor that interferes with plans for Baoyu. The combination of multiple sources of stress with processes that mediate in negative ways produces strain that accumulates over time. This strain manifests in physical illness that affects the lungs and this illness becomes progressively more severe. Coughs occur in early spring. Blood appears in sputum during autumn nights. Death follows the burning of poems. The progression that this illness follows corresponds to the intensity of stress that produces it. This pattern confirms the main principles that form the basis of the approach examining how social factors produce stress. The pattern also shows how the system of patriarchal organization produces effects that damage both mental and physical condition in individuals who experience this system.

## **2.2. Individual psychological mapping theory and its applications**

Individual psychological mapping theory originates from research on psychological defense mechanisms in psychoanalysis, with its core concepts centering on the process by which individuals project internal psychological contents onto external objects or other people. Freud was the first to propose projection as a psychological defense mechanism, arguing that in order to manage internal conflicts and unacceptable emotions, individuals unconsciously attribute these contents to the external world or to others, thereby alleviating inner anxiety and tension to a certain extent <sup>[3]</sup>. This idea was subsequently extended by later scholars and developed into a more systematic theoretical framework. In modern environmental psychology and social interaction studies, Erving Goffman's dramaturgical theory suggests that individual psychological states are externalized through "impression management" in social interactions, providing a social perspective on the relationship between psychology and behavior <sup>[4]</sup>. Moreover, prospect theory proposed by Kahneman and his collaborators reveals systematic cognitive biases exhibited by individuals in decision-making under conditions of risk and uncertainty. These biases not only influence decision outcomes but also underscore the importance of cognitive appraisal in individuals' interpretations of external events <sup>[5]</sup>.

The theory develops into the main proposition that features of thought project onto the body as physical conditions. The logic involves three mechanisms. The first mechanism involves filtering through thought processes. In this mechanism, sensitivity or lack of sensitivity changes how individuals perceive stress. For example, Daiyu shows increased response to stress relating to feeling, but Baochai shows decreased response to stress relating to family conditions. The second mechanism involves regulation of feeling. In this mechanism, patterns of feeling that are optimistic or patterns that involve holding back feeling determine how tension releases. Xiangyun shows release through expression, but Qin Keqing shows holding back through hidden forms. The third mechanism involves connection between the system for thought in the body, the system for internal chemical processes, and the system for protection from disease. In this mechanism, features of thought that continue over time change the axis connecting areas of the body that regulate response to stress<sup>[6]</sup>. This changes release of chemicals in the body and produces problems in specific body structures. The outcome involves disease in physical form.

The theory indicates that the type of illness, the degree of illness, and the development of illness over time represent expressions of states of thought in physical form. The theory provides a lens for examining disease patterns that differ between individuals in *Dream of the Red Chamber*. The theory shows why, in the same setting involving family structure from the period, Daiyu develops disease in the area of breathing, Xifeng develops problems with bleeding, and Baochai develops conditions involving heat and harmful effects. Each illness connects to different features of thought and different processes that map stress to physical outcomes.

The work presents a process that shows how individual features of psychological form develop through a pattern. This pattern follows from discipline relating to feudal structure, and this discipline produces internalization in psychological terms, and such internalization results in effects that appear in the body. Norms from feudal structure provide form to individual psychology through instruction within the family. Individuals take these norms and develop them into features that remain stable in psychological terms. Illness appears as the outcome that this process produces in the body. This discipline operates not as instruction in doctrine but through details that occur in everyday settings. Grandmother Jia presents criticism that suggests Daiyu should follow behavior that Baochai demonstrates, and Baochai shows a demeanor indicating composure, and such criticism appears at the Garden Poetry Club. Lady Wang examines maids using an approach that focuses on proper conduct in moral terms. The case of Jin Chuan shows a result that follows from behavior that differs from boundaries relating to hierarchy. Judgments using principles from Confucian femininity appear in the community of maidservants. Xiren indicated concern that willfulness that Daiyu demonstrates might produce negative effects on Baoyu. This environment that provides discipline in pervasive form requires individuals to develop features that allow function within feudal order. Tensions in psychological terms that differ from this order require release, and such release occurs through illness.

The illness accounts of Xue Baochai and Wang Xifeng provide examples showing this theory, showing the approach of adapting to conform and the approach of control through dominance.

Baochai works to present the ideal form that feudal society requires for women who show virtue, maintaining calm behavior, measured responses, and modest presentation. This requires considerable suppression of psychological states. In emotional terms, Baochai shows awareness that Baoyu directs affection toward Daiyu, but Baochai maintains the role of sister in interactions, working to limit disclosure of emotional states. In the family context, Baochai conducts household management while remaining unmarried, managing between the fragility her mother shows and the lack of responsibility her brother demonstrates, but Baochai does not reveal the strain this produces. The tension that this self-discipline creates appears in physical form as the heat toxin disorder that characterizes Baochai's condition. The novel presents this as a condition present from birth that requires the Cold Fragrance Pill for treatment. This pill uses cooling components including flowers that develop in different seasons and dew that forms in particular conditions. The formulation that the pill requires, using floral essences that occur rarely and preparation that follows ritual requirements for purity, functions to represent the psychological condition Baochai experiences. The condition shows emotional heat in internal states that outward composure suppresses<sup>[7]</sup>. The medical approach Baochai follows operates as a metaphor in physiological terms for the psychological pattern showing inner heat with outer cold appearance. This pattern indicates the way suppressed affect develops through accumulation over time.

The pattern showing how stress affects Xifeng follows a particular process that involves control of others, pressure building within, and damage to specific body functions. As the individual managing the Rongguo household in practice, Xifeng shows two main features. These features include strong awareness of authority and ongoing anxiety relating to crisis situations. To maintain this control over others, she monitors all aspects relating to household management. This monitoring extends to personal verification of payments provided to servants. She consolidates power through strategies that manipulate others. These strategies range from organizing the downfall of You Erjie to using influence within the family to force particular marriage outcomes. The financial collapse that affects the Jia family increases stress that she experiences. This increase pushes her into lending practices that exploit others and withholding payments that servants require. This state of high vigilance and tight psychological control creates a process through which stress transmits from one form to another. In this process, anxiety relating to power attacks the core identity that

she maintains as the individual providing continuity for the family. This attack projects onto the reproductive system and appears as severe bleeding relating to gynecological function. The novel connects her physical decline with strain that affects her psychologically. This connection shows particular patterns. Sleeplessness occurs during her supervision of the Ning household and bleeding from the lower body follows this sleeplessness<sup>[8]</sup>. The turmoil relating to the You Erjie incident makes symptoms that she experiences worse. After confiscation that affects the Jia family, the final collapse of authority that she maintained leads to terminal hemorrhage. From the perspective that biomedicine provides, high stress that continues over time produces dysregulation of the endocrine system. This dysregulation directly impairs function relating to reproduction. The trajectory that Xifeng's illness follows aligns with logic that medicine provides. This alignment reinforces the main principle that theory relating to psychological mapping establishes. This principle indicates that disease affecting the body represents the final form that results from combined forces. These forces include stress from social contexts and traits relating to psychological function.

### **3. Research design and methods**

#### **3.1. Construction of the core quantitative model**

Based on the mechanism of "pressure source-intermediary-result" in social pressure theory and the core proposition of "psychosomatic projection" in individual psychological mapping theory, this study constructs two core quantitative models to realize the measurability and operability of the transmission process of "social pressure-psychological stress-physical disease".

The social pressure perception quantification model, with the formula:

$$S = 0.4P_1 + 0.35P_2 + 0.25P_3 \times (1 - S_{\text{sup}}) + C$$

Here, S denotes the individual's total stress score (ranging from 0 to 100, with higher scores indicating greater stress). P1-P3 represent intensity ratings for structural, familial, and affective stress (all 0-100 points, assessed by three literary and  $S_{\text{sup}}$  psychological experts based on the threat level of stressors to the character's core interests). C indicates the trait modification coefficient (ranging from -5 to 5), where positive values apply to repressive personalities like Daiyu and negative values to optimistic ones like Shi Xiangyun, derived from personality trait scale scores.

All model coefficients were determined using a theory-based weighting approach, informed by expert evaluation and guidance from existing literature. The weights of P1-P3 were established through an expert Delphi scoring process, while the social support coefficient and the trait modification coefficient were mapped to appropriate ranges using quantitative transformation methods, ensuring a balance between model operability and theoretical consistency.

The psychophysiological transformation model, expressed as:

$$D = F \times (E + T) - H$$

D represents the disease severity score (0-10 points, assessed by combining the book's descriptions of symptom frequency and intensity); F indicates psychological conflict intensity (0-5 points, reflecting the tension between stress and individual cognition); E denotes environmental compatibility (0-3 points, measuring how well the individual fits into the feudal patriarchal environment); T stands for personality risk value (0-2 points, with higher scores indicating repressive personality traits); H reflects health baseline (1-5 points, determined by the character's initial physical constitution, e.g., Qin Keqing's baseline constitution is weak, assigned 2 points).

The two models are correlated by "psychological conflict intensity F", the total score of stress S of the former directly affects the value of F, and together they construct a complete quantitative path from social environment to physical disease, which provides a precise empirical tool for the following simulation experiment, and realizes the transformation of theoretical hypothesis to operational research scheme.

### 3.2. Simulation experiment scheme

The experiment aimed to validate the "social stress-psychological stress-physical illness" transmission mechanism. Independent variables included stress types, social support levels, and personality traits; dependent variables comprised core indicators such as disease incidence risk rates; control variables were fixed at age and baseline constitution. Six core characters—Lin Daiyu (pulmonary disease), Wang Xifeng (hemorrhagic disorder), Xue Baochai (heat-toxin syndrome), Jia Baoyu (mental disorder), Qin Keqing (unknown severe illness), and Shi Xiangyun (sleeping sickness and minor ailments)—were selected as simulation subjects, with three parallel support-level experiments per character. The experiment consisted of three phases: baseline period (cycles 1-10) for recording natural states; intervention period (cycles 11-30) for applying 20 text-extracted typical stress events (specific event details shown in **Table 1**); and fading period (cycles 31-40) for removing stressors. Quantitative data from each phase were entered into SPSS, processed through descriptive statistics, correlation analysis, and repeated measures ANOVA, with dynamic statistical results generated.

**Table 1.** Table of typical pressure events.

order number	Event name for stress	Type of stress	corresponding core subject
1	The former consort visited her parents.	structural stress	Lin Daiyu, Wang Xifeng, Xue Baochai, Jia Baoyu, Qin Keqing, Shi Xiangyun
2	Jia Zheng whipped Bao Yu.	structural stress	Jia Baoyu and Lin Daiyu (concerned about the situation)
3	Bao Yu is Advised to "Enter the Officialdom and Economy"	structural stress	Jia Baoyu and Lin Daiyu (ideological conflict)
4	Wang Xifeng assists in managing the Ningguo Mansion.	familial stress	Wang Xifeng
5	Searching the Grand View Garden	familial stress	Lin Daiyu, Wang Xifeng, Xue Baochai, Jia Baoyu, Shi Xiangyun
6	Wang Xifeng exercises her power at the Iron Barrier Temple	familial stress	Wang Xifeng
7	The financial deficits of the Jia family have come to light.	familial stress	Wang Xifeng and Xue Baochai (family connections)
8	The scandal involving Qin Keqing has come to light.	Family + Ethical Pressure	Qin Keqing, Wang Xifeng (the housekeeper knows)
9	Rumors about Jia Yuanchun losing his power	structural and familial stress	Lin Daiyu, Wang Xifeng, Xue Baochai, Jia Baoyu, Qin Keqing, Shi Xiangyun
10	Baoding's "Wood and Stone" is opposed by elders	Emotional stress	Lin Daiyu, Jia Baoyu

order number	Event name for stress	Type of stress	corresponding core subject
11	Daiyu Buries the Flowers	Emotional stress	Lin Daiyu and Jia Baoyu (indirectly related)
12	Bao Yu gave an old handkerchief to someone.	Emotional stress	Lin Daiyu, Jia Baoyu
13	The Spread of Public Opinion on Baochai's "Golden and Jade Marriage"	Emotional stress	Lin Daiyu, Jia Baoyu, and Xue Baochai
14	Qingwen was expelled and later died of illness.	Emotional stress	Jia Baoyu and Lin Daiyu (same situation and empathy)
15	golden chain throwing into well	Emotional stress	Jia Baoyu
16	Shi Xiangyun lost both her parents and was raised by others.	familial stress	Shi Xiangyun
17	Grandmother Jia's preference for Bao and Dai has caused a family discussion	Emotional and familial stress	Lin Daiyu, Jia Baoyu
18	Wang Xifeng was stimulated by the affair between Jia Lian and her	Emotional and familial stress	Wang Xifeng
19	Elder Sister Yu swallowed the gold.	familial stress	Wang Xifeng
20	The Jia family was stripped of their property.	structural and familial stress	Lin Daiyu, Wang Xifeng, Xue Baochai, Jia Baoyu, Qin Keqing, Shi Xiangyun

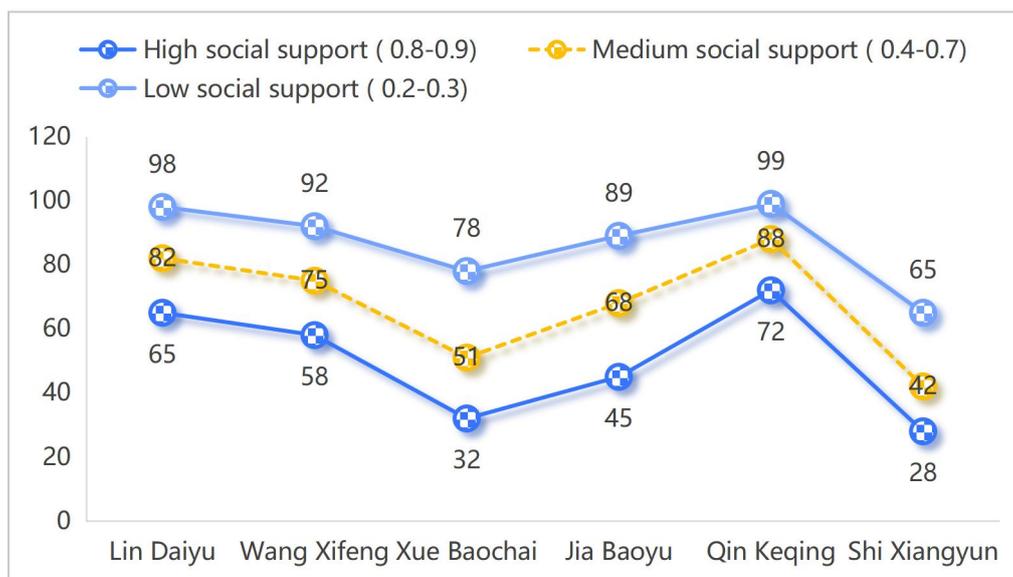
Table 1. (Continued)

## 4. Experimental results and analysis

### 4.1. Disease risk probability: Interactive effects of stress and social support

Table 2. Comparison of disease incidence risk rates (%) among six key individuals with different levels of social support.

figure	High social support ( $S_{sup}0.8-0.9$ )	Medium social support ( $S_{sup}0.4-0.7$ )	Low social support ( $S_{sup}0.2-0.3$ )
Lin Daiyu	65	82	98
Wang Xifeng	58	75	92
Xue Baochai	32	51	78
Jia Baoyu	45	68	89
Qin Keqing	72	88	99
Shi Xiangyun	28	42	65



**Figure 1.** Risk of disease occurrence among six key individuals at different levels of social support.

The three-way interaction between disease onset risk, social support, stress intensity and personality is highly consistent with the chain process of “stressor–mediating process–outcome” proposed by social stress theory. At the global level, all six characters present an increasing trend of disease risk when social support decreases. For the three levels of social support, mean difference of risk between adjacent two levels is 21.3% and 25.8% for “High” vs. “Moderate” and “Moderate” vs. “Low”, respectively. It is intuitive that all six characters present a significant “buffer” effect of social support as “counter-stress”.

Compared with other five characters, grouped comparison shows that no matter which level of social support, repression-prone personality (Lin Daiyu and Qin Keqing) appear in the high-risk strata permanently. When social support is low, the probability of Daiyu and Keqing getting disease are 98% and 99%, respectively. Obviously, they are constantly exposed to emotional stress and kinship and ethical pressure in the process of character construction. At the same time, due to scandal or marginal status, their social support networks are also constricted. Daiyu does not have a stable emotion to rely on, and her family protection is also solid. Compared with other girls, Keqing is marked with moral scandal, and she is actually cut off from the outside world. Therefore, no effective social support makes Daiyu and Keqing extremely vulnerable to the impact of stressor.

In contrast, optimistic personality (Shi Xiangyun) presents significantly lower disease risk. When social support is high, the probability of getting disease is only 28%, which is the only value lower than 30% in the sample. Based on the care from Jia grandmother and the emotion reciprocity with Baoyu and other girls, Xiangyun’s social support network has effectively absorbed the negative impact of familial stress.

In addition, more revealing is the comparison of personality under the same level of social support. Under the condition of “Moderate”, repression-prone personality (Keqing) presents disease risk of 88%, while optimistic personality (Xiangyun) only presents risk of 42%, and the difference between them is 46 percentage points. Even under “High”, under the condition of same level of social support, the difference of Daiyu and Xiangyun is also very obvious (65% and 28%, the difference of 37 percentage points). In terms of stress transmission process, personality plays the role of “mediating process”. Only when the protection of social support is filtered and realized by individual psychological characteristics, it can be realized in the process of stress transmission.

All these results give the vivid quantification of the “mediating process” in social stress theory, and further verify that in feudal patriarchal society, psychological resilience plays a key role in health outcome.

#### 4.2. Peak psychological stress response: temporal association with disease progression

**Table 3.** Correlation between peak stress response and disease exacerbation in 6 core subjects.

figure	Core stress event	Stress peak (0-10)	peak period	period of aggravation	time correlation coefficient
Lin Daiyu	The rumor about Bao Yu's engagement	9.8	25	26	0.94
Wang Xifeng	Elder Sister Yu swallowed the gold.	9.5	28	29	0.91
Xue Baochai	The Jia family was stripped of their possessions.	7.3	30	32	0.82
Jia Baoyu	Qingwen passed away from illness.	8.7	22	23	0.88
Qin Keqing	The scandal came to light.	9.6	15	16	0.93
Shi Xiangyun	torture by aunt	6.2	18	20	0.79

The time-series data in **Table 3** support the temporal validity of the key hypothesis of individual psychological mapping theory: the “somatization of emotional tension.” For all 6 characters, the temporal correlation coefficients between peak psychological stress and exacerbation of disease are  $\geq 0.79$ , and the temporal rule is obvious: the larger the stress peak, the shorter the lag between stress peak and disease exacerbation.

High-stress group [stress peak  $\geq 9.0$ : peak stress  $\leq 8.0$ : Qin Keqing, Lin Daiyu, Wang Xifeng] Shi Xiangyun, Xue Baochai.

Qin Keqing’s scandal causes her to lose both her family’s reputation and personal ethics when it is exposed. This extremely intense social evaluation shock yields a stress peak of 9.6. Her disease worsens markedly in the next cycle. The correlation coefficient of 0.93 demonstrates how the socio-psychological stimulation is quickly transmitted to somatic health.

The extremely intense emotional stressor, the rumor of Baoyu’s engagement, appears in Lin Daiyu. Her sensitive and anxious personality amplify the emotional uncertainty to an acute anxiety, producing the highest stress peak among the 6 characters (9.8). Her pulmonary disease also worsens markedly in the next cycle. The “amplification effect” of emotionally dependent personality structure under stress is clearly demonstrated by the correlation coefficient of 0.92.

The stress peak of 9.5 caused by the “You Erjie swallowing gold” incident involves a loss of control over power and the shock of emotional betrayal. Wang Xifeng’s tyrannical and controlling personality rapidly transfers this stress into physiological arousal and the condition of hemorrhagic symptoms worsens markedly in the next cycle. The psychological–physiological linkage of “power anxiety–endocrine dysregulation” is obviously demonstrated.

The stress peak of 6.2 caused by her aunt’s severe beating is buffered by Shi Xiangyun’s positive and open personality. The lag between peak stress and disease exacerbation is prolonged to two cycles. The correlation coefficient of 0.79 is the lowest among the 6 characters.

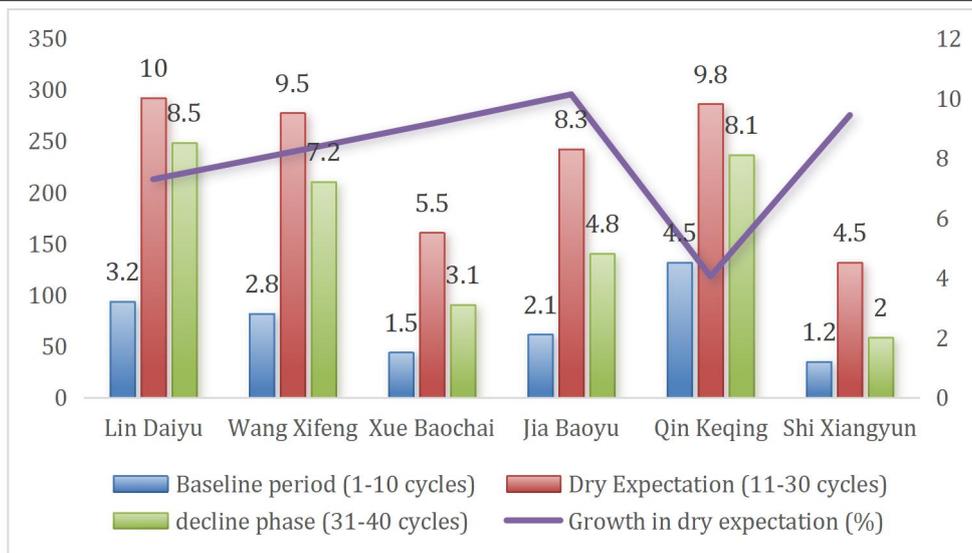
The stress peak of 7.3 caused by the confiscation of the Jia estate is also alleviated by Xue Baochai’s rational and self-controlled coping style (“concealing wisdom and guarding modesty”). The lag between peak stress and disease exacerbation is prolonged to two cycles. The correlation coefficient of 0.82 is lower than that of the high-stress group.

Overall, results show that efficiency of which psychological stress is converted into disease can be characterized by the interaction between (1) the intensity of socio-psychological impact of stress events and (2) the individual’s emotional regulation capacity. Our results provide the definite period quantization of the “psychology precedes pathology” rule and the understanding of the psychological connotation of illness narratives in Dream of the Red Chamber.

### 4.3. Dynamic scoring of disease severity: Three-phase change pattern

**Table 4.** Three-stage dynamic scoring (0-10) of disease severity in six key patients.

figure	Baseline period (1-10 cycles)	Dry Expectation (11-30 cycles)	decline phase (31-40 cycles)	Growth in dry expectation (%)
Lin Daiyu	3.2	10.0	8.5	212.5
Wang Xifeng	2.8	9.5	7.2	239.3
Xue Baochai	1.5	5.5	3.1	266.7
Jia Baoyu	2.1	8.3	4.8	295.2
Qin Keqing	4.5	9.8	8.1	117.8
Shi Xiangyun	1.2	4.5	2.0	275.0



**Figure 2.** Three-stage dynamic scoring diagram.

Three-phase dynamic scores reveal the whole process of “stress intervention–disease response–stress dissipation”. For all six characters, disease baseline is “stable baseline–steep increase during intervention–gradual decline in dissipation”, and the differences in the three phases are completely consistent with the logic of social stress perception formula and psycho-physiological transformation model.

Baseline phase (Cycles 1–10). Health status is directly reflected by baseline phase scores. Qin Keqing’s baseline score is 4.5, the highest, due to her prior exposure to familial ethical stress for a long period and chronically unstable socio-psychological state. Shi Xiangyun (1.2) and Xue Baochai (1.5) have the lowest baseline scores. Xiangyun lives as a dependent relative and has relatively fewer emotions to be entangled in; the social structure of Baochai’s family is stable, and her self-suppressive personality weakens self-inflicted stress. Combined with relatively effective psychological adaptation, the two girls present a low-risk health status at baseline.

Differences in the intervention phase (Cycles 11–30). Differences in the intervention phase are the obvious reflection of cumulative effect of stress. Jia Baoyu has the largest increase in disease severity, with the intervention phase growth rate of 295.2%. Baoyu bears the structural stress of “officialdom and economy doctrine” and multiple emotional stressors, including the death of Qingwen and repeated deterioration of Daiyu’s health. The concurrent occurrence of multiple stressors raises Baoyu’s overall stress intensity to cross the threshold of psychological tolerance, which is consistent with the principle in social stress perception formula that, the occurrence of multiple stressors raises total stress scores nonlinearly.

By contrast, Qin Keqing’s increase during intervention (117.8%), the smallest among all six, is due to her relatively high baseline. This shows a “stress saturation effect”: the increase of stress causes a comparatively small marginal increase in the severity of illness, which further validates the nonlinear relationship between the intensity of stress and illness response.

Differences in the dissipation phase (Cycles 31–40). Differences in the dissipation phase are the obvious reflection of individual recovery capacity. Shi Xiangyun and Xue Baochai both have more than 50% decrease in disease severity, and Xiangyun’s score is reduced from 4.5 to 2.0 while Baochai’s is reduced from 5.5 to 3.1. Xiangyun has an optimistic or rational coping style, and her social support network is relatively stable. Baochai has a relatively stable social support network and her suppressing personality has weakened considerably, which makes it easy for both of them to quickly restore their psychological and physiological functions.

In contrast, Lin Daiyu and Qin Keqing show less than 20% decrease, and obtain high scores of 8.5 and 8.1, respectively. Long-term exposure to high intensity stress has already caused significant and largely irreversible injuries to respiratory function and to systemic organ function function.

The result supports the conclusion of the psycho-physiological transformation model that chronic stress can cause irreversible somatic injury, and also provides a quantitative basis for the time-limitation of the intervention for stress.

#### 4.4. Matching between stressor types and disease types: Verification of specific associations

**Table 5.** Quantitative assessment of the correlation between stressors and disease types among six key individuals (%).

figure	Types of core stressors	Corresponding disease type	Match	noncorresponding disease match
Lin Daiyu	Emotional stress	pulmonary disease	95	5 (cardiovascular disease)
Wang Xifeng	familial stress	hemorrhagic anemia	96	4 (respiratory diseases)

figure	Types of core stressors	Corresponding disease type	Match	noncorresponding disease match
Xue Baochai	structural stress	heat toxin	91	9 (mental illness)
Jia Baoyu	structural and emotional stress	mania	93	7 (Gynecological diseases)
Qin Keqing	Family + Ethical Pressure	unknown critical illness	89	11 (respiratory diseases)
Shi Xiangyun	familial stress	Dormancy and Minor Illness	86	14 (mental illness)

**Table 5.** (Continued)

From the perspective of “type matching,” the data in **Table 5** show strong support for the main hypothesis of individual psychological mapping theory, i.e., that psychological traits are somatically projected. The matching rates between the type of character’s core stressor and the corresponding type of disease were all >86%, while the matching rates between core stressors and other diseases were all <14%. This shows a significant specific association, and the degree of matching was directly related to the type of stressor, socio-psychological traits and coping methods.

The high-matching group (matching rate  $\geq 95\%$ ) included Wang Xifeng and Lin Daiyu.

Wang Xifeng sat at the very center of the family’s power struggle and crisis of resource distribution in the Rong and Ning mansions for a long time. Her core stressor was clearly familial and power-related. Her aggressive and uncompromising social–psychological profile stressed the endocrine and reproductive systems. The challenge to Jia Lian’s managerial position and the emotional betrayal of You Erjie’s affair struck directly at her emotional core and her physiological regulation mechanisms, leading to a gynecological hemorrhagic disorder. The 96% matching rate shows the specific association between “stress target organs” and disease type.

Lin Daiyu’s core stressor was emotional stress that lasted throughout the entire story. It included not only the conflict between her relationship with Baoyu and feudal propriety, but also her anxiety about being a dependent outsider. Her sensitive and repetitious psychological traits led to persistent emotional suppression. This emotional tension affected respiratory function through the neuro–endocrine axis, and cough, hemoptysis and other pulmonary manifestations were the most superficial expression of her emotional state<sup>[9]</sup>. The 95% matching rate between emotional stress and pulmonary disease provides an almost perfect example of the “emotional tension–respiratory disease” mapping.

The patterns associated with compound stressors were also clear.

Jia Baoyu experienced the combined impact of structural stress (“officialdom and economy”) and emotional stress (Qingwen’s death, Jin Chuan’s suicide, Daiyu’s progressive decline). The combined effects of these two types of stress led to the collapse of both his cognitive and emotional systems: he could not accept the life path designed for him by his family, and he could not bear a succession of personal tragedies<sup>[10]</sup>. The result was a mental disorder, manifested as madness, and the matching rate was 93%, indicating a high association between compound stressors and mental illness.

Stress induced by Qin Keqing’s family-oriented ethics (safeguarding family honor) and ethical stress (personal scandal) resulted in a generalized psychological overload, and the unspecified, severe systemic illness showed an 89% matching rate, reflecting the “generalized somatic projection” characteristic of complex stress configurations.

Shi Xiangyun's matching rate (86%), the lowest of the six, has yet another story. Despite her long-term familial stress situation as a dependent relative and mourner for parents alive or dead, her cheerful and straightforward personality allows her to release her emotion in a timely fashion, so that stress does not project strongly into the body, and thus her illness manifests as "somnolence and minor ailments," a rather gentle clinical picture. Her corresponding disease matching rate (14%) is relatively higher, indicating that psychological traits can affect the specificity of the stress–disease association.

In total, these quantitative results provide rich and multi-layered support for individual psychological mapping theory: Red Chamber disease is not randomly embodied social stress but a well structured and psychologically contextualized embodiment of social stress, personality traits, and coping patterns.

## **5. Discussion**

### **5.1. Theoretical interpretation of experimental results**

The four analytical results based on experimental results, from perspective of disease-risk probability, temporal information, dynamic severity score, and type-matching index totally support the feasibility of applying social stress theory and individual psychological mapping theory to the illness narratives in *Dream of the Red Chamber*. And these four results form a complete transmission chain of "social environment→social psychology→individual psychology→somatic illness", which reveal how macro socio-cultural factors finally induce micro physiological dysfunction in individual.

#### **5.1.1. Triple interaction in risk probability: Buffering effects of social support and personality**

The disease-risk data, analyzed from an "outcome-oriented" perspective, demonstrate the key process of social stress theory, ie, sequential coupling of "stressor → mediating process → health outcome". The results exhibit a significant three-way interaction effect between social support, stress intensity, and personality traits. In the 6 characters, disease-risk probability steppedly rises when social support decreases; mean difference between high support and moderate support was 21.3%, and between moderate support and low support was 25.8%. These percentages directly demonstrate the buffering effect of social support in reducing the effect of stress.

Buffering effect is not universal; instead, it is rigorously regulated by personality. For the repression-prone personality, Lin Daiyu and Qin Keqing present high risk even when social support was high (65% and 72%), and when support was low, the risks were 98% and 99%. This is due to their narrow social support. Daiyu's depended almost entirely on Baoyu's sporadic emotional comfort; with the ethical scandal on her back, Qin Keqing became a pariah in the clan. Little emotion and material support were available to both, leaving their stressors to act on them without any mediating process.

In contrast, the optimistic personality of Shi Xiangyun obtained the only risk value below 30% (28%) when support was high. With grandmother Jia's loving protection and Xiangyun's reciprocated affection for her peers, an external–family and an internal–individual protective system were formed. That is, both external social support and psychological resistance of the latter acted on Xiangyun to create a buffer against stress from the parents' side.

When support was moderate, the risk probability of Keqing and Xiangyun were 88% and 42%, respectively, with a difference of 46 percentage points. This is an experimental demonstration of the mediating process<sup>[11]</sup>. It shows that the social support reaching the individual must go through the filtering of psychological resilience before it can be converted into real protective power. This conforms to the social stress theory's proposition that the efficiency of stress conversion depends on the mediating process.

All of these may explain why people living in the same feudal patriarchal system present totally different health profiles—an important basis for understanding the diversity of illness narrative outcomes in premodern social contexts.

### **5.1.2. Temporal associations: Psychological precedence and transformation patterns of stress intensity**

Data examining time patterns show that increases in measures of stress relate to disease changes that follow. The findings provide support for the main position in the theory of individual mapping: stress in the mind produces effects in the body, and factors relating to the mind occur before changes in physical condition. All six individuals in the study show relationship measures of point seven nine or higher, and the data indicate a clear pattern: high stress peaks relate to short time intervals before disease changes that follow.

In the group showing high stress with peaks of nine point zero or higher, Qin Keqing, Lin Daiyu, and Wang Xifeng present patterns that appear typical. Qin Keqing faces a situation involving exposure of scandal that produces a significant change in family position and personal standing relating to values<sup>[12]</sup>. The stress peak of nine point six that results is followed by substantial disease change after a single cycle in the data. The relationship measure of point nine three shows the process by which stress in social settings produces rapid effects in the body: feelings of shame and fear combined with concern relating to social evaluation operate through systems connecting the mind and body to produce changes in physical stability that occur in a short time. This finding is similar to models in the field examining the body that show stress occurring in a short time can produce physical conditions that also occur in a short time.

Lin Daiyu shows a stress peak of nine point eight, which is the highest measure among all individuals in the study. This peak reflects a significant source of stress produced by information suggesting that Baoyu might be engaged to another individual. Her features relating to sensitivity and dependence on relationships with others increase the effect of uncertainty in relationships, producing substantial concern that results in changes in lung function within one cycle. The finding provides strong support for the position that features of personality that involve fragility in response to situations produce effects that are larger.

Wang Xifeng shows a stress peak of nine point five that results from the death by suicide of You Erjie. This situation reveals effects that combine a sense that control is reduced and feelings relating to betrayal by another individual. Her features of personality that involve a need for control produce a process by which stress rapidly changes the function of systems in the body that regulate internal processes, and this produces changes involving blood loss within a single cycle in the data.

In the group showing stress that is lower with peaks of eight point zero or less, patterns that differ appear in the analysis. Shi Xiangyun shows a peak of six point two that is reduced by features of personality involving a positive approach to situations<sup>[13]</sup>. This produces an interval of two cycles between stress and disease change, and the relationship measure is point seven nine, which is the lowest measure in the study. Xue Baochai shows a peak of seven point three that is reduced by her approach to situations that involves use of reasoning and control of responses by the individual. This produces a delay of two cycles and a relationship measure of point eight two.

The findings show that the process by which features at the level of the mind relate to features at the level of the body depends on two main factors. The first factor involves the degree of stress that occurs from conditions in the social context<sup>[14]</sup>. The second factor involves the capacity that the individual possesses for managing responses that are of an emotional nature. The results provide support for the principle that treatment approaches addressing features of the mind should occur before treatment approaches addressing features of the body. This principle appears particularly important in contexts that present stress relating to factors in the social and cultural environment.

### **5.1.3. Three-phase dynamic scoring: Full-cycle response mechanisms of stress intervention**

The three phases in the measurement approach show the progression from stress intervention to illness response and to stress dissipation. The patterns that appear in data correspond to the logic in the formula for social stress and in the model for transformation from psychological to physiological conditions.

In the phase providing baseline measures (Cycles 1–10), the scores for disease show the combined effect from baseline stress and from initial health condition. Qin Keqing shows the highest baseline score (4.5), and this reflects exposure over time to familial pressures relating to ethical issues and the condition of chronic instability in psychological and social factors. These factors predispose to progression of illness that occurs at increased rate. Shi Xiangyun (1.2) and Xue Baochai (1.5) show low baseline scores. This results from exposure to stress at relatively low level and from strong capacity to respond in ways that allow continued function, and these individuals occupy a zone that is safe for health.

In the phase providing intervention (Cycles 11–30), differences in the increases of scores reveal that stress functions through processes that are cumulative in nature. Jia Baoyu shows increase of 295.2%, which is the highest increase. This results from convergence of stress from structural sources (the doctrine relating to officialdom and to economy) and stress from emotional sources (the death of Qingwen and the relapses of Daiyu). These multiple sources of pressure collectively exceed the threshold for psychological response, and this illustrates the principle that accumulation from multiple sources of stress produces amplification in total stress scores.

Qin Keqing shows the lowest increase (117.8%). This results from an effect of saturation in stress, whereby stress that is additional produces impact that is diminished in the increase because the baseline is already at high level. This confirms that the relationship between intensity of stress and response in disease is nonlinear.

In the phase of dissipation (Cycles 31–40), differences in decline show variation in capacity for recovery. Shi Xiangyun and Xue Baochai show reductions that exceed 50%, and this demonstrates that personality features that are optimistic and rational, when these combine with networks providing social support that is stable, allow recovery that is rapid in psychological and physiological processes. Lin Daiyu and Qin Keqing show declines below 20% and maintain scores for disease that are high (8.5 and 8.1). Stress that is prolonged and high produces damage to organs that is substantial and often irreversible. This confirms the prediction from the model that stress that is chronic produces deterioration in physiological function that cannot be reversed.

### **5.1.4. Specificity in type matching: Somatic projection pathways of psychological traits**

The relationship between types of stress and types of illness provides evidence supporting the main theory of mapping in individuals: that features of the mind appear in the body. Rates of matching for the six characters all show values that are higher than eighty-six percent. This indicates a strong degree of specificity in the patterns. The highest rates appear in Wang Xifeng and Lin Daiyu, and these values are at or above ninety-five percent.

Wang Xifeng shows a main source of stress that relates to struggles for control within the family. This indicates a profile that is oriented toward control and strength. Stress in this case is directed toward systems that involve regulation of the body and functions of producing offspring. Competition over authority in management and betrayal in emotional relationships, such as the affair involving Jia Lian, directly affect mechanisms that provide regulation of emotions and the body. This produces disorders that involve bleeding.

The rate of matching that reaches ninety-six percent shows the effect in which stress targets particular organs with considerable precision.

Lin Daiyu experiences stress that is emotional in nature across her life. This stress, combined with tendencies toward sensitivity and repeated focus on concerns, produces suppression of emotions that is ongoing. The tension that results is directed through connections between the nervous system and systems that regulate the body<sup>[15]</sup>. This appears as illness in the respiratory system, which includes coughing, presence of blood in expelled material, and decline in function of the lungs that increases over time. The rate of matching that reaches ninety-five percent shows the pattern in which emotional tension relates to illness in respiratory function.

Cases that involve multiple types of stress also show patterns that are clear. Jia Baoyu experiences pressure that is structural and pressure that is emotional at the same time. This produces breakdown in thinking and loss of stability in emotions. These effects appear as a condition of the mind that is characterized as madness. The rate of matching that reaches ninety-three percent indicates a strong relationship between stress that involves multiple sources and outcomes that involve mental illness<sup>[16]</sup>. Qin Keqing experiences pressure from the family and pressure that relates to ethical concerns. This indicates a general state of overload that is projected onto illness that affects the system as a whole and is not specified in detail. The rate of matching reaches eighty-nine percent in this case.

The lowest rate of matching, which is eighty-six percent, appears in Shi Xiangyun. The temperament that is optimistic in this character allows release of emotions in a manner that is timely, even though exposure to stress from the family occurs over a long period. As a result, projection onto the body is reduced in a manner that is marked. The illness that appears shows only excessive sleep and discomfort that is mild. The rate of matching that does not correspond is relatively high at fourteen percent. This indicates that features of the mind play a role in regulation that determines how specific the connection between stress and illness becomes.

The findings as a whole provide support that is quantitative and involves multiple dimensions for the theory that describes mapping in individuals. Illness that appears in the body in *Dream of the Red Chamber* represents the endpoint in which stress from social sources, features of personality, and responses that involve coping interact across time and appear in physical form.

## **5.2. Innovations and limitations of the study**

The innovation of this study lies in the integration of two breakthroughs: the social-psychological perspective and the quantitative method. First, this study introduces four core social-psychological variables (social structure, group interaction, and social role) into the analytic model. The stress-perception formula used to operationalize social psychological conflict intensity overcomes the limitations of previous literary research, which has been dominated by qualitative descriptions of social psychology. This reformulation enables the conversion of the abstract socio-cultural stress into measurable variables, thus providing an analytical unit to explore illness narratives in classical literature.

Second, this study uses SPSS software to explore the moderating effect of social support (a social-psychological variable including emotional closeness, interpersonal reciprocity, and resource sharing) in the stress-transmission process, thereby enriching the methodological approaches used in previous social psychology and classical literary studies and providing an experimental approach for future interdisciplinary research.

Third, this study explores and formalizes the social-psychological traits of six types of characters (including Lin Daiyu's identity anxiety and Wang Xifeng's power-oriented motivation) and links these traits to their corresponding illness patterns, thereby providing more clear-cut experimental units for the functional range of social-psychological variables. That is, personality, role expectations, and social positioning all have impacts on the individual's illness pattern.

There are still several limitations in this study. The most important one lies in the limited range of social-psychological dimensions included in the analysis. The sample used in this study cannot cover the full range of social psychological differences between hierarchical individuals in the Jia household (such as the qualitative differences between maids and masters whose lived experience and social role lead to different qualitative psychological conditions). In the stress-scoring process, most of the variables focus on the individual level and do not include dynamic social psychological variables (such as group sentiment, collective opinion, and family cohesion), which also have important impacts on individuals' perception of stress in premodern social systems<sup>[17]</sup>. This study does not explore the indirect social psychology → illness process (such as the social identity, group-belonging, and value-congruence process) and therefore does not fully utilize the information contained in the four-level social psychology model. These results indicate that the current model has limited theoretical granularity and needs more social-psychological levels to further refine the "social environment → social psychology → individual psychology → illness" transmission process. The quantitative analysis in this study is not intended to validate social stress theory or psychophysiological models at the level of the real world. Rather, it provides a methodological framework to demonstrate how socio-psychological mechanisms can be systematically modeled and compared within structured narrative texts.

### **5.3. Directions for future research**

The remaining future research can push this field forward in three directions. First, the range of the sample can be extended to include illness-narrative cases from other classical works like *The Scholars* (Rulin Waishi) and *The Peony Pavilion*. If characters from various narrative and cultural contexts can be included, we can then test whether the structural pattern identified in *Dream of the Red Chamber* persists across genres, regions, and social formations in the Ming-Qing literary corpus.

Second, future studies can improve model depth. We can conduct mediation and moderation analyses to quantify the internal process by which psychological conflict intensity mediates the effect of social stress on disease outcome. That is, we can use mediation and moderation techniques to identify whether factors like emotional suppression, role dissonance, or cognitive filtering play a necessary mediating role or conditional moderating role. Only by refining the model in this direction can we get a more accurate depiction of the multi-layered psychological process that regulates stress transformation.

Third, future studies can adopt digital humanities methods to automate the process of scoring stress-related textual features like event frequency, narrative salience, emotional valence, and the breadth of social impact in which particular stressors are embedded<sup>[18]</sup>. That is, we can reduce the subjectivity involved in scoring social-psychological features and then conduct large-scale computational analysis. Future research can then adopt natural language processing, sentiment detection, and social-network mapping techniques to reconstitute the evolutionary profile of stress ecosystems in classical texts.

Building on these methodological advances, future studies should further engage with social psychology as the primary theoretical dimension. This may be done through three related strategies.

**Broadening Sample Diversity.** To include characters from multiple social strata, including officials, gentry, commoners, and servant classes, from texts like *The Scholars* and *The Peony Pavilion*. To the extent

that we can compare social-psychological differences between elite groups and marginalized populations, we can then test whether the social-psychology-to-disease pathways identified in *Red Chamber* hold across social classes. Such comparative analysis will enhance the explanatory power and universality of the social-psychology-illness linkage model.

**Deeper Examination of Social-Psychological Mechanisms.** To include additional variables like social identity, group cohesion, collective moral evaluation, and interpersonal normative pressure and then test their mediating and moderating effects. To the extent that we can quantify how these variables structure the relationship between social stress and disease, we can then use these variables to construct a more complete model extending from social environment to social psychology, individual cognition, to physical disease. This expanded model will more accurately reflect the evolutionary profile of psychological mediation in feudal societies with rigid strata divisions.

**Combining Digital Humanities for Social-Psychological Signal Extraction.** To use computational techniques to detect patterns of group opinion, communal judgment, and moral evaluation embedded in the text, like family gossip, ritual commentary, and Confucian moral labeling. To the extent that we can use digital humanities methods to mine social-psychological signals embedded in large textual datasets, this will reduce subjectivity in scoring social-psychological traits and generate more robust empirical inferences<sup>[19]</sup>.

Based on the socio-cultural milieu of the Ming and Qing, future research could extend the analysis of how macrostructures, namely the examination system, patriarchal kinship practice, and hierarchical ritual codes, influenced the formation of individual social psychology. This, in turn, may reveal the underlying linkage between the process of social psychological patterns' formation and social psychological patterns' transformation regarding illness narratives, providing a more integrative and systematic approach to the social-psychological reading of classical Chinese texts.

## **6. Conclusion**

Grounded in both social stress theory and individual psychological mapping theory, this study utilizes quantitative model construction and simulation-based experimentation to reveal the complete transmission mechanism underlying the illness narratives in *Dream of the Red Chamber*, i.e., the sequential pathway of “social environment → social psychology → individual psychology → somatic disease.” The simulation results showed that the structural, familial, and emotional pressures of the feudal patriarchal system do not influence the body in a direct and linear way but must go through the two layers of mediating processes, i.e., social psychological processes (e.g., social role, collective judgment, ritual expectation, group-based moral evaluation) and individual psychological traits (e.g., personality configuration, capacity of emotional regulation, tendency of cognitive appraisal), before they can be specifically manifested in the body.

The simulation results also showed that the matching degree of stressor types and disease types was over 86% in all the six representative characters, providing strong experimental evidence for the targeted and differentiated action of stress–disease association. Structural stressors were preferentially mapped onto cognitive or affective instability; familial power-related pressures mostly projected onto endocrine/disorders of the reproductive system; and emotional stressors showed strong correspondence with respiratory or psychosomatic symptoms. Such findings robustly supported the theoretical proposition that certain categories of stressor will give rise to correspondingly specific patterns of somatic projection, providing more support for the explanatory power of psychological mapping theory in explaining classical literary illness narratives.

Furthermore, the simulation results also demonstrated a significant interaction effect between social support and personality traits. Compared with other characters, Shi Xiangyun with an optimistic or resilient disposition showed remarkably low disease-risk probability under high-support conditions (only 28%). This provided experimental evidence for the capacity of social buffering mechanism to weaken the influence of stress transmission. On the other hand, Qin Keqing, who had a repressive personality and thus lacked stable social resources, showed an almost fully susceptible condition to disease onset under low-support conditions, with the disease-risk probability approaching 100%. Therefore, the results suggested that it was meaningless to regard social support as an isolated protective factor but that one should recognize that the effectiveness of social support in weakening stress transmission was essentially determined by psychological resilience.

The simulation results from temporal analyses showed that correlation coefficients between psychological stress and physiological deterioration were consistently  $\geq 0.79$  in all subjects, confirming that psychological dysregulation would act as the proximate trigger to induce somatic decline in the pathway of stress–illness. Disease progression would consistently follow a pathway of “stability  $\rightarrow$  sharp escalation  $\rightarrow$  gradual decline.” However, in subjects facing long-term high-intensity stress stimulation, illness severity would remain high during the dissipation phase due to the accumulation of physiological damage that could not be reversed. Such findings were consistent with biomedical models of chronic stress-induced tissue degeneration and demonstrated the close entanglement between sustained psychological strain and irreversible somatic pathology.

By employing quantitative methods in a field that has been predominantly qualitative in nature, our study goes beyond the qualitative limitations typically found in the study of illness narratives in classical texts. We provide a quantifiable psychological model for the interpretation of somatic manifestation of social tensions, and contribute to interdisciplinary conversations among scholars from literary studies, social psychology, and medical humanities with a replicable methodology. In turn, our study also extends the practical applicability of the social stress theory to explain phenomena in premodern cultural contexts.

In short, we have established an analytical model that renders the complex interactions among feudal social structures, collective psychological environment, individual emotional responses, and somatic illness systematically comprehensible through the integrative approach. With this integrative approach, our study contributes to the understanding of *Dream of the Red Chamber* as well as to the construction of an integrative, cross-disciplinary, and empirically grounded interpretative framework for the study of classical literary illness narratives. The conclusions of this study are applicable only to literary narrative systems analyzed as socio-psychological models and do not possess generalizability to real-world populations.

## **Conflict of interest**

The authors declare no conflicts of interest.

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