An Exploration of Trust Repair Mechanisms Following Social Media Privacy Violations: Postprint

Authors: Weijuan Li, Lin Shengdong

Date: 2023-04-01T00:00:00+00:00

Abstract

[Purpose/Significance] Trust serves as the bridge between social media platforms and users; however, frequent privacy violation incidents often plunge social media into trust crises. Therefore, rebuilding user trust after privacy violations is of paramount importance. [Method/Process] This study reviews relevant research on trust repair, constructs a four-dimensional structural model of trust repair based on the specific context of social media privacy violations, collects 324 valid questionnaires through surveys, and employs PLS-SEM and fsQCA for exploration and validation. [Results/Conclusion] The findings reveal that the net effects of social media's action repair strategies and government intervention are significant, whereas the net effects of social media' s verbal repair strategies and technical third parties are not significant. However, fsQCA combinatorial analysis reveals that social media verbal repair and technical third parties can trigger high-intensity trust repair when combined with other variables. Furthermore, the eight antecedent variable combinations for high trust repair identified in the analysis results can provide references for trust repair strategies following privacy violations.

Full Text

Preamble

Research on Trust Repair Mechanisms After Social Media Privacy Invasion

Li Weijuan[1], Lin Shengdong[2]

[1]School of Journalism and Communication, Xiamen University, Xiamen 361005
[2]School of Journalism, Renmin University of China, Beijing 100872

Abstract: [Purpose/Significance] Trust serves as a bridge between social media platforms and users, yet frequent privacy violations often plunge social media into crises of trust. Consequently, rebuilding user trust following privacy violations is critically important. [Method/Process] This study reviews relevant research on trust repair and constructs a quaternary structural model of trust repair based on the specific context of social media privacy violations. We collected 324 valid questionnaires and employed PLS-SEM and fsQCA for analysis and validation. [Results/Conclusions] The findings indicate that the net effects of social media' s action repair strategies and government intervention are significant, whereas the net effects of social media' s verbal repair strategies and technical third parties are not significant. However, fsQCA configurational analysis reveals that verbal repair and technical third parties can trigger high-intensity trust repair when combined with other variables. Additionally, the eight configurations of antecedent variables for high trust repair identified in the analysis can provide reference for trust repair strategies following privacy violations.

Keywords: social media; privacy violation; trust repair; quaternary actors

Classification Number: G206.2
DOI: 10.13266/j.issn.0252-3116.2021.17.004

Trust forms the foundation of relationships and behaviors between social media and users, serving as the cornerstone of social media' s survival. As transgressive behaviors occur with increasing frequency, how to repair damaged trust has become a core issue for social media platforms. Current research on trust repair primarily originates from management and psychology, with few scholars examining the repair mechanisms following social media privacy violations. The limited relevant literature comes exclusively from foreign scholars, while domestic researchers have yet to explore this area. This gap exists for two main reasons: first, privacy research in the internet context remains in its exploratory stage, with relevant issues not yet fully developed; second, trust repair mechanisms are inherently complex, and investigating them in the context of social media privacy violations differs fundamentally from trust repair after service failures in traditional management contexts.

In conventional service or product failure scenarios, remedial measures are convenient and repair processes transparent, allowing consumers to make rational judgments. Consequently, trust repair research has primarily focused on dyadic interactions between the trust violator and the trustor, where the trustor can rationally evaluate the violator' s repair measures and decide whether to restore trust. However, social media privacy violations are characterized by regulatory difficulties and high technical barriers, making it challenging for users to assess the effectiveness of remedial measures. In this context, effective trust repair requires the participation of additional actors. Therefore, this study expands beyond the binary interaction structure between social media and users, situating trust repair and its mechanisms within a quaternary interactive structure comprising social media platforms, technical third parties, government, and

users. This approach offers both theoretical and practical value. The theoretical contributions include: (1) expanding the perspective and scope of privacy research; (2) supplementing domestic research on trust repair following privacy violations; and (3) enriching trust repair theory in the context of privacy violations. Practically, the findings provide: (1) strategic guidance for social media platforms on trust repair after privacy violations; and (2) clear demonstration to enterprises of the high costs of privacy violations, where excessive repair costs imply high error costs, thereby imposing constraints on social media institutions and providing a basis for industry self-discipline in internet governance.

Authors: Li Weijuan (ORCID: 0000-0001-5179-8268), PhD candidate; Lin Shengdong (ORCID: 0000-0002-9138-3494), Professor, PhD, doctoral supervisor, corresponding author, E-mail: 13742822778@qq.com.

Received: 2021-03-01
Revised: 2021-06-13
Page Range: 33-44
Responsible Editor: Yi Fei

2 Literature Review

2.1 Social Media Privacy

Statistics show that in 2020, social media users accounted for nearly half of the global population, providing tremendous convenience for worldwide communication. While enjoying this convenience, users inevitably leave traces on social media, raising unprecedented concerns about data privacy. However, despite privacy concerns, users continue to disclose personal information on social media platforms due to rational or emotional needs, leading to the privacy paradox—users trade partial privacy for satisfaction of their needs, gradually ceding privacy control to social media platforms.

Users' passive or active disclosure of privacy on social media does not imply permission for unlimited surveillance or misuse of their data. Nevertheless, privacy violations occur frequently, affecting major platforms both internationally (Facebook, Zoom) and domestically (Tencent, Alibaba, Pinduoduo). Such incidents erode user trust, reduce platform usage, and prompt privacy-protective behaviors including refusal, misrepresentation, deletion, negative word-of-mouth, and complaints. While existing research has focused on negative user behaviors and impacts following privacy violations, few studies have examined the trust repair process or how various stakeholders interact to rebuild trust, particularly in the Chinese context.

2.2 Social Media Trust

Trust has long been a focal research topic. For social media, trust not only motivates user participation but also constitutes a key antecedent of privacy disclosure. Scholars define social media trust at different levels. Niu and Meng

define it broadly as users' trust in social media' s ability to protect personal privacy, while others define it platform-specifically (e.g., trust in QQ, trust in WeChat), referring to users' belief that a specific platform can protect their personal information. The latter approach, by differentiating social media hierarchically, enables more targeted research.

Despite trust' s importance for social media, frequent privacy violations trigger heightened privacy concerns that easily damage user trust. Given trust' s dynamic and contextual nature, damaged trust can potentially be repaired. However, existing studies have primarily examined the negative consequences of privacy violations without exploring trust repair mechanisms, which are crucial for users in the dynamic trust process—a gap that warrants further investigation.

2.3 Trust, Violation, and Repair

Trust is a dynamic concept encompassing development, growth, maintenance, violation, and repair stages. Trust violation occurs when the trusted party behaves contrary to expectations, leading individuals to reduce trust—a process of trust dissolution. Trust repair refers to actions that improve trust beliefs and intentions toward the violating party after damage, manifesting as the trustor' s cognitive willingness to consider renewed cooperation accompanied by positive emotions. Essentially, trust repair involves improving trust in the violator after trust has been damaged due to violations.

Trust repair research, though relatively recent and exploratory, has attracted attention from management scholars. However, findings do not generalize well across disciplines and contexts. Therefore, examining trust repair following social media privacy violations requires developing context-specific models and hypotheses that address the particularities of this scenario.

3 Research Model and Hypothesis Development

Previous trust repair research has primarily focused on the violating party, examining how repair strategies and individual characteristics affect trust restoration. This dyadic interaction perspective represents the mainstream approach in traditional trust repair research. Limited studies have examined third-party roles, but such literature remains scarce and lacks an integrated perspective. This study argues that trust repair following social media privacy violations differs significantly from other contexts, particularly due to the high technical barriers to assessing privacy violations, which render users' self-assessments ineffective. When users lose trust yet cannot independently evaluate remedial measures, traditional binary trust repair mechanisms fail. Therefore, in social media privacy violation contexts, other actors—technical third parties and government—must participate as primary factors in the trust repair mechanism, working jointly with social media repair strategies.

Based on these considerations, this study constructs trust repair strategies from internal and external perspectives: internal repair refers to social media plat-

form strategies, while external repair encompasses technical third-party and government strategies.

3.1 Trust Repair Mediating Mechanisms

This study conceptualizes social media trust repair at two levels: platform trust repair and brand trust repair. When privacy violations damage trust in a social media platform, based on trust transfer theory, the damage may extend beyond the violating platform to the corporate brand behind it, potentially causing trust crises for other platforms under the same brand. For instance, if QQ is exposed for privacy violations, users may question not only QQ' s privacy protection but also Tencent and its other platforms like WeChat. Combining these definitions, this study identifies two layers of social media trust repair: (1) platform trust repair—users' renewed trust in the directly violating platform' s future privacy protection, reduced negative emotions, and continued usage intention; and (2) brand trust repair—users' renewed trust in other social media platforms under the same corporate brand, reduced negative emotions, and continued usage intention.

Perceived Penitence refers to users' perception that social media will sincerely repent from the privacy violation incident and improve accordingly. Research indicates that perceived penitence leads trustors to develop more positive expectations about violators' intentions and behaviors, thereby improving relationships and rebuilding trust. After privacy violations damage trust, users doubt social media' s integrity in privacy protection. If users perceive genuine repentance and improvement intentions, they develop new positive expectations and rebuild trust. Based on trust transfer theory, users also rebuild trust in other platforms under the same brand. Therefore:

- **H1a:** Perceived penitence is positively related to platform trust repair.
- **H1b:** Perceived penitence is positively related to brand trust repair.

Perceived Prevention emphasizes users' belief that social media will not commit similar privacy violations in the future. After privacy violations, users focus on predicting future violation likelihood and need to perceive constraints on social media to minimize recurrence, thereby establishing credibility. According to trust transfer theory, perceived prevention affects not only trust repair in the violating platform but also positively influences brand trust repair. Therefore:

- **H2a:** Perceived prevention is positively related to platform trust repair.
- **H2b:** Perceived prevention is positively related to brand trust repair.

Perceived penitence and perceived prevention are also intrinsically positively related. If social media demonstrates clear repentance for privacy violations, users perceive that the platform is willing to take responsibility and constrain its behavior, further reducing future violation likelihood. Therefore:

- **H3:** Perceived penitence is positively related to perceived prevention.

3.2 Internal Repair—Social Media Remedial Measures

Following privacy violations, social media typically implements verbal remedial measures through official accounts. Common verbal repair strategies include denial, explanation, admission, and apology. Existing research indicates that verbal repair promotes trust repair through perceived penitence, as it conveys acknowledgment of harm and a clear desire for reconciliation and relationship maintenance. If social media' s admissions, explanations, and apologies are timely and sincere, users perceive that the platform has learned from the incident and intends to reform. Therefore:

- **H4:** Social media' s verbal repair is positively related to perceived penitence.

In addition to verbal strategies, action repair represents another common approach, including compensation, regulation, punishment, and accepting supervision. Research shows that action repair promotes trust repair through perceived penitence. After privacy violations, social media typically stops user losses and provides appropriate compensation, revises versions, fixes technical vulnerabilities, and further self-regulates around privacy concerns. We infer that positive action demonstrates social media's determination to remedy trust and highlights its willingness to learn and improve. Therefore:

- **H5:** Social media' s action repair is positively related to perceived penitence.

3.3 External Repair—Role of Technical Third Parties

After privacy violations, users develop negative emotions toward social media, accompanied by defensive attitudes and negative expectations, making them likely to reject or misinterpret repair strategies. Consequently, relying solely on social media for trust repair becomes difficult. Without external intervention, social media may continue to be deemed untrustworthy. Based on trust transfer theory, trust can be transferred from credible actors, groups, or institutions to reputation-damaged organizations. If a credible third party emerges, its information and judgments are more likely to be accepted by users. Research has confirmed third parties' positive effects on unknown entities.

Technical third parties refer to actors or organizations with professional expertise capable of technical verification, such as opinion leaders in technology forums or security software like 360 and Huorong. After privacy violations, technical professionals or companies conduct professional testing of the violating platform, determine whether violations actually occurred, issue timely alerts to users, and continuously track whether updated versions have patched vulnerabilities. Based on recognition of technical third parties' professionalism and credibility, users believe that their endorsement, continuous tracking, and judgment can constrain social media' s privacy violations to some extent, reducing future recurrence likelihood. Therefore:

- **H6:** Technical third-party involvement is positively related to perceived prevention.

3.4 External Repair—Government Role

As an authoritative institution, government plays a significant role in economic activities, performing regulatory and supervisory functions, providing platforms and rules for orderly markets, and monitoring non-compliant market actors. In the Chinese context, government possesses high credibility, which is crucial for shaping user trust in markets. Research shows that when users believe government can successfully supervise and punish wrongdoing, their sense of security increases. Government intervention refers to the use of public power, such as administrative or criminal penalties based on law, to regulate privacy violations. If users observe government involvement in privacy violation incidents through measures like interviews, public condemnation, or mandated rectification, they tend to believe that violating social media platforms have accepted government supervision and will complete rectification under oversight. This helps users regain confidence, believing that existing systems and measures can prevent future privacy violations. Therefore:

- **H7:** Government intervention is positively related to perceived prevention.

Based on the above, the research model shown in [Figure 1: see original paper] is established.

4 Data Analysis

4.1 Research Methods

4.1.1 Variable Measurement All variables in this study were derived from existing literature and scales, revised according to the specific context of social media privacy violations. The measurement consists of two parts. The first part includes measurement items for eight latent variables. Verbal repair (3 items) was adapted from W.P. Bottom et al. [15]; government intervention (5 items) was adapted from M. Lwin and Zhang Bei et al. [32-33]; technical third party (4 items) was adapted from Zhang Bei et al. [33]; action repair (3 items) was adapted from K.T. Dirks et al., Guan Xinhua et al., and Yao Qi et al. [22,24,28]; perceived penitence (3 items) and perceived prevention (3 items) were adapted from K.T. Dirks et al. [22]; platform trust repair and brand trust repair (4 items each) were adapted from E. Ayaburi, Zhang Bei et al., and Y. Xie et al. [2,33-34]. All items were scored on a 7-point Likert scale (1 = strongly disagree, 7 = strongly agree). The second part collected demographic information including gender, age, monthly income, and education level.

4.1.2 Sample Information Between February 1 and February 16, 2021, this study collected 445 questionnaires. After eliminating invalid responses (e.g., non-social media users, careless responses), 324 valid samples remained. Sample

characteristics are shown in . Among valid respondents, 58.6% were female; 28.4% were under 20 years old, 49.4% were aged 20-35, and 22.2% were 35 or older. In terms of education, 9.0% held associate degrees or below, 72.8% held bachelor' s degrees, and 18.2% held master' s degrees or above. Regarding monthly income, 52.5% earned below 3,000 RMB, while 47.5% earned 3,000 RMB or more.

4.2 Structural Equation Model Testing

Based on the survey data, this study employed two analytical methods for model evaluation and hypothesis testing: structural equation modeling (SEM) using PLS software, and configurational verification and exploration through fsQCA.

SmartPLS 3.0 is widely used for SEM analysis because it does not require normally distributed data and can simultaneously conduct model assessment and hypothesis testing with good predictive orientation [4,35-36]. Therefore, this study used SmartPLS 3.0 for model evaluation and hypothesis testing.

4.2.1 Model Adjustment and Assessment Three items were deleted due to factor loadings below 0.7. The remaining items had factor loadings between 0.732 and 0.965, meeting the threshold [37]. Reliability and validity test results are shown in and . Most variables' Cronbach' s α values exceeded 0.7, with one variable between 0.6-0.7, which is considered acceptable [38], indicating good internal consistency. All variables' CR values ranged from 0.814 to 0.956, exceeding the 0.7 threshold [37,39], demonstrating good reliability. All variables' AVE values were above 0.594, higher than the 0.5 threshold [39], indicating good convergent validity. Discriminant validity comparisons showed that the square root of each variable' s AVE exceeded its Pearson correlation coefficients with other variables, confirming good discriminant validity [39].

4.2.2 Hypothesis Testing Using SmartPLS 3.0' s bootstrapping function with 5,000 resamples, the research hypotheses were tested. Results are shown in and [Figure 2: see original paper].

For internal repair strategies, social media' s action repair showed a significant positive relationship with perceived penitence ($\beta = 0.578$, $p < 0.01$), supporting H5. However, verbal repair was not significantly related to perceived penitence ($p > 0.05$), rejecting H4. This suggests that after privacy violations, if social media aims to evoke perceived penitence for trust repair, behavioral remedies represent the optimal choice.

Regarding external actors, government intervention showed a significant positive relationship with perceived prevention ($\beta = 0.323$, $p < 0.01$), supporting H7. However, technical third-party involvement was not significantly related to perceived prevention ($p > 0.05$), rejecting H6. This indicates that after privacy violations, third-party intervention alone does not convince users that privacy

issues will be effectively resolved, but government involvement in regulating privacy violations enhances users' belief that their privacy is protected and future violations will decrease.

Perceived penitence significantly triggered both platform trust repair ($\beta = 0.364$, $p < 0.01$) and brand trust repair ($\beta = 0.363$, $p < 0.01$), supporting H1a and H1b. Perceived prevention also significantly triggered platform trust repair ($\beta = 0.293$, $p < 0.01$) and brand trust repair ($\beta = 0.445$, $p < 0.01$), supporting H2a and H2b. Perceived penitence significantly and positively influenced perceived prevention ($\beta = 0.408$, $p < 0.01$), supporting H3. Thus, both perceived penitence and perceived prevention facilitate trust repair in the violating platform and its corporate brand, with perceived penitence positively influencing perceived prevention.

4.3 Fuzzy-set Qualitative Comparative Analysis (fsQCA)

While SEM analysis can explain the magnitude and valence of net effects of internal and external repair strategies on trust repair, it has limitations. First, SEM focuses on individual variable effects while neglecting configurational influences. Second, SEM assumes symmetrical mirror relationships between high and low outcomes, meaning antecedents for high and low trust repair are opposite. These limitations mean SEM results only partially explain trust repair mechanisms. Therefore, this study employs fsQCA to examine asymmetric configurational effects and better understand trust repair mechanisms.

4.3.1 Variable Calibration For Likert scale calibration, we followed Ordanini et al.' s recommendation [40] using 2 (full non-membership), 6 (full membership), and 4 (crossover point) as anchors based on sample distribution characteristics. Verbal repair (fs-VR), action repair (fs-AR), technical third party (fs-TTP), government intervention (fs-GI), perceived prevention (fs-PP), and perceived penitence (fs-PR) served as antecedent variables, while platform trust repair (fs-PTR) and brand trust repair (fs-BTR) served as outcome variables.

4.3.2 Configurational Analysis Platform Trust Repair Configurations

Analysis of platform trust repair antecedents revealed four configurations (NP1-NP4) for low-intensity platform trust repair, with overall coverage of 0.763 and consistency of 0.825. Specifically: NP1 shows that even with government and technical third-party involvement, low-intensity platform trust repair occurs without perceived prevention and penitence; NP2 shows that lacking action repair, perceived prevention, penitence, and verbal repair triggers low-intensity repair; NP3 shows that even with government and technical third-party involvement, lacking action repair, perceived prevention, and verbal repair triggers low-intensity repair; NP4 shows that lacking all repair strategies, interventions, and perceptions triggers low-intensity repair. The XY plot for con-

figuration NP1 demonstrates asymmetric relationships among antecedents for low-intensity platform trust repair, as shown in left panel.

Three configurations (P1-P3) explain high-intensity platform trust repair, with overall coverage of 0.717 and consistency of 0.805. P1 shows that combining action repair, government intervention, technical third-party involvement, perceived penitence, and perceived prevention triggers high-intensity platform trust repair. P2 shows that even without perceived prevention and penitence, action repair combined with government and technical third-party involvement triggers high-intensity repair. P3 shows that even without perceived prevention, penitence, and verbal repair, government and technical third-party involvement triggers high-intensity repair. The XY plot for configuration P1 demonstrates asymmetric relationships, as shown in right panel.

Brand Trust Repair Configurations

Analysis of brand trust repair antecedents revealed four configurations (NB1-NB4) for low-intensity brand trust repair, with overall coverage of 0.792 and consistency of 0.824. NB1 shows that even with government and technical third-party involvement, lacking perceived penitence and prevention triggers low-intensity repair. NB2 shows that lacking verbal repair, action repair, perceived penitence, and prevention triggers low-intensity repair. NB3 shows that even with government and technical third-party involvement, lacking action repair, perceived prevention, and verbal repair triggers low-intensity repair. NB4 shows that lacking all elements triggers low-intensity repair. The XY plot for configuration NB1 demonstrates asymmetric relationships, as shown in left panel.

Five configurations (B1-B5) explain high-intensity brand trust repair, with overall coverage of 0.709 and consistency of 0.840. B1 shows that action repair, government intervention, technical third-party involvement, perceived penitence, and perceived prevention trigger high-intensity brand trust repair. B2 shows that even without perceived penitence and prevention, verbal repair combined with government and technical third-party involvement triggers high-intensity repair. B3 shows that even without perceived penitence and prevention, action repair combined with government and technical third-party involvement triggers high-intensity repair. B4 shows that even without verbal repair, action repair, and perceived prevention, government and technical third-party involvement combined with perceived penitence triggers high-intensity repair. B5 shows that even without action repair, government intervention, technical third-party involvement, perceived penitence, and prevention, verbal repair alone triggers high-intensity brand trust repair. The XY plot for configuration B1 demonstrates asymmetric relationships, as shown in right panel.

4.3.3 Complexity Theory Assessment We evaluated the results against six key principles of complexity theory [42]. Principles 1 and 2 posit that outcomes require configurational rather than single-variable explanations. Our results

show that trust repair requires combinations of at least four variables, supporting these principles. Principle 3 states that configurations are sufficient but not necessary conditions. Our results show multiple antecedent combinations for each outcome, supporting this principle. Principle 4 posits that antecedent configurations for high and low outcomes are not symmetrical mirror structures. Our results show asymmetrical configurations with inconsistent numbers, supporting this principle. Principle 5 states that individual variable effects depend on other variables. In our low-intensity platform trust repair results, government intervention had positive effects in NP1 and NP3 but negative effects in NP4, supporting this principle. Principle 6 states that each configuration represents only one explanation for the outcome with coverage below 1. Our results show coverage between 0.232 and 0.671, supporting this principle. These six principles validate the complex interactions among factors influencing platform and brand trust repair.

5 Discussion

This study is the first to examine quaternary structural interactions in trust repair within the Chinese social media privacy violation context. Using SEM to examine net effects and fsQCA to explore configurational effects, we obtained comprehensive findings.

5.1 Net Effects

(1) Internal Repair Strategies: Our findings confirm that among social media repair strategies, action repair is more effective than verbal repair in evoking perceived penitence and repairing trust. In crisis contexts, low-cost verbal repair struggles to convey genuine remorse, differing from P.H. Kim et al.' s conclusions [14]. This may be because in China' s online environment, explanations and apologies are common PR strategies, and users have developed immunity to "seemingly sincere but actually formulaic" PR statements. Additionally, given the technical barriers to assessing privacy violations, users cannot directly verify the authenticity of apology claims, rendering verbal repair ineffective. Only concrete actions—such as immediately fixing vulnerabilities, compensating users, and strengthening self-regulation—can demonstrate genuine repentance and imply corrective capabilities. This finding reflects the Chinese cultural principle that "actions speak louder than words."

(2) External Repair Strategies: Users perceive government privacy regulation as more effective and constraining than technical third-party involvement. The Chinese government possesses high credibility. When comprehensive legal frameworks manage social media and violations are publicly disclosed and punished, users feel strongly constrained and believe future violations are less likely. However, technical third parties' net effects were not significant, inconsistent with Y. Yu et al.' s findings [43]. This may be because technical third parties lack independence in privacy violation contexts. Whether individual internet

technologists or regulatory software like 360, these actors struggle to gain absolute user trust. Technical third parties may have affiliations with social media platforms (e.g., past conflicts between 360 and Tencent QQ), making their assessments potentially questionable and preventing them from serving as fully independent third parties whose endorsement alone cannot convince users of effective prevention.

(3) Perceived Penitence and Prevention: Both variables show significant positive relationships with trust repair, consistent with K.T. Dirks et al. [22]. Perceived prevention demonstrates stronger effects on brand trust repair than platform trust repair, suggesting that corporate brands—being implicated parties—are more easily forgiven than the violating platform itself. The positive relationship between perceived penitence and prevention aligns with Yao Qi et al.'s findings [24], indicating that perceived sincerity in repentance reduces users' expectations of future violations.

5.2 Configurational Effects

(1) fsQCA results reveal more complex asymmetrical mechanisms. In privacy violation contexts, lacking perceived prevention is a necessary condition for triggering low-intensity platform trust repair. In other words, if users believe social media will not violate privacy again, low-intensity platform trust repair will not occur. Similarly, lacking perceived prevention is necessary for triggering low-intensity brand trust repair, meaning users must perceive that social media will not infringe on privacy to avoid low-intensity brand trust repair.

(2) Although SEM found no significant relationships between verbal repair and perceived penitence or between technical third parties and perceived prevention, fsQCA shows these variables can achieve trust repair when combined with others. For example, configuration B2 demonstrates that even without perceived prevention and penitence, verbal repair and technical third-party involvement combined with government intervention trigger high-intensity brand trust repair. This proves that timely, sincere apologies, explanations, commitments, and third-party involvement are important antecedents for trust repair, though their mechanisms do not operate through perceived penitence and prevention as mediators but through alternative pathways.

6 Conclusion

6.1 Theoretical Contributions

First, in digital media privacy research, current topics focus primarily on privacy violation behaviors, user privacy protection behaviors, privacy paradox, and privacy management. Our findings theoretically expand privacy research perspectives by introducing the post-violation trust reconstruction process into mainstream privacy research.

Second, regarding trust repair after privacy violations, existing research is pre-

dominantly foreign. Given cultural differences, trust repair mechanisms may vary between Chinese and foreign social media users. This study supplements research on trust repair mechanisms in China' s internet context.

Finally, for trust repair research, this study expands its mechanisms in the privacy violation context by integrating multiple actors, providing an initial model architecture for future scholars examining trust repair in privacy violation scenarios.

6.2 Practical Contributions

Our SEM and fsQCA configurational analyses provide multiple effective repair strategies for social media platforms following privacy violations. SEM results show that high-cost action repair is more effective than low-cost verbal repair, and government intervention is significantly more effective than technical third-party involvement. Clearly, lobbying government costs more than hiring technical third parties, proving that trust repair after violation is extremely costly. For social media, privacy violations carry high costs, and repaired trust remains fragile [24]. These findings provide important evidence for social media user privacy protection and theoretical references and empirical materials for government internet governance.

6.3 Research Limitations

This study has several limitations: (1) Although SEM showed that verbal repair and technical third-party involvement did not significantly affect mediating variables, fsQCA revealed they can trigger high-intensity trust repair when combined with other variables. However, their specific mechanisms and potential mediation pathways remain unexplored. (2) Given the complexity of user behavior, this study only used trust repair as the dependent variable without examining actual usage behaviors. In social media contexts, trust repair and usage behaviors may diverge due to high user stickiness or lack of alternatives. Future research should explore these complexities. (3) Our sample had relatively high education levels, so findings may only apply to knowledgeable user groups. Future studies should examine users with different educational backgrounds.

References

[1] BANSAL G, ZAHEDI F M. Trust violation and repair: the information privacy perspective[J]. Decision support systems, 2015, 71: 62-77.

[2] AYABURI E, TREKU D. Effect of penitence on social media trust and privacy concerns: the case of facebook[J]. International journal of information management, 2020, 50: 171-181.

[3] SHENG XIAOPING, GUO DAOSHENG. Research on data security governance in scientific data open sharing[J]. Library and Information Service, 2020, 64(22): 25-36.

[4] CHENG HUIPING, WEN XINYU, SU CHAO. A model and empirical study of factors influencing social media users' privacy disclosure intention[J]. Library and Information Service, 2020, 64(16): 92-104.

[5] SON J Y, KIM S S. Internet users' information privacy-protective responses: a taxonomy and an ontological model[J]. Mis quarterly, 2008, 32(3): 503-529.

[6] KAMBOJ S, SARMAH B, GUPTA S, et al. Examining branding co-creation in brand communities on social media: applying the paradigm of stimulus-organism-response[J]. International journal of information management, 2018, 39: 169-185.

[7] NIU JING, MENG XIAOXIAO. The influence of social media trust on privacy risk perception and self-disclosure: the mediating effect of online interpersonal trust[J]. Chinese Journal of Journalism & Communication, 2019(7): 91-109.

[8] XIE XINGZHENG, CAI NIANZHONG, HUANG ZHIMING, et al. A preliminary study on factors influencing social media users'privacy paradox behavior[J]. Library and Information Service, 2018, 62(18): 55-63.

[9] ZHANG XUEBO, LI BO. Trust and risk perception: an empirical study on factors influencing privacy security in social networks[J]. Modern Communication (Journal of Communication University of China), 2019, 41(2): 153-158.

[10] GUO HAILING, MA HONGYU, XU ZEHUI. Construction and empirical study of a model influencing social media users' information disclosure intention: a case study of WeChat users[J]. Library and Information Service, 2019, 63(15): 111-120.

[11] WANG HONGLI, LIAN XUEJUN. An analysis of dynamic interaction between trustor and trustee from a dyadic perspective[J]. Journal of South China University of Technology (Social Science Edition), 2016, 18(5): 27-35.

[12] CHANG S E, LIU A Y, SHEN W C. User trust in social networking services: a comparison of facebook and linkedIn[J]. Computers in human behavior, 2017, 69: 207-217.

[13] YAO QI. Research on trust violation and repair in organizational behavior[J]. Nankai Journal (Philosophy and Social Sciences Edition), 2011(5): 133-140.

[14] KIM P H, FERRIN D L, COOPER C D, et al. Removing the shadow of suspicion: the effects of apology versus denial for repairing competence- versus integrity-based trust violations[J]. Journal of applied psychology, 2004, 89(1): 1-56.

[15] BOTTOM W P, GIBSON K, DANIELS S E, et al. When talk is not cheap: substantive penance and expressions of intent in rebuilding cooperation[J]. Organization science, 2002, 13(5): 497-513.

[16] DIRKS K T, LEWICKI R J, ZAHEER A. Repairing relationships within and between organizations: building a conceptual foundation[J]. The academy of management review, 2009, 34(1): 68-84.

[17] BACHMANN R, GILLESPIE N, PRIEM R. Repairing trust in organizations and institutions: toward a conceptual framework[J]. Organization studies, 2015, 36(9): 1123-1142.

[18] GILLESPIE N, DIETZ G. Trust repair after an organization-level failure[J]. Academy of management review, 2009, 34(1): 127-145.

[19] HAN PING, NING JI. Research on trust repair strategies based on two types of trust violations[J]. Chinese Journal of Management, 2013, 10(3): 390-396.

[20] XIONG YAN, QIAN TINGTING. Research on consumer trust repair strategies after product harm crises[J]. Economic Management Journal, 2012, 34(8): 114-120.

[21] YAN YU, WU XIA. From trust violation to trust repair: the mechanism of moral emotions[J]. Advances in Psychological Science, 2016, 24(4): 633-642.

[22] DIRKS K T, KIM P H, FERRIN D L, et al. Understanding the effects of substantive responses on trust following a transgression[J]. Organizational behavior & human decision processes, 2011, 114(2): 87-103.

[23] TOMLINSON E C, MAYER R C. The role of causal attribution dimensions in trust repair[J]. Academy of management review, 2009, 34(1): 85-104.

[24] YAO QI, YUE GUOAN, LAI KAISHENG, et al. Trust repair: current status and challenges[J]. Advances in Psychological Science, 2012, 20(6): 902-909.

[25] LAERT V, RUYTER K D. In stories we trust: how narrative apologies provide cover for competitive vulnerability after integrity-violating blog posts[J]. International journal of research in marketing, 2010, 27(2): 164-174.

[26] UTZ S, MATZAT U, SNIJDERS C. On-line reputation systems: the effects of feedback comments and reactions on building and rebuilding trust in online auctions[J]. International journal of electronic commerce, 2009, 13(3): 95-118.

[27] ZHANG Z. The study on consumer trust repair based on the interaction of person & environment[J]. Procedia engineering, 2012, 29: 1467-1470.

[28] GUAN XINHUA, XIE LISHAN, PI PINGFAN. Research on the impact of negative reports on tourist destinations and trust repair[J]. Economic Management Journal, 2017, 39(8): 146-158.

[29] DESMET P T M, REMER D D, DIJKE V. Trust recovery following voluntary or forced financial compensations in the trust game: the role of trait forgiveness[J]. Personality and individual differences, 2011, 51(3): 267-273.

[30] HUANG DAN. Repair of brand trust in online food delivery platforms after product harm crises[J]. China Economic & Trade Herald (Middle), 2019(6): 81-83.

[31] SPICER A, OKHMATOVSKIY I. Multiple paths to institutional-based trust repair[J]. Organization studies, 2015, 36(9): 1143-1170.

[32] LWIN M, WIRTZ J, WILLIAMS J D. Consumer online privacy concerns and responses: a power-responsibility equilibrium perspective[J]. Journal of the academy of marketing science, 2007, 35(4): 572-585.

[33] ZHANG BEI, WU BAOSHU, WEN XIAOWEI. The impact of social co-governance of online rumors on consumer trust: a case study of food harm[J]. Economic Management Journal, 2019, 41(5): 136-150.

[34] XIE Y, PENG S. How to repair customer trust after negative publicity: the roles of competence, integrity, benevolence, and forgiveness[J]. Psychology and marketing, 2009, 26(7): 572-589.

[35] HAIR J F, RISHER J J, SARSTEDT M, et al. When to use and how to report the results of PLS-SEM[J]. European business review, 2019, 31(1): 2-24.

[36] HAIR J F, RINGLE C M, SARSTEDT M. PLS-SEM: indeed a silver bullet[J]. Journal of marketing theory and practice, 2011, 19(2): 139-152.

[37] JOHNSTON A C, WARKENTIN M. Fear appeals and information security behaviors: an empirical study[J]. Mis quarterly, 2010, 34(3): 549-566.

[38] VAN GRIETHUIJSEN R A, VAN EIJK M W, HASTE H, et al. Global patterns in students' views of science and interest in science[J]. Research in science education, 2015, 45(4): 581-603.

[39] GEFEN D, STRAUB D. A practical guide to factorial validity using PLS-Graph: tutorial and annotated example[J]. Communications of the Association for Information Systems, 2005, 16(1): 91-109.

[40] DU Y, KIM P H. One size does not fit all: strategy configurations, complex environments, and new venture performance in emerging economies[J]. Journal of business research, 2021, 124: 272-279.

[41] ORDANINI A, PARASURAMAN A, RUBERA G. When the recipe is more important than the ingredients: a qualitative comparative analysis (QCA) of service innovation configurations[J]. Journal of service research, 2014, 17(2): 134-149.

[42] WOODSIDE A G. Embrace perform model: complexity theory, contrarian case analysis, and multiple realities[J]. Journal of business research, 2014, 67(12): 2495-2503.

[43] YU Y, YANG Y, JING F. The role of the third party in trust repair process[J]. Journal of business research, 2017, 78: 233-241.

Author Contributions:
Li Weijuan: conceptualization, data analysis, writing;
Lin Shengdong: supervision, review.

Note: Figure translations are in progress. See original paper for figures.