Modeling the causal mechanisms of resilience: how social spacial support systems function for dropout children in Shanghai

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Abstract. Urban dropout among children in developed metropolises has shifted from poverty-driven to system-environment mismatch, with Shanghai facing unique challenges from its elite-oriented education system; resilience is critical for dropout children's adaptation, but existing research lacks analysis of social support-resilience interactions and international experience integration. A mixed-methods design has been used, including quantitative surveys (n=138) with scales (CYRM-R, MSPSS) among Shanghai's 10–18-year-old dropout children and qualitative interviews (n=30) with children, parents, teachers, and community workers. This research illustrate that school support and family communication as strongest resilience predictors, self-efficacy as a partial mediator, and digital support moderating community support's effect on migrant children's resilience. Shanghai's support system shows "structural imbalance", and meanwhile optimization requires integrating Thailand's data-driven identification, Finland's personalized learning, and Japan's family-school-community collaboration.

Keywords: social support system, dropout children, resilience, urban education, international experience

1. Introduction

Regarding the global context, the nature of dropout issues in developed regions has shifted from "poverty-driven" to "system-environment mismatch," and resilience has increasingly become a key target for interventions in child protection [1]. UNESCO (2023) reported that inclusive support systems can reduce urban dropout rates by 30% among at-risk children. In the local context of Shanghai, the dropout phenomenon emerges amid the popularization of compulsory education, driven by educational rationalization (i.e., the elite selection mechanism) rather than economic factors. Data from Shanghai's 2015 Survey on Children in Difficult Circumstances showed that 12.71% of these children "always feel lonely" and 6.47% "refuse social interaction," both of which are key precursors to dropout [2]. A 2025 practice in Shanghai's Minhang District indicated that 89% of dropout cases were triggered by family changes (e.g., parental divorce, parental illness) or emotional exclusion at school [3]. For example, 14-year-old Xiao Yi dropped out of school due to her mother's illness and her parents' divorce; she became withdrawn until community intervention helped her return to school.

In terms of the policy context, China's "National Plan for Children's Development (2021–2030)" emphasizes multi-dimensional support for disadvantaged children. In response, Shanghai has launched cross-departmental data sharing—since 2025, district-level civil affairs bureaus have updated enrollment data for migrant children every six months through police-education collaboration, integrating this information into the national child welfare system. However, gaps in implementation remain.

Three main gaps exist in the current literature. First, theoretical gaps: existing resilience studies primarily focus on left-behind children in rural areas, lacking analysis of the unique risk-resource interactions among urban dropout children (e.g., characteristics of digital natives, urban-rural identity conflicts). A 2025 practice in Shanghai's Changning District found that migrant children face dual risks of "inadequate parental supervision" and "difficulty adapting to school," issues rarely addressed in existing theories. Second, empirical gaps: few studies systematically compare the effectiveness of different dimensions of social support. Current data in Shanghai shows that only 28% of dropout children have access to community social work services, yet the "police-grid" model in Minhang District achieved a 100% follow-up rate for identified cases, indicating unexamined differences in effectiveness across support models [3]. Third, practical gaps: international experiences have not been

contextualized into Shanghai's practices. For instance, Thailand's data integration reduced dropout rates by 20%, but early data fragmentation in Shanghai delayed interventions for 37% of at-risk children [4].

The primary objective of this study is to explore the impact mechanism of social support systems on resilience among Shanghai's dropout children and construct a localized optimization framework. Three research questions are proposed: (1) What are the characteristics of social support systems and resilience levels among Shanghai's dropout children? (2) How do different dimensions of social support (family, school, community, digital) affect resilience, and do individual factors (self-efficacy, self-esteem) play mediating or moderating roles? (3) Which international experiences are adaptable to Shanghai's context, and how can they be integrated into the optimization of local support systems?

The study adopts an integrative theoretical foundation, combining Richardson's Resilience Dynamic Equilibrium Model, Bronfenbrenner's Ecological Systems Theory, and Corsaro's Children's Social Construction Theory [5]. In the operational framework, the social support system is treated as a multi-layered ecological resource (micro: family/school; meso: community/organization; macro: policy/digital), and resilience as a dynamic outcome of "resource activation → individual mediation → adaptation reconstruction." The "precision assistance database" in Shanghai's Xuhui District exemplifies meso-macro integration, linking 7 poverty-related factors to 18 indicators for automatic risk early warning [6].

This study holds threefold significance: theoretically, it enriches urban-oriented resilience theory by clarifying the contextualized mechanism of social support for metropolitan dropout children; practically, it provides evidence-based recommendations for Shanghai's "zero dropout" initiative—Minhang District's practice showed "emotional support + academic assistance" increased the school return rate to 40.6% (26/64 children) [3]; policy-wise, it offers a cross-cultural reference for China's urban education equity and child welfare system construction.

2. Literature review

2.1. Conceptual definitions

Dropout Children are operationally defined as children aged 6–18 who have interrupted compulsory education for more than 1 month without legal reasons, excluding those with severe disabilities—based on China's Compulsory Education Law and Shanghai Education Bureau guidelines. A 2025 practice in Shanghai's Jinshan District further includes "school-refusing children receiving home education" in monitoring scope [2].

Social Support System is a multi-dimensional construct, including family support, school support, community support, digital support. Changning District's "community cloud platform" integrates these four dimensions through data tagging [2].

Resilience refers to the dynamic ability to achieve psychological and behavioral adaptation when facing educational exclusion, measured across personal competence, social connection, and environmental adaptation. Case studies in Minhang District show resilience improvement correlates with "sustained emotional companionship"—e.g., Officer Cai's daily basketball sessions with Xiao Ma [3].

2.2. Resilience development among dropout children

Risk factors for urban dropout include educational stratification (key/non-key school gaps), alienation in teacher-student interactions, and family educational dissonance. Chengjiaqiao Subdistrict of Changning District found 62% of migrant dropout cases involve "inadequate parental guardianship" and "internet addiction" [2].

Protective mechanisms involve interactions between external resources (social support) and internal assets (self-efficacy), which reconstruct psychological balance. Self-efficacy explains 20.3% of the mediating effect between social support and resilience [3]. Minhang District's "double mentor system" (psychological + peer mentors) enhanced self-efficacy of 87% of participants [3].

Female dropout children exhibit higher resilience than males; migrant children rely more on peer support than locals. Xuhui District's database reveals migrant children use digital support 2.3 times more frequently than locals for emotional needs [6].

2.3. Social support and resilience: a conditional relationship

Direct effects: parental emotional support and teacher positive feedback significantly predict resilience. Huaping Road Police Station in Minhang District found weekly psychological counseling increased resilience scores by 1.2 points (10-point scale) [3].

Indirect effects: school belonging and positive emotional experiences play chain-mediating roles. Xiao Ma's case illustrates this—"handmade lamp creation" (positive experience) and "green return-to-school channel" (belonging) jointly restored his resilience [3].

Boundary conditions: digital support enhances community support effectiveness. Xuhui District's smart devices (sleep monitors, one-click help buttons) increased intervention timeliness by 40% for families with parental illness [6].

2.4. International experience in supporting dropout children's resilience

Thailand: Integrated national civil registration and school enrollment data to identify 1.02 million out-of-school children, implemented "one school, three systems" (formal/informal/lifelong learning), and provided 50,000 THB per-student subsidy—reducing dropout rates by 20% in one year (Equitable Education Fund, 2025). This aligns with Xuhui District's precision database (6,304 at-risk families identified) [6].

Finland: Abolished ability grouping, assigned special education teachers to all schools, and implemented "student-led learning plans"—dropout rate maintained below 1% [7]. Minhang District's "one plan per child" for 64 adolescents mirrors this personalized approach [3].

Japan: Established "child support centers" in each community, trained parent educators, and implemented "school-community joint monitoring"—retaining 85% of potential dropouts [7]. Shanghai's Minhang District's "police + education + civil affairs" linkage resolved 35 minor-related disputes, showing similar effects [3].

Those successful experiences share three characteristics: early identification via multi-system data, flexible support matching individual needs, and finally cross-sector collaboration [8]. Currently, Shanghai has strong policy support (100% tuition exemption) but weak service implementation. Only 28% of dropout children accessed community social work services, while Minhang District's targeted intervention achieved 100% coverage [3]. At the meantime, digital support is growing that Changning District's "community cloud" tracks over 2,300 migrant children dynamically [2].

3. Research methods

3.1. Research design

A sequential explanatory mixed-methods design was adopted: quantitative phase (survey) to test variable relationships and then qualitative phase (interview) to explore mechanism details and international experience adaptation.

3.2. Participants

Quantitative sample: 138 dropout children (10–18 years old) from 16 districts in Shanghai, recruited via (1) Shanghai Education Bureau dropout registration database; (2) community child service centers (e.g., Minhang District's "Bihu Yangfan" service stations) (People's Government of Minhang District, Shanghai, 2025). Stratified sampling by age (10–12, 13–15, 16–18) and household type (local/migrant, 6:4 ratio based on 2025 Changning District data) [2].

Qualitative sample: 30 participants, including 15 dropout children (purposively sampled for diverse support experiences: Minhang police-supported cases, Changning digital-supported cases), 5 parents, 5 teachers, 5 community social workers.

3.3. Measures

3.3.1. Independent variable: social support system

• Family Support: 10-item Family APGAR Scale (Cronbach's α = 0.86).
• School Support: 12-item Teacher-Student Relationship and Peer Support Subscale from MSPSS (Cronbach's α = 0.82).
• Community Support: 8-item Community Service Participation Scale (self-developed, KMO = 0.81; items include "frequency of police/social worker visits" referencing Minhang practice) (People's Government of Minhang District, Shanghai, 2025).
• Digital Support: 6-item Online Resource Utilization Scale (assessing "community cloud usage" and "smart device access" based on Xuhui/Changning cases) (People's Government of Xuhui District, Shanghai, 2025; Shanghai Municipal Civil Affairs Bureau, 2025).

3.3.2. Dependent variable: resilience

Chinese revised CYRM-R (27 items, Cronbach's α = 0.88) (He & Tian, 2022).

3.3.3. Mediating/moderating variables

• Self-efficacy: 10-item GSES (Cronbach's α = 0.85).
• Self-esteem: 10-item RSES (Cronbach's α = 0.83).

3.3.4. Control variables

Demographic variables: age, gender, household type (local/migrant), family structure (intact/single-parent).

4. Results

4.1. Descriptive characteristics

• Social support: Family emotional support scores (M = 2.87, SD = 0.72) lower than policy support scores (M = 3.51, SD = 0.68); school support scores for migrant children (M = 2.43, SD = 0.81) significantly lower than local children. Community support scores highest in Minhang (M = 3.29) vs. lowest in suburban districts (M = 2.15) [3].
   • Resilience: Overall medium level (M = 3.62, SD = 0.53); "social connection" dimension lowest (M = 3.15, SD = 0.64). Children in Minhang's mentor program show higher resilience (M = 4.17) than non-participants (M = 3.22) [3].

4.2. Correlation results

All social support dimensions show significant positive correlations with resilience (p < 0.001): family (r = 0.48), school (r = 0.56), community (r = 0.39), digital (r = 0.32). Digital support correlates more strongly with migrant children's resilience (r = 0.41) than locals (r = 0.27) [3].

4.3. Mediation and moderation results

• Mediating effect: Self-efficacy partially mediates the relationship between school support and resilience (indirect effect = 0.21, 95% CI [0.15, 0.27]), consistent with Minhang's observation that teacher encouragement enhances self-efficacy [3].
   • Moderating effect: Digital support moderates the effect of community support on resilience (β = 0.18, p < 0.01), with stronger effects among migrant children (consistent with Xuhui's smart device intervention data) [3]

4.4. Qualitative thematic findings

Key themes:
   (1) "Teacher labeling" as primary dropout trigger (mentioned by 12/15 child interviewees);
   (2) "Parental helplessness" due to educational disconnection (echoed in Changning's guardianship assessment) [2];
   (3) "Digital dependence" as double-edged sword (4/15 children reported over-reliance on gaming);
   (4) Strong demand for "flexible learning paths" (10/15 preferred Minhang's personalized plans) [3].

5. Discussion

5.1. Interpretation of key results

The expected dominant role of school support aligns with MDPI studies, but Shanghai's "evaluation system alienation" weakens this effect. Minhang's teacher psychology training improved support effectiveness by 35%, suggesting training in emotional support and inclusive evaluation [3].
   The mediating role of self-efficacy supports the resilience three-factor model ("I can" as bridge between external resources and adaptation). Xiao Yi's case illustrates this—weekly counseling + skill-building enhanced self-efficacy, then resilience [3].
   Digital support's moderating role reflects urban dropout children's digital native characteristics. Xuhui's smart devices compensated for 40% of community support gaps in single-parent families, proving digital tools' supplementary value [3].

5.2. Cross-cultural comparison with international experience

Thailand's data integration resolved Shanghai's identification lag—Xuhui's database reduced intervention delay from 3 months to 1 week [3]; Finland's individualized learning addressed stratification—Minhang's "one plan per child" raised rate by 27% [3]
   Japan's community-centered model needs adjustment (Shanghai's population density: 18,000/km² vs. Tokyo's 6,000/km²); Thailand's subsidy model is less applicable (only 8% of Shanghai's dropout cases relate to poverty) [3].
   Combine Thailand's "data identification" with Finland's "school support optimization" to form a "prevention-intervention" chain, as shown in Minhang's 92% risk prevention rate [3].

5.3. Implications for social support system optimization

At the micro-level, schools should abolish stratified classes and conduct teacher training on strength-based evaluation by referencing the teacher training experience of Minhang District (People's Government of Minhang District, Shanghai, 2025); families need to provide parental education focused on emotional communication, which can be achieved by adapting Changning's guardianship guidance (Shanghai Municipal Civil Affairs Bureau, 2025); and digital platforms ought to develop mental health modules, such as peer forums. Moving to the meso-level, it is necessary to establish "school-community joint centers" with embedded social workers, a measure that involves scaling up Minhang's "police-grid" model, according to data from the People's Government of Minhang District, Shanghai in 2025, this model has reduced minor-related disputes in Minhang by 5.37%. At the macro-level, efforts should be made to build cross-department data sharing through Shanghai's digital government infrastructure, which can be realized by expanding Xuhui's database; as reported by the People's Government of Xuhui District, Shanghai in 2025, this system identified over 1,200 at-risk children in 2025.

6. Conclusion

This study systematically examines the impact of the multi-dimensional social support system on resilience among Shanghai's dropout children, confirming that emotional school support and effective family communication are the most critical protective factors, with self-efficacy playing a key mediating role [9]. International experience comparison reveals Thailand's data integration and Finland's inclusive education principles have high localization value—evidenced by Minhang's 40.6% school return rate and Xuhui's 92% risk prevention rate [3,6].

There exists a sampling bias in the study: the over-reliance on registered dropout children may lead to the omission of the rest of unregistered migrant cases, which is based on the 2025 Changning estimate and has been documented by the Shanghai Municipal Civil Affairs Bureau in 2025. Second, the study has a causality limitation—due to its cross-sectional design, it is unable to establish causal relationships between the variables under investigation. Besides, there is a limitation in terms of cultural generalization: the adaptation of international experience into the local context lacks long-term testing, and a specific example is that Minhang's model only has 1-year data, as stated by the People's Government of Minhang District, Shanghai in 2025 [6].

To sum up, in order to optimize Shanghai's support system, stakeholders should: firstly, establish precision identification via cross-departmental data sharing; second,restructure school support to prioritize emotional connection over academic remediation; last but not least, build a multi-sector collaborative network integrating family, school, community, and digital resources. These efforts will enhance dropout children's resilience and promote educational equity in urban China.

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