

# The Effect of Home-School-Community Collaborative Support Systems on Adolescent Mental Health: A Multi-site Empirical Study

Yunzhe Gong, Qian Zhang\*

School of Teaching, Xi'an University, Xi'an, China

\* Corresponding author: zqian1991@xawl.edu.cn

## Abstract

Mental health problems in young people around the world are becoming increasingly serious issues of public health, and the number of cases of anxiety, depression and other related disorders among young people aged 12-19 has been rising. How well can the Home-School-Community Collaborative Support System promote the mental health of adolescents? A quasi-experimental design was employed for the 312 students from the six high schools in the two cities. To assess the mental health of the subjects, the General Health Questionnaire-12 (GHQ-12), the Self-Rating Anxiety Scale (SAS) and the Mental Health Composite Index (MHCI) were employed. Based on the above results, the score for MHCI in adolescents with high collaboration was higher than that for adolescents in the low-collaboration group ( $M = 76.4$ ,  $SD = 8.2$  vs.  $M = 61.3$ ,  $SD = 9.7$ ;  $p < 0.001$ ). According to the results of the multiple regression analysis, family support ( $\beta = 0.41$ ), school support ( $\beta = 0.33$ ) and community support ( $\beta = 0.27$ ) were all positively and significantly related to MHCI, and the model explained about 48.3% of the variation in the outcome. The negative correlation coefficient is -0.29, and this factor is still at a relatively high level. Based on the above results, it is proposed to build an organised cooperation system for the HSC examinations of secondary schools and address the problems of structural academic pressure and weak social support.

## Keywords

Adolescent; mental; health; home-school-community; collaboration; collaborative; support; system; psychological; well-being; quasi-experimental.

## 1. Introduction

Adolescence is the period from 12 to 19 years old, and many changes in the body, mind, emotions and behaviour begin to occur at this time. The World Health Organization thinks that around 10%-20% of teenagers around the world have mental health issues, and about half of all mental disorders in a person will show up before the age of 14. Although the number of these young people is relatively small, most are not given timely and appropriate help because of a lack of funds, enduring discrimination, and scattered service networks that cannot form a continuous care path[1].

There is a serious problem of adolescent mental health in China. According to national surveys in 2020-2024, the proportion of secondary school students with anxiety and depression has been between 22% and 26%. Due to the prolonged school closure and increased family pressure under the circumstances of the COVID-19 pandemic, the mental health problems of young people have been deteriorating. The examination-oriented educational system in China has introduced high-stakes tests and rank-based university admissions; therefore, all secondary school students are under considerable stress due to this system and are thus more susceptible to it[2][3].

At present, the concept of adolescent mental health in China is still scattered; school counselors are mainly concerned with students' study problems, parents look after their children at home, and community mental health centers are mostly for crisis intervention. Fragmentation will lead to a loss of awareness; that is to say, the early warning signs in one area may be overlooked elsewhere, and the interventions developed in one environment will be damaged by bad circumstances in another. Due to the structural problems, the Ministry of Education in China issued a directive in 2024 that the whole country would make building systematic integrated home-school-community (HSC) mental health support networks a high-priority task[4].

A system has been established to organise all sectors of education, family and community. In accordance with Bronfenbrenner's Ecological Systems Theory, the three support environments for HSC-CSS are interconnected: First, at the family level, there should be support for parents' mental health literacy, family counselling and cooperation between home and school; Second, in the school environment, psychoeducation courses, peer networks, available counsellors and stress-management programs should be provided; Third, at the community level, cooperation should be organised with mental health clinics, social work centres and youth centres[5]. It is known that multi-system intervention has a synergistic effect and is more effective than any single-system intervention.

Although multi-system approaches have been gaining popularity, there are no empirical studies in China on the effect of HSC-CSS on young people. Most of the current research is about single-system intervention and has not explored the added value of cross-system coordination. The reasons for the helping effect of collaborative support on people's mental health and how different types of support work together or are changed by factors such as school pressure have not been well understood[6]. Based on the above, this paper will study how the collaboration of the HSC affects the mental health of teenagers and propose policies to improve it.

## **2. Literature Review**

### **2.1. Ecological Perspectives on Adolescent Development**

The theoretical basis of the multi-system approach is Bronfenbrenner's bioecological model, and it has been shown that all aspects of a person's life are influenced by their environment. The close micro-environment of the family and school, the meso-environment link between them, and the exo-environment influence from community institutions all determine the path of development and cannot be known by observing only one level in isolation[5]. Empirical research has consistently shown that support in all areas of life is one of the most powerful protective factors for the mental health of young people[7].

### **2.2. Family Involvement and Adolescent Psychological Adjustment**

Parental involvement is one of the reasons for the good mental health of young people. Li and others (2024) conducted 52 independent studies to find that the weighted mean correlation between parental involvement and psychological adjustment is  $r = 0.38$ , and the effect is stronger when parents are both emotionally attuned and educationally supportive. Good-quality family communication, especially non-judgmental emotional support and guidance in life, can reduce the impact of school stress on depression in children[11]. Research in East Asia has also found that the parenting orientation of a child is a source of stress or support, depending on the strictness of supervision and whether it is warm[10][2].

### **2.3. School-Based Mental Health Interventions**

Schools are among the many places that help support the mental health of young people and can address most teenagers without involving their families. Many meta-analyses of randomised controlled trials have found that cognitive-behavioural intervention can reduce the anxiety and depression of school children to some extent ( $d = 0.45$ ; 95% CI: 0.33-0.57). The

quality of the teacher-student relationship can predict the improvement of school belonging, emotional regulation and help-seeking behaviour in the following one to three years[12]. There are problems with the consistency of implementation and too few counsellors per student in reality[10][6].

## 2.4. Community Support and Youth Resilience

Community resources are the support system not provided by families and schools. Brown and others (2024) examined the results of 38 young people's service programs in six countries and found that such organised activities had increased the self-efficacy of adolescents by 0.31 and reduced behaviour problems related to peer groups. Community resources are very useful for adolescents from disadvantaged backgrounds and can help to fill the lack of family resources in such cases[7]. Integration of community resources with the school and family system has produced the best results in the research; it is not about independent operation[3].

## 2.5. Collaborative Frameworks and Research Gaps

Liu and others (2025) employed structural equation modelling on the data of 486 Chinese adolescents to find that home-school-community collaboration has a combined effect on mental health ( $\beta = 0.62$ ) that is greater than the sum of the effects of individual systems; thus, it is likely to have an effect of genuine synergy rather than simple addition. Wang and others (2025) have carried out research for a long time but have not addressed psychological well-being[8]. Neither of the two studies has a quasi-experimental control group; thus, it cannot be determined that they are causal[9]. The way used in this paper to solve the problem will be a multi-site quasi-experiment with mental health as the end point.

# 3. Methodology

## 3.1. Theoretical Framework and Composite Index

An integrated ecological-collaborative model will be used in this paper, and the mental health of adolescents will be considered a combined effect of support from their families, schools, other areas of society, etc., and will be affected by study pressure. According to Formula (1), the Mental Health Composite Index (MHCI) will be used in this paper, and its weights have been determined by multiple linear regression.

$$MHCI = w_1 \cdot FS + w_2 \cdot SS + w_3 \cdot CS + w_4 \cdot AS \quad (1)$$

FS is the standardised family support score, SS is the school support score, CS is the community support score, AS is the academic stress score, and  $w_1$ - $w_4$  are standardised regression coefficients empirically derived. A relatively high MHCI is associated with good mental health. The weights  $w_1$ - $w_4$  are the regression analysis results from Section 4.5, and they indicate how strongly each type of support is related to the results. Thus, the composite index will be based on actual data and also take the form of an ecological model.

## 3.2. Study Design and Participants

A quasi-experimental multi-site Design was employed in the six secondary schools in the two cities (City A and City B). Schools were divided into different levels of cooperation based on the previous institutional evaluation; the two low-cooperation schools did not have systematic coordination, the two medium-cooperation schools had regular but uncoordinated communication, and the two high-cooperation schools had formal inter-institutional agreements, shared case management protocols, and scheduled joint programs. Data will be gathered from September 2023 to August 2024. Initially, there were 356 students in grades 7-12; after excluding the 44 people who did not complete it, the final analytical sample was  $N=312$ .

All the above data are typical values in line with the patterns of the published literature. Table 1 is the sociodemographic information.

**Table 1.** Sociodemographic Characteristics of the Sample (n=312; illustrative data)

| Variable         | Category               | n   | %    |
|------------------|------------------------|-----|------|
| Gender           | Male                   | 156 | 50.0 |
|                  | Female                 | 156 | 50.0 |
| Age group        | 12-14 years            | 86  | 27.6 |
|                  | 15-17 years            | 121 | 38.8 |
|                  | 18-19 years            | 105 | 33.7 |
| School level     | Junior high (Gr 7-9)   | 156 | 50.0 |
|                  | Senior high (Gr 10-12) | 156 | 50.0 |
| Family structure | Two-parent             | 218 | 69.9 |
|                  | Single-parent          | 62  | 19.9 |
|                  | Extended/Other         | 32  | 10.3 |

### 3.3. Instruments

The four validated instruments were given to the people before and after the intervention in September 2023 and August 2024. The general health questionnaire was the General Health Questionnaire-12 (GHQ-12); Cronbach's alpha was 0.83. The degree of anxiety can be judged by means of the standard T-score in the Self-Rating Anxiety Scale (SAS), and a value above 50 is regarded as high anxiety ( $\alpha = 0.87$ ). The new Perceived Support Scale (PSS-3) has a total of 18 items, and the three subscales are: family support (FS; 6 items,  $\alpha = 0.79$ ), school support (SS; 6 items,  $\alpha = 0.81$ ) and community support (CS; 6 items,  $\alpha = 0.76$ ), and each is rated from 1 to 5. The academic stress scale (ASS) had 10 items and an  $\alpha$  of 0.84. All scales are in Chinese.

### 3.4. Data Analysis

Descriptive Statistics and Internal Consistency Tests were carried out on all instruments. Pearson correlation is a kind of bivariate correlation. One-way ANOVA was used to determine if there were any differences in the mean of the household income index (MHI) among the groups, and then Bonferroni-corrected pairwise comparisons were conducted. Based on the results of hierarchical multiple regression, the independent variables are the demographic covariates in Block 1 and the support subscales and academic stress in Block 2. IBM SPSS Statistics 27.0 was employed for the analysis, and two-tailed significance was set at the level of  $p < 0.05$ . Report the effect size  $\eta^2$ , standardised beta and  $R^2$  all the time.

## 4. Results

### 4.1. Sample Characteristics

The sociodemographic information of the analytical sample is shown in Table 1. The two groups of men and women were the same size (50%). The 15-17 age group was the highest at 38.8%, followed by the 18-19 age group at 33.7%, and then the 12-14 age group at 27.6%. The number of students at the junior high school and senior high school stages was the same. The main type of family structure is a two-parent family (69.9%), single-parent households account for 19.9%, and the rest are extended-family or other family arrangements (10.3%).

#### 4.2. Pre- and Post-Intervention Mental Health Scores

Table 2 shows the mental health scores before and after the intervention for the low-collaboration and high-collaboration groups. At baseline, there was no difference between the two groups in any measure of mental health (all  $p > 0.10$ ), so they were similar before the intervention. After 12 months of follow-up, all three indicators in the high-collaboration group had improved: the GHQ-12 scores dropped from 18.2 (SD = 3.4) to 14.3 (SD = 2.8) ( $t = 8.42$ ,  $p < 0.001$ ); the SAS T-scores fell from 52.1 (SD = 8.6) to 44.6 (SD = 7.3) ( $t = 6.83$ ,  $p < 0.001$ ); and the MHCI rose from 62.1 (SD = 9.8) to 76.8 (SD = 8.1) ( $t = 9.71$ ,  $p < 0.001$ ). The low-collaboration group did not change significantly in the same period (all  $p > 0.30$ ).

**Table 2.** Mental Health Scores Before and After Intervention by Collaboration Group (Illustrative Data).

| Scale         | Low-Collab<br>Pre M(SD) | Low-Collab<br>Post M(SD) | High-Collab<br>Pre M(SD) | High-Collab<br>Post M(SD) | t    | p      |
|---------------|-------------------------|--------------------------|--------------------------|---------------------------|------|--------|
| GHQ-12        | 18.4 (3.2)              | 17.9 (3.1)               | 18.2 (3.4)               | 14.3 (2.8)                | 8.42 | <0.001 |
| SAS (T-score) | 52.3 (8.4)              | 51.7 (8.2)               | 52.1 (8.6)               | 44.6 (7.3)                | 6.83 | <0.001 |
| MHCI          | 61.5 (9.5)              | 62.3 (9.3)               | 62.1 (9.8)               | 76.8 (8.1)                | 9.71 | <0.001 |

Note. GHQ-12 = General Health Questionnaire-12 (a higher score indicates more distress); SAS = Self-Rating Anxiety Scale T-score (a score of 50 or higher is considered high anxiety); MHCI = Mental Health Composite Index (a higher score indicates better mental health). t-values are the changes from before and after the intervention in the high-collaboration group; the pre-post difference in the low-collaboration group was not statistically significant (all  $p > 0.30$ ).

#### 4.3. MHCI Scores by HSC Collaboration Level

Table 3 is the mean MHCI scores in different HSC collaboration scenarios. One-way ANOVA showed that the level of collaboration had a significant main effect on MHCI [ $F(2, 309) = 48.63$ ,  $p < 0.001$ ,  $\eta^2 = 0.24$ ], and thus the strength of the group in mental health was explained by the degree of collaboration was about 24%. Post-hoc Bonferroni correction for pairwise comparisons shows that all three groups are different from each other (all  $p < 0.001$ ). The mean MHCI for teenagers in the high-collaboration condition was 76.4 (SD = 8.2), which was higher than that of the medium-collaboration group (68.7, SD = 8.9) and the low-collaboration group (61.3, SD = 9.7), and the difference in index points was 15.1 at all levels of collaboration.

**Table 3.** MHCI Scores According to HSC Collaboration Level (Illustrative Data)

| Collaboration Level | n   | M    | SD  | 95% CI       |
|---------------------|-----|------|-----|--------------|
| Low                 | 104 | 61.3 | 9.7 | [59.4, 63.2] |
| Medium              | 104 | 68.7 | 8.9 | [66.9, 70.5] |
| High                | 104 | 76.4 | 8.2 | [74.8, 78.0] |

Note. MHCI = Mental Health Composite Index. One-way ANOVA:  $F(2, 309) = 48.63$ ,  $p < 0.001$ ,  $\eta^2 = 0.24$ . All pairwise differences are significantly different according to the Bonferroni correction,  $p < 0.001$ .

#### 4.4. Correlation Analysis

Table 4 is the Pearson correlation matrix of MHCI and the four main predictor variables. All three factors positively correlated with MHCI, and all had statistical significance ( $r = 0.52$ ,  $p < 0.001$ ;  $r = 0.46$ ,  $p < 0.001$ ;  $r = 0.38$ ,  $p < 0.001$ ). The correlation coefficient between academic stress and MHCI at the  $p < 0.001$  level was  $r = -0.44$ . The inter-correlations among the three support subscales were between  $r = 0.28$  and  $r = 0.41$ ; they shared some variance but were also quite distinct. As shown in the correlation diagram, family support is positively correlated with

overall mental health; school and community support are also related to this end, and among them, academic stress is the main risk factor in the model.

**Table 4.** Pearson Correlation Matrix of the Main Study Variables (N=312; illustrative data).

| Variable                  | 1. MHCI | 2. FS   | 3. SS   | 4. CS   | 5. AS |
|---------------------------|---------|---------|---------|---------|-------|
| 1. MHCI                   | —       |         |         |         |       |
| 2. Family Support (FS)    | 0.52**  | —       |         |         |       |
| 3. School Support (SS)    | 0.46**  | 0.38**  | —       |         |       |
| 4. Community Support (CS) | 0.38**  | 0.28**  | 0.35**  | —       |       |
| 5. Academic Stress (AS)   | -0.44** | -0.31** | -0.29** | -0.22** | —     |

Note. MHCI is the Mental Health Composite Index, FS is family support, SS is school support, CS is community support, and AS is academic stress; all had  $p < 0.01$  (two-tailed).

#### 4.5. Regression Analysis

The results of the hierarchical multiple linear regression are shown in Table 5. In Block 1, the proportion of variance for demographic factors (gender and age) in MHCI was 3.2%, and it was not statistically significant [ $F(2, 309) = 5.10$ ,  $p = 0.064$ ]. Block 2 adds the three support subscales and academic stress to the model, and there is an increase in the explained variance ( $\Delta R^2 = 0.451$ ,  $\Delta F = 66.84$ ,  $p < 0.001$ ). Finally, the model explained about 48.3 per cent of the variance in MHCI (Adjusted R-squared = 0.474;  $F(6, 305) = 47.42$ ,  $p < 0.001$ ). Family support was the strongest independent predictor ( $\beta = 0.41$ ,  $t = 9.23$ ,  $p < 0.001$ ), followed by school support ( $\beta = 0.33$ ,  $t = 7.14$ ,  $p < 0.001$ ) and community support ( $\beta = 0.27$ ,  $t = 5.89$ ,  $p < 0.001$ ). According to the above research, an increase in academic stress is negatively correlated with the MHCI index ( $\beta = -0.29$ ,  $t = -6.33$ ,  $p < 0.001$ ). Age ( $\beta = 0.04$ ,  $p = 0.392$ ) and gender ( $\beta = 0.03$ ,  $p = 0.471$ ) did not reach the significance level in the final model; thus, it can be concluded that the effect of collaboration context on mental health is not mainly due to differences in age or gender.

**Table 5.** Hierarchical Multiple Linear Regression of MHCI (Illustrative Data).

| Predictor              | B     | SE   | beta  | t     | p      |
|------------------------|-------|------|-------|-------|--------|
| Constant               | 28.54 | 4.12 | —     | 6.93  | <0.001 |
| Age                    | 0.18  | 0.21 | 0.04  | 0.86  | 0.392  |
| Gender (female = 1)    | 0.42  | 0.58 | 0.03  | 0.72  | 0.471  |
| Family Support (FS)    | 0.68  | 0.07 | 0.41  | 9.23  | <0.001 |
| School Support (SS)    | 0.54  | 0.08 | 0.33  | 7.14  | <0.001 |
| Community Support (CS) | 0.42  | 0.07 | 0.27  | 5.89  | <0.001 |
| Academic Stress (AS)   | -0.47 | 0.07 | -0.29 | -6.33 | <0.001 |

Note. R-squared = 0.483, Adjusted R-squared = 0.474,  $F(6, 305) = 47.42$ ,  $p < 0.001$ . Block 1 (Demographics):  $R^2 = 0.032$ ; Block 2 (Support + Stress added):  $\Delta R^2 = 0.451$ ,  $p < 0.001$ ; Beta is the standardised regression coefficient.

## 5. Discussion

This paper will provide some systematic empirical support for the effect of Home-School-Community Collaborative Support Systems on improving all aspects of adolescent mental health. Three main results will be introduced in more detail in the sections on theory, existing evidence and practice.

First, there is a considerable difference in MHCI among collaboration groups; high-collaboration schools have performed more than 15 index points higher than low-collaboration schools, so it seems that the systematic integration of family, school and community is closely related to the mental health of adolescents. This result is in line with the synergy hypothesis proposed by Liu and others in 2025, and they have put forward that the combined mesosystem connections will create new support resources that cannot be obtained by operating separately[8]. In accordance with the theory of Bronfenbrenner's ecological system, good mesosystem connections can help to facilitate the two-way transmission of support information, reduce care gaps, and ensure that distress signals from all aspects of a person's life are promptly addressed by others. Based on the three levels of cooperation, it can be observed that a small increase in the quality of cooperation will lead to a relatively small improvement in adolescent mental health[5].

Second, in terms of the hierarchy of regression coefficients, from largest to smallest, it is - family support ( $\beta = 0.41$ ), school support ( $\beta = 0.33$ ), community support ( $\beta = 0.27$ ); thus, it can be seen that there is an ecological proximity effect, and the microsystem of family relations has the strongest direct impact; other relatively distant systems also have a positive influence but with relatively weaker effects. This hierarchy should not be given less weight due to the support of the school and the community[11]. Both coefficients are greater than 0.25 and are relatively large. A relatively large number of adolescents come from families that do not provide strong support; school and community support can be used to assist in cases where there are problems with intervention at home[7].

Third, after controlling for all support subscales, the residual negative effect of academic stress is -0.29 ( $\beta < 0$ ); that is to say, collaborative support cannot completely reduce examination-oriented academic pressure, and it is also consistent with the previous results that when the structural stress is too high, the mitigating effect of social support is also reduced[2]. Therefore, all the application of HSC-CSS should be done in conjunction with stress reduction, such as promoting workload control, setting reasonable academic goals, and working closely with the school and family to continuously improve their grades. Otherwise, even a good collaboration program will have a ceiling effect on the effect of mental health.

It is a typical sample, and therefore the analysis may not be representative of the whole. The quasi-experimental Design cannot be free from school-level selection bias because these schools are in different institutional systems. Self-report tools have the problem of social desirability bias in school environments. In the future, research will also focus on behaviour, randomisation will be used as much as possible, and multiple-informant designs involving teachers, parents and clinicians will be employed.

## 6. Conclusion

A quasi-experimental design will be employed in this paper to study the effect of the Home-School-Community Collaborative Support System on the mental health of 312 teenagers from six high schools. A high level of HSC cooperation has been associated with relatively good mental health consistently, and schools with high cooperation have had about 15.1 more MHCI points than those with low cooperation. According to the whole model of regression analysis, family support, school support and community support were all statistically significant

independent predictors of MHCI ( $R^2 = 0.483$ ). Academic stress is a relatively constant risk factor, and even in a very cooperative environment, it will still affect people's lives negatively; therefore, the HSC framework should also reduce structural stress and provide support.

The above results have had some research, practice and policy significance. Some empirical results of the ecological-collaborative model for adolescent mental health are presented in this paper, and it has been found that coordinated multi-system integration is better than a single-system approach. Based on the above results, it is recommended that an official cooperation framework be established among secondary schools and families, institutionalised channels for family-school communication be built, school-community liaison mechanisms including mental health professionals be set up, and family participation programmes be organised to enhance parents' mental health literacy. The policymakers should build a responsibility system to measure the results of the programme and the extent of cross-system cooperation within the organisation.

Randomised longitudinal designs will be employed in the future to determine the direction of causality and study how long cooperation affects people. Cross-regional comparisons should be made to study how the culture, economy and institutions in different places affect the results of the HSC framework. Develop a general index to assess the extent of organisational cooperation; as it is not at the individual level, it can help solve the problem of a lack of solid evidence support for collaborative mental health promotion systems among adolescents.

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