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Alternative “Antidepressants”: A Study on the Mental Health Dividends of Art Participation

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Abstract: In the context where mental health issues are increasingly becoming a global public health challenge, exploring cost-effective, non-pharmacological intervention pathways is paramount for enhancing individual well-being and constructing robust social support systems. Leveraging large-scale micro-data from the Chinese General Social Survey (CGSS), this study employs Ordinary Least Squares (OLS) regression to empirically examine the impact of Art Participation on individual Mental Health, elucidating both the underlying mechanisms and heterogeneous effects across different population subgroups. The findings yield three principal conclusions: First, Art Participation exerts a statistically significant positive effect on individual Mental Health. Second, mechanism analysis reveals that this beneficial impact is primarily mediated through three distinct pathways: the strengthening of social connectedness, the enhancement of subjective well-being, and the improvement of physical health status. Third, heterogeneity analysis reveals a significant educational gradient in mental health dividends from art participation, with the effect more pronounced among less educated individuals.

Keywords: Mental Health; Art Participation; Social Connectedness; Physical Health

1. Introduction

Amidst the rapid acceleration of modern societal development, individuals are confronted with escalating pressures and multifaceted challenges, propelling Mental Health to the forefront of global discourse. The World Health Organization (WHO) posits that health transcends the mere absence of infirmity, representing instead a holistic state of physical, mental, and social well-being. Nevertheless, the confluence of an accelerated pace of life, intensifying competitive dynamics, and demographic aging has precipitated a surge in psychological distress, notably anxiety and depression, thereby severely impeding individual welfare and social stability. Consequently, the identification of efficacious pathways for psychological enhancement has become a pivotal imperative in the architecture of public service delivery. Art Participation, characterized as a non-pharmacological and cost-effective intervention that synergizes aesthetic engagement with therapeutic potential, has been empirically validated to catalyze self-efficacy, foster social connectedness, and provide vital channels for emotional catharsis. This raises a critical inquiry: Does Art Participation indeed exert a causal influence on the amelioration of Mental Health? Rigorously investigating its impact, the underlying mechanisms of action, and the heterogeneous effects across diverse population subgroups is essential not only for enriching the theoretical paradigms of Mental Health promotion but also for furnishing robust empirical evidence to inform precision-oriented public cultural policies and the construction of an integrated "Art + Health" support ecosystem.

Existing scholarship elucidates that Mental Health constitutes a complex, dynamic system shaped by the multidimensional interplay of determinants ranging from macro-environmental shocks to micro-level individual behaviors. Primarily, macro-environmental conditions and structural stressors function as exogenous risk sources for Mental Health. Climate change (Brandt et al., 2024), extreme temperature fluctuations (Mullins and White, 2019), and protracted armed conflicts (Seleznova et al., 2023) exert enduring deleterious effects on population psychology by engendering uncertainty, precipitating economic distress, and fostering adverse media environments. Concurrently, profound structural inequalities—encompassing systemic racism (Williams, 2018), socioeconomic stratification, and substandard housing and working conditions (Mezzina et al., 2022)—significantly exacerbate psychological vulnerability. Notably, social mobility exhibits a nonlinear influence: individuals experiencing either upward or downward mobility demonstrate inferior Mental Health outcomes compared to those with sustained advantageous status, yet they fare better than those entrenched in persistent disadvantage. This pattern suggests that the process of mobility itself entails distinct psychological challenges (Islam and Jaffee, 2024). Secondly, digital engagement assumes an ambivalent, "double-edged sword" role in the realm of Mental Health. On one hand, prolonged screen exposure (Pandya and Lodha, 2021) and adverse social comparisons within social media ecosystems (Braghieri et al., 2022) can erode psychological well-being. On the other hand, digital participation has been empirically shown to mitigate aggregate Mental Health inequalities and elevate overall levels (Wang and Li, 2025). Furthermore, commercial video games have emerged as a cost-effective, non-stigmatizing resource with significant potential for positive intervention (Kowal et al., 2021). Finally, individual lifestyle choices and physiological foundations serve as the endogenous defense lines for maintaining Mental Health. Variations in physical health status (Doan et al., 2023), sleep quality (Scott et al., 2021), and dietary patterns (Hepsomali and Groeger, 2021) are all significantly positively correlated with Mental Health outcomes. Moreover, employment acts as a critical protective factor by furnishing self-sufficiency, income stability, and social esteem (Drake and Wallach, 2020). Additionally, Mental Health literacy has been validated not only as a direct predictor of psychological status but also as an indirect mechanism that bolsters resilience, with particularly pronounced efficacy observed among female populations (Song et al., 2023).

Existing literature substantiates that Art Participation exerts multifaceted, positive influences on individual development across the entire life course. Its value extends beyond the construction of psychological well-being to encompass the enhancement of cognitive competencies and the fortification of social functioning. Primarily, at the psychological and affective level, engagement in artistic activities has been empirically validated as a pivotal conduit

for elevating subjective well-being, self-esteem, and life satisfaction. For both children and adolescents, involvement in artistic creation fosters confidence, self-efficacy, and a robust sense of identity (Jensen, 2013; Morris et al., 2016; Ishiguro et al., 2023; Leyre Zarobe. and Hilary Bungay., 2017). These salutary effects persist into adulthood and old age; high-frequency Art Participation not only promotes physical health(Jensen et al., 2023) but also enables older women to reconstruct meaning in their lives, maintain openness to novel experiences, and garner social appreciation(Liddle et al., 2013) (Lee et al., 2021). Extensive empirical inquiry further corroborates that cultural engagement, such as museum visitation, significantly augments human health and well-being, mitigates disease risk, and enhances overall happiness(Paul M Camic. and Helen J Chatterjee., 2013) (Cotter and Pawelski, 2022).Secondly, regarding capacity building and skill acquisition, Art Participation serves as an efficacious vehicle for cultivating critical cognitive and non-cognitive skills. Through the practice of visual arts, adolescents strengthen cognitive faculties related to emotional expression and artistic creation, thereby establishing a solid foundation of self-efficacy that facilitates deeper social integration (Deer et al., 2023). Similarly, students in secondary and tertiary education acquire forward-looking, comprehensive competencies through such engagement(Myung Hee Im. et al., 2016) Furthermore, the creative process itself functions as a form of goal-oriented training, assisting individuals in setting and achieving specific objectives pertaining to creativity, communication, and psychosomatic rehabilitation(Morris et al., 2016).However, it is imperative to note a crucial nuance: while the efficacy of Art Participation in enhancing soft skills and well-being is well-documented, its direct causal impact on hard academic metrics remains a subject of scholarly debate. Research (Deer et al., 2023) indicates that students participating in active artistic endeavors do not demonstrate statistically significant advantages in academic performance compared to peers engaged solely in passive aesthetic consumption.

Extant scholarship has robustly substantiated the salutary effects of Art Participation on Mental Health across multifarious dimensions. At the level of individual psychological remediation and development, Art Participation is widely concomitant with effective intervention modalities. A plethora of empirical inquiries demonstrates that creative artistic endeavors significantly ameliorate Mental Health status and elevate subjective well-being (Fan et al., 2024) whether deployed as an adjunctive therapeutic measure(Shukla et al., 2022), or targeted toward specific demographics, such as the elderly (Singer et al., 2025) and individuals grappling with psychological distress (Caddy et al., 2012). The underlying mechanisms posit that artistic engagement fortifies social connectedness and self-expressive capacities (Cases-Cunillera et al., 2025); concurrently, by augmenting levels of empowerment (Hacking et al., 2008) and catalyzing self-efficacy, it facilitates recovery among individuals entrapped in cycles of despair (Spandler et al., 2007). Furthermore, (Mak et al., 2024)underscore that interventions specifically engineered to promote Art and Cultural Participation harbor significant potential for enhancing aggregate Mental Health outcomes. Transcending the narrow confines of therapeutic utility, the value of Art Participation extends profoundly into the domains of social functioning and cultural cognition. It serves not merely as a conduit for personal growth but also as a pivotal force in fostering discourse on Mental Health issues, dismantling the stigma associated with mental illness, and reshaping mainstream perceptions of psychological well-being (Gallant et al., 2019). Through the medium of art, individuals are afforded the opportunity to reconstruct social bonds within inclusive environments, thereby accessing more expansive networks of social support. Nevertheless, critical lacunae persist within the current literature. While extant studies—predominantly reliant on small-sample datasets or qualitative inquiries—have corroborated the positive correlation between Art Participation and Mental Health, there remains a conspicuous absence of systematic empirical validation grounded in large-scale data. Moreover, limitations endure regarding the quantitative dissection of causal mechanisms and the heterogeneity of effects across diverse population subgroups. Consequently, the field has yet to fully elucidate the universal regularities, deep-seated pathways, and boundary conditions governing the impact of Art Participation on Mental Health.

This study makes three distinct contributions to the extant literature. Firstly, it substantially broadens the scope and representativeness of the empirical sample, providing robust evidence derived from large-scale data. Diverging from prior inquiries that predominantly rely on small-sample experiments or qualitative case studies, this paper leverages the Chinese General Social Survey (CGSS), a representative large-scale micro-dataset. This approach effectively mitigates sample selection bias, not only validating the universal promotive effect of Art Participation on Mental Health but also extrapolating these findings from specific clinical or localized cohorts to the general population. Consequently, this significantly enhances the external validity and generalizability of the research conclusions. Secondly, this research unpacks the "black box" underlying the impact of Art Participation on Mental Health by constructing a multidimensional framework of mediating mechanisms. While existing scholarship has alluded to concepts such as social connectedness and empowerment, it lacks systematic quantitative verification of these pathways. Innovatively, this study integrates three pivotal variables—"social connectedness," "subjective well-being," and "physical health status"—to empirically elucidate the specific transmission channels through which Art Participation fosters Mental Health: namely, by reinforcing social networks, elevating intrinsic hedonic states, and improving physiological functioning. This enriches the theoretical explanatory mechanisms governing the "Art-Health" nexus. Thirdly, this study deepens the understanding of group heterogeneity. By identifying differential effects across educational strata, the research not only addresses concerns regarding the "health gap" potentially exacerbated by inequalities in cultural capital but also provides rigorous empirical support for policymakers. These findings inform the optimization of public art resource allocation and the implementation of targeted intervention strategies tailored to populations with varying levels of educational attainment.

2. Theoretical Analysis and Research Hypotheses

2.1 Art Participation and Mental Health

Art Participation, as a multifaceted endeavor synthesizing aesthetic appreciation, emotional engagement, and social praxis, exerts a profound and salutary influence on individual Mental Health. Theoretically grounded in Maslow's Hierarchy of Needs, which posits aesthetic needs as a paramount component of human aspiration, the satisfaction of such needs is instrumental in propelling individuals toward self-actualization. Engagement in artistic activities—ranging from attending musical performances and viewing exhibitions to active creative production—affords individuals a distinct spatiotemporal sanctuary, enabling a temporary disengagement from the exigencies and vicissitudes of daily life. Within this realm of aesthetic experience, individuals attain spiritual rejuvenation and cognitive respite. This immersive process inherently possesses potent emotive regulatory capacities, effectively ameliorating adverse psychological states such as anxiety and depression. Furthermore, artistic endeavors frequently encapsulate profound emotional articulation and philosophical introspection. Through the processes of appreciation or creation, participants establish a resonant connection with the artwork, facilitating the expression and catharsis of suppressed emotions. This mechanism aids in the resolution of internal conflicts, thereby restoring psychological equilibrium. From a socio-cultural perspective, given that art represents the quintessence of human civilization, participation therein engenders cultural edification and spiritual sublimation, ultimately fortifying one's affinity for life and sense of hope. Consequently, this study posits the following hypothesis:

Hypothesis 1: Art participation can improve mental health.

2.2 The mechanism and path by which art participation affects mental health

The promotion effect of art participation on mental health does not occur in isolation, but is realized through a series of internal psychological and social mechanisms.

2.2.1 Social connection

Social connectedness, defined as the formation of stable and meaningful affective bonds between individuals and their peers, constitutes a pivotal determinant of Mental Health. Grounded in Social Support Theory, robust interpersonal relationships furnish individuals with multifaceted resources—encompassing emotional sustenance,

informational guidance, and instrumental assistance—thereby enhancing their capacity to navigate life stressors and mitigating the deleterious impacts of adverse events. Art Participation, particularly within the context of collective artistic praxis such as choral ensembles, community theater productions, and calligraphy societies, is intrinsically endowed with social attributes. These activities cultivate platforms for interaction centered around shared aesthetic interests, thereby fostering interpersonal engagement and collaborative synergy. Through such engagement, individuals are afforded the opportunity to forge alliances with like-minded peers, exchange artistic insights, and establish novel social ties (Cases-Cunillera et al., 2025). Even receptive forms of Art Participation, such as attending performances or exhibitions, frequently entail shared experiences with family and friends followed by discursive reflection, implicitly reinforcing existing emotional bonds. The social networks thus generated or fortified through Art Participation provide individuals with a profound sense of belonging and security while attenuating feelings of isolation, ultimately exerting a salutary influence on Mental Health. Consequently, this study posits the following hypothesis:

Hypothesis 2a: Art participation can improve mental health by enhancing social connections.

2.2.2 Subjective Well-being

Subjective well-being constitutes a comprehensive cognitive and affective appraisal of one's quality of life, encompassing dimensions such as life satisfaction and the equilibrium between positive and negative affect. It serves as a pivotal metric for assessing Mental Health. From the perspective of positive psychology, the pursuit of happiness and meaning constitutes a fundamental human motivation. Art Participation, by virtue of its distinctive allure, significantly augments individuals' positive affective experiences. During aesthetic appreciation, the perception of beauty elicits positive emotions—such as pleasure, serenity, and being moved—whereas engagement in artistic creation fosters a sense of flow, achievement, and self-efficacy; these are intrinsic elements of subjective well-being. Furthermore, the arts facilitate introspection and the discernment of existential meaning, thereby elevating overall life satisfaction. Heightened subjective well-being, in turn, bolsters resilience against negative affect and fosters emotional stability. Consequently, Art Participation indirectly facilitates the amelioration of Mental Health by enhancing subjective well-being. Accordingly, this study posits that:

Hypothesis 2b: Art participation can improve mental health by enhancing subjective well-being.

2.2.3 Physical Health Condition

Mental Health is inextricably linked to physical well-being. Suboptimal physical health frequently serves as a precipitating or exacerbating factor for psychological distress. Grounded in the theory of mind-body interaction, a positive psychological state contributes to the maintenance of robust physiological functioning, and vice versa. Numerous forms of Art Participation inherently entail a degree of physical exertion; activities such as dancing, singing, and playing musical instruments serve to condition the body, enhance circulation, and bolster physical constitution during the engagement process (Jensen et al., 2023). Even ostensibly sedentary forms of artistic appreciation, such as standing for prolonged periods during an exhibition or attentive listening in a concert hall, necessitate physical stamina and may involve subtle motor activity. More critically, the gratification and relaxation derived from Art Participation can effectively attenuate the levels of stress hormones, such as cortisol, thereby mitigating the somatic toll of chronic stress and indirectly ameliorating subjective physical perceptions. As individuals perceive an improvement in their physical condition, their psychological outlook and emotional affect typically commensurately improve, establishing a virtuous cycle of mutual reinforcement between physical and mental health. Consequently, Art Participation may exert a beneficial impact on Mental Health by ameliorating individuals' perceived physical health status. Accordingly, this study posits that:

Hypothesis 2c: Art participation can improve mental health by enhancing physical well-being.

3 Research Design

3.1 Sample Selection

The empirical analysis draws upon data from the Chinese General Social Survey (CGSS), a comprehensive, nationwide survey administered by the China National Survey Data and Analysis Center at Renmin University of China. To ensure national representativeness, the survey employs a rigorous, multi-stage stratified sampling design based on map-assisted address selection—a methodology widely recognized as the gold standard in large-scale socio-economic inquiries within China. The dataset encompasses 29 provinces, municipalities, and autonomous regions. This study harmonizes six waves of the survey, spanning 2012, 2013, 2015, 2017, 2018, and 2021. To guarantee the validity of the regression estimates, observations with missing values for key variables—including the core explanatory variables, dependent variables, mediators, and controls—were excluded. The final analytical sample consists of 59,201 observations.

3.2 Variable Selection

3.2.1 Dependent Variable

The dependent variable in this study is individual mental health (MH), which is operationalized by measuring the frequency of negative emotions—specifically, feelings of depression and distress. This variable is derived from the following survey question: “During the past four weeks, how often have you felt depressed or distressed?” Responses were recorded on a five-point Likert scale, with options ranging from “never” to “always,” coded as 1 through 5, respectively. It is important to note that this measure is reverse-coded, such that higher scores indicate a greater frequency of depressive symptoms and, consequently, poorer mental health.

3.2.2 Core explanatory variables

The core explanatory variable in this study is art participation (AP), which is derived from the following survey question: “In the past year, how often did you participate in cultural activities, such as attending concerts, performances, or exhibitions?” Responses were assessed using a five-point Likert scale, with the options “never,” “once a year or less,” “several times a month,” “several times a week,” and “every day” assigned values of 1 through 5, respectively. Higher scores indicate a greater frequency of art participation.

3.2.3 Mediating Variables

The variable of social connection (SC) is employed to capture the frequency and intensity of an individual’s interactions within their social network. This measure is derived from the following survey question: “In the past year, how often did you spend time with friends during your leisure time?” Responses were recorded on a five-point Likert scale, with the options “never,” “once a year or less,” “several times a month,” “several times a week,” and “every day” assigned values of 1 through 5, respectively. Higher values on this measure indicate a greater frequency of social interaction with friends, reflecting a stronger degree of social connection.

The variable of subjective well-being (SW) is designed to capture an individual’s overall evaluation and satisfaction with their quality of life. This measure is derived from the core survey question: “Overall, do you consider yourself a happy person?” Responses were assessed using a five-point Likert scale, with the options “very unhappy,” “somewhat unhappy,” “neutral,” “somewhat happy,” and “very happy” assigned values of 1 through 5, respectively. Higher values on this measure indicate a greater level of subjective well-being.

The variable of physical health status (PHS) is employed to capture an individual’s subjective perception and evaluation of their current health condition. This measure is derived from the core survey question: “How would you rate your current physical health?” Responses were assessed using a five-point Likert scale, with the options “very unhealthy,” “somewhat unhealthy,” “fair,” “somewhat healthy,” and “very healthy” assigned values of 1 through 5, respectively. Higher values on this measure indicate a more favorable self-perceived physical health status.

3.2.4 Control Variables

To account for potential confounding factors, this study draws on the existing literature to select a set of

individual-level characteristics that may influence mental health as control variables. Specifically, these include gender (GEN), coded as 1 for male and 0 for female; age (AGE), calculated as the survey year minus the year of birth; religious belief (RB), coded as 1 for individuals with religious affiliation and 0 otherwise; household registration status (RR), coded as 1 for agricultural registration and 0 for non-agricultural registration; marital status (MS), coded as 1 for married and 0 for unmarried; political affiliation (PA), coded as 1 for the general public, 2 for members of the Communist Youth League, 3 for members of democratic parties, and 4 for members of the Communist Party; and income (INC), measured as the natural logarithm of total annual income from the previous year.

3.3 Model Specification

We employ ordinary least squares (OLS) to empirically examine the effect of art participation on mental health. The specific model specification is as follows:

$$MH_{it} = \alpha_0 + \alpha_1 AP_{it} + \beta Control + \mu_i + \nu_t + \varepsilon_{it} \quad (1)$$

where the i and t denote province and year, respectively; MH_{it} represents the dependent variable of mental health; AP_{it} is the core explanatory variable of art participation; Control denotes the set of control variables; α and β are the corresponding regression coefficients; μ_i captures province fixed effects, while ν_t accounts for year fixed effects; and ε_{it} is the stochastic error term.

3.4 Descriptive Statistical Analysis

Table 1 presents the descriptive statistics for the main variables. The results indicate that the effective sample size comprises 59,201 observations. The mean value of the core dependent variable, mental health (MH), is 2.1353, which falls below the midpoint of the five-point scale, suggesting that the sample population, on average, reports a favorable mental health status, corresponding to a frequency of feeling depressed “rarely.” However, the standard deviation of 0.9805 reveals considerable heterogeneity across individuals. The mean value of the core explanatory variable, art participation (AP), is 1.4219, substantially below the scale midpoint, indicating a low overall level of engagement in artistic activities, approximating a “never” participation frequency. The standard deviation of 0.7508 similarly reflects notable variation in participation frequency across individuals. Collectively, these descriptive statistics show that while the majority of the sample exhibits favorable mental health, their level of art participation remains relatively low, thereby providing a foundation for exploring the potential influence of art participation on mental health.

Table 1 Descriptive Statistics of Variables

Variable	Obs	Mean	Std.Dev.	Min	Max
MH	59,201	2.1353	0.9805	1.0000	5.0000
AP	59,201	1.4219	0.7508	1.0000	5.0000
SC	59,201	2.3499	0.9878	1.0000	5.0000
HW	59,201	3.8574	0.8327	1.0000	5.0000
PHS	59,201	3.5581	1.0885	1.0000	5.0000
GEN	59,201	0.4874	0.4998	0.0000	1.0000
AGE	59,201	50.6548	16.6129	17.0000	118.0000
RB	59,201	0.1104	0.3133	0.0000	1.0000
RR	59,201	0.5473	0.4978	0.0000	1.0000
MS	59,201	0.8684	0.3380	0.0000	1.0000
PA	59,201	1.3933	0.9651	1.0000	4.0000
INC	59,201	8.3920	3.6214	0.0000	16.1181

4. Empirical Analysis

4.1 Baseline Regression Analysis

Table 2 presents the results of the baseline regression analysis. In all models, we control for both province and

year fixed effects. Specifically, Model (1) reports the regression results without the inclusion of control variables, while Model (2) clusters the standard errors at the province level based on Model (1). Models (3) and (4) introduce individual-level control variables, building upon the specifications of Models (1) and (2), respectively. The regression results reveal that the coefficient of the core explanatory variable—art participation—is negative across all models and statistically significant. This finding indicates that, after accounting for individual characteristics, as well as province and year fixed effects, a higher level of art participation is associated with a significant reduction in the reported frequency of depressive symptoms, thereby contributing to improved mental health. These results provide robust empirical support for the central hypothesis of this study, namely that art participation exerts a positive effect on mental health.

Table 2 Results of Baseline Regression Analysis

Variable	(1)	(2)	(3)	(4)
AP	-0.0612*** (0.0054)	-0.0612*** (0.0116)	-0.0198*** (0.0055)	-0.0198** (0.0097)
GEN			-0.1034*** (0.0082)	-0.1034*** (0.0108)
AGE			0.0071*** (0.0003)	0.0071*** (0.0009)
RB			0.0739*** (0.0133)	0.0739** (0.0278)
RR			0.1140*** (0.0092)	0.1140*** (0.0133)
MS			-0.1292*** (0.0129)	-0.1292*** (0.0155)
PA			-0.0496*** (0.0042)	-0.0496*** (0.0046)
INC			-0.0153*** (0.0012)	-0.0153*** (0.0016)
Constant	2.2223*** (0.0086)	2.2223*** (0.0165)	2.0953*** (0.0214)	2.0953*** (0.0398)
Province FE	Yes	Yes	Yes	Yes
Year FE	Yes	Yes	Yes	Yes
N	59201	59201	59201	59201
R ²	0.043	0.043	0.070	0.070

Note: Standard errors in parentheses, * $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$

4.2 Robustness Analysis

4.2.1 Variable Replacement and Model Switching

In the baseline regression, the dependent variable—frequency of depressive symptoms—was measured using a five-point Likert scale, with responses ranging from “never” to “always” coded as 1 through 5, respectively. This variable is reverse-coded, such that higher scores indicate a greater frequency of depressive symptoms, corresponding to lower levels of mental health.

To assess the sensitivity of the estimation results to the measurement approach, we conduct the following robustness checks. First, we transform the continuous variable into a binary variable, categorizing “never” and “rarely” as “mentally healthy” (coded as 0), and “sometimes,” “frequently,” and “always” as “mentally unhealthy” (coded as 1), and re-estimate the model using ordinary least squares (OLS). The results are presented in Model (1) of Table 3.

Second, in light of the ordinal discrete nature of the dependent variable, we re-estimate the model using a Logit specification, with the results shown in Model (2) of Table 3.

The regression results reveal that the coefficient of the core explanatory variable, art participation, remains consistent in direction with that of the baseline regression and is statistically significant at the 1% level. These findings indicate that after altering the measurement of the dependent variable and the model specification, the promoting effect of art participation on mental health remains robust.

4.2.2 Elimination of Special Samples

To account for potential systematic differences in the factors influencing mental health among certain subpopulations, we conduct robustness checks by excluding specific sample groups. First, we exclude individuals under the age of 18 and those over 65, as their mental health status is more susceptible to physiological development and aging-related factors. Second, we remove observations from the four 直辖市的 municipalities—Beijing, Shanghai, Tianjin, and Chongqing—where public cultural resources are disproportionately concentrated, leading to systematic differences in the accessibility of art participation compared to other regions.

Regression results following the exclusion of these specific subsamples are presented in Models (3) and (4) of Table 3. The findings show that the sign and statistical significance of the coefficient for art participation remain largely consistent with those of the baseline regression, suggesting that the main findings are not driven by the inclusion of these particular subsamples.

4.2.3 Preference Score Matching Method

To mitigate endogeneity concerns arising from sample selection bias, this study employs propensity score matching (PSM) to preprocess the sample. Specifically, propensity scores are first estimated based on individual characteristics. A 1:1 nearest-neighbor matching procedure is then applied to identify matched samples from the control group (non-participants) for the treatment group (art participants), and the average treatment effect on the treated (ATT)—that is, the average net effect of art participation on mental health—is subsequently estimated. As a robustness check, caliper matching with a caliper radius of 0.01 is also conducted.

The nearest-neighbor matching results indicate that the total sample size prior to matching was 59,201 observations, which reduced to an effective sample of 25,735 observations after matching. The balance diagnostics reveal that following matching, the standardized bias for all covariates fell below 5%, and the t-tests failed to reject the null hypothesis of no significant differences in covariates between the treatment and control groups. These findings suggest that systematic differences between the two groups were effectively eliminated, confirming the adequacy of the matching procedure. Regression results based on the matched sample are presented in Model (5) of Table 3.

The caliper matching results show that the effective sample size after matching comprises 40,814 observations. The balance diagnostics similarly indicate that the standardized bias for the majority of covariates falls below 5%, demonstrating satisfactory matching performance. Regression results based on the matched sample are presented in Model (6) of Table 3.

Regression results from both matching methods consistently demonstrate that the coefficient for art participation is negative and statistically significant at the 5% level, suggesting that even after mitigating selection bias, art participation continues to exert a significant negative effect on the frequency of depressive symptoms. These findings confirm the robustness of our main conclusions.

Table 3 Robustness Test

Variable	(1)	(2)	(3)	(4)	(5)	(6)
	Replace the explained variable	Logit	Exclude special age groups	Exclude samples from municipalities	Nearest neighbor matching	Caliper matching
AP	-0.0152*** (0.0046)	-0.0769*** (0.0241)	-0.0134** (0.0052)	-0.0228** (0.0107)	-0.0138*** (0.0049)	-0.0163*** (0.0048)
Constant	0.3355*** (0.0184)	-0.7949*** (0.1065)	0.3130*** (0.0222)	2.0933*** (0.0416)	0.3447*** (0.0206)	0.3178*** (0.0184)
Control	Yes	Yes	Yes	Yes	Yes	Yes
Province FE	Yes	Yes	Yes	Yes	Yes	Yes
Year FE	Yes	Yes	Yes	Yes	Yes	Yes
N	59201	59201	47697	48313	25735	40814
R2	0.052		0.049	0.061	0.040	0.050

Note: Standard errors in parentheses, * $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$

4.3 Mechanism Analysis

The baseline regression analysis has established a statistically significant negative effect of art participation on mental health, thereby providing the foundation for conducting subsequent mediation effect tests.

To further investigate the underlying mechanisms through which art participation influences mental health, this study employs a mediation effect model, which is implemented according to the following analytical steps:

Firstly, in the first-stage regression, we examine the impact of artistic participation on the mediating variable. The model specification is shown in Equation (2):

$$M_{it} = \alpha_0 + \alpha_1 AP_{it} + \beta Control + \mu_i + \nu_t + \varepsilon_{it} \quad (2)$$

Subsequently, the second-stage regression is performed to assess the effect of the mediating variable on mental health, with the model specification set forth in Equation (3):

$$MH_{it} = \alpha_0 + \alpha_1 M_{it} + \beta Control + \mu_i + \nu_t + \varepsilon_{it} \quad (3)$$

Finally, a joint effect test is conducted by simultaneously incorporating art participation and the mediating variable into the regression equation to examine their combined influence on mental health. The model specification is presented in Equation (4):

$$MH_{it} = \alpha_0 + \alpha_1 AP_{it} + \alpha_2 M_{it} + \beta Control + \mu_i + \nu_t + \varepsilon_{it} \quad (4)$$

In Equations (2) through (4), M_{it} denotes the mediating variable, which in this study specifically refers to social connection, subjective well-being, and physical health status. The results of the mechanism analysis are presented in Table 4.

4.3.1 Social Connections

This section examines the mediating role of social connection. The first-stage regression results, presented in Model (1), show that the coefficient of art participation is 0.2208 and statistically significant at the 1% level, indicating that art participation has a positive and significant effect on social connection—that is, higher levels of art participation are associated with stronger social connections. The second-stage regression results, shown in Model (2), indicate that the coefficient of social connection is -0.0542 and significant at the 1% level, implying that social connection exerts a negative and significant effect on mental health: the stronger the social connection, the lower the frequency of

depressive symptoms, and thus the better the mental health status. The joint effect test results, presented in Model (3), reveal that after including social connection in the model, the coefficient of art participation becomes -0.0081 and loses statistical significance, whereas the coefficient of social connection remains -0.0531 and remains significant at the 1% level. In the baseline regression reported earlier, the coefficient of art participation was significantly negative at -0.0198. Taken together, these findings suggest that social connection serves as a mediator between art participation and mental health: art participation improves individuals' mental health by enhancing their level of social connection. Thus, Hypothesis 2a is supported.

Table 4 Results of Mechanism Analysis

Variable	(1) SC	(2) MH	(3) MH	(4) SW	(5) MH	(6) MH	(7) PHS	(8) MH	(9) MH
AP	0.2208*** (0.0084)		-0.0081 (0.0095)	0.0578*** (0.0070)		-0.0005 (0.0090)	0.0680*** (0.0088)		0.0054 (0.0085)
SC		-0.0542*** (0.0069)	-0.0531*** (0.0067)						
SW					-0.3348*** (0.0059)	-0.3348*** (0.0060)			
PHS								-0.3715*** (0.0055)	-0.3717*** (0.0055)
Constant	2.7089*** (0.0323)	2.2277*** (0.0379)	2.2392*** (0.0381)	3.5545*** (0.0241)	3.2845*** (0.0540)	3.2853*** (0.0517)	4.3941*** (0.0439)	3.7377*** (0.0365)	3.7287*** (0.0360)
Control	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Province FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Year FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
N	59201	59201	59201	59201	59201	59201	59201	59201	59201
R ²	0.158	0.072	0.072	0.044	0.147	0.147	0.203	0.205	0.205

Note: Standard errors in parentheses, * $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$

4.3.2 Subjective Well-being

This section examines the mediating role of subjective well-being. The first-stage regression results, presented in Model (4), show that the coefficient of art participation is 0.0578 and statistically significant at the 1% level, indicating that art participation has a positive and significant effect on subjective well-being—that is, higher levels of art participation are associated with greater subjective well-being. The second-stage regression results, shown in Model (5), indicate that the coefficient of subjective well-being is -0.3348 and significant at the 1% level, implying that subjective well-being exerts a negative and significant effect on mental health: the higher the level of subjective well-being, the lower the frequency of depressive symptoms, and thus the better the mental health status. The joint effect test results, presented in Model (6), reveal that after including subjective well-being in the model, the coefficient of art participation becomes -0.0005 and loses statistical significance, whereas the coefficient of subjective well-being remains -0.3348 and remains significant at the 1% level. In the baseline regression reported earlier, the coefficient of art participation was significantly negative at -0.0198. Taken together, these findings suggest that subjective well-being serves as a mediator between art participation and mental health: art participation primarily improves individuals' mental health by enhancing their level of subjective well-being. Thus, Hypothesis 2b is supported.

4.3.3 Physical Health Condition

This section examines the mediating role of physical health status. The first-stage regression results, presented in Model (7), show that the coefficient of art participation is -0.3715. The second-stage regression results, shown in Model (8), indicate that the coefficient of physical health status is -0.3715 and statistically significant at the 1% level,

implying that physical health status exerts a negative and significant effect on mental health: the better an individual's physical health, the lower the frequency of depressive symptoms, and thus the higher the level of mental health. The joint effect test results, presented in Model (9), reveal that after including physical health status in the model, the coefficient of art participation becomes 0.0054 and loses statistical significance, whereas the coefficient of physical health status remains -0.3717 and remains significant at the 1% level. In the baseline regression reported earlier, the coefficient of art participation was significantly negative at -0.0198. Taken together, these findings suggest that physical health status serves as a mediator between art participation and mental health: art participation primarily improves individuals' mental health by enhancing their physical health status. Thus, Hypothesis 2c is supported.

4.4 Heterogeneity Analysis

To examine whether educational level plays a heterogeneous role in the process through which art participation influences mental health, we stratified the sample into two groups based on individuals' highest educational attainment: a lower education group (below associate degree) and a higher education group (associate degree or above). Group-specific regressions were then conducted, with the results presented in Table 5. In the lower education subsample, the coefficient of art participation is -0.0220 and statistically significant at the 1% level. In contrast, in the higher education subsample, the coefficient of art participation is -0.0132 and not statistically significant. This finding suggests that the beneficial effect of art participation on mental health is more pronounced among individuals with lower levels of education.

Several factors may account for this pattern. First, resource constraints and substitution effects. Individuals with higher educational attainment typically enjoy higher incomes, more extensive social networks, and a broader array of leisure activities—such as reading, traveling, and sports—which themselves can provide emotional solace and social connection. These alternative pursuits may partially substitute for the mental health benefits derived from art participation, thereby diminishing its marginal effect. By contrast, individuals with lower educational levels are more likely to face constraints in terms of both time and economic resources, leaving them with fewer culturally or spiritually enriching options. For this group, art participation—an activity with relatively low barriers to entry—may exert a more pronounced positive impact on mental health. Second, differences in motivation and expectations. Individuals with higher education may approach art activities with elevated expectations or more refined evaluative criteria. Should their actual experience fall short of these expectations, the associated positive emotions and psychological gains may be less intense than those experienced by their less-educated counterparts. Third, the hierarchy of psychological needs. For some individuals with lower educational levels, art participation may play a more critical role in fulfilling basic needs for mental relaxation and emotional expression, thereby generating more substantial mental health benefits. Taken together, these findings underscore that the positive effect of art participation on mental health is particularly vital for groups with relatively limited educational resources.

Table 5 Results of Heterogeneity Analysis

Variable	(1)	(2)
	Low educational level	High educational level
AP	-0.0220** (0.0096)	-0.0132 (0.0159)
Constant	2.1063*** (0.0419)	2.0372*** (0.0515)
Control	Yes	Yes
Province FE	Yes	Yes
Year FE	Yes	Yes
N	50578	8623

R ²	0.072	0.025
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Note: Standard errors in parentheses, * $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$

5. Discussion

5.1. Theoretical Contributions

This study makes several theoretical contributions, which can be summarized as follows. First, it enriches the interdisciplinary field bridging the sociology of art and the sociology of health by providing empirical evidence from the Chinese context regarding the mental health effects of art participation. While existing literature has predominantly focused on Western developed countries, the present study draws on large-scale survey data covering 29 provinces, autonomous regions, and municipalities directly under the central government to validate the positive role of art participation in improving individual mental health, thereby extending the geographical and cultural scope of the literature. Second, the study systematically uncovers the underlying mechanisms through which art participation influences mental health. By conducting mediation analyses, we identify social connection, subjective well-being, and physical health status as three critical pathways linking art participation to mental health. This not only addresses prior criticisms regarding the ambiguity of underlying mechanisms but also offers a more refined micro-level perspective for understanding how art becomes embedded in individuals' daily lives and exerts positive effects, thereby deepening our understanding of the social functions of art. Third, through heterogeneity analysis, the study reveals boundary conditions for the mental health effects of art participation, showing that educational level serves as an important moderating variable. This finding helps elucidate the differential distribution of the benefits of art participation across population subgroups and provides a theoretical basis for targeted policy interventions.

5.2 Limitations and Future Research Directions

This study has several limitations that point to directions for future research. First, the measurement of the core explanatory variable—art participation—relies on a single survey item that captures only the frequency of engagement, without accounting for more nuanced dimensions such as the type, depth, or motivation underlying participation. As a result, the true effect of art participation may be underestimated. Second, although the study exploits the panel structure of the data to control for province and year fixed effects, it cannot entirely rule out endogeneity arising from omitted variables. Future research may employ instrumental variable approaches or seek quasi-natural experimental settings to identify cleaner causal relationships. Third, the mediation analysis primarily focuses on social, psychological, and physical pathways. Future studies could explore other potential mechanisms, such as cognitive ability or self-efficacy. Finally, the heterogeneity analysis only examines educational level as a moderating factor. Subsequent research could expand the stratification dimensions—for instance, by investigating rural-urban differences, income brackets, or generational cohorts—to obtain a more comprehensive understanding of how the effects of art participation vary across populations.

6. Conclusion

Art participation, as a significant form of social and cultural engagement, exerts a non-negligible positive influence on individual mental health. Drawing on data from the Chinese General Social Survey, this study empirically examines the effect of art participation on mental health and the underlying mechanisms. The results indicate that art participation significantly improves individuals' mental health. The mechanism analysis reveals that art participation operates primarily through three pathways: enhancing social connection, elevating subjective well-being, and improving physical health status. Together, these mediating pathways constitute the internal logic through which art fosters mental health. Furthermore, the heterogeneity analysis uncovers the moderating role of educational level, showing that the positive effect of art participation on mental health is more pronounced among individuals with lower levels of education.

Based on these findings, this study proposes the following policy recommendations:

First, strengthen top-level design by integrating art-promoted mental health into public cultural development planning. Given the significant positive effect of art participation on mental health—particularly through the mechanisms of social connection, subjective well-being, and physical health—governments should regard art activities as an important public health intervention. When formulating public cultural service policies, full consideration should be given to their positive role in social psychological construction; coordinated planning is needed to guide and support the popularization and development of various art activities.

Second, optimize resource allocation to reduce group-level disparities in art participation. The finding that art participation exerts a stronger mental health effect among lower-educated groups highlights the need to focus on equity in cultural resource distribution. Governments should increase cultural investment in rural, remote, and low-income areas. By means such as mobile cultural services and the sharing of digital cultural resources, barriers to art participation can be lowered, thereby safeguarding the basic cultural rights of disadvantaged groups and enabling them to benefit equally from art activities.

Third, innovate activity formats to integrate art into community daily life. Communities serve as the fundamental unit of residents' daily lives and important arenas for fostering social connection. Community-based organizations should be encouraged to organize diverse art activities that respond to residents' needs, such as public cultural performances, interest-based groups, and art lectures. In this way, art can become a bridge for neighborhood interaction and emotional communication, thereby enhancing residents' sense of well-being and belonging in their everyday lives and contributing to a positive community mental health ecosystem.

Data availability

The datasets supporting the study are publicly available on the CGSS website <http://cgss.ruc.edu.cn>. The specific situation has been explained in the text. The data that support the findings of this study are available from the corresponding author upon reasonable request.

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Competing interests

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