Abstract

While children and adolescents’ education has been significantly affected during the COVID-19 pandemic and school closures, how they are impacted remains unknown. Based on Bourdieu’s theory, this paper aims to examine whether cultural capital mediates the association between economic capital and academic achievement during the crisis. Using a longitudinal dataset from the Chinese high school and the moderated mediation model, the result showed that economic capital had a total effect on academic achievement, especially on the students’ academic ranks. Meanwhile, economic-related inequality in education seemed to be mediated by cultural capital. Interestingly, the finding further indicated that the indirect effect was mainly attributable to exam-oriented cultural capital, compared with quality-based cultural capital. We discussed the theoretical contributions and policy implications in the end.

Keywords Economic capital · Academic achievement · Exam-oriented cultural capital · Quality-oriented cultural capital · Moderated mediation · School closure · COVID-19
Introduction

Children and adolescents’ quality of life has been significantly affected during the COVID-19 pandemic (Cowie & Myers, 2021; Shek, 2021; Zhang, Hong, & Ma, 2022). Especially due to school closures, billions of students have had to stop receiving in-person instruction in school. Despite remote education, scholars have warned that children are suffering from the decrease in human capital globally (Aucejo et al., 2020; Clark et al., 2021; Dong et al., 2020; Kapasia et al., 2020; Kuhfeld et al., 2020). They have also pointed out that children’s learning losses may be unequally distributed, and vulnerable children are more affected than other children (Engzell, Frey, & Verhagen, 2021; Rosenthal et al., 2020). Unfortunately, few empirical studies have explained the process of how vulnerable children are mostly affected in the crisis. The study discussed in this paper aims to fill this gap in the literature.

Based on Bourdieu’s theory (Bourdieu, 1986), we argue that unequal learning losses during the pandemic is probably due to the conversion of capital, especially through the indirect effect of cultural capital. Specifically, we aimed to examine three research questions: ① Did the effect of economic capital on children’s academic achievement change during the COVID-19 pandemic? ② Did cultural capital mediate the effect of economic capital on academic achievement during the crisis? ③ What kind of cultural capital is more important, exam-oriented cultural capital or quality-oriented cultural capital? The following sections will thoroughly review the literature on economic capital, cultural capital, and academic achievement in the context of the COVID-19 pandemic.

Economic Capital and Educational Inequality During the Pandemic

The research on the association between economic capital and academic achievement has a long tradition in the social science literature. In the 1960s, Coleman’s report showed that the differences in students’ educational outcomes were mainly attributable to family socio-economic background (Coleman et al., 1966). Since that report was published, numerous empirical studies have confirmed that students’ economic capital is closely correlated with academic achievement, attainment, behavior, etc. For example, based on a meta-analysis, White (1982) found that the coefficient between economic capital and academic achievement was around 0.22, meaning that a one-point increase in children’s economic capital will result in a 0.22-unit increase in academic achievement. Another meta-analysis conducted by Sirin (2005) showed that the median of the correlation between economic capital and academic achievement was 0.28 at the individual level and 0.60 at the aggregate level.

During the COVID-19 pandemic, when children were quarantined at home, scholars were concerned that economically vulnerable children might suffer from more learning losses than other children. Using data from a survey conducted in Shaanxi Province, China during the COVID-19 pandemic, Zhang et al. (2021) found that economic resources declined for almost all children, with left-behind children affected the most. Based on an online survey conducted during the COVID-19 pandemic in India, Kapasia et al. (2020) showed that students from remote places and marginal-
ized areas might face more academic failures than other students. And Engzell, Frey, and Verhagen (2021), based on a sample of 350,000 students in Netherland, showed that vulnerable students lagged behind when they learned from home.

Although current literature have showed that economic capital has great impact on academic achievement, they do not provide us an explanation for why economic-related inequality in education increased during the COVID-19 related school closures. Based on Bourdieu’s theory, we argue that the conversion of capital may provide a valuable perspective for understanding why academic achievement is unequally affected. A study on Chinese parents’ beliefs and attitudes amidst the crisis showed that the problem of learning from home was not due to financial limitations; it was probably due to their parents’ lack of cultural knowledge (Dong et al., 2020). The theoretical works and empirical studies enlighten us that the effect of economic capital on academic achievement during the pandemic may be further mediated by cultural capital.

The Mediation of Cultural Capital

The conversion of economic capital to cultural capital was first proposed by the French sociologist, Perrier Bourdieu. In his seminal work, Bourdieu (1986) wrote: “The notion of cultural capital initially presented itself to me, in the course of research, as a theoretical hypothesis which made it possible to explain the unequal scholastic achievement of children originating from the different social classes by relating academic success” (p. 84). Bourdieu (1986) argued that the study of economic capital and human capital is inadequate, because “they are unaware that ability or talent is itself the product of an investment of time and cultural capital” (p. 85). Therefore, Bourdieu (1986) pointed out that the focus on economic capital “ignores the fact that the scholastic yield from education action depends on the cultural capital previously invested by the family” (p. 85).

Based on Bourdieu’s theory, we propose that the conversion of economic capital to cultural capital, and ultimately to academic achievement, may be strengthened during the school closures. After the outbreak of COVID-19, China’s central government launched a series of public policies to contain transmission of the virus, including mobility restriction, family quarantine, school closure, etc. (Li et al., 2021; Miao et al., 2021; Qian & Hanser, 2021). Children are required to learn at home, with unfamiliar digital devices and online platforms. Parental engagement with cultural capital becomes very important for children’s effective learning. For example, an empirical study showed that online tutoring needs the intensive investments of professional knowledge and time (Dong et al., 2020). Therefore, we suspect that cultural capital may be a significant mediator between economic capital and academic achievement during the COVID-19 pandemic.

If cultural capital were playing a mediating role, what does cultural capital exactly mean? In Western societies, for example, researchers have shown that the experience of visual arts in children’s everyday lives has a significant impact on cultural capital (Robb et al., 2021). Another study, using a quasi-experimental longitudinal mixed-methods, found that family cultural activities and resources may improve
children’s psychological well-being (Manzano-León et al., 2021). Unfortunately, it is still unknown whether these conceptualization and operationalization of cultural capital are suitable in Chinese context. Therefore, we have to further review different kinds of cultural capital.

Exam-oriented Versus Quality-oriented Cultural Capital

Since Bourdieu proposed the concept of cultural capital, its definition and measurement have always been debated (van de Werfhorst, 2010). Lamont and Lareau (1988) provided a definition of cultural capital, stating it as “institutionalized, i.e., widely shared, high status cultural signals (attitudes, preferences, formal knowledge, behaviors, goods and credentials) used for social and cultural exclusion” (p. 156). They argued that the key to understanding cultural capital can be summarized by the term “legitimate culture”; that is, a culture that is widely shared, has a high status, and is socially exclusive. Bourdieu (1986) also explained that cultural capital had a significant and long-term effect on children’s education only because cultural capital might strengthen the habitus acknowledged by legitimate systems. Therefore, identifying legitimate systems is critical to the definition of cultural capital.

Although it is plausible to interpret cultural capital as an indicator of legitimate culture, doing so may lead to another problem: different societies have different legitimate cultures. For example, Bourdieu (1986) embedded cultural capital in the legitimate culture of French society. But Lamont (1992), in her book, Money, Morals, and Manners, showed that the American and French upper-middle class have different definitions about cultural capital that separate themselves from everyone else. Moreover, when scholars have studied cultural capital in Eastern Asian societies, they have found that Western high-brow culture is not as important as exam-oriented cultural indicators (Hu & Wu, 2019; Yamamoto & Brinton, 2010). If we define cultural capital as different legitimate indicators, there will be incomparable dilemmas.

To solve the problem, scholars have suggested an international as well as a local conceptualization and operationalization of the concept (Hu & Yin, 2021). They argued that the international version of cultural capital might include cultural activities, cultural communications, cultural possessions, etc. In Western societies, the high-brow culture is closely related to activities, such as visiting museums, attending concerts, going to the theater, etc. (DiMaggio, 1982; DiMaggio & Mohr, 1985). However, in developing countries, scholars have suggested that reading behavior may be a good indicator of high-brow culture because it represents an aspect of cultural life (Jaeger, 2011; Sullivan, 2001). In the context of China, scholars have also found that reading behaviors and cultural books may be more effective indicators of children’s cultural capital (Ma & Wu, 2020; Evans et al., 2010; Wang et al., 2006).

In terms of local version, cultural capital in China may be quite exam-oriented. For high school students especially, the College Entrance Examination (Gaokao) is still the legitimate system for educating and selecting adolescents. Exam-based meritocracy is highly respected, and it is regarded as the only way to access prestigious universities. Such a case is very similar to other East Asian societies. Relevant studies in Japan and South Korea have shown that in the context of taking test scores as the
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basic standard for the distribution of educational resources, it is difficult to appreciate and encourage cultural tastes or special endowments during students’ education period (Byun et al., 2012). More studies have found that cultural activities oriented by cultural literacy and cultural taste, such as watching movies, watching dramas, and reading extracurricular readings, will have a negative impact on students’ academic performance (Byun et al., 2012). Therefore, exam-oriented cultural capital can be regarded as a local representative of cultural capital because it focuses on the legitimate culture of exam-based education in China.

According to the review above, we try to identify two forms of cultural capital: one represented the international version, calling quality-oriented cultural capital (QCC); the other named exam-based cultural capital (ECC), representing China’s legitimate education. We conceptualized the two concepts in our framework, as shown in Fig. 1. We argue that our study makes three marginal contributions to the literature: First, Using a longitudinal dataset, our study may provide new knowledge for current discussions about economic-related inequality in education during the COVID-19 pandemic; Second, we take a further step to explain educational reproduction through the perspective of capital conversion. We construct a theoretical framework to identify the path from economic capital to cultural capital and finally to academic achievement. Finally, we also provide new evidence for the debate on the different version of cultural capital. We hope to find a new measurement of cultural capital that is mostly suitable for Chinese studies.

Method

Data and Participants

The data were collected from students at a key high school in Eastern China. They were arguably a good population to study the losses of human capital during the COVID-19 pandemic because high school students had to take scheduled examina-
tions. Although there was no COVID-19 case in the region under study, the school was required to be closed after the pandemic outbreak in Wuhan in January 2020. The school was reopened in late April, at which time the high school level-three students were the first to return to school. After a short period of observation, all the students returned to school in early May 2020. Although our sampling strategy was non-representative due to the closure of schools, the school still bears similarities to other key high schools (Zhongdian Gaozhong) across China (Liu et al., 2020).

We designed a survey to collect information on the students’ socio-demographic, family background, psychological well-being, and other factors. The survey was conducted in August 2020, shortly after the level-three students finished their College Entrance Examination. The students completed the survey via their own phones due to public health considerations. The process was monitored by the school’s head teachers. We received 1,982 responses, covering all the students in the high school. After a rigorous screening, 1,736 questionnaires (88%) were used for the analysis. Our analysis of missing data showed that the distributions between 1,982 samples and 1,736 samples were not significantly different. The survey complied with the ethical standards at the authors’ universities. The questionnaires were reviewed and approved by the high school principal. Every student was informed by their school that the participation was entirely voluntary.

We also collected the longitudinal data of the students’ examination scores from 2019 to 2020. To focus on our research questions, we selected three time points according to the school closures. The first time point was in January, 2020, which is the final examination of the 2019 Fall Semester before the onset of the pandemic. The second time point was late April and early May 2020, when all the students took the end-of-closure returning examinations. The final exam was in July 2020, two months after the school reopened. For level-three students specifically, the July test meant the 2020 College Entrance Examination. The examination scores covered the following subjects: Chinese, mathematics, English, and Integrated Curriculum. All the scores were collected with the approval of the high school.

The analytical data were prepared using two steps. First, the survey data and the score data were cleared, respectively. Second, the two datasets were merged using the students’ IDs. One may be concerned about the quality of our data because it was not possible to know whether students’ information in the survey changed during the three waves. It is really a pity that our fieldwork could only take place after the final exams because the school did not allow us to investigate during school closures and reopening. Fortunately, some statistical evidence shows that household economic and cultural capital did not change significantly in the first half of 2020 due to the impact of epidemic control measures. For example, in the first half of 2020, the year-on-year growth rate of the physical bookstore channel was $-47.36\%$, while the overall online store channel only increased by $6.74\%$ (Shanghai Observer, 2020). It probably means that household book ownership may not be changed dramatically during the period of school closures and reopening.
Measures

Academic achievement was measured by two indicators: the student’s total score and the student’s academic rank at school. The total score was aggregated by the scores for the following subjects: Chinese, mathematics, English, and Integrated Curriculum. Integrated Curriculum represented the students’ selection of subjects from physics, chemistry, biology, history, politics, and geography. The student’s rank was measured by each student’s relative academic position at the school based on the student’s total score.

Economic capital was measured by family income. Students were asked to choose their family’s economic status based on six levels (in Chinese Yuan): below 10,000, 10,000–50,000, 50,000–100,000, 100,000–150,000, 150,000–200,000, above 200,000. The mean was 2.71, and the standard deviation was 1.12. The statistics results indicate that the high school students’ family income was mainly below 100,000.

Cultural capital included two kinds of indicators. ECC was measured by the number of textbooks at home. It represented the association between cultural capital and exam-oriented education. Although there is no study utilizing the measurement in China, scholars in Japan and other east Asian societies have showed that exam-related indicator is of great important for cultural capital (Yamamoto & Brinton, 2010). QCC was assessed by the number of extracurricular books at home. It represented the relationship between cultural capital and high-brow activities. Such a measurement is quite common in current literature. For example, research has shown that cultural book is an effective indicator for children’s cultural capital (Ma & Wu, 2020; Evans et al., 2010; Wang et al., 2006). Both measurements were ranked based on five levels, ranging from a few to many.

The control variables included age, gender, grade, hukou, siblings, family structure, father’s education, mother’s education, father’s occupation, and mother’s occupation. Age was measured by subtracting each student’s birth year from 2020. Gender included boy and girl, with boy being the reference. Grade was measured by the three levels in China’s high schools. Siblings was assessed by single child or not. Family structure was measured by whether the student lived with both parents. The father’s and mother’s education were grouped into six levels: no schooling, primary, junior middle, senior middle, university, and graduate levels. The father’s and mother’s occupations were measured by five levels based on Erikson-Goldthorpe’s classification (Erikson et al., 2010): never worked and long-term unemployment, peasant class, petty bourgeois, professional class, and upper class.

Analytical Strategy

Based on the research questions, we constructed a moderated mediation model to analyze our data.

First, we regressed family income and control variables on score and rank using ordinary least squares (OLS) regression. This preliminary analysis was used to check whether economic capital had an impact on academic achievement during the COVID-19 pandemic.
Second, we tested the mediation of cultural capital based on the structural equation modeling (SEM). Because we did not have latent variables, we only conducted the structure model of SEM. There are two mediators. The formula was listed as follows:

\[
Y = i_1 + c \times INCOME + e_1
\]

\[
Y = i_2 + c' \times INCOME + b_1 \times ECC + b_2 \times QCC + e_2
\]

\[
ECC = i_3 + a_1 \times INCOME + e_3
\]

\[
QCC = i_4 + a_2 \times INCOME + e_4
\]

Where \( Y \) is the dependent variable, \( INCOME \) is the independent variable, and \( ECC \) and \( QCC \) are the mediators. \( i_1, i_2, i_3, \) and \( i_4 \) are intercepts, \( c \) is the coefficient associating the independent and dependent variable, while \( c' \) is the adjusted coefficient after including the mediators. The \( a_1 \) and \( a_2 \) is the coefficients relating the independent variable to the mediators, and the \( b_1 \) and \( b_2 \) are the coefficients associating the mediators to the dependent variable adjusted for the independent variable. The \( e_1, e_2, e_3, \) and \( e_4 \) are residuals.

After the mediating analysis, we compared whether the mediating effects of cultural capital were changed across the time period: January, May, and July. We used the standardized root mean squared residual (RMR) and the coefficient of determination (CD) as the group-level fit statistics. If the fit is good, then SRMR will be close to 0 and CD will be near 1.

**Results**

**The Descriptive Statistics**

Table 1 shows the descriptive statistics of the main variables. The average score of the high school students in January was 513.48. After the COVID-related school closures, the mean of total score decreased to 469.89 in May. The average score recovered to 500.52 in July, two months after the school reopened. The mean of rank had almost no change during the COVID-19-related school closures because it was a relative indicator.

Table 2 shows the effect of economic capital and control variables on the students’ score and rank using OLS regression. In January, before the pandemic, income had a significant effect on the total score. The coefficient was 4.71, indicating that a one-unit increase in family income would result in a 4.71-unit increase in the total score. In May, after the COVID-19 school closures, the coefficient decreased slightly to 4.22 and it was significant at the level of 0.1. The coefficient was 3.55 in July, and it was not significant at this time. However, the effect of income on each student’s rank at school showed a relatively stable pattern. In January, the students’ income had a significant effect on their rank. A one-unit increase in income would bring a 11.24-
The effects were still significant in May and July, with the coefficient was $-10.68$ and $-9.75$ respectively. In terms of control variables, the socio-demographic variables, such as age, gender, and grade, had significant effects. Moreover, the variables of hukou, siblings, and family structure had no significant effect on the outcomes during the three time points. Parental education and parental occupation seemed to be important at some waves. Specifically, mother’s occupation had a significant effect on score and rank during the crisis.

**The Mediation of Cultural Capital**

The main objective of our study is to test whether cultural capital explained the association between economic capital and academic achievement. According to Table 2, ECC, as one indicator of cultural capital, had significant effects on the students’ total score and school rank from January to July. And the coefficients seemed to change during the school closure. The effects of QCC, as the other indicator of cultural capital, though not significant, also changed as we had anticipated. Based on the analysis above, we conducted a mediation model to test our next hypothesis. As shown in Fig. 1, The three models on the left (1, 3, 5) referred to the mediation of cultural capital on the total score, while the models on the right (2, 4, 6) refer to the dependent of school rank.

Model 1 showed that income had a positive and significant effect on the total score in January. Meanwhile, income had significant effects on both variables of cultural capital. The coefficient of income was $0.117$ for ECC and $0.133$ for QCC. While ECC had a significant and positive effect on the total score ($\beta = 0.050$), QCC had a
negative but non-significant effect on total score \((\beta = -0.009)\). The coefficients in Model 2 showed that income had a significant but negative effect on the students’ rank \((\beta = -0.067)\). This meant that a one-point increase in economic capital would result in a 0.063-higher student rank in January. Income had positive effects on both indicators of cultural capital. ECC had a significant but negative effect on rank \((\beta = -0.094)\); thus, a one-point increase in ECC resulted in a 0.094 increase in a student’s rank. The coefficient of QCC on rank was 0.022; thus, one-point increase in QCC would decrease the student’s rank to 0.022, but the change was not statistically significant.

In May, when the high school students took the returning examination, the mediating effects of cultural capital seemed to be stronger. According to Model 3, the effects of income on score, rank, and cultural capital were similar to those of Model 1. The coefficient of ECC on total score had increased to 0.072, indicating that a one-point increase in ECC would result in a 0.072 increase in a student’s score. However, while the effect of QCC was positive now, it was not statistically significant. In Model 4, the effect of ECC on rank also increased \((\beta = -0.100)\); indicating that a one-point
increase in ECC would result in a 0.100 increase in a student’s rank. The coefficient of QCC turned negative ($\beta = -0.004$), meaning that QCC might improve students’ rank. Unfortunately, it was still not statistically significant.

The final models in July showed the results after the school had been reopened for two months, when the high school students had been able to learn in a face-to-face environment. Model 5 shows that the coefficient of ECC on score slightly increased ($\beta = 0.077$) in comparison to the effect in Model 3. However, the effect of QCC was still not significant. In Model 6, the effect of ECC on rank was still significant, but negative. This means that the student’s rank would increase 0.104 when the ECC increased by one point. Again, the effect of QCC was not significant.
Table 3: Group Comparison of Total, Indirect, and Direct Effects (N=1736)

| Effects          | Score |               | Rank |               |
|------------------|-------|---------------|------|---------------|
|                  | Jan   | May           | Jul  | Jan           | May           | Jul  |
| Total Effect     | 5.30* | 5.34*         | 4.78*| -12.63**      | -12.73**      | -12.26**|
| Direct Effect    | 4.71* | 4.22*         | 3.55 | -11.24**      | -10.68*       | -9.75*|
| Indirect Effect  | 0.60  | 1.12**        | 1.23**| -1.38**      | -2.05**       | -2.51**|
| Proportion       | 11.32%| 20.97%       | 25.94%| 10.93%       | 16.10%       | 20.47%|

Group-level fit statistics

|                  | SRMR (none) | SRMR (coefficient) | CD (none) | CD (coefficient) |
|------------------|-------------|--------------------|-----------|------------------|
| Score            | 0.026       | 0.026              | 0.026     | 0.026            |
|                 | 0.041       | 0.031              | 0.040     | 0.026            |
| Rank             | 0.638       | 0.431              | 0.369     | 0.242            |
|                 | 0.504       | 0.486              | 0.455     | 0.240            |

*p <.1; *p <.05; **p <.01; ***p <.001

**Group Comparison of Mediation**

Table 3 shows the indirect effects of cultural capital. The total indirect effect of cultural capital was 0.60 in January; however, it was not statistically significant. Considering that the total effect of economic capital on the students’ score was 0.039, the proportion of the indirect effect of cultural capital was 11.32%. After the outbreak of COVID-19, the indirect effect of cultural capital (1.12) became significant, representing 20.97% of the total effect. After the students returned to school for two months, the mediating effect of cultural capital slightly increased to 1.23. The percentage of the indirect effect increased to 25.94%.

The indirect effect of cultural capital on the student’s rank showed a similar pattern. In January, the indirect effect of cultural capital represented 10.93% of the total effect. In May, cultural capital became a significant mediator, and the indirect effect increased to -2.05, representing 16.10% of the total effect. The mediating effect of cultural capital was maintained at -2.51 after the school had reopened for two months, and it represented 20.47% of the total effect.

Finally, we tried to test whether the differences of medication between three waves were statistically significant. We conducted a group comparison using SRMR and CD as the group-level fit statistics. As shown in Table 3, we did not constrain the coefficients of three time points in the first step. In terms of score, the SRMR (none) was 0.026 for all three time points. CD (none) was 0.638 for January, 0.431 for May, and 0.369 for July. When the coefficients of all the groups were constrained as the same, SRMR (coefficient) increased. This probably means that the constrained model decreased the model’s goodness-of-fit. In January, CD (coefficient) decreased from CD (none), while it increased in May and July. This might mean that the coefficients were the same in May and July. The fit statistics of rank before and after the constraint were relatively stable. This probably indicated that the students’ rank had not changed dramatically during the crisis, although their learning losses decreased significantly.
Discussion

During the COVID-19 school closures, children and adolescents had encountered learning losses, and economically vulnerable group had suffered even more. So far, however, we still lack understanding of the mechanism of its occurrence. Based on Bourdieu’s theory, we introduced a perspective of capital to explain the association between capital and educational inequality during the COVID-19 school closures. Using a longitudinal dataset collected in a high school in Eastern China, this study showed that academic achievement were affected by economic capital during the pandemic. However, the association was mediated by cultural capital. Especially, exam-oriented cultural capital, rather than quality-oriented cultural capital, played of great important role in the process. Our marginal contributions are interpreted in the following.

First, cultural capital significantly mediated the association between economic capital and academic achievement during the COVID-19. And the indirect effect of cultural capital enlarged during the school closures, and became stable in the period of school reopening. Previous literature has already showed the unequal distribution of student’s learning losses during the COVID-19 pandemic (Kapasia et al., 2020; Zhang et al., 2021; Engzell, et al., 2021). We further indicated that students’ economic capital may be converted to cultural capital, which ultimately affects their scores and ranks. One may wonder why cultural capital has such an indirect effect. Bourdieu (1986) argued that “they are unaware that ability or talent is itself the product of an investment of time and cultural capital” (p. 85). Enlightening by his work, we can imagine that economic capital could not directly be converted into academic achievement during the crisis when students were learning from home. Economic capital still needs to be transformed into cultural resources available to high school students for digital learning. And this immediately led us to think further about what types of cultural capital might be more effective for high school students.

Second, we defined two types of cultural capital according to previous literature. And we found that compared with quality-based cultural capital, exam-oriented cultural capital has a very strong indirect effect. This finding is very interesting because it probably provide new evidence for the debate on cultural capital, especially in east Asian societies. For the past four decades, scholars have been vigorously discussing the conceptualization and measurement of cultural capital ( Lamont & Lareau, 1988; Goldthrope, 2007; van de Werfhorst, 2010; Ma & Wu, 2020). Most of studies in the Europe and the United States used high-brow cultural activities as the proxy variable of cultural capital. Unfortunately, China seems to be very different from Western societies (Hu & Yin, 2021). Because of the schooling system, Chinese students are required to demonstrate a variety of skills by taking examinations, especially in high school. High-brow cultural activities and resources seem to be not as important as exam-oriented cultural activities and resources. This phenomena can also be found in other east Asian societies, such as Japan and South Korea, where exam-related cultural capital seemed to be more important (Byun et al., 2012; Yamamoto & Brinton, 2010). Therefore, we suggest that more research is needed to test whether exam-oriented cultural capital has higher impact on academic achievement in Eastern Asian societies.
While our study makes marginal contributions to the current body of literature, it has several limitations. The first limitation is about our measurement of cultural capital. Our indicators are collected in the very special environment, and they are by no means the sole measurement for cultural capital. We hope future research can retest our finding by using better measurements of exam-oriented and quality-oriented cultural capital. The second limitation is that the survey were collected in August while the scores had three waves. Although we argue that economic and cultural capital were relatively stable during the crisis, we hope future research can collect paired data. The final limitation is that the data did not enable us to analyze the causal inference. Because all students are influenced by the COVID-19 school closures, it was impossible for us to include a control group.

Despite the limitations, our study still has important implications for social policy. First, at the macro level, the government should provide more culture-based services instead of income allowance to support vulnerable families that are affected by the COVID-19 pandemic. At the meso level, organizations, such as schools and non-governmental organizations, should provide more supportive services to facilitate students’ ability to study at home during school closures. For example, professional tutoring and cultural resources may be very important for online learning. Finally, at the micro level, parents should pay more attention to their cultural engagements with their children. With the help of family, school, and society, vulnerable children may have an equal opportunity to improve their ability to learn and enjoy academic achievement during the COVID-19 pandemic.

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