



Socioeconomic Status, Peer Social Capital, and Quality of Life of High School Students During COVID-19: A Mediation Analysis

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Abstract

This paper investigates how peer social capital mediates associations between socioeconomic status and quality of life among adolescents during the COVID-19 pandemic. Using survey data and school administration records collected at a high school (N = 1,736) in a coastal province in China, the results demonstrate that adolescents' socioeconomic status is associated strongly with their quality of life. When students were learning at home during COVID-19 school closures, peer social capital exerted a mediating effect on the association between socioeconomic status and quality of life. Most importantly, while peer social capital rooted in the real world seemed to be related positively to higher quality of life, peer social capital in the virtual world led to lower quality of life. These findings suggest that peer social capital might manifest different impact mechanisms for adolescents during the pandemic. Theoretical contributions and policy implications are discussed in this paper.

Keywords COVID-19 · Socioeconomic Status · Peer Social Capital · Quality of Life · Structural Equation Model · Causal Mediation Model

Introduction

The COVID-19 pandemic has impacted adolescents' quality of life (QoL) (Shek, 2021; Shek et al., 2021a) significantly. Adolescence is an important life stage in human development, and the pandemic appears to be interrupting this stage (Leung

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& Fung, 2021; Shek, 2021b). An investigation of Chinese primary school students who were confined at home during the pandemic found that 22.6% showed symptoms of depression, and 18.9% showed symptoms of anxiety (Xie et al., 2020). In terms of adolescents' academic achievement, Kuhfeld et al. (2020) estimated that almost all students suffered learning loss after COVID-19-related school closures. Although research attention has been paid to adolescents' QoL during the pandemic, few studies have examined how their QoL has been affected.

This paper aims to fill this literature gap by investigating three research questions: 1) How does family socioeconomic status (SES) affect adolescents' QoL? 2) How does peer social capital (PSC) mediate the association between family SES and adolescents' QoL? 3) Is offline PSC's mediating effect different from that of online PSC in the context of school closures? Offline peer social capital (PSC-Pal) refers to PSC generated by social networks rooted in the real world, e.g., relationships with classmates, neighbors, and family peers. Online PSC (PSC-Epal) derives from social circles formed purely online, such as through social media and online gaming. The essential difference between the two lies in whether one builds a long-term, trusting relationship. We argue that PSC-Pal's effect may differ from that of PSC-Epal. We will elaborate on our arguments in the following sections.

Literature Review

Socioeconomic Status, Social Capital, and Quality of Life

QoL normally reflects both eudaimonic and actualized aspects of personal well-being (Shek & Lin, 2014, 2017). Specifically, health-related, education-related, and positive development-related QoL are among the most important QoL outcomes in the literature (Boehm & Kubzansky, 2012; Campbell-Sills et al., 2009; Catalano et al., 2012; Shek et al., 2016; Wang & Eccles, 2012). Unfortunately, the pandemic has affected these aspects greatly. For example, scholars have found that the pandemic has impacted adolescents' mental health negatively (Hasan & Bao, 2020; Yeasmin et al., 2020). They also found that school closures have become a direct reason for learning loss and school dropout (Kuhfeld et al., 2020; Lee et al., 2020; Shim & Lee, 2020). Moreover, the pandemic may be influencing protective factors, such as resilience, which may hinder adolescent positive developments (Shek, 2021; Shek et al., 2019; Shek, Peng, et al., 2021).

Despite the pandemic's impact on adolescents' QoL, few studies have examined the underlying influences. From an ecological perspective, people's environments may impact their lives significantly (Bronfenbrenner, 1979). Previous research has indicated that family SES (e.g., income, education, occupation, etc.) and social capital (e.g., family, peers, school, etc.) may affect adolescents' QoL (Coleman, 1988; Kawachi et al., 1997). Specifically, scholars have found a strong relationship between household income and children's education (Sirin, 2005; White et al., 1993). Meanwhile, *social capital*, defined by cohesion or network approaches, is also associated positively with different QoL dimensions among adolescents (Ma & Wu, 2019; Moore & Carpiano, 2020).

Furthermore, social capital may serve as a mediator between SES and education related QoL based on Coleman's social capital theory (Coleman, 1988). In the public health field, Kawachi et al. (1997) proposed that social capital mediates the relationship between SES and health. For example, some studies have found that the widening income gap has led to poorer social cohesion and trust, which is related further to increased mortality (Kawachi et al., 1997; Kennedy et al., 1996; Wilkinson, 1994). Moreover, in terms of psychological factors, Wanberg et al. (2020) illustrated that interaction between perceived financial resources, perceived control, interpersonal resources, and COVID-19-related knowledge/news consumption comprises an internal mechanism underlying the decrease in life satisfaction among individuals. Therefore, joint impacts from SES and social capital may be viewed as a classic model that is fundamental to the study of adolescents' QoL.

However, the pandemic has cast some doubts on the classic model. To implement lockdowns and social distancing, people were required to be quarantined at home (Lai et al., 2020; Pan et al., 2020). Thus, students tend to be isolated at home because of school closures, and ecological explanations' meso- and macro-levels may become less powerful as individual-level factors take precedence during these times. Take PSC, for example: Previous literature has indicated that peer networks provide an important mechanism for mediating the association between family SES and adolescents' QoL (Carbonaro, 2004; Haynie & Osgood, 2005; Jørgensen, 2017; Ream & Rumberger, 2008; Sacerdote, 2011; Zimmerman, 2003). When PSC shifted to an online form, we wondered whether the original mediation of PSC would still hold. Specifically, we aimed to fill this literature gap by investigating PSC's mediation effect on the association between family SES and adolescents' QoL during the pandemic.

Peer social capital's contradictory mediation

During the pandemic and the related school closures, new forms of digital resources may change the mediation of PSC. Modern social networking technology's wide availability has provided new ways in which young people can interact with each other. Children can meet friends through Internet multiplayer games and on social media platforms, e.g., Facebook, Twitter, and WeChat (Bapna & Umyarov, 2015). Particularly during the pandemic, the Internet has become the most readily available and prominent medium through which adolescents contact friends. For example, younger generations have been relying more on video calls during home quarantines than before (Juvonen et al., 2021). Therefore, we suspect that PSC's mediating mechanism may be changing during the pandemic.

Two types of mediating effects regarding PSC's role in new contexts may be present. One body of literature indicates that interactions with friends in the real world (PSC-Pal) yield positive outcomes (Ream & Rumberger, 2008; Yugo & Davidson, 2007; Zambon et al., 2010). This suggests that PSC-Pal effectively improves adolescents' self-esteem levels and helps prevent negative emotions, such as anxiety and depression (Foster et al., 2016; Guralnick, 2006; Reupert et al., 2013). Students' narratives from interviews in a study demonstrated that PSC-Pal experiences with rich

social meaning contribute to “feeling good” and “being well” generally (Jørgensen, 2017). Therefore, we hypothesize that PSC-Pal positively affects adolescents’ QoL.

Contrary to positive impacts from contact with real friends, public health research indicates that using the Internet for communication might trigger depression (Bessièrè et al., 2008; Ellison et al., 2011). Unlike developing and maintaining relationships with friends rooted in the offline world, communication online with strangers (PSC-Epal) can be somewhat deleterious. It may not be possible to get responses and receive emotional support from people whom you do not know beyond social media (Ellison et al., 2011). Bessièrè et al. (2008) pointed out that higher depression test scores were associated with online friendships with strangers. Furthermore, Smahel et al. (2012) pointed out that associating with online peers may increase the risk of Internet addiction.

Based on the literature review above, we argue that the PSC-Pal and PSC-Epal model makes three contributions. First, it is the first study, to our knowledge, that tests whether PSC mediates the association between family SES and QoL among adolescents during the pandemic. Second, we establish a new framework to account for the new forms of PSC during the pandemic and school closures. We propose that PSC-Pal and PSC-Epal’s mediating effects may be different. The final contribution concerns methodology. We drew on a unique data set on high schoolers’ well-being during the pandemic’s early stage, when all schools in mainland China were closed. We used both structural equation modeling and causal mediation modeling to improve our causal inferences. This study’s conceptual framework is illustrated in Fig. 1, and three hypotheses are provided:

H1. The higher the SES, the better the adolescents’ quality of life.

H2. PSC-Pal mediates the association between SES and QoL, i.e., high SES is associated with accumulation of PSC-Pal, resulting in positive effects on QoL.

H3. PSC-Epal mediates the association between SES and QoL, i.e., high SES is associated with accumulation of PSC-Epal, resulting in negative effects on QoL.

Methods

Participants and procedures

This study’s participants came from a high school in an Eastern China province. Due to school closures and the survey’s nature during the pandemic, we employed a convenience sample gathered from the researchers’ personal network to ensure accessibility and timeliness. Nevertheless, this school has representative characteristics of high schools in China. First, it is a key high school in the county. Every county in China has a key high school whose institutions and composition of teachers and students share many similarities. Second, the school is located in a county with a moderate level of economic development (2020 gross domestic product [GDP] per capita: 10,084 USD), comparable with the national economy’s average (2020 GDP per capita: 11,193 USD). Third, the physical school’s closure and reopening was also like other schools, according to National Education Ministry policies.

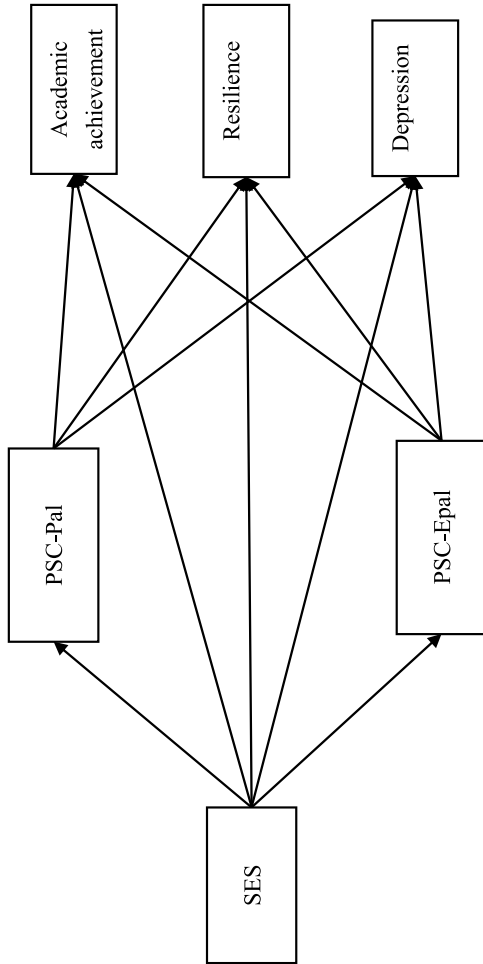


Fig. 1 Theoretical Framework

We conducted a survey in August 2020, shortly after the grade-three students finished their college entrance exams. We designed an online questionnaire that the high school approved and trained the teachers on how to instruct their students to complete the survey remotely. Before the survey was administered, every student was informed that participation was completely voluntary. Almost all students ($N=1,982$) were invited to participate in the study, and 100% agreed. The data were prepared in three steps: First, after our rigorous screening, valid questionnaires comprised nearly 88% of the total ($N=1,736$). The survey included students' sociodemographic backgrounds, family SES, depression, resilience, and other variables. Second, we collected score data from the high school and merged them with the survey data using matching IDs, which were removed, along with other potentially identifying information at this point, to ensure participants' anonymity. Finally, the missing data automatically were estimated using the full information maximum likelihood (FIML) method in structural equation modeling.

Measures

QoL was assessed based on high school students' depression, academic achievement, and resilience. Depression was assessed by the Zung Self-Rating Depression Scale (SDS), which comprised 10 negative and 10 positive items (Zung, 1965). Students were required to respond to the frequency of symptoms during the epidemic using a four-point reporting scale (from 1 = "rarely or none of the time" to 4 = "most or all of the time"). To make the scale's scoring standard consistent, we changed the 10 positive questions' scoring direction, then aggregated the scores. We multiplied all values by 1.25 to get a depression range of 25–100. Academic achievement was measured based on students' scores in Chinese, mathematics, and English in July 2020. The grade-three students' July test scores were derived from a college entrance exam, and we constructed a latent variable for academic achievement. Resilience was assessed using the Connor-Davidson Resilience Scale, a two-item scale from the longer CD-RISC (Connor & Davidson, 2003). The first question was, "I am able to adapt when changes occur," and the second was "I tend to bounce back after illness or other hardships." According to Vaishnavi et al. (2007), the two items demonstrated good reliability and validity. Thus, we constructed a latent variable for resilience.

SES was measured based on family income, mother's education, and mother's occupation. The annual household income range was divided into six levels: below 10,000 RMB; 10,000–50,000; 50,000–100,000; 100,000–150,000; 150,000–200,000; and above 200,000. Mother's education level was measured using a six-item scale: never attended school; elementary school; junior high school; general high school; vocational high school or technical secondary school; or a college degree – undergraduate, postgraduate, and above. Mother's occupation was queried using the following options: staff of state agencies; senior manager; professional; skilled worker (including driver); general and self-employed worker; farmer; or unemployed. Thus, we constructed a latent variable based on the observed indicators of income, education, and occupation.

Our measurement of youth PSC was based on two questions: “How often do you communicate with your classmates during the period of school closure?” to capture PSC-Pal, and “How often do you communicate with Epals (*wangyou*) during the period of school closure?” to capture PSC-Epal. Particularly notable is that because of the quarantine, accumulation of data on these two kinds of social capital during the epidemic only could be achieved through online communication, such as WeChat, email, phone, etc. Both questions were scored using a scale of 1–5 (very rarely, sometimes, normal, somewhat often, or very often).

Control variables included gender, age, siblings, and family structure. Gender was measured as male or female. Age was measured by birth year, deducted from 2020. Siblings were measured with two choices: only child or number of siblings. Family structure was measured as either having two parents or others as caregivers.

Analytical Strategy

We used mediation models to analyze our data. Structural equation modeling (SEM) was used first to estimate direct and indirect effects. We followed a two-step approach: The first was to conduct a confirmatory factor analysis of the latent constructs, and the second was to examine the multivariate relationships among the variables in the structural model. The study used four fit indices to assess the measurement and structural models: (1) chi-square (χ^2); (2) comparative fit index (CFI), in which values above 0.90 denote a good fit; (3) root mean square error of approximation (RMSEA), in which values less than 0.08 indicate an adequate fit; and (4) standardized root mean square residual (SRMR), in which a value less than 0.08 denotes a good fit (Kline, 2015). We conducted SEM using Mplus software.

After the SEM analysis, we gauged the main findings’ robustness using the causal mediation model (CMM). As Robins and Greenland (1992) and Pearl (2001) indicated, the indirect effect or causal mediation effect can be expressed as the following formulation:

For each unit i and each treatment status $t=0$ or 1:

$$\delta_i(t) = Y_i[t, M_i(1)] - Y_i[t, M_i(0)]$$

with the direct effect defined as

$$\zeta_i(t) = Y_i[1, M_i(t)] - Y_i[0, M_i(t)]$$

and the average causal mediation effect (ACME) denoted as

$$\bar{\zeta}_i(t) = E\{Y_i[t, M_i(1)] - Y_i[t, M_i(0)]\}$$

As for sequential ignorability (SI) assumptions, we also conducted sensitivity analysis and did not include SEM control variables because the model may be parsimonious. However, to improve robustness, we included CMM control variables and sensitivity analysis.

Results

Structural Equation Modeling

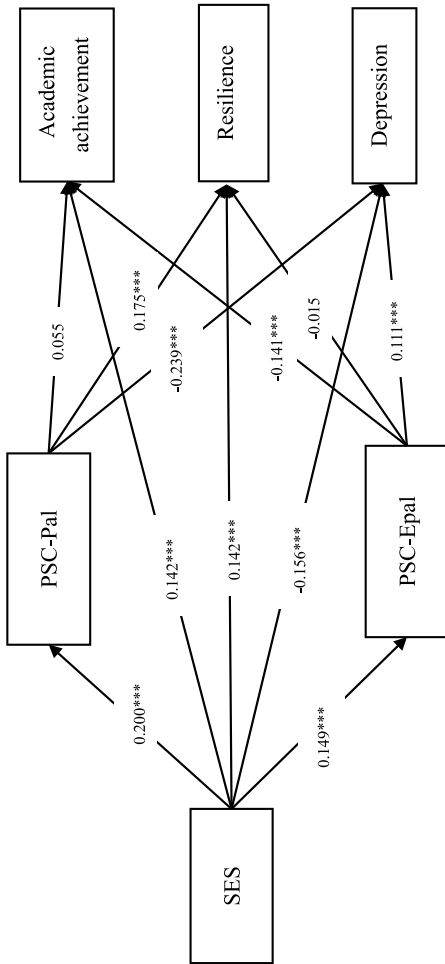
The present study's measurement model was constructed using SEM, comprising three latent variables: SES; academic achievement; and resilience. The results obtained from the confirmatory factor analysis demonstrated that our measurement model had a good fit to the data when three pairs of indicators were constrained. While chi-square was significant due to the large sample size ($\chi^2=522.728$, $p<0.001$, $DF=98$), other indices of fit appeared to be merely acceptable, with RMSEA at 0.051, CFI at 0.986, and SRMR at 0.033. All the observed indicators were loaded significantly on the latent constructs, indicating that all the items from latent variables were reliable.

After the measurement model, we conducted the structural model. As shown in Fig. 2, the structural model fit the data quite well (RMSEA=0.037; CFI=0.981; SRMR=0.029). Both PSC-Pal and PSC-Epal significantly mediated the relationship between SES and adolescents' QoL. Specifically, the SES coefficients on two types of PSC were both positive and significant ($\beta = 0.200$ and $\beta = 0.149$), i.e., high SES levels can promote PSC accumulation. Meanwhile, PSC-Pal exerted a positive effect on students' QoL, while PSC-Epal exerted a negative effect. In particular, when PSC-Pal increased one unit, depression scores decreased by 0.239 units, and resilience scores increased by 0.175 units. However, when PSC-Epal increased by one unit, depression scores increased by 0.111 units, and academic achievement decreased by 0.141 units. To our surprise, no significant association was found between PSC-Pal and academic achievement, nor between PSC-Epal and resilience.

The total effects from academic achievement, resilience, and depression, as shown in Tables 1 and 2, were 0.132, 0.175, and -0.187, respectively. In terms of indirect effect, PSC-Pal had a larger effect size than PSC-Epal, but their directions were opposite. PSC-Pal exerted a positive, but non-significant, effect on academic achievement, while PSC-Epal exerted a negative, but significant, effect. Meanwhile, PSC-Pal's indirect effect on resilience was 0.035, but the PSC-Epal effect was not significant. The opposite directions for PSC-Pal and PSC-Epal could be observed further in the depression outcome. For example, the indirect effect from PSC-Pal was -0.048, the indirect effect from PSC-Epal was 0.017, and the total indirect effect on depression was $(-0.048)+0.017=-0.031$. The direct effects from SES on academic achievement, resilience, and depression were all significant.

Causal Mediation Modeling

We conducted causal mediation modeling (CMM) to gauge the results' SEM robustness. The CMM results are shown below in Table 3. The average causal mediation effects from PSC-Pal and PSC-Epal were still significant when SES was measured by family income and mother's education. For example, in the income outcome, the average causal mediation effect for PSC-Pal was -0.32, and for PSC-Epal, it was



Chi-square=114.304; DF=32; P<0.001

RMSEA=0.037, 90%CI=[0.030,0.044], P-close=0.999

CFI=0.981, SRMR=0.029

Fig. 2 Structural Model (N = 1,736)

Table 1 Descriptive statistics for main variables (N = 1,736)

Variable	Mean	SD	Min	Max
Socioeconomic Status				
Income	2.71	1.11	1	6
Mother's education	3.08	1.45	1	8
Mother's work	3.96	2.48	1	9
Peer Social Capital				
How often do you communicate with your classmates?	3.32	.99	1	5
How often do you communicate with Epal (wangyou)?	2.31	1.17	1	5
Academic Achievement				
Chinese score	94.87	17.31	0	133
Math score	75.38	26.56	0	143
English score	91.43	24.43	0	144
Resilience				
I am able to adapt when changes occur	3.44	.79	1	5
I can deal with whatever comes my way	3.13	.77	1	5
Depression				
Depression	50.58	10.85	25	91.25

Table 2 Standardized total, indirect, and direct effects from SEM (N = 1,736)

	Outcome	SES	Mediation of PSC-Pal	Mediation of PSC-Epal
Total	Academic achievement	0.132***		
	Resilience	0.175***		
	Depression	-0.187***		
Indirect	Academic achievement	-0.010	0.011	-0.021***
	Resilience	0.033***	0.035***	-0.002
	Depression	-0.031***	-0.048***	0.017***
Direct	Academic achievement	0.142***		
	Resilience	0.142***		
	Depression	-0.156***		

0.04. To our surprise, no significant mediation effect was found when the predictor was mother's occupation. Moreover, the average direct effects still were significant for income, but not for education. This probably meant that PSC might be a principal mechanism for the negative effect from mother's education on depression. Generally, for family income, the indirect effect from PSC-Pal accounted for 31% of the total effect, while the indirect effect from PSC-Epal accounted for only 4%.

Finally, we conducted a sensitivity analysis to ensure robustness further for the CMM results, and it suggested how the model deviated from the sequential ignorability assumed by CMM, i.e., 1) given the observed covariables, the treatment assignment is statistically independent of potential outcomes and potential

Table 3 Causal mediation of peer social capital on depression (N = 1,736)

Effects	PSC-Pal			PSC-Epal		
	Income	Education	Work	Income	Education	Work
Average causal mediation effect	-0.32 ***	-0.17***	-0.03	0.04***	0.054***	0.01
Average direct effect	-0.73*	-0.20	-0.13	-1.15***	-0.42	-0.20
Total effect	-1.05***	-0.36	-0.16	-1.11***	-0.38	-0.19
Proportion of mediation effect	31%	34%	15%	4%	9%	4%
Rho	-0.20	-0.20	-0.20	0.05	0.05	0.05
R ² _M * R ² _Y *	0.04	0.04	0.04	0.003	0.003	0.003
R ² _M ~R ² _Y *~	0.04	0.04	0.04	0.002	0.002	0.002

mediators, and 2) given the observed treatment status and pretreatment covariables, the observed mediator is independent of potential outcomes. As shown in Table 3, only 4% of PSC-Pal and 2% of PSC-Epal effects can be explained by the possible existence of confounders that both affect intermediate variables and adolescents' depression. Generally, our mediating causal effect was robust in the sensitivity test.

Discussion and Implication

The COVID-19 pandemic and related public health measures have affected adolescents' QoL significantly (Shek et al., 2021a, b; Shek, 2021a, b; Ye et al., 2021). Based on the ecological perspective, the present study pays more attention to COVID-19's impact on their health, education, and resilience as they relate to QoL. Using high school students' survey and school record data in China in 2020, this study tested the classical SES, PSC, and QoL model. The results indicated that SES exerted a positive and significant effect on adolescents' QoL. We also found that when students learned at home during school closures, PSC still exerted a mediating effect. However, PSC rooted in the real world seems to be related positively to higher QoL, while PSC generated in the virtual world led to lower QoL. The results are discussed and interpreted below.

Discussion

Our results indicated that the higher the family's SES, the higher the academic achievement and resilience, and the lower the adolescents' depression. Meanwhile, we also found that PSC's total indirect effect on the relationship between family SES and adolescents' QoL is significant and positive. This finding is consistent with previous research (Catalano et al., 2002; Coleman, 1988; Kawachi et al., 1997). It indicates that during the pandemic, family SES and peer social capital have remained important resources to help teens improve their QoL. And it may suggest that higher SES may lead to larger peer networks and higher levels of social supports (Algren et al., 2020), resulting adolescents' positive development (Corsano et al., 2017; Ho

et al., 2021). On the contrary, lower SES may lead to smaller peer networks and lower levels of social resource, which not only impedes adolescents' QoL. Moreover, because of the significant direct effect from SES, our partial mediation implies that more mediators other than PSC may exist to explain the association between family SES and QoL. We leave this research gap for future studies to fill.

Our study's most interesting finding concerns PSC's contradictory roles. Because of school closures and online education, digital devices have become an indispensable tool for students at home. Simultaneously, they had more opportunities to establish new relations via social media and online gaming. We considered two types of PSC during school closures: One comes from real-life acquaintances' networks (classmates), and the other is generated from the Internet. The results demonstrated that while PSC-Pal exerted a positive mediating effect, PSC-Epal negatively mediated the relationship between family SES and adolescents' QoL. These contradictory effects have not been addressed fully in previous literature, but we try to explore them in detail.

First, the two types of PSC exerted opposite effects on adolescents' depression. Consistent with our hypothesis, PSC can mitigate traumatic situations' negative impact (Shek, Zhao, et al., 2021) and promote developmental outcomes (Zhu & Shek, 2020). Familiar friends in particular can provide more support to reduce symptoms of depression (Corsano et al., 2017; Ye et al., 2021). However, peer networks gained through online channels may not be able to provide effective support for adolescents' psychological development (Cornwell & Lundgren, 2001; Cummings et al., 2002; Moody, 2001; Parks & Roberts, 1998; Wolak et al., 2003). The reason may be that students normally blame themselves for wasting time after online gaming and chatting (Pang et al., 2017; Stevens & Morris, 2007). Another reason may be that students with depressive symptoms are more likely to isolate themselves online (Taechoyotin et al., 2020; Wartberg et al., 2017). However, more research is needed to uncover the underlying mechanisms.

Second, while PSC-Epal negatively predicted academic outcomes, PSC-Pal exerted no effect on academic achievement. Our results are partially consistent with previous research by scholars who found that online friends may be related to higher risks of Internet addiction (Malak et al., 2017; Smahel et al., 2012). However, our result on PSC-Pal deviated from our hypothesis and was inconsistent with previous studies' results (Ream & Rumberger, 2008). We suspect that it may be attributable to online education. As we noted earlier, PSC-Pal refers to friendships with classmates in person. Unfortunately, during the pandemic school closures, high school students were deprived of face-to-face contact. Consequently, PSC-Pal cannot significantly affect students' academic achievement.

Finally, PSC-Epal exerted no significant effect on adolescents' resilience, which differs from our hypothesis. We suspect that this may be attributable to resilience's characteristics. Although the Internet may affect adolescents' positive development (Leung & Fung, 2021), previous studies also indicated that traumatic experiences may foster positive developmental attributes, e.g., problem-solving skills, emotional management competence, and resilience (Shek, 2020, 2021b). This complicated resilience trait may render PSC-Epal's indirect effect non-significant. New data are needed to determine in what circumstances students' resilience may be triggered.

Our study also has some limitations. First, because we conducted the survey in just one high school in an Eastern China province, the results may not be generalizable to other contexts. Second, our causal analysis must be interpreted with caution given the data's cross-sectional nature, although we employed multiple methods to improve our results' robustness. Finally, our measurement of PSC may not be entirely satisfactory due to the survey's limitations. Future researchers may design better research instruments to measure new forms of PSC. However, despite these limitations, our study not only advanced PSC theory, but also holds implications for public policies that support positive development during adolescence.

Practical Implications

The contradictory effects from PSC-Pal and PSC-Epal may provide practical implications for promoting adolescents' QoL. Empirical studies have documented that adolescent would suffer a decline in personal well-being mainly due to mismatches of their inner needs with the changing environment (Eccles et al., 1993). However, many scholars believe that adolescents' resilience would help them thrive (Lerner, 2004; Shek & Lin, 2017). Similar to advice to improve friendship quality (Way & Greene, 2006), our study points out that PSC accumulated through acquaintances in person would help promote adolescents' QoL. As a result, family, school, and society should make more of an effort to encourage students to build healthy relationships in the real world.

Considering that students' limited social resources are more inclined toward making friends online (Kraut et al., 2002), parents should pay more attention to their children's psychological needs. Furthermore, enhancing adolescents' inner strength has been proven to be effective at reducing problem behaviors, such as Internet addiction (Shek et al., 2019, 2020). For example, positive youth development programs in schools and communities may help children enhance this ability (Shek et al., 2021a, b; Zhu & Shek, 2020, 2021). Moreover, schools can play an active role in preventing potential harm by incorporating education on online fraud and virtual dating into their formal curricula. Teachers also can do more to promote healthy interactions among classmates and facilitate positive peer connections.

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