Developmental Assets, Self-Control and Internet Gaming Disorder in Adolescence: a Longitudinal Moderated Mediation Model

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Introduction

The population of Internet game users and the prevalence of Internet gaming disorder (IGD) are climbing dramatically[1-6]. IGD will lead to altera-tions in brain function and structure, and hinder healthy development [7-12].

Positive youth development theory (PYD) and *developmental assets framework theory* highlight that the more positive resources adolescents have, the more positive outcomes and fewer problems they will develop[13,14].

According to *the general theory of crime*, a poor self-control ability would lead to greater IGD[15]. Moreover, according to *the ecological systems theory*, self-control ability is shaped by the various resources in the environment[16-18].

A series of gender differences were reported in developmental assets, self-control ability, and IGD in previous studies[19-21].
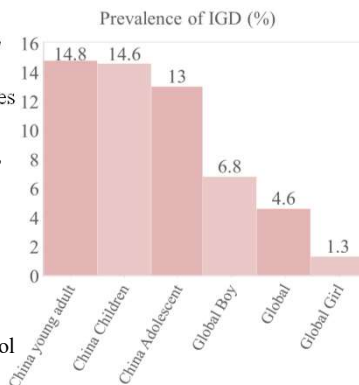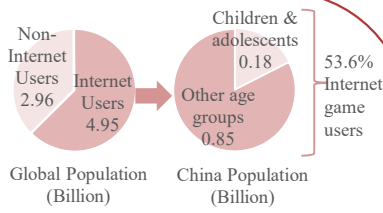
Summary of hypotheses

H1: *developmental assets may predict adolescent IGD negatively and self-control ability positively.* **H2:** *self-control may mediate the association between developmental assets & IGD.* **H3:** *gender may moderate the aforesaid relationship between developmental assets, self-control & IGD.*

Methods
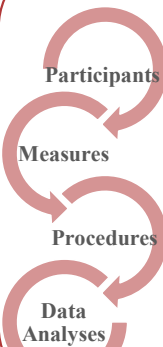
Participants: 1,023 adolescents were recruited from two public middle schools in Southern China (505 boys; Mage = 13.16 years, SD = 0.86; attrition rate = 2.93%) by a random cluster sampling.

Measures: Developmental Assets Profile (DAP)[22]; Brief Self-Control Scale (BSCS)[23]; 11-item Internet Gaming Disorder Questionnaire (IGDQ)[24]; Demographics.

Procedures: Pencil-and-paper questionnaires were used to collect data in Oct 2020(T1) and Apr 2021(T2). The Research Ethics Committee of Yangtze University approved this work.

Data Analyses: Attrition analysis and common method bias analyses in SPSS 26.0; descriptive statistics and correlations of the key variables; structural equation modeling (SEM) and multigroup analysis in Mplus 8.0.

Results

Table 1 displays descriptive characteristics of current sample. Most of them were from families at the average economic level (3.10% ≤; 1.85% ≥ the average level).

Table 1. Descriptive Statistics of Covariates and Key Variables

	Boys		Girls		Total		
	M	*SD*	*M*	*SD*	*M*	*SD*	*Range*
Covariates							
1. Age	13.23	0.88	13.09	0.84	13.16	0.86	11-15
2. Family Type	2.05	1.23	2.24	1.42	2.15	1.34	1-4
3. Family Economic Status	1.99	0.25	1.98	0.19	1.99	0.22	1-3
Key Variables							
4. T1 DA	2.60	2.42	2.486	2.35	2.54	2.38	0-8
5. T1 SC	40.13	7.03	39.82	6.96	39.97	6.99	17-63
6. T2 IGD	15.79	3.71	15.23	3.45	15.51	3.59	11-32

Note. DA=Developmental assets, SC=Self-control, IGD= Internet gaming disorder.

Chi-square tests and *t*-tests showed that the data set would not be biased due to attrition. Harman's Single-Factor Test reported that results were less influenced by common method biases.

Results

Table 2 outlines skewness, kurtosis, and intercorrelations of all variables.

Table 2. Skewness, Kurtosis and Intercorrelations of Covariates and Key Variables

	Skewness	*Kurtosis*	1	2	3	4	5
Covariates							
1. Gender	-0.01	-2.00					
2. Family Type	1.10	0.51	**0.07***				
3. Family Economic Status	-1.02	17.12	-0.01	-0.01			
Key Variables							
4. T1 DA	0.67	-0.67	-0.02	-0.05	0.05		
5. T1 SC	0.11	0.24	-0.02	**-0.11****	**0.10****	**0.28****	
6. T2 IGD	1.71	3.68	**-0.08***	0.04	**-0.10****	**-0.11****	**-0.19****

Note. DA=Developmental assets, SC=Self-control, IGD= Internet gaming disorder. $* p < 0.05$, $**p < 0.01$.

A mediation model was constructed to test whether T1 self-control mediates the pathway from T1 DA to T2 IGD. Results were illustrated in Figure 2.

Multigroup analysis was used to assess the possible moderation effect of gender on the mediation model. Based on the mediation model, this study added gender as a grouping item. The new model fit the data well:
$RMSEA = 0.06$, $SRMR = 0.049$
$CFI = 0.967$, $TLI = 0.960$

Wald-Test indicated that there was no significant gender difference in the mediation model ($\chi 2 = 1.011$, $p = 0.315$).

Model Fit:
RMSEA = 0.04
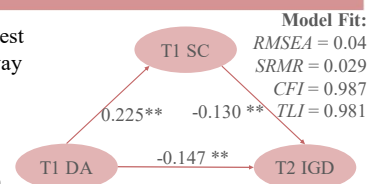*SRMR* = 0.029
CFI = 0.987
TLI = 0.981

Figure 2. The Mediating Effect of T1 Self-Control in the Relationship Between T1 Developmental Assets and T2 Internet Gaming Disorder. *Note.* DA=Developmental Assets; SC=Self-Control; IGD=Internet Gaming disorder. Standardized coefficients are reported; $**p < 0.01$.

9th

Limitations

Data	Self-reported questionnaires *VS* multiple measures
Content	Developmental assets *VS* other positive factors
Design	Six-month longitudinal study *VS* Longer follow-up study
Sample	Chinese adolescents *VS* more diverse youth

Contribution

To Literature: Expanded previous indirect evidence; Provided empirical support for theories.

To Practice: Comprehensive measures (e.g., PATHS[25]) should be taken to develop more positive attributes and a higher self-control ability; Developing developmental assets is an effective way to prevent, and improving self-control is a more direct approach to intervening in adolescent IGD.

Conclusion

From the perspective of PYD, developmental assets play a critical role in promoting adolescent development. The present study examined how their joint function affected the development of Chinese adolescents during the COVID-19 pandemic through a moderated mediation model based on a longitudinal design. Adolescents who have more developmental assets are less likely to develop IGD. The developmental assets are beneficial for developing a higher level of self-control ability, which in turn contributes to preventing or decreasing IGD. In summary, measures should be taken to construct developmental assets to assist adolescents in responding to the developmental challenges during adolescence.

Acknowledgements

Contact

Article Source

ResearchGate Profile

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(Full reference could be found in the original article through the QR code)