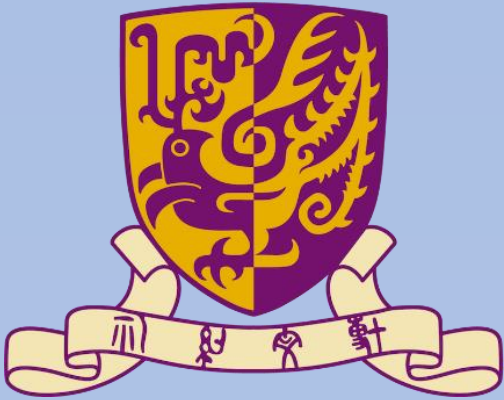


Intergenerational transmission of Internet gaming disorder in Hong Kong adolescents

Qian LI¹, Samuel Y.S WONG¹, Xue YANG¹

1. Jockey Club School of Public Health and Primary Care, Faculty of Medicine, The Chinese University of Hong Kong

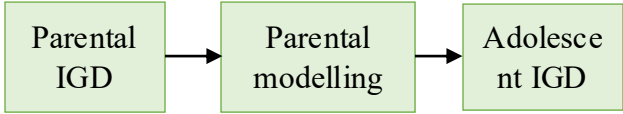
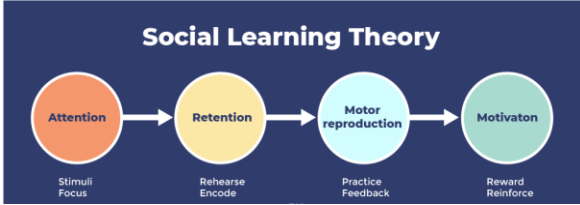


Background

- Adolescent Internet gaming disorder (IGD) is a significant public health concern in Hong Kong.
- Parental factors are closely related to adolescent IGD.
- No longitudinal study has examined whether and how parental IGD influences adolescent IGD.

Possible mechanism 1: Parental modelling

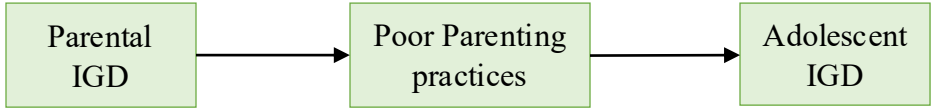
Definition: Parents or caregivers demonstrate behaviors and attitudes that children may observe and imitate.



Possible mechanism 2: Parenting practice

Definition: Behaviors and strategies that parents use to interact with and guide their children.

- General parenting practices: support, communication, love, discipline, or supervision
- Specific parenting practices: mediation strategies on Internet gaming



Aims

- To assess the longitudinal relationship between parent-reported IGD and adolescent IGD.
- To examine the mediating roles of parental modelling and parenting practices on the intergenerational transmission of IGD.

Method

- Study design:** A one-year, two-wave longitudinal study in Hong Kong
- Population:** Secondary school students (grade 1-3) + one of their parents (primary caregiver)
- Data collection:** Questionnaire survey in the classroom (adolescents); Online survey via WhatsApp or telephone interview (parents)
- Statistical analyses:** Cross-lagged panel model (CLPM); Structural equation modelling (SEM)

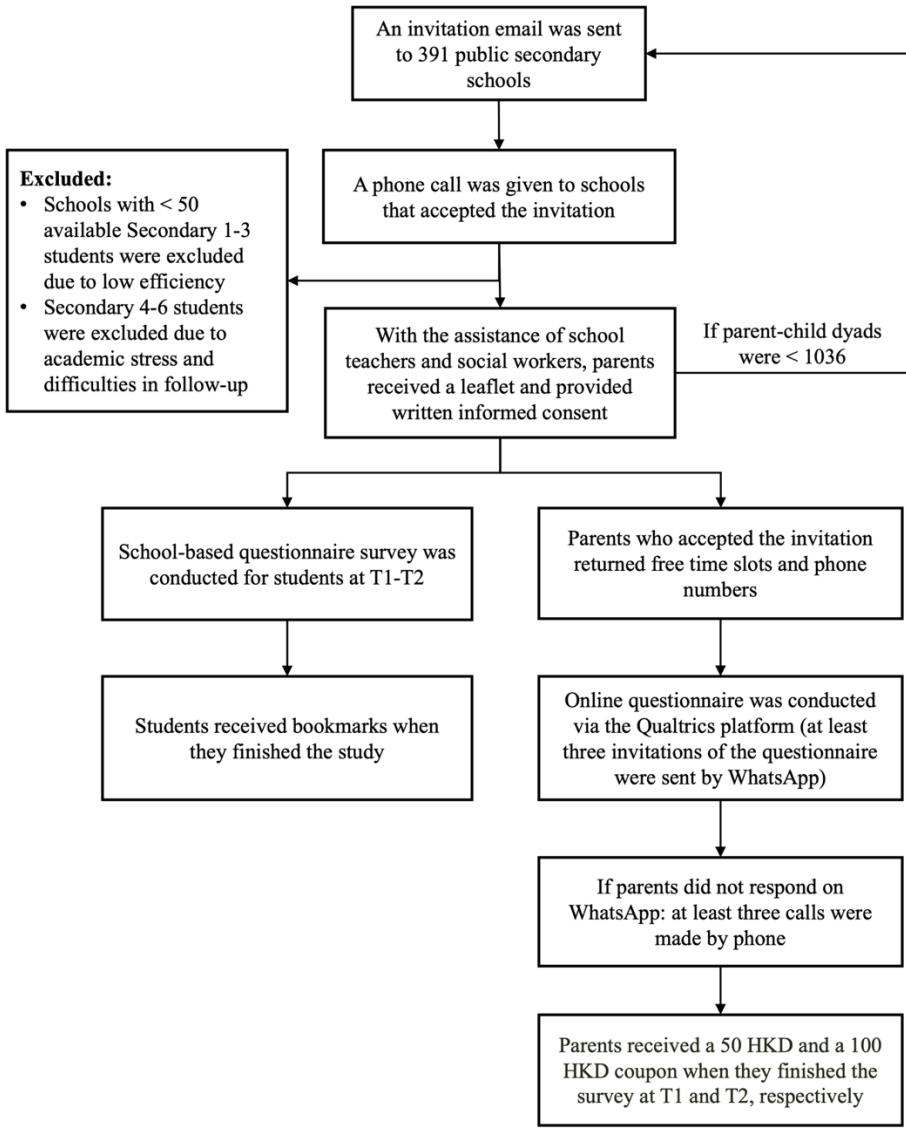


Figure 1 Flowchart of study design

Results

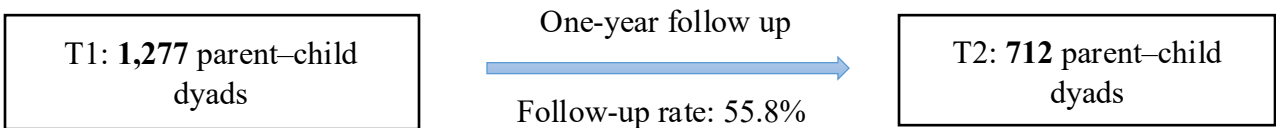


Table 1 Demographic characteristics of parent-child dyads at T1 and conversion rates of IGD

	Adolescents (N=712), n (%)	Parents (N=712), n (%)
Age (mean (SD))	12.28 (1.35)	44.76 (5.15)
Female	350 (49.2)	580 (81.5)
Play Internet games	581 (81.6)	344 (48.3)
IG time (h/day) (mean (SD))	1.79 (1.62)	0.59 (0.88)
IGD Prevalence at T1, n/N (%)	72/712 (10.1)	8/712 (1.1)
IGD Incidence, n/N (%)	41/640 (6.4)	4/704 (0.6)
IGD Remission rate, n/N (%)	49/72 (68.1)	6/8 (75.0)
Persistent IGD, n/N (%)	23/712 (3.2)	2/712 (0.3)
Never experienced IGD, n/N (%)	599/712 (84.1)	700/712 (98.3)

Note: IG, Internet gaming; SD, standard deviation.

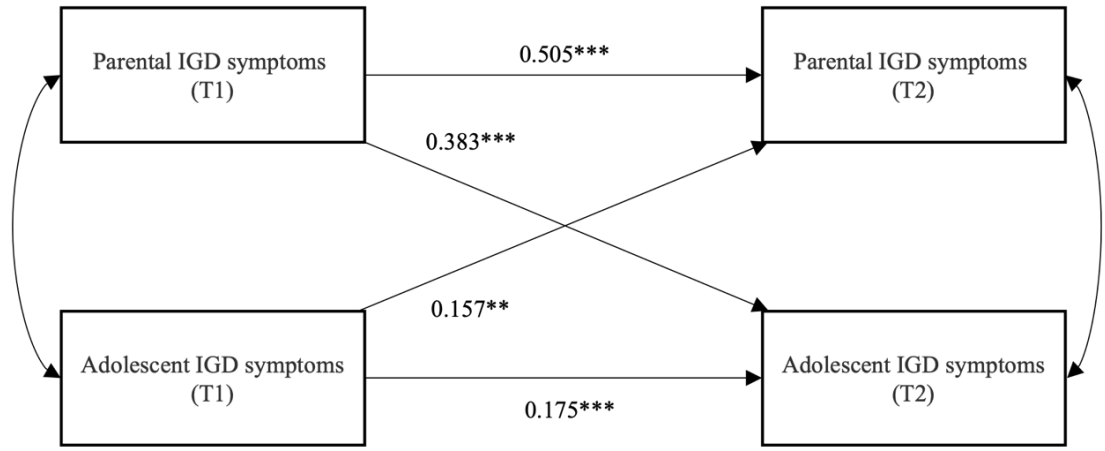


Figure 2 The cross-lagged panel model between parental and adolescent IGD symptoms/IG time

Note: In Figure A, adolescents' age, gender, depression status, anxiety status, mental health service history, family relationship, and perceived parental other Internet activities were adjusted for; In Figure B, adolescents' age, gender, family relationship and perceived parental other Internet activities at T1 were adjusted for; The standardized path coefficients were shown; IG, Internet gaming; IGD, Internet gaming disorder; * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$.

Table 2 The relationship between parental modeling/parenting practice and adolescent IGD

	Model 1		Model 2	
	OR (95%CI)	<i>p</i>	AOR (95%CI)	<i>p</i>
Parental modelling				
PA_IG time	1.637 (1.470, 1.823)	<0.001	1.641 (1.454, 1.851)	<0.001
PA_IG attitudes	0.928 (0.889, 0.970)	0.001	0.951 (0.909, 0.995)	0.030
Parenting practice				
PP_Specific ^a	1.007 (0.994, 1.020)	0.305	1.011 (0.997, 1.026)	0.123
PP_General ^b	0.782 (0.731, 0.835)	<0.001	0.800 (0.748, 0.856)	<0.001

Note: Model 1 adjusted for cluster effects within schools and repeated measurements; Model 2 additionally adjusted for adolescents' age, gender, depression status, anxiety status, mental health service history, family relationship, and perceived parental other Internet activities;

a, Specific parenting means parental mediation on child's gaming behaviour;

b, General parenting means more emotional warmth, less punishment and control;

PA_ means parental factors reported by adolescents; PP_ means parental factors reported by parents; IG, Internet gaming; IGD, Internet gaming disorder; OR: odds ratio; AOR, adjusted odds ratio; CI: confidence interval.

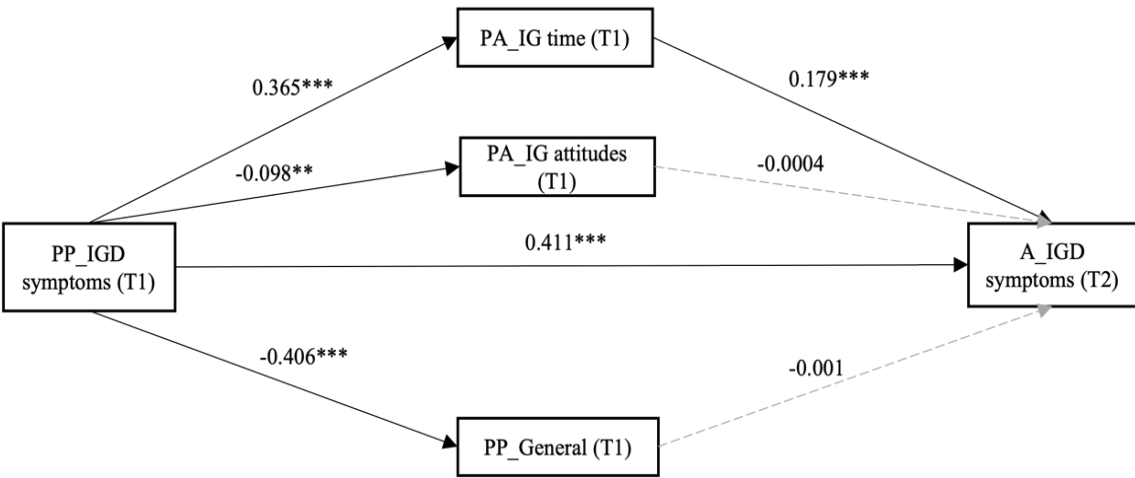


Figure 3 Mediation analyses between parental and adolescent IGD symptoms

Note: Adolescents' age, gender, depression status, anxiety status, mental health service history, family relationship and perceived parental other Internet activities at T1 were adjusted for;

The standardized path coefficients were shown;

Specific means parental mediation on child's gaming behaviour; General means parenting practice with more emotional warmth, less punishment and control;

A_ means adolescents' factors; PA_ means parental factors reported by adolescents; PP_ means parental factors reported by parents; IG, Internet gaming; IGD, Internet gaming disorder;

* $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$.

Discussion

- The prevalence of adolescent IGD in Hong Kong is still higher than that in Europe (pooled prevalence: 2.72% [1.95%-3.75%]), the US (2.74% [0.70%-10.21%]), and the global level (3.05% [2.38%-3.91%]).
- Although many parents play Internet games, IGD is not common in them. Parental gaming behavior may not primarily impact the parents themselves, but rather their children.
- Compared to parental IGD symptoms (a more complex psychological symptom), parental gaming time is a more direct and observable target to regulate.
- Improving parental gaming attitudes might help reduce its direct influence on adolescent IGD, but it could not break the intergenerational transmission of IGD.
- Adolescent IGD symptoms at T1 significantly predicted parental IGD symptoms at T2. A possible reason is that children's problematic behavior can lead to parental burnout and trigger parental emotional distress, which have been reported as significant risk factors of adult IGD.
- Family-based interventions are advised to provide parents support in effectively regulating their gaming behavior, particularly in front of their children, which might be an effective way to reduce adolescent IGD and IG time, both directly and indirectly.

Limitations

- Both parents' and adolescents' screen time was self-reported, which might lead to recall bias.
- Data were collected from only one parent per family, with a disproportionately high number of mothers. This might exaggerate observed parental effects on female adolescents, as prior research suggested that mothers often exert stronger influence on daughters' behaviors.
- The follow-up rate in the current sample was 55.8%. The high rate of loss to follow-up might lead to biased findings.
- Certain potential confounders were not collected and adjusted for in this study, such as game genres, parental gaming history and the non-primary caregivers' (most were fathers) gaming behavior.

Implications/Conclusions

- Parental IGD contributes to the development of adolescent IGD.
- Adolescents' perceived parental IG time is a key mediator of the intergenerational transmission of adolescent IGD.
- The most cost-effective and actionable family-based intervention for adolescent IGD might be avoiding parental gaming in front of their children.