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Unraveling the Links between Maternal and Paternal Parenting Practices and Adolescent Problematic Gaming: the Mediating Role of Satisfaction and Frustration of Psychological Needs

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Declarations

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The data that support the findings of this study are available from the corresponding author, upon reasonable request.

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Ethical Approval Statement

The research was conducted in adherence to the Declaration of Helsinki and was approved by the ethical committee for Psychological Research of the University of Padova (protocol number: 5081).

Informed Consent

Parental informed consent and adolescent assent (or active informed consent for participants older than 18 years) were collected to allow for participation in the study.

CRedit Contributions

Erika Pivetta: Conceptualization; Data curation; Formal analysis; Methodology; Project administration; Resources; Software; Visualization; Writing - original draft.

Sebastiano Costa: Conceptualization; Formal Analysis; Methodology; Software; Supervision; Validation; Writing - review & editing.

Claudia Marino: Conceptualization; Methodology; Resources; Supervision; Validation; Writing - review & editing.

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Abstract

Adolescent problematic gaming (PG) is a concerning condition worldwide. Increasing evidence documented associations between parental behaviours (measured unitedly for mothers and fathers) and adolescent PG; however, the specific contribution of each parent and the mediating mechanisms remain understudied. Drawing from the Self-Determination Theory, this study separately examined, in mothers and fathers, (i) the direct associations between supportive parenting practices (i.e., autonomy support, structure, warmth) and thwarting practices (i.e., coercion, chaos, rejection) and adolescent PG, (ii) their indirect associations via the satisfaction and the frustration of basic psychological needs, and (iii) potential gender differences.

Data were collected at school via online questionnaires in 2023 and the final sample comprised 1193 Italian videogame players ($M_{\text{age}} = 15.81 \pm 1.58$; 64.3% males). Path analyses were run to test the two mediation models and multi-group comparisons were conducted.

Coercion by both parents was directly associated with higher PG among all adolescents, while chaos by both parents was directly associated with higher PG only in males. Furthermore, the thwarting practices of both parents were associated with higher adolescent PG via increased need frustration, whereas autonomy support only by fathers was related to lower adolescent PG via reduced need frustration; no gender differences emerged in the indirect associations.

These findings evidence that the thwarting parenting practices and need frustration in particular may be crucial risk factors for adolescent PG and suggest that involving both mothers and fathers in the prevention and intervention programs may be particularly useful to tackle this condition in adolescence.

Keywords: Problematic Gaming; Adolescence; Parenting Practices; Self-Determination Theory; Need Frustration; Gender Differences.

Public Policy Relevance Statement

The thwarting practices of both mothers and fathers, which entail being overcontrolling, inconsistent and rejective, together with the frustration of basic psychological needs may be crucial risk factors

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for adolescent problematic gaming (PG). Encouraging an active involvement of both parents in the prevention and intervention programs and promoting adolescents' awareness of the critical role of need frustration may be particularly useful to tackle PG among adolescents.

1. Introduction

Playing videogames is a widespread recreational activity worldwide, especially among adolescents (Stevens et al., 2021). Even if gaming can be beneficial in multiple ways, for instance, by promoting social interactions or physical exercise (Halbrook et al., 2019), it may also evolve into a dysfunctional pattern of use and become problematic gaming (PG) (Nogueira-López et al., 2023), leading to different adverse outcomes, such as higher psychological distress, lower academic scores and decreased self-esteem (Limone et al., 2023). In the most severe cases, players can develop gaming disorder, which is a condition characterized by addictive-like symptoms and significant psychosocial impairment in daily life (Reed et al., 2022; WHO, 2019). Since recent large-scale studies have found high prevalence rates among adolescents (Kim et al., 2022), it is crucial to study the underpinnings of PG in this vulnerable category to implement effective and comprehensive prevention strategies (Bender et al., 2020; Colasante et al., 2022; Gopali et al., 2023).

In accordance with studies on other dysfunctional behaviors, among the numerous risk and protective factors for PG identified in the literature (Ropovik et al., 2023), a growing body of research has stressed the relevance of considering parental factors in relation to the dysfunctional use of videogames in adolescence (Nielsen et al., 2020; Zhuang et al., 2023). According to a meta-analysis on adolescent PG and other problematic Internet uses (Lukavská et al., 2022), two main categories of parenting can be distinguished: (i) general parenting, entailing traditional practices, such as providing warmth and control, and (ii) media-specific parenting, such as active mediation of technology consumption. The current study concentrated on the first category, specifically by following the motivational model conceptualized by Skinner et al. (2005) within the framework of the self-determination theory (SDT; Ryan & Deci, 2000; 2017). As a broad theory of human motivation and well-being, the SDT encompasses, among its fundamental tenets, the importance of the satisfaction and frustration of three basic psychological needs (i.e., needs for autonomy, competence and relatedness), which are described as “conditions that are essential to an entity’s growth” (Ryan, 1995, p. 410). More precisely, when these needs are satisfied, one can experience a sense of integrity,

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effectiveness and connection that are essential for flourishing; on the contrary, when these needs are frustrated, one can perceive pressure from others and experience a sense of helplessness or loneliness that may put him/her at higher risk of developing problematic behaviors, including PG, as an alternative way to fulfil such needs or to cope with the related negative affect (Allen & Anderson, 2018; Przbyski et al., 2019; Ryan & Deci, 2017; Vansteenkiste et al., 2020). In this regard, the conceptual relevance of the motivational model (Skinner et al., 2005) consists into the fact that it considers the social context of parents as critical to the satisfaction or frustration of basic psychological needs during adolescence. More specifically, the model identifies six core parenting practices, among which autonomy support (i.e., allowing freedom of expression and action), structure (i.e., providing clear guidelines and expectations) and warmth (i.e., conveying acceptance and support) represent supportive parenting practices and have been consistently associated with more positive outcomes in adolescence (Bülow et al., 2022; Niu et al., 2023; Vieno et al., 2007); while coercion (i.e., overcontrolling and being intrusive), chaos (i.e., being unpredictable and inconsistent), and rejection (i.e., expressing disapproval and aversion) are considered as thwarting parenting practices and have been found to increase adolescent maladjustment (Costa et al., 2019; Niu et al., 2023; Skinner et al., 2016; Zhu et al., 2022). Crucially, despite supportive environments have been primarily associated with well-being through need satisfaction, and thwarting environments have been related to maladjustment through need frustration, their cross-paths dynamics should also be considered (Vansteenkiste & Ryan, 2013). In other words, it is possible that supportive parenting may also act as a buffer against the development of problematic behaviours, possibly through a reduction of need frustration, and, viceversa, thwarting parenting may hamper individual functioning, possibly through a decrease of need satisfaction (Vansteenkiste & Ryan, 2013).

In the field of adolescent PG, studies adopting the SDT perspective to investigate general parental behaviors (Gugliandolo et al., 2020; Liang et al., 2021) and media-specific behaviours (Bradt et al., 2023; Görgülü & Özer, 2024) are scant and further research is needed. Furthermore, to the best of our knowledge, none of the available studies has simultaneously examined all the abovementioned

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parenting practices and distinguished them between mothers and fathers. For instance, one previous work by Gugliandolo et al. (2020) has evaluated the associations between two specific parenting practices, namely parental psychological control and parental autonomy support, and four adolescent technological problematic behaviours (including problematic gaming behaviour) and tested the mediating roles of both need satisfaction and frustration. The results showed that parental psychological control was significantly associated with problematic gaming behavior and only need frustration mediated this relationship; hence, the authors argued that gaming may be used by adolescents particularly as a strategy to compensate for their un-met psychological needs and for the negative states, resulting, in this case, from the thwarting behaviour of parental psychological control (Gugliandolo et al., 2020). A similar argumentation has been provided by Zhu et al. (2021) as a possible explanation for the association between parental rejection and PG in a longitudinal study involving Chinese adolescents; however, the mediating role of the psychological basic needs was not tested in that study and thus remained unexplored.

Notably, an important limitation of these studies is that parenting practices have been investigated aggregately, using composite scores rather than distinct for mothers and fathers. However, the lack of analysis of the unique contribution of each parent may have overlooked potential gender-specific effects (Inguglia et al., 2018; Jeong et al., 2020). In fact, it is possible that the maternal contribution may be primarily perceived in terms of emotional presence, conveyed through supportive and warmth parenting practices, while the paternal role may be mainly perceived in terms of coercive and disciplinary parenting practices (Yaffe, 2023). Furthermore, one previous study has found that perceived autonomy support from mothers, but not from fathers, was negatively associated with need frustration in adolescence (Costa et al., 2016). A work by Su et al. (2018), instead, has shown that it was the quality of father-adolescent relationship that specifically mediated the association between parental monitoring and adolescent Internet gaming disorder, stressing the need for further research in this domain.

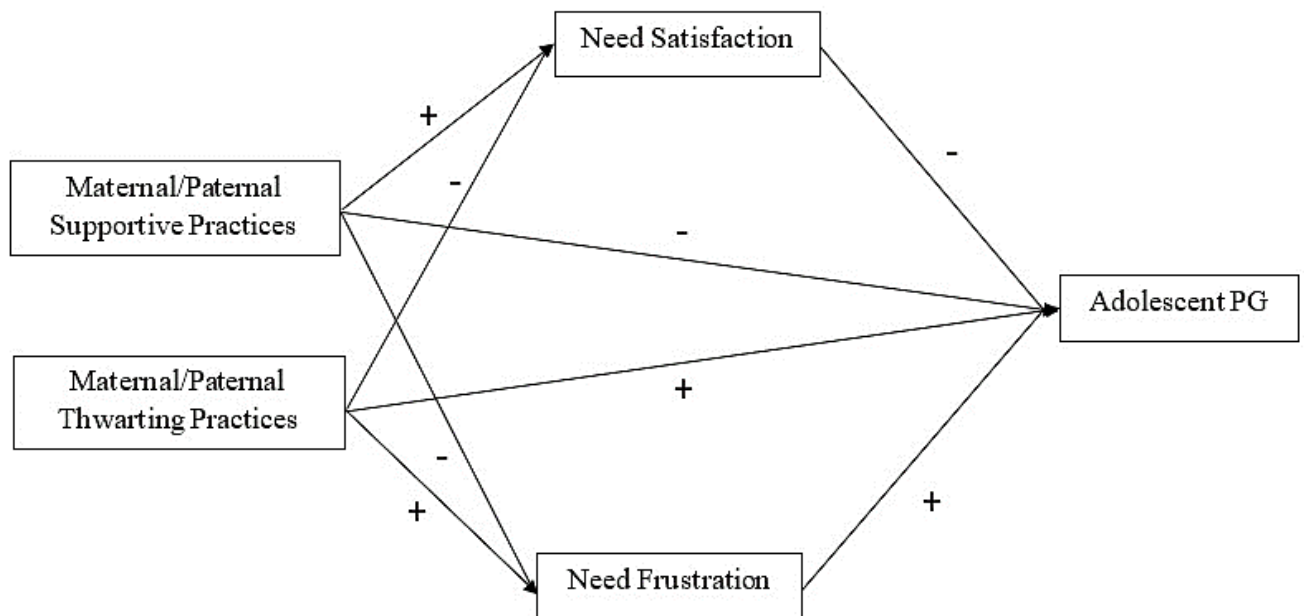
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Besides the association with parenting practices, in the gaming domain the role of the psychological basic needs has been extensively studied in the literature (Allen & Anderson, 2018; Bender & Gentile, 2020; Przybylski & Weinstein, 2019). In fact, although both need satisfaction and need frustration in the real world may show a positive association with time spent playing videogames (Przybylski & Weinstein, 2019), several studies have shown that was psychological need frustration to be consistently related to PG (Allen & Anderson, 2018; Mills et al., 2018; Przybylski & Weinstein, 2019). Following the suggestion by Vansteenkiste et al. (2013) to distinguish the lack (or low) fulfilment of the basic psychological needs from the more harmful experience of need frustration, in this study we separately analyzed the contribution of need satisfaction and need frustration.

Consistent with the motivational model by Skinner et al. (2005), the aims of the present research were: (i) to examine whether the supportive parenting practices (i.e., autonomy support, structure, warmth) and the thwarting practices (i.e., coercion, chaos and rejection) would be directly associated with adolescent PG; (ii) to test the associations between need satisfaction and need frustration and adolescent PG; (iii) to assess the mediating role of need satisfaction and need frustration between the parenting practices and adolescent PG. Adding to the literature, two distinct models (i.e., one for mothers and one for fathers) were tested (*see* Fig.1). Finally, since previous studies have documented gender differences in adolescent PG (Bender et al., 2020; Colasante et al., 2022; Dong & Potenza, 2022) in the relationship between parenting practices and general adolescent adjustment (Ramírez-Uclés et al., 2018), and between parental behaviors and adolescent PG (Pivetta et al., 2024), an additional aim of this study was to explore potential differences between males and females in the hypothesized pattern of relationships among variables. In both models, we expected that the supportive parenting practices would be negatively associated with adolescent PG, both directly and indirectly, primarily via higher need satisfaction, but also via lower need frustration; furthermore, we expected that the thwarting parenting practices would be positively associated with adolescent PG, both directly and indirectly, primarily via higher need frustration, but also via lower need satisfaction.

Fig. 1

The Hypothesized Model for the Associations between Maternal and Paternal Parenting Practices and Adolescent Problematic Gaming.



Notes. Autonomy-Support, Structure and Warmth were synthetically reported within the Variable Maternal/Paternal Need Supporting Practices; Coercion, Chaos and Rejection were synthetically reported within the Variable Maternal/Paternal Thwarting Practices. Age was included as a covariate of Need Satisfaction, Need Frustration and Adolescent Problematic Gaming.

2. Materials and Methods

2.1 Procedure

Data were collected in 14 Italian public high schools between January and February 2023. After obtaining the school's authorization, parental informed consent and adolescent assent (or active informed consent for participants older than 18 years) were collected. Adolescents completed an online survey lasting approximately 30 minutes that was delivered via the secure platform Qualtrics®. Data collection took place during regular school hours under the supervision of the researchers and

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their assistants. Privacy and anonymity of the participants were guaranteed. The research was conducted in adherence to the Declaration of Helsinki and was approved by the ethical committee for Psychological Research of the University of Padova (protocol number: 5081).

2.2 Participants

A total of $n = 1784$ adolescents responded to the questionnaires. The data cleaning procedure followed three steps: first, participants who reported not to have played videogames in the last 12 months ($n = 380$) were excluded. Second, participants with missing data in the main study variables ($n = 188$) and in the gender variable ($n = 11$) were removed. Third, participants self-identifying as non-binary ($n = 12$) were excluded due to insufficient numerosity for multi-group analyses. Thus, the analyses were run on a final sample of $n = 1193$ adolescent videogame players ($M_{\text{age}} = 15.81 (\pm 1.58)$ years; age range = 13–21 years; 64.3% males). The majority of the adolescents was born in Italy (96.4%), 0.8% in Romania, 0.5% in Albania and the remaining 2.3% in other countries. More than half of the students (58.7%) attended the first or the second grade of high school. Most of the adolescents lived in a two-parent family (83.1%), 12.0% in a single-parent family, 3.6% in a step-family and 1.3% in external facilities. Finally, 93.1% of the students reported to come from medium- and high-class families.

On average, adolescents reported to play $3.92 (\pm 2.26)$ days per week and the duration of game time per day was $113.85 (\pm 105.69)$ minutes. Among genres, participants preferred Action-Adventures (45.3%), Sport (43.4%), and First-Person Shooting (43.0%). Adolescents mainly played videogames on smartphones (70.2%) and consoles (57.8%) and their favourite gaming locations were their own house (58.8%) or their friends' house (31.3%).

2.3 Measures

2.3.1 Adolescent Problematic Gaming

To assess adolescent PG, the Internet Gaming Disorder Scale-Short Form (IGDS9-SF; Pontes et al., 2015; Italian validation: Monacis et al., 2016) was used. The nine items of the scale assess the frequency of difficulties and problems associated with gaming experienced in the last 12 months

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based on the criteria identified in the *Diagnostic and Statistical Manual of Mental Disorders (DSM-5; American Psychiatric Association [APA], 2013)*. Items were rated on a five-point scale from (1) “never” to (5) “very often”. Following a dimensional approach, adolescent PG was conceptualized on a continuum of severity, in line with previous research on this condition involving non-clinical samples of adolescents (Ciccarelli et al., 2022; Teng et al., 2020). Thus, items were summed to obtain a continuous score for adolescent PG, with higher scores indicating higher levels of PG severity. In this study, the Cronbach’s α was .84 (95 % CI [.91, -.93]).

2.3.2 Basic Psychological Needs Satisfaction and Frustration

To examine the satisfaction and the frustration of basic psychological needs (i.e. autonomy, competence, relatedness) in everyday life, the Basic Psychological Needs Satisfaction and Frustration Scale (BPNSFS; Chen et al., 2015; Italian validation: Costa et al., 2018) was employed. The BPNSFS comprises 24 items divided into two subscales: needs satisfaction (12 items) and needs frustration (12 items) rated on a five-point scale from (1) “completely disagree” to (5) “completely agree”. The items composing each subscale were summed to obtain the total scores for needs satisfaction and frustration, respectively. In this research, the levels of reliability were good: satisfaction: $\alpha = .86$ (95% CI [.85, .87]) and for frustration: $\alpha = .88$ (95% CI [.87, .89]).

2.3.3 Maternal and Paternal Parenting Practices

To investigate adolescents’ perceptions of maternal and paternal practices, the Parents As Social Context Questionnaire (PASCQ; Skinner et al., 2005) was employed. The scale examines six core dimensions of parenting (i.e., autonomy support, structure, warmth, coercion, chaos, and rejection), which are separately evaluated for mothers and fathers by the adolescent using a four-point scale from (1) “not at all true” to (4) “very true”. Each subscale is composed of four items which are summed to obtain a total score for the corresponding parenting dimension. Despite the PASCQ has been validated and used in several studies worldwide (e.g., Abidin et al., 2019; Rebecka et al., 2020), the Italian validation is not available. Thus, we preliminarily performed a Confirmatory Factor Analysis (CFA) on the Italian back-translated version by Costa and colleagues (2019). The CFA provided support for

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the construct validity of the questionnaire (*see* Supplemental Materials). In this study, the reliability levels of the maternal subscales were for autonomy support: $\alpha = .78$ (95% CI [.76, .80]), structure: $\alpha = .77$ (95% CI [.75, .79]), warmth: $\alpha = .82$ (95% CI [.80, .84]), coercion: $\alpha = .69$ (95% CI [.66, .72]), chaos: $\alpha = .71$ (95% CI [.69, .74]), rejection: $\alpha = .66$ (95% CI [.63, .69]). The reliability levels for the paternal subscales were for autonomy support: $\alpha = .79$ (95% CI [.77, .81]), structure: $\alpha = .80$ (95% CI [.78, .81]), warmth: $\alpha = .85$ (95% CI [.84, .86]), coercion: $\alpha = .66$ (95% CI [.62, .69]), chaos: $\alpha = .70$ (95% CI [.67, .73]), rejection: $\alpha = .66$ (95% CI [.63, .70]).

2.4 Data Analytic Strategy

Descriptive statistics and bivariate Pearson's correlations were calculated using the Statistical Package for Social Science software (SPSS) V.28.0.1 (IBM Corp., 2023).

To test the hypothesized model of the inter-relationships between the study variables, a path analytic approach (i.e., structural equation modeling for observed variables) was applied using the lavaan package (Rosseel, 2012) of the open-source software R (R Development Core Team, 2023). Specifically, a single observed score for each construct and the robust maximum likelihood method estimator (MLR) were used (Satorra & Bentler, 1994). To calculate indirect associations, the bootstrapping approach with 5000 resamplings and the maximum likelihood method estimator (ML) was applied, and the 95% bias-corrected confidence intervals (CI) were estimated and considered significant if they did not include zero (Hayes, 2013). In our model, the supportive and the thwarting parenting practices were the independent variables; the satisfaction and the frustration of basic psychological needs were the mediating variables; and adolescent PG was the dependent variable; age was included as a covariate (Fig.1). To check the overall goodness of fit, the explained variance of each endogenous variable (R^2) and the total coefficient of determination (TCD), which is commonly considered a reliable fit index for path analysis (Bollen, 1989; Jöreskog & Sörbom, 1996), were considered. In addition, the Robust Comparative Fit Index (R-CFI), the Robust Root Mean Square Error of Approximation (R-RMSEA), and the Standardized Root Mean Square Residual (SRMR) were inspected. For an acceptable fit, the R-CFI should be $\geq .95$, the R-RMSEA and the

SRMR should be $\leq .05$ (Kline, 2012). First, the two distinct models for maternal and paternal practices were tested in the total sample of participants. Secondly, to test for gender differences (males/females) in the associations between the study constructs, we conducted multi-group path analyses using a nested model comparison (Jöreskog & Sörbom, 1996; Van de Schoot et al., 2012). Precisely, three increasingly invariant and restrictive models were compared: Model 1 testing configural invariance, Model 2 testing the invariance of the intercepts, and Model 3 in which both the intercepts and regression coefficients of all items were constrained to be equal between groups. To compare the models, the scaled Chi-Squared Difference Test (Satorra & Bentler, 2001) was applied: if the χ^2 values change significantly as the models become more restrictive, the constraints imposed on the more restricted model worsen model fit. In addition, the null hypothesis of equality of the path coefficients across gender groups was tested with a series of Wald Chi-Squared Tests of parameter equalities (e.g., Marino et al., 2023) using the “lavTestWald” function in R (Klopp, 2020; Rosseel, 2012).

3. Results

3.1 Preliminary Analyses

The descriptive statistics and bivariate Pearson’s correlations of the study variables in the total sample are presented in Table 1 (for maternal practices) and in Table 2 (for paternal practices). The skewness and kurtosis of all the variables fell within the acceptable range. Bivariate correlations between adolescent PG and all the study variables were statistically significant. Specifically, adolescent PG was negatively associated with all the supportive parenting practices (i.e., autonomy-support, structure and warmth) and positively associated with all the thwarting parenting practices (i.e., coercion, chaos, rejection) for both parents. Furthermore, adolescent PG was negatively associated with need satisfaction and positively associated with need frustration. Similar patterns of correlations were observed for males and females (*see* Supplemental Materials, Tables S1 and S2), except for a non-significant association between maternal structure and adolescent PG in males. In addition, age negatively correlated with adolescent PG only in males.

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Table 1

Descriptive Statistics and Bivariate Pearson's Correlations for Maternal Parenting Practices in the Total Sample.

Variable	<i>M</i>	<i>SD</i>	Range	Skew	Kurt	1.	2.	3.	4.	5.	6.	7.	8.	9.	10.
1. Aut. Supp.	13.08	2.62	4-16	-1.06	.69	-									
2. Structure	12.09	2.81	4-16	-0.64	-0.08	.62***	-								
3. Warmth	13.64	2.66	4-16	-1.29	1.28	.70***	.62***	-							
4. Coercion	5.49	2.11	3-12	0.78	-0.03	-.58***	-.37***	-.40***	-						
5. Chaos	7.26	2.73	4-16	0.82	0.14	-.54***	-.44***	-.45***	.59***	-					
6. Rejection	6.45	2.55	4-16	1.27	1.42	-.58***	-.38***	-.54***	.56***	.58***	-				
7. NS	43.71	8.19	12-60	-0.41	.07	.41***	.31***	.35***	-.22***	-.28***	-.30***	-			
8. NF	29.56	9.86	12-60	.043	-.36	-.32***	-.20***	-.25***	.35***	.40***	.40***	-.56***	-		
9. PG	14.53	5.68	9-45	1.46	2.49	-.17***	-.09***	-.11***	.25***	.23***	.21***	-.18***	.32***	-	
10. Age	15.81	1.58	13-21	0.49	-0.73	-.01	-.07*	-.05	-.01	.04	-.01	-.06*	.07*	-.12***	-

Notes. *N* = 1193 adolescents. Aut. Supp. = Autonomy Support; NS = Need Satisfaction; NF = Need Frustration; PG = Problematic Gaming. *M* = Mean, *SD* = Standard Deviation, Skew = Skewness, Kurt = Kurtosis. ****p* < .001; **p* < .05.

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Table 2

Descriptive Statistics and Bivariate Pearson's Correlations for Paternal Parenting Practices in the Total Sample.

Variable	<i>M</i>	<i>SD</i>	Range	Skew	Kurt	1.	2.	3.	4.	5.	6.	7.	8.	9.	10.
1. Aut. Supp.	12.74	2.78	4-16	-0.98	.57	-									
2. Structure	11.93	2.99	4-16	-0.66	-0.10	.65***	-								
3. Warmth	12.86	2.99	4-16	-0.89	.05	.73***	.61***	-							
4. Coercion	5.42	2.09	3-12	0.93	.38	-.55***	-.36***	-.39***	-						
5. Chaos	7.00	2.71	4-16	1.00	0.67	-.55***	-.47***	-.46***	.60***	-					
6. Rejection	6.57	2.63	4-16	1.18	1.10	-.58***	-.42***	-.55***	.52***	.60***	-				
7. NS	43.71	8.19	12-60	-0.41	.07	.44***	.32***	.35***	-.21***	-.28***	-.30***	-			
8. NF	29.56	9.86	12-60	.043	-.36	-.33***	-.22***	-.25***	.33***	.38***	.39***	-.56***	-		
9. PG	14.53	5.68	9-45	1.46	2.49	-.16***	-.09**	-.12***	.24***	.22***	.22***	-.18***	.32***	-	
10. Age	15.81	1.58	13-21	0.49	-0.73	-.05	-.03	-.09**	.05	.03	.02	-.06*	.07*	-.12***	-

Notes. *N* = 1193 adolescents. Aut. Supp. = Autonomy Support; NS = Need Satisfaction; NF = Need Frustration; PG = Problematic Gaming. *M* = Mean, *SD* = Standard Deviation, Skew = Skewness, Kurt = Kurtosis. ****p* < .001; ** *p* < .01; **p* < .05.

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3.2 Path Analyses

3.2.1 Single-Group Path Analyses

We first conducted two single-group path analyses to estimate the hypothesized mediation models for maternal and paternal parenting practices. Model fit indices indicated an adequate fit for both models. Specifically, for the model of mothers, the TCD was .34 and the squared multiple correlations showed that a modest portion of the variance could be explained by the study variables (18% for needs satisfaction, 22% for need frustration, and 14% for adolescent PG). Additionally, the R-CFI was .998, the R-RMSEA was .034 (95% CI [.009, .058]), and the SRMR was .014. For the model of fathers, the TCD was .35 and the squared multiple correlations indicated that the model accounted for 20% of the variance in needs satisfaction, 20% in need frustration, and 15% in adolescent PG. The R-CFI was .998, the R-RMSEA was .032 (95% CI [.004, .056]), and the SRMR was .018.

The results of the path analyses with maternal and paternal parenting variables in the total sample are reported in Table 3. In the model of mothers, only the thwarting parenting practice of coercion was positively associated with adolescent PG ($\beta = .12, p < .01$), while the direct paths between all the other parenting practices and adolescent PG were not significant. Furthermore, results indicated that need frustration was positively related to adolescent PG ($\beta = .25, p < .001$), and age was negatively related to adolescent PG ($\beta = -.13, p < .001$). The mediator need satisfaction was significantly and positively associated with the independent variables of autonomy-support ($\beta = .28, p < .001$), warmth ($\beta = .08, p < .05$), and coercion ($\beta = .07, p < .05$), and was negatively associated with rejection ($\beta = -.08, p < .05$); the mediator need frustration was significantly and positively related with the independent variables of coercion ($\beta = .08, p < .05$), chaos ($\beta = .21, p < .001$), and rejection ($\beta = .22, p < .001$). In addition, the estimation of the 95% bias-corrected confidence intervals (CI) using the bootstrapping method showed a statistically significant mediating role only of need frustration in the relationships between the thwarting parenting practices and adolescent PG as follows: coercion ($\beta = .02, p < .05$), chaos ($\beta = .05, p < .001$), and rejection ($\beta = .05, p < .001$). All the other direct and indirect paths in the model of mothers were not significant (Table 3).

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In the model of fathers, similarly to the model of mothers, only the thwarting parenting practice of coercion was positively associated with adolescent PG ($\beta = .13, p < .01$), while the direct paths between all the other parenting practices and adolescent PG were not significant. Moreover, results indicated that need frustration was positively related to adolescent PG ($\beta = .26, p < .001$), and age was negatively related to adolescent PG ($\beta = -.14, p < .001$). The mediator need satisfaction was only significantly and positively associated with the independent variable of autonomy-support ($\beta = .37, p < .001$), whereas the mediator need frustration was negatively associated with the independent variables of autonomy support ($\beta = -.12, p < .01$) and positively associated with the independent variables of chaos ($\beta = .18, p < .001$), and rejection ($\beta = .22, p < .001$). Concerning the indirect paths, statistically significant mediating roles only of need frustration were observed between adolescent PG and paternal autonomy-support ($\beta = -.02, p < .05$), and between adolescent PG and the thwarting parenting practices: coercion ($\beta = .02, p < .05$), chaos ($\beta = .04, p < .001$), and rejection ($\beta = .05, p < .001$). All the other direct and indirect paths in the model of fathers were not significant (Table 3). The results concerning the mediating variable of need satisfaction, which were all not significant in both maternal and paternal models, are reported in the Supplemental Materials (Table S3).

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Table 3

Path Analyses for the Models of Maternal and Paternal Parenting Practices and Adolescent PG in the Total Sample.

	Maternal Practices				Paternal Practices			
	β	SE	LLCI	ULCI	β	SE	LLCI	ULCI
<i>Direct Paths</i>								
Aut. Support → NS	.28***	.04	.19	.37	.37***	.04	.27	.46
Structure → NS	.04	.03	-.03	.11	.04	.03	-.02	.11
Warmth → NS	.08*	.04	.01	.16	.03	.04	-.04	.11
Coercion → NS	.07*	.03	.01	.14	.06	.03	-.01	.15
Chaos → NS	-.06	.03	-.14	.00	-.04	.03	-.12	.02
Rejection → NS	-.08*	.04	-.16	.00	-.05	.03	-.12	-.01
Age → NS	-.04	.02	-.10	.01	-.03	.02	-.09	.02
Aut. Support → NF	-.07	.04	-.16	.01	-.12**	.04	-.21	-.03
Structure → NF	.04	.03	-.02	.11	.03	.03	-.03	.10
Warmth → NF	.03	.03	-.04	.10	.05	.04	-.02	.14
Coercion → NF	.08*	.03	.00	.15	.06	.03	-.01	.12
Chaos → NF	.21***	.03	.14	.29	.18***	.03	.11	.25
Rejection → NF	.22***	.03	.16	.30	.22***	.03	.15	.29
Age → NF	.07**	.02	.01	.12	.05*	.02	.01	.11
Aut. Support → PG	-.01	.05	-.10	.08	.04	.05	-.05	.14
Structure → PG	.01	.03	-.06	.08	.05	.03	.02	.12
Warmth → PG	.04	.04	-.04	.11	-.02	.04	-.11	.06
Coercion → PG	.12**	.03	.05	.20	.13**	.03	.05	.21
Chaos → PG	.06	.04	-.02	.14	.04	.04	-.03	.12
Rejection → PG	.01	.04	-.06	.09	.05	.04	-.03	.13
NS → PG	-.01	.03	-.08	.06	-.01	.03	-.09	.05
NF → PG	.25***	.03	.18	.32	.26***	.03	.17	.32
Age → PG	-.13***	.02	-.18	-.08	-.14***	.02	-.19	-.09
<i>Indirect Paths*</i>								
Aut. Support → NF → PG	-.01	.02	-.09	.01	-.02*	.02	-.11	-.01
Structure → NF → PG	.01	.01	-.01	.05	.01	.01	-.01	.05
Warmth → NF → PG	.01	.02	-.02	.06	.01	.02	-.01	.07
Coercion → NF → PG	.02*	.02	.01	.11	.02*	.02	.01	.09
Chaos → NF → PG	.05***	.02	.06	.17	.04***	.02	.05	.14
Rejection → NF → PG	.05***	.03	.07	.19	.05***	.02	.07	.18
R ² NS	.18				.20			
R ² NF	.22				.20			
R ² PG	.14				.15			
TCD	.34				.35			

Notes. N = 1193 adolescents. β = Standardized Parameter Estimates; SE = Standard Errors; LLCI = Lower Limit of the 95% Confidence Interval; ULCI = Upper Limit of the 95% Confidence Interval;

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TCD = Total Coefficient of Determination. NS = Need Satisfaction; NF = Need Frustration, PG = Problematic Gaming. *Indirect Paths with NS as mediating variable were all non-significant and were not reported for presentation simplicity purposes. *** $p < .001$; ** $p < .01$; * $p < .05$.

3.2.2 Multiple-Group Path Analyses

To test gender differences in the associations specified by the mediation models, we conducted multi-group (males/females) path analyses (Table 4). Results from the nested model comparison using the Chi-Squared Difference Test indicated that: (i) between Model 1 and Model 2, the values changed significantly in both the model of mothers ($\Delta\chi^2_{(9)} = 58.20, p < .001$) and of fathers ($\Delta\chi^2_{(9)} = 74.81, p < .001$); (ii) between Model 2 and Model 3, the values changed significantly in both the model of mothers ($\Delta\chi^2_{(23)} = 195.25, p < .001$) and of fathers ($\Delta\chi^2_{(23)} = 200.35, p < .001$), thus neither the invariance of the intercepts nor the invariance of the regression coefficients were supported. Coherently, the omnibus Wald test of parameter constraints was statistically significant in both the model of mothers (Wald $\chi^2_{(23)} = 47.09, p < .01$), and of fathers (Wald $\chi^2_{(23)} = 53.07, p < .001$). These results indicated that gender did influence the magnitude of the model paths, thus stressing the relevance of separately analyzing and comparing the regression coefficients between the two groups. Specifically, in the model of mothers, two paths significantly differed between males and females: the path between maternal chaos and adolescent PG (which was not significant for females; Wald $\chi^2_{(1)} = 6.35, p < .05$); and the path between age and adolescent PG (which was not significant for females; Wald $\chi^2_{(1)} = 8.63, p < .01$). In the model of fathers, four paths significantly differed between males and females: the path between paternal autonomy-support and need frustration (which was not significant for males; Wald $\chi^2_{(1)} = 5.04, p < .05$); the path between paternal rejection and need frustration (which was not significant for females; Wald $\chi^2_{(1)} = 5.14, p < .05$); the path between paternal chaos and adolescent PG (which was not significant for females; Wald $\chi^2_{(1)} = 4.11, p < .05$); and the path between age and adolescent PG (which was not significant for females; Wald $\chi^2_{(1)} = 9.29, p < .01$). All the other paths did not significantly differ among males and females. The total amount of variance explained by the model of mothers was TCD = .37 for males and TCD = .31 for females, and the squared multiple correlations indicated that the model accounted for 17 % and 21 %

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of the variance in need satisfaction, for males and females respectively, 21% and 19% in need frustration, and 26% and 12% in adolescent PG. The total amount of variance explained by the model of fathers was $TCD = .38$ for males and $TCD = .31$ for females, and the squared multiple correlations indicated that the model accounted for 19 % and 20 % of the variance in need satisfaction, for males and females respectively, 20% and 17% in need frustration, and 26% and 12% in adolescent PG. Table 5 reports the indirect associations of need frustration in the multi-group path analyses for the models of mothers and fathers, which were all small and comparable among males and females based on the results of the Wald Chi-Squared Tests; the indirect associations of need satisfaction, instead, were not significant (*see* Supplemental Materials, Table S4).

Table 4

Multi-Group Path Analyses for the Models of Maternal and Paternal Parenting Practices and Adolescent PG.

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	Maternal Practices								Paternal Practices							
	Males (<i>N</i> = 767)				Girls (<i>N</i> = 426)				Males (<i>N</i> = 767)				Girls (<i>N</i> = 426)			
	β	<i>SE</i>	LLCI	ULCI	β	<i>SE</i>	LLCI	ULCI	β	<i>SE</i>	LLCI	ULCI	β	<i>SE</i>	LLCI	ULCI
<i>Direct Paths</i>																
Aut. Supp. → NS	.22***	.05	.12	.33	.35***	.08	.19	.51	.32***	.06	.20	.44	.43***	.08	.26	.59
Structure → NS	.06	.04	-.02	.15	.05	.06	-.08	.18	.01	.04	-.07	.09	.07	.06	-.04	.19
Warmth → NS	.11*	.04	.02	.20	.04	.08	-.11	.20	.11*	.04	.01	.20	-.02	.07	-.17	.13
Coercion → NS	.11*	.04	.03	.20	-.01	.06	-.14	.12	.08	.04	-.01	.17	.01	.06	-.11	.03
Chaos → NS	-.07	.04	-.16	.01	-.03	.06	-.15	.09	-.02	.04	-.11	.06	-.05	.06	-.17	.07
Rejection → NS	-.09*	.04	-.18	-.01	.01	.07	-.15	.15	-.08*	.04	-.16	-.01	.06	.06	-.07	.19
Age → NS	-.08*	.03	-.15	-.01	.01	.04	-.08	.08	-.07	.03	-.14	.01	.01	.04	-.07	.10
Aut. Supp. → NF	-.01	.05	-.10	.11	-.11*	.08	-.33	-.01	-.05	.05	-.16	.05	-.20*	.08	-.36	-.04
Structure → NF	.01	.04	-.07	.09	.02	.06	-.10	.15	.07	.04	-.01	.15	.02	.06	-.10	.15
Warmth → NF	-.03	.04	-.12	.05	.12	.07	-.02	.27	-.04	.05	-.15	.06	.09	.07	-.06	.24
Coercion → NF	.09*	.04	.01	.17	.09	.07	-.05	.23	.07	.04	-.01	.16	.13*	.06	.01	.25
Chaos → NF	.23***	.04	.14	.32	.17*	.07	.03	.31	.17***	.04	.08	.26	.14*	.06	.02	.26
Rejection → NF	.19***	.04	.10	.27	.19**	.07	.05	.33	.24***	.04	.16	.33	.08	.07	.05	.22
Age → NF	.09*	.03	.03	.16	.06	.04	-.02	.14	.07*	.03	.01	.14	.06	.04	-.02	.14
Aut. Supp. → PG	-.01	.05	-.10	.09	-.11	.08	-.27	.05	-.02	.05	-.07	.13	-.04	.08	-.42	.27
Structure → PG	.04	.04	-.03	.12	-.01	.06	-.13	.13	.05	.03	-.02	.12	-.06	.06	-.19	.06
Warmth → PG	.05	.04	-.03	.14	.01	.07	-.12	.16	.01	.04	-.07	.10	.06	.08	-.10	.23
Coercion → PG	.09*	.04	.01	.17	.11	.07	-.04	.26	.06	.04	-.02	.15	.14*	.06	.01	.26
Chaos → PG	.12**	.04	.03	.21	-.07	.07	-.21	.05	.11*	.04	.02	.21	.03	.06	-.15	.09
Rejection → PG	.05	.04	-.03	.13	.03	.07	-.13	.16	.07	.04	-.01	.16	.04	.08	-.12	.20
NS → PG	-.07	.04	-.15	.01	.06	.06	-.06	.20	-.06	.04	-.14	.01	.04	.07	-.08	.18
NF → PG	.33***	.03	.25	.41	.30***	.06	.17	.43	.34***	.04	.25	.42	.28***	.06	.14	.41
Age → PG	-.20***	.03	-.26	-.14	-.04	.04	-.13	.03	-.21***	.03	-.27	-.15	-.05	.04	-.13	.02
R ² NS	.17				.21				.19				.20			
R ² NF	.21				.19				.20				.17			

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R ² PG	.26	.12	.26	.12
TCD	.37	.31	.38	.31

Notes. β = Standardized Parameter Estimates; SE = Standard Errors; LLCI = Lower Limit of the 95% Confidence Interval; ULCI = Upper Limit of the 95% Confidence Interval; TCD = Total Coefficient of Determination. NS = Need Satisfaction; NF = Need Frustration, PG = Problematic Gaming. *Indirect Paths with NS as mediating variable were all non-significant and were not reported for presentation simplicity purposes. *** $p < .001$; ** $p < .01$; * $p < .05$.

Table 5

Indirect Paths with Needs Frustration as Mediator in the Multi-Group Path Analyses for the Models of Maternal and Paternal Parenting Practice.

	Maternal Practices								Paternal Practices							
	Males (N = 767)				Girls (N = 426)				Males (N = 767)				Girls (N = 426)			
	β	SE	LLCI	ULCI	β	SE	LLCI	ULCI	β	SE	LLCI	ULCI	β	SE	LLCI	ULCI
Aut. Supp. → NF → PG	-.01	.04	-.07	.08	-.02	.05	-.20	-.00	-.01	.04	-.13	.04	-.03*	.05	-.20	-.01
Structure → NF → PG	.01	.03	-.05	.06	.01	.03	-.06	.09	.02	.03	-.01	.12	.01	.03	-.04	.07
Warmth → NF → PG	-.01	.03	-.09	.04	.03	.04	-.01	.16	-.01	.03	-.10	.04	.02	.03	-.03	.12
Coercion → NF → PG	.03*	.04	.01	.17	.02	.05	-.03	.19	.01	.04	-.01	.16	.03*	.04	.01	.20
Chaos → NF → PG	.07**	.04	.09	.25	.03*	.04	.01	.18	.05**	.03	.06	.21	.04*	.03	.01	.15
Rejection → NF → PG	.06**	.04	.08	.26	.05*	.04	.02	.21	.07**	.04	.12	.31	.03*	.03	.02	.12

Notes. β = Standardized Parameter Estimates; SE = Standard Errors; LLCI = Lower Limit of the 95% Confidence Interval; ULCI = Upper Limit of the 95% Confidence Interval. NF = Need Frustration; PG = Problematic Gaming. Indirect Paths with NS as mediating variable were all non-significant and were not reported for presentation simplicity purposes. ** $p < .01$; * $p < .05$.

4. Discussion

The present study added to the literature by separately investigating, in mothers and fathers, (i) the direct associations between different supportive and thwarting parenting practices and adolescent PG, (ii) their indirect associations via need satisfaction and need frustration, and (iii) potential gender differences in the pattern of associations. Overall, among the parenting practices, our findings showed direct associations only between certain thwarting practices and adolescent PG, providing support for the crucial role of the negative social environments in increasing adolescent maladjustment, problematic Internet use and problematic use of videogames (Costa et al., 2019; Coşa et al., 2022; Niu et al., 2023).

Specifically, it was observed that the coercive behaviours by both mothers and fathers were positively associated with PG in the total sample of adolescents. This parenting practice is characterized by high demandingness for strict obedience and intrusive control (Skinner et al., 2005), which may elicit psychological reactance among the youth, especially in the case that it targets adolescents' preferences and choices (for instance, regarding media use) (Valkenburg et al., 2013). Indeed, considering that adolescents typically could reject the constraints imposed by the authority figures, and given that gaming is a spare time activity that can be freely chosen, it is plausible that the more adolescents perceive their parents to control their duties and even their pastimes, the more they are willing to play videogames as an act of defiance and an attempt to remark their own independence (Van Petegem et al., 2015). Consistent with this, a study by Görgülü and Özer (2024) has found a conditional effect of parental controlling mediation in heightening the risk of gaming disorder among Turkish mid-school students. Of note, however, individual vulnerabilities and gaming-related features may increase the risk that adolescents choosing to play videogames intensively fail to control their activities, ultimately developing addictive patterns of use (Király et al., 2023).

In addition to coercion, multi-group analyses revealed that maternal and paternal chaos were positively related to adolescent PG in males. This is in line with previous literature showing that living with inconsistent and unpredictable parents, whose behaviours contribute to generate

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confusion and disorganization, could constitute a critical risk factor for PG (Nielsen et al., 2020). This finding may be noteworthy also in light of the recent challenges posed by the Covid-19 pandemic that has been found to increase parental difficulties and family chaos, leading to higher adolescent maladjustment (Masten, 2021). Consistent with a previous study on Internet addiction (Zhang et al., 2022), our findings suggest that males in particular may be less tolerant of ambiguity and uncertainty, and thus, they may turn to videogames to manage the associated negative emotions or, alternatively, to search and interact with a more structured environment. As postulated by the compensatory Internet use theory (CIUT; Kardefelt-Winther, 2014), individuals experiencing unpleasant states arising from stressful life situations, such as problems with their parents, may be particularly motivated to use technology as a coping strategy or as a way to compensate for what is lacking in real life.

In line with this, our study provided support for the prominent role of need frustration, not only as a critical factor associated with higher PG, but also as a possible mechanism suitable to explain the relationship between the thwarting parenting practices and PG. Differently from need satisfaction, which was associated with PG and all the parenting practices in the expected directions but only at a correlational level, need frustration was found to significantly mediate the relationship between adolescent PG and coercion, chaos and rejection in the models of both parents and among all adolescents. These results align with the most recent conceptualizations and findings regarding the basic psychological need theory, which evidence a clear distinction between (low) need satisfaction and need frustration (Rodríguez-Meirinhos et al., 2020; Vansteenkiste et al., 2020). In fact, it is the experience of need frustration that may be mostly detrimental and pathogenic, since it constitutes “an active threat of the psychological needs”, rather than just an absence of their fulfillment (Vansteenkiste et al., 2020, p.9). In line with this, Przbylski et al. (2019) found that need frustration in daily life, but not low need satisfaction, was positively associated with dysregulated gaming among British adolescents. What is likely to happen, according to Mills and Allen (2020), is that the experience of need frustration may undermine one’s own psychological resources for self-control, that is the ability to manage emotions, thoughts and behaviours (Nigg, 2016). As a result, it may be

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speculated that adolescents having their psychological needs frustrated by negative parental behaviours may have only limited resources left to effectively regulate their gaming activities. The fact that the mediational role of need frustration was observed for the thwarting behaviours of both parents further stresses the harmful nature of such practices (Keijsers et al., 2020). Notably, while maternal rejection in this study was positively associated with need frustration in both males and females, confirming the centrality of mothers in the emotional domain (Putnick et al., 2012; Wartberg et al., 2023), paternal rejection was positively related to need frustration only in males, providing initial evidence for a higher susceptibility of boys to their fathers' disapproval and/or detachment. One possible explanation could be that fathers, compared to mothers, may behave in a more distant way with their offsprings, especially with their sons, who thus may suffer for this lack of closeness more intensively than daughters (Ramírez-Uclés et al., 2018).

Furthermore, the present study expanded the knowledge on the mediating role of need frustration between the positive practice of autonomy-support, previously measured unitedly for the parents, and adolescent PG (Gugliandolo et al., 2020), by specifically evidencing this link in the model of fathers. This is consistent with the father-child activation relationship theory (Paquette, 2004), which stresses the centrality of the paternal role in promoting adolescents' volitional functioning and psychological freedom (Ryan & Deci, 2017; Vrolijk et al., 2020). As recently pinpointed by Van Petegem et al. (2023), autonomy-related developmental processes are fundamental for a positive adolescent growth and for the development of adaptive coping. Since PG may indeed arise from adolescents' dysfunctional attempts to regulate negative affect and compensate for un-met needs (Kardefelt-Winther, 2014), it is possible that the more fathers enact such autonomy granting behaviours, the more they can protect adolescents from the development of this problematic behaviour by reducing their need frustration and the associated negative emotions that may push them to play (Przbylski et al., 2019; Vansteenkiste & Ryan, 2013). Specifically, our study further showed that paternal autonomy support was negatively associated with need frustration in females, suggesting that girls in particular may be more attentive and sensitive to the buffering effects of this parenting practice

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compared to boys. Alternatively, it may also be the case that socializing agents, such as fathers, may act differently towards males versus females, for instance, by considering their daughters more capable of decision making and thus granting them autonomy with higher indulgence (Hu et al., 2021; Rodríguez-Meirinhos et al., 2020). However, we consider these findings preliminary and we encourage future research to replicate and extend them.

4.1 Limitations

Some limitations should be acknowledged. First, the cross-sectional design did not allow to infer causality, thus longitudinal research is needed to confirm the directionality of the hypothesized associations. Additionally, despite the distinction between maternal and paternal variables may have provided more accurate findings on the contribution of each parent, the reciprocal effects between the parenting practices of the two parents were not investigated. In line with the family systems theory (Lerner et al., 2015), future studies should consider the possibility to test an integrative model including the presence of mutually influential relationships between maternal and paternal practices. A further step could also be to examine the potential bidirectional associations between parental behaviours and adolescent PG. Indeed, as demonstrated by previous longitudinal cross-lagged studies (Lin et al., 2020; Su et al., 2018), not only parental practices may affect adolescent PG, but also adolescent PG may exert an influence on parental practices. Another limitation was that we did not determine the minimum required sample size before collecting the data. Future studies should conduct an a priori power analysis estimating the minimum sample needed to obtain the maximum level of statistical power for a hypothesized effect size to increase the accuracy of statistical estimates (Kyriazos, 2018). Related to this, the significant effects observed in the mediational models were small in magnitude, thus the robustness of our results is reduced (Kirk, 2003). Moreover, the final sample included only Italian adolescents and was imbalanced between males and females, limiting the generalizability of the findings, both in terms of culture and of gender. Future research should not only involve larger and cross-national samples of adolescents, but also include participants who identify themselves beyond the binary gender, in such a numerosity to implement multi-group

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analyses (de Graaf et al., 2021). In addition, research should collect data also from parents, possibly using a multi-informant approach to examine convergence and divergence between parent and adolescent reports (De Los Reyes et al., 2019; Pivetta et al., 2023), or to detect possible differences in parenting practices based on distinct profiles of adolescent players, as done in previous research on problematic smartphone use (Efrati & Rosenberg, 2023). Finally, to study the correlates of adolescent PG, this research concentrated on certain traditional parenting practices and on overall need satisfaction and need frustration in daily life. To expand current knowledge, it may be interesting to investigate and compare the differential role of general practices and media-specific practices, considering the growing importance of the latter in a world progressively penetrated by digital technology (Lukavská et al., 2022; Modecki et al., 2022). Future research should further explore the complexity of basic psychological needs by isolating and inspecting each of them (e.g., Costa et al., 2019; Inguglia et al., 2018) and should consider the effects of other variables, for instance, adolescent need satisfaction in-game (Bender & Gentile, 2020) and deviant peer affiliation (Lin et al., 2020), both found to enhance the risk for adolescent PG.

4.2 Practical Implications

This study has some important implications. First, it stresses the importance of including both parents in the preventive efforts and in the interventions aimed at reducing dysfunctional use of videogames in youth (Bonnaire et al., 2019; Nielsen et al., 2023; Shutzman & Gershny, 2023). More precisely, the present work confirmed the relevance of adopting the SDT not only to understand human motivation (Ryan et al., 2023), but also as a framework to implement parenting interventions to tackle adolescent maladjustment (Grolnick et al., 2021). From a practical standpoint, structured interviews and psychoeducational sessions promoting parental awareness of the barriers towards their parenting goals, the detrimental effects of their negative practices and the strategies to support their offsprings' psychological needs might be useful (Grolnick et al., 2021). In the field of PG, to the best of our knowledge, only one previous study has developed and validated a parent-based program following

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the SDT principles and provided preliminary evidence on its effectiveness in alleviating game-related problems in youth (Li et al., 2019). In addition, future programs may also be based on the principles of multi-dimensional family therapy, which aims to facilitate mutual understanding between adolescents and their parents and to improve family emotional bonds and interpersonal behaviors (Nielsen et al., 2021). Based on this evidence and on our results, we encourage researchers and practitioners to implement further programs, paying attention to the potential gender differences between mothers and fathers in dealing with their offsprings.

Additionally, since need frustration in particular emerged as a risk factor for adolescent PG, prevention and intervention programs should guide adolescents to better understand the links between this aspect and their gaming activities and to identify possible alternatives to fulfil un-met needs (Przybylski et al., 2019). For example, Kaya et al. (2023) suggested that adolescents should be supported in finding meaning in life and in experiencing a sense of responsibility by engaging in daily important tasks, which are two aspects found to play a serial mediating effect in the association between basic psychological needs and PG.

5. Conclusion

This study shed new light on the direct and indirect associations between certain supportive (i.e., autonomy support, structure, warmth) and thwarting (i.e., coercion, chaos, rejection) parenting practices and adolescent PG, by distinguishing between mothers and fathers and by examining the mediating roles of need satisfaction and need frustration. On one hand, our findings highlight the importance for parents of being fully aware of the possible associations between their parenting practices and adolescent PG; on the other, they suggest that adolescents should be adequately informed not only about the potential links between their experience of need frustration and the development of PG, but also about the possible alternatives that exist in real life to fulfil their un-met psychological needs.

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