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Dismorfia muscolare, solitudine e comportamenti online:
l'interazione tra ambiente e individuo nei disturbi emergenti
dell'età evolutiva

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Sommario

Nell'ambito della psicologia clinica dello sviluppo, un numero crescente di ricerche e dati clinici ha evidenziato come, nella genesi di comportamenti disfunzionali e disturbi emergenti tra adolescenti e giovani adulti, intervengano e si intersechino molteplici fattori che abbracciano sia il contesto sociale e familiare di riferimento, sia determinate caratteristiche e competenze individuali. L'ultima versione del Manuale Diagnostico e Statistico dei Disturbi Mentali (DSM 5-TR) individua, nella definizione di ciascun disturbo, fattori di rischio temperamentali e ambientali, ribadendo la necessità di adottare un approccio integrato e sistemico nella diagnosi e nel trattamento dei disturbi mentali.

Il presente lavoro è finalizzato ad individuare e indagare comportamenti a rischio e disagi psicologici emergenti in adolescenza e nella prima età adulta relativi alla percezione dell'immagine corporea, all'interazione con le nuove tecnologie digitali, alla percezione di solitudine, ai fenomeni di evitamento e ritiro sociale. Tra questi fenomeni sono stati analizzati: la Dismorfia Muscolare, il Disturbo da *Binge Eating*, la percezione di solitudine, il comportamento *Hikikomori* e comportamenti a rischio *online*, quali l'utilizzo problematico dei *social media* il Disturbo da Gioco su Internet, i fenomeni di *cyberbullismo* e *cybervittimizzazione*.

Il progetto di ricerca comprende sette studi e adotta una prospettiva multifattoriale e sistemica, integrando fattori familiari e individuali per analizzarne le interazioni e individuare potenziali fattori di rischio e di protezione. L'obiettivo è verificare se, e in che modo, il funzionamento familiare, il supporto sociale percepito e le esperienze di traumi emotivi infantili influenzino, direttamente o attraverso la mediazione di specifiche caratteristiche individuali e tratti di personalità, lo sviluppo dei comportamenti devianti e dei disagi psicologici indagati.

Il campione oggetto di studio è composto da adolescenti e giovani adulti di età compresa tra 14 e 30 anni, di entrambi i sessi, reclutati tramite un campionamento di convenienza. I questionari somministrati sono di tipo *self-report*, validati in italiano e utilizzati in studi su adulti e adolescenti. È stato adottato un disegno quantitativo di tipo trasversale e longitudinale, quest'ultimo con tre rilevazioni effettuate a distanza di quattro mesi l'una dall'altra. L'analisi dei dati si è basata sull'utilizzo di Modelli di Equazioni Strutturali (*SEM*) al fine di individuare ed esaminare le interazioni tra specifici fattori di rischio ambientali (predittori), variabili psicologiche e caratteristiche individuali (mediatori) e comportamenti disfunzionali (variabili dipendenti).

I risultati delle analisi hanno riscontrato:

- effetti indiretti del supporto sociale percepito sulla dismorfia muscolare attraverso la mediazione della autoefficacia generale;
- effetti indiretti della autoefficacia generale sulla dismorfia muscolare attraverso la mediazione dell'utilizzo problematico dei *social media*;
- effetti indiretti del controllo psicologico genitoriale, attraverso la mediazione di una eccessiva tolleranza allo stress, sulla sintomatologia del disturbo da *Binge Eating*;
- effetti indiretti del controllo psicologico genitoriale sui fenomeni di *cyberbullismo* e *cybervittimizzazione*, attraverso la mediazione dei tratti di personalità disfunzionali che formano la cosiddetta Triade oscura;
- effetti indiretti del funzionamento familiare, attraverso la Triade oscura, sul disturbo da gioco su Internet;
- effetti indiretti del Disturbo da Stress Post-Traumatico e del Disturbo dell'Auto-Organizzazione, attraverso la mediazione dei tratti di personalità disfunzionali, sulla percezione di solitudine.

Riguardo ai modelli longitudinali, sono emersi:

- effetti indiretti dell'abuso emotivo, valutato nella prima misurazione (T1), sul Disturbo da Gioco su Internet, osservato nella terza misurazione (T3) attraverso l'abuso emotivo, lo psicoticismo e il Disturbo da Gioco su Internet, valutati nella seconda misurazione (T2);
- effetti di mediazione dello psicoticismo, valutato al T1, sul Disturbo da Gioco su Internet, valutato al T3, attraverso lo psicoticismo al T2, e il Disturbo da Gioco su Internet al T2;
- effetti indiretti della negligenza emotiva, misurata al T1, sul Disturbo da Gioco su Internet, misurato al T3, attraverso la negligenza emotiva, rilevata al T2, il comportamento *Hikikomori*, rilevato al T2, e il Disturbo da Gioco su Internet rilevato al T2;
- effetti di mediazione del comportamento *Hikikomori*, misurato al T1, sul Disturbo da Gioco su Internet, rilevato al T3, attraverso il comportamento *Hikikomori* al T2 e il Disturbo da Gioco su Internet al T2 .

Complessivamente, i risultati ottenuti nei diversi studi evidenziano la presenza di effetti diretti e indiretti, statisticamente significativi, tra le variabili oggetto d'indagine. Ciò conferma la necessità di adottare un approccio multifattoriale e sistemico, al fine di identificare e promuovere strumenti e strategie di prevenzione e di intervento, mirate ed efficaci, per affrontare il disagio in età evolutiva.

1. Introduzione

1.1 Inquadramento generale del progetto di ricerca

Il presente progetto di ricerca si articola in una serie di studi volti ad approfondire le manifestazioni del disagio psicologico in adolescenza e nella giovane età adulta, con particolare riferimento all'era digitale. L'obiettivo principale è contribuire all'ampliamento delle conoscenze scientifiche relative agli emergenti fattori di rischio, di vulnerabilità e di mantenimento del malessere psicologico in età evolutiva, con una ricaduta applicativa orientata allo sviluppo di strategie di prevenzione e di intervento mirate ed efficaci in ambito clinico, educativo e sociale.

Gli studi condividono un comune impianto teorico e metodologico, fondato sull'adozione di una prospettiva sistemica e integrata. In tale cornice, il disagio psicologico viene concepito non come un fenomeno isolato o riconducibile a singole variabili, bensì come l'esito di una complessa e dinamica interazione tra fattori individuali, familiari, relazionali e sociali. L'analisi del disagio in età evolutiva si sviluppa pertanto attraverso un esame congiunto delle caratteristiche di personalità, del contesto familiare e delle dinamiche sociali e relazionali, tenendo conto dell'ambiente storico e culturale in cui tali processi si inscrivono.

All'interno di questa cornice, la percezione dell'immagine corporea viene assunta come snodo concettuale privilegiato per l'analisi del disagio giovanile in quanto si configura come una dimensione particolarmente critica nelle fasi di transizione dall'adolescenza alla giovane età adulta, assumendo una funzione centrale nella regolazione dell'autostima, dell'appartenenza sociale e del senso di efficacia personale. Milton Hyland Erickson individua tale passaggio evolutivo come una fase di particolare vulnerabilità non solo per l'individuo, ma anche per il sistema familiare di appartenenza caratterizzata da due nodi evolutivi centrali: da un lato il rischio di distorsione della percezione dell'immagine corporea, dall'altro la difficoltà nel processo di separazione-individuazione e nella costruzione di una progressiva autonomia emotiva e relazionale dalle figure genitoriali (Haley, 1976).

1.2 Cornice teorica di riferimento

L'impostazione teorica del progetto si fonda su una prospettiva sistemica ed ecologica, ispirata all'*Ecologia della mente* di Gregory Bateson (Bateson, 1972), alla *Teoria di campo* di Kurt Lewin (Lewin, 1939), alla *Teoria ecologica della percezione* di James Gibson (Gibson, 2014), e al *Modello bioecologico* di Urie Bronfenbrenner e Stephen Ceci (Bronfenbrenner & Ceci, 1994).

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In particolare, Bateson fu tra i fondatori della teoria cibernetica della comunicazione, secondo la quale ogni sistema organizzato è costituito da elementi in interazione tra loro, che si coordinano attraverso scambi di informazione di tipo circolare. Questi processi comunicativi producono cambiamenti negli stati degli elementi del sistema e ne modificano le azioni evidenziando al contempo fondamentali proprietà dell'insieme che non sono rilevabili nei suoi elementi costitutivi considerati singolarmente. Il tutto risulta dunque superiore alla somma delle singole parti. (Bateson, 1972, 1977). L'autore dunque concepisce la mente come un sistema di relazioni e di scambi informativi, non riducibile ai singoli elementi che lo compongono. In tale prospettiva, la mente non è individuabile esclusivamente all'interno di un singolo e ben definito organo (cervello) o entità (personalità, anima) e descrivibile utilizzando esclusivamente concetti propri dell'anatomia, la neurologia o la psicologia, ma è concepita come l'insieme delle relazioni e delle interazioni che costituiscono il sistema stesso. L'ecologia della mente consente di cogliere la complessità dei processi comunicativi e relazionali che danno forma all'esperienza psichica (Bateson, 1972, 1977).

In continuità con tale approccio, il modello bioecologico di Bronfenbrenner (Bronfenbrenner, 1979, 2000) descrive lo sviluppo umano come il risultato dell'interazione dinamica tra cinque diversi sistemi interconnessi che includono i contesti relazionali prossimali, le influenze sociali e culturali più ampie e i mutamenti storici e tecnologici che attraversano il ciclo di vita:

- 1) il microsistema, costituito dalla famiglia, dal gruppo dei pari, dalla scuola;
- 2) il mesosistema, costituito dal contesto relazionale, che indirettamente agisce sull'individuo durante l'infanzia, attraverso l'interazione, ad esempio, tra la famiglia e gli insegnanti;
- 3) l'esosistema, costituito dal contesto lavorativo e sociale;
- 4) il macrosistema, costituito dal contesto politico, culturale e valoriale;
- 5) il cronosistema, costituito dagli eventi storici, i cambiamenti climatici, le rivoluzioni tecnologiche, i mutamenti nell'assetto familiare e l'attraversamento delle diverse fasi della vita.

1.3 Prospettiva sistemica del disagio psicologico in età evolutiva

La psicologia clinica contemporanea manifesta un crescente scetticismo nei confronti di modelli esplicativi lineari e univoci che, in passato, tendevano a ricondurre il disagio psicologico a semplici rapporti di causa-effetto e a categorie diagnostiche rigide. È sempre più evidente, infatti, come le manifestazioni di disagio non seguano percorsi prevedibili e uniformi, ma emergano da un intreccio complesso e dinamico di fattori biologici, ambientali, relazionali e individuali, che si

influenzano e si ridefiniscono reciprocamente (Engel, 1977, 2012; Frazier, 2020; Siegel, 2020; Waters *et al.*, 2017).

Nello studio e nel trattamento del disagio psicologico in età evolutiva, in particolare, un ruolo centrale è attribuito alla sfera socio-familiare, che comprende il funzionamento familiare, gli stili genitoriali percepiti, le esperienze traumatiche infantili, il supporto sociale percepito e le relazioni con il gruppo dei pari e con altre figure significative. Accanto a tali dimensioni, la letteratura evidenzia l'importanza dei tratti di personalità e delle competenze sociali, comunicative e relazionali come fattori di rischio o di protezione nello sviluppo e nel mantenimento del disagio (Calaresi *et al.*, 2025b; Farina *et al.*, 2021; Verrastro *et al.*, 2024; Yu *et al.*, 2022).

In questa prospettiva, l'ambiente non si configura come un semplice sfondo, ma come una componente costitutiva dell'identità individuale. La relazione con il contesto contribuisce in modo determinante alla costruzione dell'identità personale, plasmando esperienze, vissuti emotivi e significati in sinergia con i fattori biologici e di personalità.

1.4 Sviluppo identitario, ambiente digitale e immagine corporea

L'ambiente a cui oggi si fa riferimento non è più esclusivamente fisico e relazionale, ma si estende in misura crescente all'universo digitale costituito da Internet, *social network* e piattaforme *online*, che rappresentano spesso un prolungamento del mondo reale e talvolta una sua sostituzione e contrapposizione. L'era digitale rende possibile la costruzione di spazi percepiti come alternativi, caratterizzati da un'apparente maggiore controllabilità e sicurezza rispetto al mondo *offline*. Tale percezione si fonda sull'illusione di potervi entrare e uscire con facilità; in realtà, i contenuti condivisi continuano a circolare in uno spazio e in un tempo potenzialmente illimitati, indipendentemente dalla volontà di chi li ha generati. Le rapide trasformazioni dell'ambiente reale e virtuale impongono così un costante riassetto degli equilibri psicologici individuali, favorendo l'emergere di forme di disagio difficilmente riconducibili a categorie diagnostiche stabili e caratterizzate da modalità di espressione ibride e mutevoli.

In questo scenario, le tecnologie digitali costituiscono un vero e proprio ambiente relazionale, capace di incidere profondamente sui processi di costruzione dell'identità, dell'immagine di sé e delle modalità di relazione. Esse possono assumere un duplice ruolo, configurandosi sia come fattori predisponenti e di mantenimento del disagio psicologico, sia come contesti privilegiati attraverso cui il disagio stesso si manifesta.

I *social media* e le piattaforme digitali, in particolare, possono amplificare difficoltà comunicative e relazionali, incidendo sulla percezione dell'immagine corporea attraverso l'esposizione continua a modelli estetici artificiali e spesso irrealistici, idealizzati e proposti come standard

normativi di bellezza, successo e realizzazione personale. Tali dinamiche risultano particolarmente rilevanti in una fase evolutiva in cui l'identità corporea e personale è ancora in via di strutturazione e possono favorire vissuti di inadeguatezza, confronto sociale negativo e svalutazione di sé.

Parallelamente, l'interazione con l'ambiente digitale risulta strettamente connessa allo sviluppo delle cosiddette *dipendenze comportamentali*, molte delle quali, pur non essendo ancora pienamente formalizzate nei principali sistemi diagnostici, tra cui il DSM-5, rappresentano ambiti di crescente interesse scientifico e clinico. Tra queste rientrano l'uso problematico di Internet, *smartphone* e *social media*, il disturbo da gioco su Internet e altre forme di coinvolgimento compulsivo nelle piattaforme digitali (Gao *et al.*, 2022; Rumpf *et al.*, 2018; Ryding & Kuss, 2020 Sorrentino *et al.*, 2023). Tali comportamenti condividono la tendenza a favorire sentimenti di solitudine, comportamenti di ritiro e isolamento sociale, che possono evolvere in manifestazioni più strutturate di disagio, quali l'*Hikikomori*, il *Maladaptive Daydreaming* e diverse forme di sintomatologie dissociative (Andreassen *et al.*, 2016; Calaresi *et al.*, 2025a, Fontana *et al.*, 2023; Roza *et al.*, 2023).

L'ambiente digitale offre inoltre nuove modalità di espressione dell'aggressività e della violenza, come nel caso del *Cyberbullismo* e della *Cybervittimizzazione*. La possibilità di agire a distanza, in forma anonima o mediata dallo schermo, rende tali comportamenti più accessibili e meno vincolati al confronto diretto, con un conseguente aumento del rischio di *escalation* e di cronicizzazione del danno psicologico. Nel loro insieme, questi fenomeni contribuiscono a un incremento delle difficoltà comunicative e relazionali, a una riduzione dello sviluppo dell'empatia e delle competenze emotive, a processi di disregolazione emotiva e a una percezione distorta dell'immagine corporea, con rilevanti ricadute sul comportamento alimentare e sull'esercizio fisico. Tali fattori si configurano all'interno di una relazione circolare e ricorsiva, in cui ciascun elemento agisce al contempo come causa e conseguenza degli altri, contribuendo al mantenimento del disagio psicologico.

Tra le forme di disagio che clinica e ricerca riscontrano con maggiore frequenza tra adolescenti e giovani adulti, accanto all'uso problematico delle nuove tecnologie e ai vissuti di solitudine e ritiro sociale, emergono quelle legate alla percezione dell'immagine corporea e all'alimentazione (Amendola *et al.*, 2021; Calaresi *et al.*, 2025a; Cuadrado, 2024; Donnarumma & Mingoia, 2024; Fontana *et al.*, 2023; Nowland *et al.*, 2018; Roza *et al.*, 2023; Twenge *et al.*, 2021). L'adolescenza e la prima età adulta rappresentano fasi di particolare vulnerabilità rispetto allo sviluppo di un rapporto conflittuale con il proprio corpo, che può tradursi in comportamenti disfunzionali quali esercizio fisico eccessivo, disturbi dell'alimentazione e isolamento sociale.

In un contesto socio-relazionale instabile e in rapido mutamento, diventa complesso individuare punti di riferimento sicuri e duraturi. In tale scenario, il corpo in quanto percepito come controllabile e misurabile tende a divenire l'area privilegiata su cui esercitare una forma di controllo e autodeterminazione. Nella prospettiva intersoggettiva (Stern, 1988, 2008; Fonagy & Target, 2003; Schore, 2021), il corpo rappresenta la prima modalità di comunicazione e di regolazione affettiva; quando le esperienze precoci di sintonizzazione risultano carenti o incoerenti, esso può diventare il luogo principale di espressione del disagio, attraverso strategie somatiche di regolazione come l'iper-allenamento o le condotte alimentari disfunzionali (Murray *et al.*, 2012; Halioua *et al.*, 2022).

L'adolescenza è caratterizzata da profonde trasformazioni fisiche, psicologiche e relazionali, che rendono l'immagine corporea una dimensione centrale nella costruzione dell'identità e spesso amplificano l'attenzione al giudizio altrui. In questa fase l'individuo sperimenta il conflitto tra corpo "percepito" e corpo "rappresentato", tra ciò che sente di essere e ciò che crede di dover apparire (Cacioppo & Patrick, 2008). Nel contesto digitale, tale distanza tende ad ampliarsi: il corpo assume una dimensione virtuale e frammentata, articolandosi in rappresentazioni continuamente osservate, modificate e valutate. *Likes*, commenti e *followers* possono essere vissuti come indicatori quantitativi del valore personale, rafforzando processi di auto-oggettivazione e dipendenza dal giudizio esterno (Donnarumma & Mingoia, 2024).

Nel tentativo di ridurre la distanza tra corpo reale e corpo ideale, il soggetto può ricorrere a strategie di iper-controllo corporeo, che includono esercizio fisico compulsivo, restrizione alimentare e uso di sostanze. Paradossalmente, tali strategie, orientate a incrementare il senso di sicurezza, tendono ad amplificare fragilità, autosvalutazione e vulnerabilità. È in questo spazio di tensione tra corpo vissuto e corpo rappresentato che può radicarsi la sintomatologia della dispercezione corporea, in cui la ricerca incessante di perfezione fisica si accompagna a vergogna e paura di non essere all'altezza degli standard interiorizzati (Longobardi *et al.*, 2017; Pope *et al.*, 1997; Vasiliu, 2023).

L'ambiente contemporaneo, infine, non si limita a proporre modelli estetici irrealistici, ma tende a identificare il valore personale con performance, efficienza e controllo (Cuadrado *et al.*, 2024). Fenomeni come *fitspiration* e *thinspiration* (Carrotte & Lim, 2017; Cataldo *et al.*, 2021) veicolano ideali corporei iper-performativi e favoriscono l'internalizzazione di standard irrealistici, incrementando insoddisfazione corporea, ansia sociale e perfezionismo dismorfico (Cataldo *et al.*, 2021; Fioravanti *et al.*, 2022). In questo quadro, il mondo digitale non si limita a riflettere vulnerabilità preesistenti, ma può amplificarle attraverso meccanismi di rinforzo algoritmico e di

confronto sociale continuo, contribuendo allo sviluppo e al mantenimento di comportamenti a rischio e di forme di disagio psicologico.

1.5 Struttura del progetto di ricerca

Ciascuno degli studi inclusi nel progetto analizza specifiche modalità di espressione del disagio adolescenziale e giovanile, con l'obiettivo di comprenderne il funzionamento nella loro interazione con l'ambiente socio-familiare e culturale, le esperienze precoci di traumi emotivi e determinate caratteristiche individuali e di personalità. Pur focalizzandosi su fenomeni differenti, gli studi condividono elementi metodologici comuni, tra cui la popolazione di riferimento, l'utilizzo di modelli di equazioni strutturali (SEM) e analisi di mediazione, nonché una lettura integrata dei processi di sviluppo e di mantenimento del disagio psicologico.

Il punto di partenza del percorso di ricerca è rappresentato dallo studio della dismorfia muscolare, una sottocategoria del disturbo da dismorfismo corporeo, caratterizzata da una preoccupazione intensa e persistente per un corpo percepito come troppo piccolo o insufficientemente muscoloso. Tale preoccupazione può tradursi in comportamenti disfunzionali orientati al perseguimento di una perfezione corporea irraggiungibile, che tende progressivamente a escludere altri interessi, attività e ambiti di vita determinando elevati livelli di ansia sociale ed evitamento. Questi comportamenti includono pratiche alimentari restrittive o nutrizionalmente squilibrate, quali diete iperproteiche o regimi alimentari eccessivamente limitanti, esercizio fisico eccessivo e rigidamente strutturato, nonché l'uso di steroidi anabolizzanti con gravissimi rischi per la salute. In questa sede non sono state oggetto di studio altre forme di dismorfismo corporeo o di dispercezioni corporee legate a disturbi alimentari quali l'anoressia nervosa.

Tale fenomeno è stato analizzato in relazione al supporto sociale percepito, all'autoefficacia generale e all'uso problematico dei *social media*, costituendo la base per un progressivo ampliamento del *focus* verso ulteriori comportamenti a rischio e forme emergenti di disagio psicologico riconducibili alla complessa interazione tra immagine corporea, mondo virtuale, tratti di personalità, dinamiche sociali ed esperienze familiari.

1.6 Obiettivi

Alla luce del quadro teorico e concettuale delineato, il presente progetto di ricerca adotta una prospettiva di indagine multifattoriale e integrata, finalizzata a superare approcci riduzionistici e descrittivi del disagio psicologico in età evolutiva.

L'obiettivo generale è quello di analizzare i principali disagi psicologici emergenti in adolescenza e nella giovane età adulta come esiti di una complessa interazione tra fattori individuali, familiari, sociali e ambientali, con particolare attenzione al ruolo della percezione dell'immagine corporea e dell'interazione con l'ambiente digitale.

Gli obiettivi specifici sono quelli di:

- Individuare *pattern* di interazione circolare tra individuo e ambiente, al fine di identificare meccanismi di mantenimento del disagio e potenziali leve di intervento.
- Indagare l'intervento diretto, o indiretto attraverso variabili di mediazione, degli stili genitoriali e delle esperienze precoci di abuso e negligenza emotiva nello sviluppo e nel mantenimento dei comportamenti a rischio e del disagio psicologico in età evolutiva.
- Valutare il ruolo mediatore di specifiche caratteristiche individuali e di personalità, quali tratti di personalità disadattivi, autoefficacia percepita, eccessiva tolleranza allo stress, nella relazione tra fattori ambientali e manifestazioni di disagio.
- Esaminare forme disfunzionali di interazione con l'ambiente digitale, in particolare l'uso problematico dei *social media* nella distorsione dell'immagine corporea e particolarmente nella sintomatologia della dismorfia muscolare, il gioco problematico su Internet, i fenomeni di *Cyberbullismo* e *Cybervittimizzazione*.

Lo scopo ultimo del progetto è quello di contribuire allo sviluppo di modelli interpretativi più articolati e sistemici del disagio psicologico in età evolutiva, ampliando gli strumenti concettuali e operativi a disposizione della ricerca e della pratica clinica ed educativa, sia in ottica di prevenzione che di trattamento. Tale prospettiva consente di orientare interventi non esclusivamente focalizzati sulla sintomatologia, ma rivolti ai processi relazionali, familiari e alle competenze emotive, comunicative e relazionali individuali, considerate fattori di protezione fondamentali nel breve e nel lungo termine.

2. Metodologia

2.1 Partecipanti e Procedure

Gli studi hanno coinvolto un campione di adolescenti e giovani adulti, di entrambi i sessi e di età compresa tra i 14 e i 30 anni.

Gli adolescenti tra i 14 e i 17 anni, sono stati selezionati in scuole secondarie di secondo grado italiane. Il reclutamento è avvenuto attraverso la presa di contatti con gli istituti scolastici tramite *e-mail* alla dirigenza scolastica. Il testo della *mail* riportava le caratteristiche e le finalità dello studio, il campione a cui si rivolgeva e le modalità di somministrazione dei questionari. Alle *e-mail* sono stati allegati il modulo del consenso informato e copie dei questionari, così che dirigenti e docenti potessero verificarne i contenuti. Il modulo del consenso informato, in accordo con le scuole, è stato consegnato in forma cartacea agli studenti per essere firmato dai genitori o dal tutore legale. La mancata restituzione del consenso ha comportato l'esclusione dalla partecipazione. Poiché la compilazione dei questionari era prevista *online* tramite *Google Forms* (versione 0.8), è stato richiesto alle scuole di garantire che ogni studente disponesse di un dispositivo elettronico (cellulare, tablet o computer).

I giovani adulti tra i 18 e i 30 anni, sono stati reclutati con campionamento di convenienza attraverso la tecnica "a palla di neve".

I protocolli di ricerca, costituiti da questionari *self-report*, sono stati somministrati *online* tramite *Google Forms* (versione 0.8). La visualizzazione e compilazione dei questionari da parte dei giovani adulti era vincolata alla presa di visione della descrizione e finalità del protocollo di ricerca e alla sottoscrizione da parte di ciascun partecipante del consenso informato.

Tutte le domande dei questionari sono state impostate su *Google Forms* come obbligatorie, così da evitare accidentali risposte mancate, pur consentendo ai partecipanti la possibilità di astenersi dal rispondere. La compilazione dei questionari richiedeva dai 15 ai 20 minuti circa.

Negli studi trasversali i dati sono stati raccolti in un periodo di tempo compreso tra i due e i tre mesi. Negli studi longitudinali sono state effettuate tre rilevazioni, a intervalli regolari di quattro mesi l'una dall'altra, in un periodo di tempo complessivo di 12 mesi.

2.2 Disegno di ricerca

In tutti gli studi presentati è stato adottato un modello di analisi basato sulle Equazioni Strutturali (Structural Equation Modeling, SEM). All'interno di tale cornice metodologica sono state

condotte analisi di mediazione, finalizzate a identificare i possibili meccanismi attraverso cui uno o più predittori influenzano una o più variabili dipendenti.

I predittori sono variabili indipendenti generalmente stabili e difficilmente modificabili, quali gli stili di attaccamento, il funzionamento familiare e le esperienze traumatiche precoci vissute in età infantile e/o adolescenziale.

I mediatori, invece, includono variabili psicologiche come i tratti di personalità e le competenze emotive e relazionali, maggiormente suscettibili di cambiamento nel corso del tempo e in risposta a interventi mirati. In questa prospettiva, le variabili di mediazione sono state esaminate sia per il loro effetto diretto sulle variabili dipendenti, sia per il loro ruolo nel modulare gli effetti indiretti esercitati dalle variabili indipendenti. La natura e le caratteristiche di tali interazioni possono contribuire allo sviluppo di disagio psicologico e di comportamenti devianti, in particolare durante l'adolescenza e la giovane età adulta, influenzandone il decorso evolutivo. Tra i potenziali fattori predittivi analizzati figurano gli stili genitoriali controllanti, la percezione del supporto sociale e le esperienze emotive traumatiche. Tra le caratteristiche individuali considerate come possibili mediatori sono stati esaminati i tratti di personalità disadattivi, il senso di autoefficacia generale e la tolleranza allo stress.

Per ciascuna di queste variabili è stata valutata l'influenza esercitata nella relazione tra ambiente socio-familiare problematico, esperienze infantili avverse e sintomatologia da stress post-traumatico, da un lato, e comportamenti devianti in età giovanile e malessere psicologico, dall'altro.

2.3 Strumenti

Gli strumenti utilizzati consistono in questionari *self-report* validati in Italia su campioni di adolescenti e adulti di entrambi i sessi. La sezione relativa ai questionari *self-report* è preceduta da una sezione dedicata alla rilevazione delle caratteristiche demografiche del campione: sesso biologico (maschio/femmina), identità di genere (con possibilità di selezionare un genere non binario), origine socioculturale (italiana o straniera), titolo di studio dei genitori o *caregivers*.

Negli studi rivolti ai giovani adulti, si raccolgono inoltre informazioni aggiuntive relative al loro titolo di studio, alla professione e alla composizione del nucleo abitativo.

I questionari *self-report* utilizzati sono i seguenti:

- The Binge Eating Scale (BED) (Gormally *et al.*, 1982; Di Bernardo *et al.*, 1998);
- The Childhood Trauma Questionnaire-Short Form (CTQ-SF) (Bernstein *et al.*, 1997; Sacchi *et al.*, 2018);

- The Cyberbullying subscale and Cybervictimization subscale of the Cyberbullying Scale (CBS) (Stewart *et al.*, 2014; Pozzoli & Gini, 2020);
- The Dark Triad Dirty Dozen Scale (DTDD) (Jonason & Webster, 2010; Schimmenti *et al.*, 2019);
- The Distress Overtolerance Scale (DOS) (Gorey *et al.*, 2018; Cheli *et al.*, 2021);
- The General Functioning Subscale of the McMaster Family Assessment Device (FAD) (Epstein *et al.*, 1983; Roncone *et al.*, 1998);
- The General Self-Efficacy Scale (GSE) (Schwarzer & Jerusalem, 1995; Sibilgia *et al.*, 1995);
- The Hikikomori Questionnaire (HQ) (Teo *et al.*, 2018; Sulla *et al.*, 2020);
- The International Trauma Questionnaire (ITQ) (Cloitre *et al.*, 2018; Rossi *et al.*, 2022);
- The Internet Gaming Disorder Scale—Short-Form (IGDS9-SF) (Pontes & Griffiths, 2015; Monacis *et al.*, 2016);
- The Multidimensional Scale of Perceived Social Support (MSPSS) (Zimet *et al.*, 1988; Busoni & Di Fabio, 2008);
- The Muscle Dysmorphic Disorder Inventory (MDDI) (Hildebrandt *et al.*, 2004; Santarnecchi & Dèttore, 2012);
- The Personality Inventory for DSM-5 (PID-5) (Krueger *et al.*, 2011; Fossati *et al.*, 2017);
- The Psychological Control Scale-Youth Self-Report Psychological Control Scale (PCS) (Barber 1996; Costa *et al.* 2015);
- The Bergen Social Media Addiction Scale (BSMAS) (Andreassen *et al.*, 2016; Monacis *et al.*, 2017);
- The UCLA Loneliness Scale (Version 3) (Russell, 1996; Boffo *et al.*, 2012).

2.4 Analisi statistiche

Il software di analisi dei dati *IBM SPSS (Statistic Package for Social Sciences)* versione 29 è stato utilizzato per le analisi preliminari dei dati: analisi delle frequenze e descrittive sono state effettuate per fornire una panoramica preliminare delle caratteristiche del campione e delle associazioni tra le variabili.

Per valutare la relazione tra le variabili, sono stati calcolati i coefficienti di correlazione prodotto-momento di *Pearson*; la significatività delle stime è stata valutata tramite intervalli di confidenza al 95% corretti per il *bias* e accelerati (BCa), ottenuti mediante procedura *bootstrap*.

Al fine di valutare la presenza di eventuali differenze legate al genere sono stati effettuati *T-Test di Student* o l'*Analisi Multivariata della Varianza* (MANOVA), nella quale il genere è stato

considerato come variabile indipendente, mentre tutte le altre variabili sono state trattate come dipendenti. In presenza di un effetto multivariato significativo, sono state effettuate analisi univariate di *follow-up* applicando la *correzione di Bonferroni* per controllare il rischio di errori dovuto ai confronti multipli.

L'attendibilità interna di ciascun modello testato è stata verificata attraverso il calcolo dell'*Alpha di Cronbach* di ciascun questionario incluso nel progetto di ricerca. Secondo le indicazioni di Nunnally e Bernstein (1975), i valori si considerano soddisfacenti se maggiori di 0.70, dato confermato da tutti i questionari utilizzati negli studi effettuati.

Il software *R* ed *R Studio* versione 4.3.2, con i pacchetti *Lavaan*, *Semtools* e *Sempath*, è stato utilizzato per stabilire la validità fattoriale degli strumenti utilizzati e le relazioni strutturali tra questi ultimi. È stato adottato un approccio di *parceling* per costruire gli indicatori delle variabili latenti: gli item dei questionari sono stati aggregati in tre indicatori per ciascuna variabile latente, una strategia considerata ottimale rispetto ai modelli basati su variabili osservate (Little *et al.*, 2013, 2023).

La significatività degli effetti indiretti è stata valutata tramite *bootstrap* con 5000 iterazioni utilizzando intervalli di confidenza corretti per il *bias*.

Per la valutazione degli indici di *Fit* (adattamento) dei modelli si è fatto riferimento alle linee guida stabilite da Bentler e Bonett (1980) e Schermelleh-Engel e colleghi (2003), che raccomandano di valutare l'adattamento dei modelli testati utilizzando molteplici indici, tra cui: *Comparative Fit Index (CFI)*, *Tucker-Lewis Index (TLI)*, *Standardized Root Mean Square Residual (SRMR)* e *Root Mean Square Error of Approximation (RMSEA)*.

Modelli con valori di *CFI* e *TLI* uguali o superiori a 0.90 e con valori di *SRMR* e *RMSEA* inferiori a 0.10 sono considerati adeguati (Bilgin & Taş, 2018; Schermelleh-Engel *et al.*, 2003).

In tutti i modelli alla base dei nostri studi i valori rientrano nei *range* raccomandati.

Negli studi longitudinali, al fine di attenuare potenziali problemi legati al *common method bias*, è stata condotta un'*analisi fattoriale esplorativa (EFA)* utilizzando il test del *singolo fattore di Harman*, includendo tutti gli item degli strumenti. Il test valuta la quota di varianza spiegata da un unico fattore: se tale quota supera il valore critico del 50%, ciò indica la presenza di *common method bias* (Podsakoff *et al.*, 2003) eventualità che nei nostri studi non è stata riscontrata.

Sono state inoltre condotte *analisi fattoriali confermativa (CFA)* per valutare la validità interna degli strumenti *self-report*, esaminandone l'aderenza ai dati e le relazioni tra variabili latenti e relativi indicatori, in accordo con le strutture teoriche ipotizzate (Sathyanarayana & Mohanasundaram, 2024; Williams & Vogt, 2011).

La validità discriminante è stata verificata per accertare che le variabili studiate fossero tra loro distinte: sono state esaminate le correlazioni tra i fattori e i relativi intervalli di confidenza, confrontando il modello di base con una serie di modelli nidificati in cui ciascuna correlazione fattoriale veniva vincolata individualmente (Rönkkö & Cho, 2022).

È stata poi eseguita un'analisi *SEM* a tre tempi con variabili latenti per esaminare le relazioni longitudinali e reciproche ipotizzate tra le variabili indagate, controllando gli effetti auto regressivi di ciascuna variabile nel tempo e le correlazioni trasversali (residuali) tra le variabili per ciascun punto temporale. Per gestire i dati mancanti e verificare la robustezza dei risultati sono state inoltre condotte analisi basate sull'algoritmo *EM*.

Infine, sono state condotte una *sensitivity analysis* e una *complete case analysis* su un sottocampione di mille partecipanti, che avevano fornito dati in tutte e tre le rilevazioni temporali, controllando in ognuna gli effetti dell'età e del genere.

2.5 Dichiarazione etica

I protocolli di ricerca dei singoli studi sono stati approvati dall'Institutional Review Board (IRB) del Dipartimento di Scienze Umane, Sociali e della Salute dell'Università degli Studi di Cassino o dall'Institutional Review Board (IRB) dell'Istituto per lo Studio delle Psicoterapie di Roma, che ne hanno rilevato la conformità alle linee guida internazionali della Dichiarazione di Helsinki del 1964 e dell'ultima revisione del codice etico dell'Associazione Italiana di Psicologia (AIP) del 2000.

La *privacy*, così come la possibilità di ritirare il proprio consenso in qualunque momento, è stata garantita in tutte le fasi della ricerca. La partecipazione è stata su base volontaria e non ha previsto alcuna forma di ricompensa o rimborso.

3. Risultati

3.1 Studio 1: *Interaction Between Social Support and Muscle Dysmorphia: The Role of Self-Efficacy and Social Media Use*

3.1.1 Sommario

Lo studio indaga il fenomeno della Dismorfia Muscolare (MD) caratterizzato da una percezione distorta delle dimensioni del proprio corpo, in particolare della propria muscolatura, valutata come poco sviluppata e flaccida, a cui tendono ad associarsi dieta rigida, allenamento compulsivo, utilizzo di sostanze tra cui steroidi anabolizzanti, ansia ed evitamento sociali.

Il modello di analisi individuato esamina l'autoefficacia generale percepita e l'utilizzo problematico dei *social media* come potenziali mediatori, rispettivamente di primo e di secondo livello, nella relazione tra supporto sociale percepito e sintomatologia da Dismorfia Muscolare.

Il campione è costituito da 2325 individui di entrambi i sessi, adolescenti dai 14 ai 17 anni e giovani adulti dai 18 ai 29 anni.

I risultati mostrano effetti indiretti significativi del Supporto Sociale Percepito (PSS) sull'Uso Problematico dei Social Media (PSMU) tramite l'Autoefficacia Generale Percepita (GSE) ($\beta = -0.05$; $p < 0.001$). Significativa è anche la mediazione del PSMU nella relazione tra GSE e Dismorfia Muscolare (MD) ($\beta = -0.08$; $p < 0.001$) e nella relazione tra PSS e MD ($\beta = -0.07$; $p < 0.001$).

Da quanto emerso potrebbe risultare utile per i professionisti che si occupano di tale disagio prendere in considerazione interventi volti a rafforzare le reti di sostegno sociale dei giovani. Potrebbero risultare di grande aiuto anche interventi di psicoeducazione sull'impatto negativo dell'abuso dei *social media*, nonché il potenziamento dell'autoefficacia e della capacità di costruire e mantenere relazioni di sostegno *offline*.



Article

Interaction Between Social Support and Muscle Dysmorphia: The Role of Self-Efficacy and Social Media Use

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Abstract: Muscle dysmorphia (MD) consists of a type of body dysmorphic disorder and involves a distorted perception of one's muscles, strict diets, and workouts. Mostly, studies focus on adult male athletes, especially bodybuilders, while research on adolescents and women is limited. Our study aims to explore potential protective or risk factors influencing MD, using a mediation model calculated through Structural Equation Modeling (SEM) and at the same time help to involve female individuals in the exploration of a distress traditionally and predominantly analyzed only in male individuals. The model examines whether problematic social media use (PSMU) and generalized self-efficacy (GSE) are potential first- and second-level mediators, respectively, in the relationship between perceived social support (PSS) and MD. The sample consisted of 2325 individuals of both sexes aged 14–29 years. Structural equation models were used to assess effect sizes, regressions, and direct and indirect effects of perceived social support on muscle dysmorphia and general self-efficacy both on problematic social media use and muscle dysmorphia. Our results suggest that inadequate perceived social support may reduce individuals' perceived effectiveness in managing daily challenges, potentially leading to problematic use of social media, which may contribute to muscle dysmorphia symptoms. Future interventions could promote a healthier perception of one's body, improving confidence in individuals' coping strategies and strengthening the social environment of reference.

Keywords: muscle dysmorphia; social support; self-efficacy; social media use; adolescents; young adults



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1. Introduction

Muscle Dysmorphia has been officially classified as a subtype of body dysmorphic disorder in the *Diagnostic and Statistical Manual of Mental Disorders 5th ed.* constituted by a distorted perception of one's body (American Psychiatric Association, 2013; Cooper et al., 2020; Underwood & Olivardia, 2023). Individuals who suffer from MD do not perceive themselves as sufficiently toned and muscular (Hellfeldt et al., 2019; Santarnecchi & Dèttore, 2012). They are obsessed with their physical appearance and musculature and resort to any strategy—sometimes even taking anabolic-androgenic steroids—to achieve an ideal aesthetic model (Imperatori et al., 2022; Tovt & Kajanová, 2021). Furthermore, muscle dysmorphia is characterized by the implementation of strict diets and rigorous and strenuous daily workouts (Di Fabio & Busoni, 2008). These conducts are carried out even in the presence

of fatigue, injury, and discomfort and might cause physical damage and social or work impairment (Tovt & Kajanová, 2021). In this framework, problematic social media use (PSMU) (Monacis et al., 2017; Sommantico et al., 2023) emerges in the literature as one of the most common dysfunctional behaviors related to body image dissatisfaction and the wide range of related disorders, such as negative evaluation of one's physical appearance, eating disorders, obsessive-compulsive disorder in the form of body dysmorphia, and muscle dysmorphia (Griffiths et al., 2018; Imperatori et al., 2022; Rizwan et al., 2022; Ryding & Kuss, 2020). Regarding the definition of problematic use of social media, since it is not currently mentioned in the *Diagnostic and Statistical Manual of Mental Disorders* (5th edition, text revision; DSM-5-TR) (American Psychiatric Association, 2013) no uniformly accepted definition exists, and consequently, there is a wide and heterogeneous range of terminology referring to it as "addiction", "excessive use", "misuse", "pathological use", and "problematic use". Despite the lack of agreement in recognizing, describing, and defining this distress, most scholars agree that problematic use of social media is a potential behavioral addiction specifically related to the misuse or overuse of new technologies, such as Internet addiction, smartphone addiction, and online gaming addiction, recognizing as its constituent characteristics the six criteria identified by Griffiths (2008) in his study on behavioral addictions: mood modification (i.e., change in emotional states due to engagement in social media use); salience (i.e., intense preoccupation with social media use); tolerance (i.e., increasingly frequent social media use); withdrawal symptoms (i.e., emotional and physical symptoms due to limited or interrupted social media use); conflict (i.e., intrapsychic and interpersonal problems due to social media use); and relapse (i.e., rapid return to excessive social media use after a period of abstinence) (Ryding & Kuss, 2020; Sommantico et al., 2023). Another factor that emerges in many studies is the relationship between problematic social media use, lower life satisfaction, and poor mental health in general, in the form of maladaptive cognitions, such as self-criticism and dysfunctional attitudes, decreased self-esteem and negative self-concept, and increased risk of rumination, as well as in the form of risk or maintenance factors for a multitude of psychological stresses, including depression, anxiety, loneliness, and social isolation, in addition to those already mentioned related to body image perception and eating disorders (Imperatori et al., 2022; Meshi & Ellithorpe, 2021; Rizwan et al., 2022; Ryding & Kuss, 2020; Sommantico et al., 2023). In accordance with the aforementioned assumptions, in our study on the problematic use of social media, we mean behavior that is beyond the control of individuals, that creates anxiety and distress when it cannot be acted upon, or difficulty in stopping it, or a tendency to prolong it much longer than expected, with a general impairment of social relationships, school and work performance, and a reduction or lack of other interests outside of social media platforms. Based on these considerations, we decided not to focus our research on specific social media platforms or set a specific time interval for their use. Social media use allows people, especially younger people, to connect with each other and communicate, receiving social rewards by representing one of the most important instruments of communication, socialization, and comparison (Imperatori et al., 2022; Li, 2019). As a result, social media's overemphasis on an individual's outward appearance could increase the sense of body image dissatisfaction, i.e., negative appraisal of one's physical appearance. Indeed, several online platforms, of which TikTok, Facebook, Instagram, etc., promote an idealized body image and rigid beauty and physical fitness, are becoming a source of discomfort and distress, especially for adolescents and young adults. Studies on emerging trends among youths suggest that posts on Social Media (SM) (e.g., Facebook, Instagram) identified with the hashtag "thinspiration" contribute to idealizing extremely thin bodies. Exposure to these contents is associated with beliefs, attitudes, and symptoms often related to eating disorders (Griffiths et al., 2018;

Imperatori et al., 2022; Rizwan et al., 2022). Similarly, it has been hypothesized that the increasing number of posts identified with the hashtag “fitspiration” (i.e., content shared to promote healthy messages focused on fitness, exercise, eating styles, physical appearance, and weight control) may emphasize an unrealistic body image and unattainable habits, thus leading to negative feelings in relation to mood, body image, and emotional well-being (Griffiths et al., 2018; Mancin et al., 2024; Schoenberg & Martin, 2020). The literature suggests that although gender differences may exist in relation to the idealized body type proposed by social media, it should be emphasized that dysfunctional use of such models may be associated with the development and maintenance of body image dissatisfaction in both genders equally. In addition, other studies hypothesize that the use of social networks in comparing physical appearance may promote the development and maintenance of symptoms of body dysmorphic disorder and should be considered an important risk factor (Imperatori et al., 2022; Mancin et al., 2024; Rizwan et al., 2022).

The literature identifies two key factors that serve as protective measures against heterogeneous psychological distress: perceived social support and general self-efficacy. These findings align with the tenets of social cognitive theory and social comparison. The tenets of social cognitive theory posit that the observation of exemplary conduct can positively influence observers’ task and job performance. This is because observational learning from role models can enhance self-efficacy. Social comparison theory posits that the perception of higher performance is accompanied by negative self-evaluations, which, in many circumstances, should reduce self-efficacy and subsequent task and job performance (Gerber et al., 2018). In particular, social comparison theory is concerned with the psychological processes by which individuals evaluate themselves in comparison to others. The topic of social comparison has been a prominent area of research in the fields of social and personality psychology since 1954. The theory has subsequently undergone significant expansion, with links now established to social cognition, individual differences, developmental psychology, and experimental social psychology. The primary objective is to examine the processes through which individuals engage in social comparison, the motivations underlying these comparisons, the identity of those who engage in such comparisons, and the consequences of these comparisons (Haddad, 2022).

On the basis of this theory, we decided to include perceived social support and general self-efficacy in our research in order to investigate their potential role as predictor and mediator, respectively in the development of problematic social media use and muscle dysmorphia discomfort. Self-efficacy is situated within the broader theoretical framework of social cognitive theory (Bandura et al., 2003) and consists of personal perceptions of problem-solving skills and coping strategies for managing stressful or challenging events (Waddington, 2023). Perceived self-efficacy represents a positive sense of personal competence (Schwarzer & Jerusalem, 1995) and plays a key role in determining behavior, goals, and overall human functioning. Based on Bandura’s social cognitive theory, self-efficacy is a personal construct that influences and is influenced by behaviors and social/environmental variables. According to this theory, human functioning depends on three main interacting factors: personal, social/environmental, and behavioral, each of which influences and is influenced by the others (Schwarzer & Jerusalem, 1995). According to Bandura et al. (2003) there are two main types of expectations: self-efficacy expectations, which refer to one’s personal ability to achieve a desired outcome, and outcome expectations, which refer to the likelihood of achieving a desired outcome (Bandura et al., 2003; Tortosa Martínez et al., 2024). Bandura defines the former as judgments about the ability to perform certain actions to achieve a goal or to deal effectively with stressful situations (Bandura et al., 2003). The researcher’s concept of self-efficacy emphasizes that an individual’s belief in his or her own abilities can significantly influence his or her approach to goals,

tasks, and challenges. For instance, students who have high self-efficacy believe that they can perform well and achieve their goals (Iwanowicz-Palus et al., 2021; McLean et al., 2023; Meshi & Ellithorpe, 2021; Tortosa Martínez et al., 2024). This positive belief system acts as a protective factor against the negative impacts of social appearance anxiety and body image dissatisfaction (Bentler & Bonett, 1980). Consequently, low self-efficacy appears to be related to a higher incidence of anxiety and depression symptoms and lower levels of subjective well-being (Ganson et al., 2023; Karr & White, 2024; Lippke, 2020). In contrast, high self-efficacy enables individuals to overcome fear and anxiety related to their social appearance, allowing them to focus on their strengths and abilities, improve stress regulation, increase self-esteem, well-being, and physical health, and become more resilient to acute and chronic illnesses (Dinh & Bonner, 2023).

Perceived social support (PSS) is an important factor related to general self-efficacy (Iwanowicz-Palus et al., 2021; McLean et al., 2023). Social support is a multidimensional concept that refers to social integration and interpersonal relationships that impact individuals by enabling them to feel surrounded by people they can rely on. More specifically, it can be defined as the social and psychological support that an individual receives or perceives as available from family, friends, and his or her community and includes emotional and instrumental support. In other words, PSS consists of the perception of being cared for, protected, respected, and valued by others and of being recognized and treated as an integral part of a social network (Iovino et al., 2023). This support can be provided by family members, friends, relatives, colleagues, and significant others. Through this process, individuals observe, imitate, and reinforce certain behaviors to increase their chances of being accepted and appreciated (Sibilia et al., 1995). The processes involved in social support are strongly related to mental and physical health, as they promote well-being and life satisfaction and increase resilience by acting as protective factors from heterogeneous psychological distress, from anxiety to depressive symptoms, and from body image-related distress to addictions (Iovino et al., 2023). There is substantial evidence highlighting the role of social support in promoting psychological health. Research has shown that social support influences health directly and indirectly through cognitive mechanisms, coping strategies, and health behaviors, demonstrating that individuals with supportive families or friends enjoy better health and recover faster from health problems and traumatic events than those who are less socially integrated. In fact, it has long been shown that social support is a moderator of stress, functions as an effective coping mechanism for dealing with stressors, and contributes significantly to health maintenance, disease prevention, and medical treatment success (Meshi & Ellithorpe, 2021; Xie & Kim, 2022). The presence of another person in a problematic situation reduces stress and makes one feel safer and in control. In addition, the literature suggests that the perception of one's social support network has an essentially greater coping function and exerts a stronger effect on mental health than actual social support received. The perception of having social support available may provide a buffer in times of stress, increase happiness, and improve psychological well-being. Regarding the relationship between perceived social support and social media as a communication and relationship-building tool, many scholars point out that social support in real life is associated with a reduction in depressive symptoms and greater overall well-being, while social support provided through social media does not appear to influence well-being and may increase depressive and anxiety symptoms. These researchers found that the greater the problematic use of social media, the lower the perceived social support in real life and the worse the mental health (Hossain et al., 2024; Iovino et al., 2023; Iwanowicz-Palus et al., 2021; Lin et al., 2021; McLean et al., 2023; Meshi & Ellithorpe, 2021; Saladino et al., 2024).

In accordance with the literature, which recognizes perceived social support as playing an important role in enhancing individuals' physical and psychological well-being, our study aims to examine this variable in the exploration of the phenomenon of muscle dysmorphia in adolescents and young adults of both sexes, testing it as a direct (Calaresi et al., 2024; Lovely Professional University et al., 2016; Monacis et al., 2017) and indirect predictor via GSE and sequentially via PSMU of MD-related symptomatology (Bentler & Bonett, 1980). The hypothesis underlying the selected model consists of the assumption, derived from the literature, that the perception of inadequate social support may have a negative impact on the psychosocial and emotional growth of adolescents and young people, reducing their coping skills and resources and making them use dysfunctional ways of communicating and confronting others. On the basis of the literature reviewed, which recognizes its key role in determining and influencing human behavior, choices, and attitudes in achieving goals and coping with stressful and problematic events, we propose to examine the potential mediation of general self-efficacy in the aforementioned relationship. Finally, we also propose to test the role of problematic use of social media as another mediating factor, as we hypothesize, on the basis of the literature, that it may turn out to be a risk factor in the symptomatology of muscular dysmorphia, because its specific characteristics may make it a substitute for social relationships and communication in the real world, and at the same time, as a communication tool that places great importance on appearance and promotes the image of an increasingly 'perfect' body for both women and men, it may facilitate the development of body image-related distress and eating disorders.

The choice to focus on adolescents and young adults between the ages of 14 and 29 responds to the objective of analyzing periods of life that, as evidenced by several studies, are particularly susceptible to discomforts both related to the perception of and satisfaction with body image and the problematic use of new technologies such as the Internet, social media, binge-watching, online gaming, etc. Adolescence represents, for every individual, a natural phase of research and construction of one's physical and psychological identity and of comparison with peers and with ideal aesthetic models one would like to resemble, such as soccer players or other athletes, influencers, YouTubers, those in show business, and fashion personalities. In the complex process of recognizing and expressing one's identity and in the construction and management of friendship and family relationships, which are undergoing profound transformation at this stage, adolescents who do not perceive a solid social context on which they can rely and/or who do not develop an adequate level of self-confidence to cope with stressful or difficult experiences are more likely to enact a series of dysfunctional behaviors that tend to manifest themselves mainly in the form of rigid control of their bodies as a tool for managing other aspects of their lives related to the definition of their identity, acquiring social recognition and support, and identifying their size in the world. If, during adolescence, the individual does not acquire the personal and social resources to complete this developmental process, these dysfunctional mechanisms may tend to persist and strengthen in adulthood. Research related to muscle dysmorphia is in its early stages and is characterized by several significant limitations, primarily the tendency to test mainly adult male subjects, particularly athletes, especially bodybuilders. Therefore, the choice to involve in our study a population of adolescents and young adults also of the female gender recruited outside predominantly sporting contexts, such as schools and universities, could allow for a broader observation of the phenomenon outside the restricted contexts generally examined by scientific research and offer new perspectives in the exploration of a phenomenon predominantly studied in male subjects, especially athletes and, among them, preferably bodybuilders and gym-goers.

2. Methods

2.1. Study Design

In the present study, we tested a mediation model, a type of analysis that aims to identify the mechanism underlying an observed relationship between one or more independent variables and one or more dependent variables, through the inclusion of a third or more explanatory variables, referred to as mediator variables, that can act directly on the dependent variable and influence the indirect effects of the predictor variables on it. Our model aims to test whether generalized self-efficacy (GSE) and problematic social media use (PSMU) are potential first- and second-level mediators, respectively, in the relationship between the independent variable represented by perceived social support (PSS) and muscle dysmorphia (MD), the dependent variable of the study.

2.2. Participants

The study targeted a population of both sexes aged 14–29 years, selected through a convenience sampling approach by involving Italian high schools and universities. In the demographic information section, participants were asked to indicate their male/female biological sex, gender identity with the possibility of expressing in addition to male/female a third non-binary choice, Italian or other origin, their educational qualification, caregivers' educational qualification, and with whom they live. In light of these considerations, the only criterion for inclusion was age between 14 and 29 years, along with proficiency in the Italian language in order to understand the questionnaires well.

2.3. Setting

Participants were invited to take part in this study by completing self-report questionnaires administered online using Google Form software, version 0.8, which took about 15 min to complete and remained open for a period of two months. The form contained a description of the characteristics and purpose of the research, as well as the informed consent form that each participant had to sign to view the questionnaires. As for the group of adolescents, recruitment was performed through an e-mail invitation to some high school principals to participate in the research project. The e-mail described the characteristics and objectives of the study, recruitment methods, questionnaire administration methods, and rules regarding informed consent. The latter was delivered in paper form to pupils by teachers with a request to bring it back signed by parents or guardians. Students who did not deliver the signed informed consent form were automatically excluded from participating in the research. Since the questionnaires were to be administered online, it was required that each student have an electronic tool, smartphone, tablet, or PC. All questions were set as mandatory, so there are no missing data.

In accordance with the international guidelines of the Declaration of Helsinki 1964, last revision in 2000, and the code of ethics of the Italian Association of Psychology (AIP), participation in the questionnaire administration phase was subject to the signing of an informed consent form by each participant and parents/legal guardians in the case of minors. The study was approved by the Institutional Review Board (omitted for peer review). Participation was voluntary and no prizes or compensation were provided. Privacy was ensured at all stages of the research.

2.4. Variables

All variables analyzed are quantitative, as evidenced by the use of exclusively self-report survey instruments. Mediation analyses were computed through Structural Equation Modeling (SEM). A structure with PSS, GSE, PSMU, and MD as latent variables was used to examine a model in which PSS is considered the predictor variable, GSE is the first-level

mediator, PSMU is the second-level mediator, and MD is the outcome. The model can be observed in Figure 1.

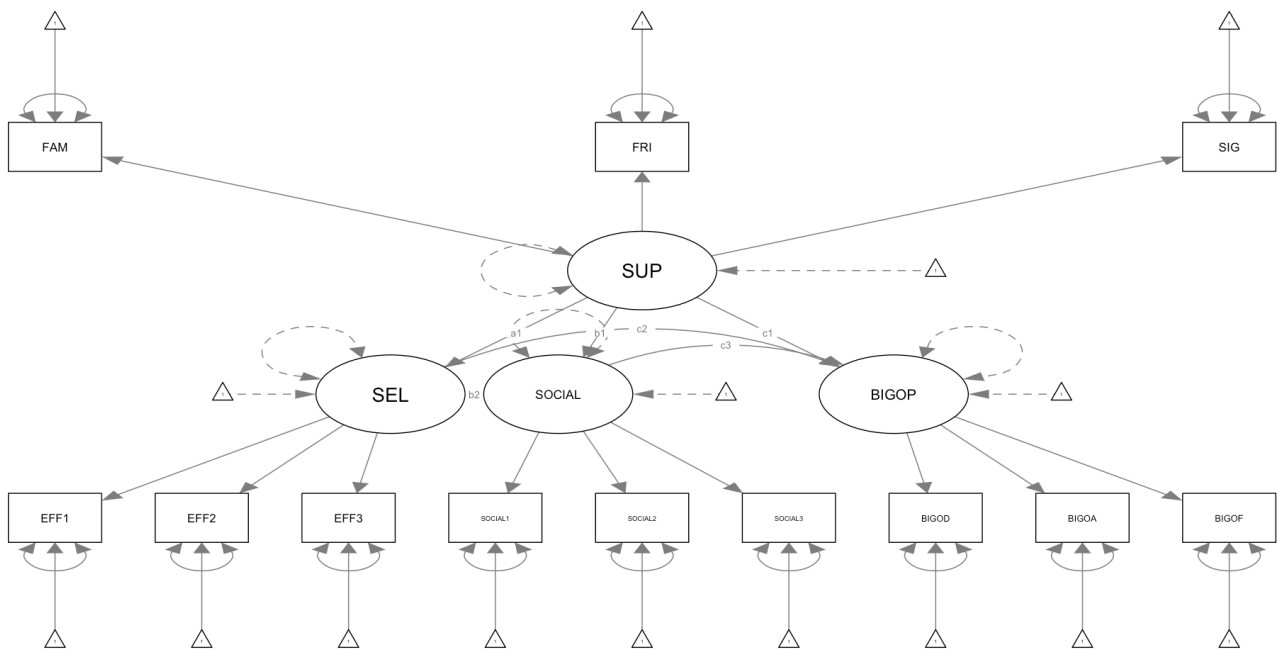


Figure 1. This figure delineates the Sem path of the selected model, determined through the parceling approach. Specifically, in the graph, circles represent latent variables, rectangles represent observed variables, and triangles represent measurement errors. SUP = perceived social support with FAM, FRI, and SIG representing its three constituent plots; SEL = general self-efficacy with EFF1, EFF2, and EFF3 representing its three constituent plots; SOCIAL = problematic use of social media with SOCIAL1, SOCIAL2, and SOCIAL3 representing its three constituent plots; BIGOP = muscle dysmorphia with BIGOD, BIGOA, and BIGOF representing its three constituent plots. Only the direct paths are shown in the figure to ensure a clear reading of the model. The paths a1 shows the direct effect between perceived social support and general self-efficacy, b1 shows the direct path between perceived social support and problematic use of social media, c1 the direct effect of perceived social support on muscle dysmorphia, b2 shows the direct path of general self-efficacy on problematic use of social media, c2 represents the direct effect of general self-efficacy on muscle dysmorphia and c3 the direct path of problematic use of social media on muscle dysmorphia.

2.5. Measurement

Perceived social support was measured with the Multidimensional Scale of Perceived Social Support (Downes et al., 2021; Zimet et al., 1988), which consists of 12 items divided into three subscales, each of which pertains to a different source of support, which has been shown to have strong factorial validity: (a) Family (i.e., “I get the emotional help and support I need from my family”), (b) Friends (i.e., “I have friends with whom I can share my joys and sorrows”) and (c) Significant Others (i.e., “I have a special person who is a real source of comfort to me”). Subjects are asked to indicate their degree of agreement with each of the items using a 7-point Likert scale (1 “completely agree”; 7 “completely disagree”).

General self-efficacy was measured through the General Self-Efficacy Scale (Sheehy et al., 2023), an instrument that evaluates the general sense of perceived self-efficacy, with the aim in mind to predict coping with daily hassles as well as adaptation after experiencing all kinds of stressful life events (i.e., “I am confident that I could deal efficiently with unexpected events”). The scale is designed for the general adult population, including adolescents. Responses are made on a 4-point scale. Each of the ten items that constitute the scale refers to successful coping and implies an internal-stable attribution of success.

The responses to all 10 items are summed to yield the final composite score with a range from 10 to 40.

Problematic social media use was assessed through the Bergen Social Media Addiction Scale (Monacis et al., 2017), a six-item scale that assesses the past 12 months eventual misuse of Social Media (i.e., “Felt an urge to use SM more and more”). The scale was developed based on Griffiths (2005) with the objective of identifying the six core characteristics of addiction: salience, mood modification, tolerance, withdrawal, conflict, and relapse in relation to excessive and compulsive use of SM (e.g., Facebook, Instagram, etc.). The questionnaire uses a five-point Likert scale, ranging from 1 (very rarely) to 5 (very often). A cut-off of ≥ 19 was used to screen problematic social media use (PSMU).

Muscle dysmorphia was evaluated through the Muscle Dysmorphic Disorder Inventory (Santarnecchi & Dèttore, 2012), consisting of 13 items that assess cognitive, behavioral, and emotional characteristics of muscle dysmorphic disorder. The MDDI items are divided into three factors: (1) drive for size (MDDI-DS, 5 items), which consists of questions regarding thoughts of being smaller, less muscular, and weaker than desired or a desire to increase size and strength (e.g., “I think my body is too small”); (2) appearance intolerance (MDDI-AI, 4 items), which consists of questions regarding negative beliefs about one’s body and the resulting appearance-related anxiety or avoidance of body exposure (e.g., “I wear baggy clothes so that people cannot see my body”); and (3) functional impairment (MDDI-FI, 4 items), which consists of questions designed to address the impairment associated with the symptoms of muscle dysmorphia (e.g., “I feel anxious when I miss one or more days of training”). The items are scored using a 5-point Likert-type response system ranging from 1 (never) to 5 (always). The total score can be derived from the sum of the subscales. Higher values reflect higher MD-related symptoms, and a cut-off point of 39 has been proposed and used in previous reports to identify clinically relevant MD.

Each variable was assessed using self-reports also validated in Italy and already administered and analyzed in samples of adults and adolescents demonstrating good levels of reliability and validity (Downes et al., 2021; Monacis et al., 2017; Santarnecchi & Dèttore, 2012; Schwarzer & Jerusalem, 1995; Sibilia et al., 1995; Zimet et al., 1988). These findings were corroborated by our model, as illustrated in Table 1.

Table 1. Descriptive analyses, reliability, and correlations.

	M	SD	S	K	α	1	2	3
1. Perceived Social Support	5.59	1.09	−1.00	0.79	0.91	-	-	-
2. General Self-Efficacy	4.72	1.12	−0.23	−0.04	0.94	0.28 *	-	-
3. Problematic Social Media Use	2.39	0.93	0.44	−0.46	0.84	−0.16 *	−0.18 *	-
4. Muscle Dysmorphia	2.07	0.70	0.66	0.22	0.82	−0.31 *	−0.14 *	0.37 *

Note: $N = 2325$. * $p < 0.01$.

2.6. Statistical Methods

IBM SPSS (Statistic Package Social Sciences) version 29 was used for preliminary statistical analyses including descriptive analysis of the sample’s main characteristics and correlational analysis of identified variables through estimation of Pearson’s product–moment correlation coefficients with a 95% bias-corrected and accelerated (BCa) confidence interval (CI). Internal reliability was verified by means of Cronbach’s α , which, according to (Nunnally, 1975) is considered satisfactory when values are greater than 0.70. The results are shown in Table 1.

R Studio version 4.3.2 with the lavaan package for R was employed to assess the factorial validity of the employed measures and the structural relationships between them.

The parceling approach was employed, whereby items from the questionnaires were randomly selected and aggregated. Parcels are more likely to satisfy the assumptions of normality and less susceptible to the influence of method effects (Little et al., 2002). The parceling approach was selected as it reduces model complexity, improves normality (parcels tend to have more normal distributions than individual items), increases long-term sustainability, and ensures more stable parameter estimates (Little et al., 2002). In the present study, three parcels were created for each observed and latent variable on a random basis. Regarding the evaluation of model fit indices, we referred to the guidance of Bentler and Bonett (1980) and Schermelleh-Engel et al. (2003), who recommend evaluating model fit using multiple indices: the Comparative Fit Index (CFI); the Tucker–Lewis Index (TLI); Standardized Root Mean Square Residuals (SRMRs); and the Root Mean Square Error of Approximation (RMSEA). Models with Comparative Fit Index (CFI) and Tucker–Lewis Index (TLI) values of 0.95 or greater and Standardized Root Mean Square Residual (SRMR) and Root Mean Square Error of Approximation (RMSEA) values of 0.08 or less are considered adequate (Bilgin & Taş, 2018; Schermelleh-Engel et al., 2003).

3. Results

3.1. Participants: Demographic Characteristics

A total of 2325 study participants aged between 14 and 29 years (min 14, max 29 years, $M \pm SD$ 21.11 \pm 4.94), of whom 1583 were female (68.1% of the total sample), completed the questionnaires. The age distribution of the sample population was as follows: 1571 young adults of both sexes aged over 18 years (67.6% of the total sample) and 754 adolescents of both sexes aged under 18 years (32.4% of the total sample). Regarding the sample size, we referred to the Monte Carlo power analysis for mediation models, which indicates that a minimum of 1000 participants is required to obtain a statistical power of 0.95 (Schoemann et al., 2017). Therefore, the sample size of this study is sufficient to ensure adequate statistical power.

3.2. Descriptive Data

With regard to other demographic characteristics, 96.8% of the participants indicated that their sociocultural background was Italian. With regard to gender, two distinct questions were posed: one concerning biological sex (male/female) and another pertaining to gender identity. In the latter category, 1.2% of respondents indicated that they identified as a gender other than male or female. The majority of participants (66.6%) reside with their parents or other equivalent figures, with a higher prevalence among those aged ≤ 17 years (79.5%) compared to those aged ≥ 18 years (60.3%). Additionally, 51.4% of participants' mothers or equivalent figures and 47.7% of participants' fathers or equivalent figures have attained a high school qualification.

3.3. Outcome Data

All data were analyzed using IBM SPSS (Statistic Package Social Sciences) version 29 and RStudio version 4.3.2 with the lavaan package.

All variables examined show significant correlations with each other ($p < 0.01$) and good internal reliability with Cronbach's α greater than 0.70 (Nunnally, 1975). The results of the model are shown in Table 1.

3.4. Main Results

The results of Pearson's correlation coefficient analysis suggest a high degree of significance in the correlation between all the variables examined, with particularly robust negative correlations observed between perceived social support and muscle dysmorphia

($r = -0.310, p < 0.001$) and the strongest positive correlation between problematic social media use and muscle dysmorphia ($r = 0.373, p < 0.001$), while no significant correlations were reported between the Drive for size and Functional impairment subscales of muscle dysmorphia with overall self-efficacy with values of ($r = -0.007, p = 0.720$) ($r = -0.021, p = 0.323$), respectively, correlations that were significant, however, in the Intolerance of appearance subscale ($r = -0.244, p < 0.001$) and in the total score of muscle dysmorphia ($r = -0.140, p < 0.001$). Finally, with regard to PSS, all of the variables analyzed show the strongest correlation with the Family subscale and the weakest correlation with the Friends subscale, and regarding MD, the most significant correlation appears to be with the Appearance intolerance subscale and the weakest correlation appears to be with the Drive for size subscale.

In constructing the mediation model, with regard to the independent variable consisting of perceived social support, we used the Multidimensional Scale of Perceived Social Support, which consists of three different scales: Family, Friends, and Significant Others, for each of which it is possible to measure a specific score or to assess a single score derived from the sum of the three different scores. In our model, we decided to use the variable in the form of a total score and to use the three scales as the three plots in our model. In fact, in this context, we were not interested in exploring the impact of each type of support on the mediator and dependent variables. The first-level mediator in our model is represented by general self-efficacy, for the assessment of which we used the General Self-efficacy scale which consists of a single scale and a total score; to construct three plots we divided the ten items into three groups. With regard to the second level mediator, which in our study consists of the problematic use of social media, measured by means of the Bergen Social Media Addiction Scale, an instrument consisting of a single scale and a total score, we divided the six items constituting it into three different groups in order to form the three plots to construct our model. Finally, with regard to the dependent variable represented by muscular dysmorphic disorder, we referred to the Muscular Dysmorphic Disorder Inventory, which consists of three scales with the possibility of calculating three different scores, one for each subscale, or a single score derived from the sum of the three specific scores; we opted for the latter option. The choice to use only the total score of the questionnaire stems from the intention to observe how the symptomatology of muscular dysmorphic disorder as a whole can be influenced by the predictor and mediator variables, whereas the evaluation of the three separate scores was not one of our analysis objectives. The construct thus identified proved to be sufficiently stable and robust, with satisfactory fit indices, as shown in Table 2.

Table 2. Goodness-of-fit indices of the measurement models.

	χ^2	p	CFI	TFI	SRMR	RMSEA
Fit Indices	(48) = 576.39	<0.01	0.96	0.95	0.06	0.07

The results of the model thus identified in the structural equation modeling analysis indicated that the direct effects of the predictor variable, i.e., PSS, on the symptomatology of muscle dysmorphia are significant and seem to confirm the results of previous studies and the initial hypotheses proposed in this research.

Furthermore, the indirect effects of PSS through GSE and PSMU on muscle dysmorphia symptomatology were both found to be statistically significant. Finally, the total effect, i.e., the sum of direct and indirect effects, of PSS on MD-related symptoms shows that PSS can influence GSE, which in turn can influence PSMU, and that both mediators influence muscle dysmorphia sequentially. The results thus seem to confirm our initial hypotheses and the hypotheses from the literature reviewed. The negative correlation between GSE

and MD was also observed, just as the positive correlation between PSMU and MD directly and indirectly via GSE seems to be confirmed. More specifically, the hypothesized relevance of perceived social support, general self-efficacy, and problematic social media use on MD symptomatology seems to be supported. The results are presented in Figure 2 and Table 3.

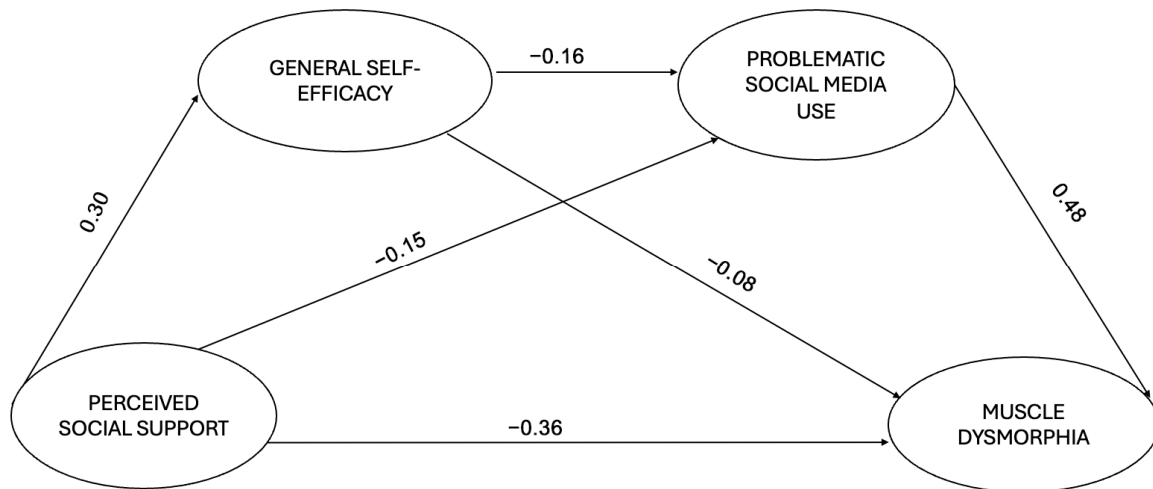


Figure 2. Structural model: Latent variables are circled. Arrows indicate the direction of the relationships between the analyzed variables. Note: Only direct paths are reported for clarity purposes; parcels were not reported for clarity purposes. For more details, see Table 3.

Table 3. Path estimates of the structural model, SE, and 95% CIs. The following table shows the values of standardized beta coefficients, standardized errors, *p*-values, and maximum and minimum levels of confidence intervals.

Direct Effect	β	<i>p</i>	SE	CI LL	CI UL
PSS → GSE	0.30	<0.001	0.04	0.40	0.56
PSS → PSMU	−0.15	<0.001	0.03	−0.20	−0.09
GSE → PSMU	−0.16	<0.001	0.02	−0.13	−0.07
PSS → MD	−0.36	<0.001	0.02	−0.20	−0.13
GSE → MD	0.08	0.01	0.01	0.01	0.04
PSMU → MD	0.48	<0.001	0.02	0.19	0.27
Indirect effect via GSE					
PSS → MD	0.02	0.01	0.004	0.003	0.02
PSS → PSMU	−0.05	<0.001	0.01	−0.06	−0.03
Indirect effect via PSMU					
GSE → MD	−0.08	<0.001	0.004	−0.03	−0.02
PSS → MD	−0.07	<0.001	0.01	−0.05	−0.02

Note: GSE = general self-efficacy; PSS = perceived social support; PSMU = PSMU; MD = MD; β = standardized beta coefficient; *p* = level of significance; SE = standard error; BC 95% CI = confidence interval; LL = lower limit; UL = upper limit.

3.5. Other Analyses

To examine the influence of gender on the proposed model, we incorporated the variable “gender” as a covariate in the regression analyses. The model was found to remain stable, with the relationships between the analyzed variables appearing unchanged, although the goodness-of-fit indices decreased slightly (CFI = 0.93; TFI = 0.90; SRMR = 0.08; RMSEA = 0.07). Therefore, although gender differences exist, they do not affect the pattern of relationships.

4. Discussion

Our study aimed to assess the role of perceived social support on the symptomatology of muscle dysmorphia through a mediation analysis in which perceived social support was tested as an independent variable to examine its direct and indirect effects, through a sequential mediation process, on the dependent variable represented by muscle dysmorphia. Our analysis is based on the recognition in the literature of the relevant role that perceived social support seems to have in improving individual well-being and in helping to cope with and overcome heterogeneous physical and psychological discomforts, particularly through the intervention of general self-efficacy, which is highlighted in the literature as an important factor in safeguarding individual psychophysical health, and which in fact represents the first-level mediator in our model. Furthermore, we hypothesized that problematic social media use would be negatively correlated with both individual perceptions of social support and generalized self-efficacy and positively correlated with symptoms of muscle dysmorphia. The results of our study, in line with the literature reviewed, seem to confirm the significance of the hypothesized relationships between the variables analyzed, thus demonstrating that the presence and intervention of certain psychological conditions and individual and social resources may influence the likelihood of developing MD-related symptoms. In particular, the perception of being able to count on solid social support from family, friends, and, more generally, the social context of reference, seems to be particularly important in this sense (Giordano et al., 2023). The problematic social interactions and relationships that adolescents and young adults engage in can lead to the development or persistence of dysfunctional behaviors (Cataldo et al., 2021; Saladino et al., 2024; Sandgren & Lavalley, 2023; Verrastro et al., 2024a; Verrastro et al., 2024b; Xie & Kim, 2022), with the risk that the need for social support, recognition, and appreciation from family, friends, and significant others in their lives will result in control over their bodies, diet and exercise. In this context, some studies suggest that an increase in social support on social media corresponds to a decrease in social support in real life, adding that while the latter seems to be associated with a reduction in depression, anxiety, and social isolation, social support on social media does not seem to protect against these psychological conditions (Monacis et al., 2017; Zhao et al., 2021). Understanding and assessing perceptions of social support in adolescents and young people at risk of muscle dysmorphia could provide health professionals with valuable information about their mental health, leading to more targeted interventions and support strategies. A similar argument can be made regarding the assessment of general self-efficacy, which, as shown in our study, could play an important role in the development and maintenance of dysfunctional use of new technologies, such as the Internet and social media. In particular, it has been shown that the use of these tools to search for content regarding exercise and weight loss strategies leads to greater dissatisfaction with body image and greater internalisation of the ideal of thinness (Favini et al., 2024; Hossain et al., 2024; Lippke, 2020; Schunk & DiBenedetto, 2021). This may be due to the use of this type of image as an ideal to strive for a slimmer and toned body in order to gain admiration and social approval, with potential negative effects on physical, psychological, and social well-being, such as reduced self-esteem and the onset of symptoms of depression and addiction (Imperatori et al., 2022; Li, 2019; Mancin et al., 2024). However, it is important to point out that our study assesses problematic social media use through the Bergen Social Media Addiction Scale, which, as previously reported, does not provide information on the specific content sought by users nor on the specific time of social media use but assesses the proposed criteria for behavioral addiction in terms of increasing time spent on social media, preoccupation, and inability to control social media use resulting in a negative impact on individual lives (Monacis et al., 2017; Ryding & Kuss, 2020; Sommantico et al., 2023). Regardless of the specific content, about which we have no in-

formation, the results of our study also show, consistent with the literature, that MD is positively associated with abuse of MS (Mancin et al., 2024; Ryding & Kuss, 2020), while it is negatively correlated with the perception of being efficient in coping with difficulties and unexpected events and having strong social support (Calaresi et al., 2024). The existing literature indicates that self-efficacy serves as a key protective factor in a multitude of psychological disorders (Favini et al., 2024; Liao et al., 2023; Sheehy et al., 2023). Therefore, enhancing self-efficacy should be an effective way to mitigate the negative effects of using social networking sites. Self-efficacy can be defined as the perceived ability to learn or perform actions at a certain level. Theory and research support the idea that self-efficacy is an important motivational construct capable of influencing choice, effort, persistence, and goal attainment, as revealed by, among others, Albert Bandura who, introducing his social cognitive and self-efficacy theories, proposed that self-efficacy and outcome expectations are fundamental to the initiation and maintenance of behavior (Bandura et al., 2003; Schunk & DiBenedetto, 2021; Tortosa Martínez et al., 2024).

Several studies have analyzed the interaction between social support and self-efficacy as a protective factor against psychological distress, linking it to students' optimism, satisfaction with life, and better academic performance (Hossain et al., 2024; Tortosa Martínez et al., 2024), as well as a greater likelihood of overcoming traumatic events (Sheehy et al., 2023) and coping with serious physical illness (Dinh & Bonner, 2023; Iovino et al., 2023; Iwanowicz-Palus et al., 2021). Thus, it can be argued that self-efficacy and perceived social support represent a knowledge of oneself as capable and of the world as friendly, which in turn can lead to an assessment of the future as potentially beautiful and fruitful and improved social and psychological functioning and health status (Czyżowska & Gurba, 2021; Meshi & Ellithorpe, 2021). Particularly for younger people, internalizing this self-confidence may reduce the importance of external assessments, such as societal pressures or criticism related to physical appearance. Indeed, as noted above, the literature emphasizes expectations of personal efficacy as determining the initiation of coping behaviors, as well as the level and duration of effort in the face of obstacles and negative experiences. Self-efficacy beliefs are dynamic and result from the interaction between the individual and the environment. They can be reinforced through direct experience, as consistent engagement in perceived challenging activities can lead to mastery experiences, which in turn increase self-efficacy and reduce defensive behaviors, or indirectly through modeling, which involves observing the successful experiences of similar individuals, such as peers and classmates (Giordano et al., 2023). In conclusion, the results of the present study are consistent with previous research that perceived social support appears to be a significant factor correlated with better mental health, both in terms of improved psychological resources and social skills, i.e., self-efficacy, and as a protective factor in the development and maintenance of psychological distress, such as maladaptive use of social media and distorted perceptions of body image, particularly physical fitness and musculature.

5. Conclusions

The results of our investigation confirm the initial hypotheses and assumptions of the literature on the subject, emphasizing the central role that perceived social support and general self-efficacy can play in mental well-being, both in dysfunctional behavior associated with the misuse of new technologies—in this case, the problematic use of social media—and in the discomforts related to an erroneous perception of one's own body image, represented here by muscular dysmorphia. However, it should be noted that the cross-sectional nature of the study and the exclusive use of self-reported instruments entail some limitations to the results. Firstly, the cross-sectional design inevitably precludes the possibility of

drawing causal inferences between the variables considered. In fact, due to their inherent nature, cross-sectional designs can only represent a snapshot of a moment in time of the trajectory and a much broader functioning of the variables under examination. In order to confirm the validity of the selected mediation model, it is advisable for future research to involve longitudinal or experimental designs, which would provide a more complete and detailed understanding of the interaction between the variables under examination. Indeed, such models allow for a better evaluation of the results derived from the cross-sectional model, allowing causal inferences to be drawn and providing stronger evidence of the existence and functioning of the hypothesized relationships between the analyzed variables. Another major limitation is the exclusive use of self-report instruments without qualitative diagnostic or confirmatory interviews. Although self-report instruments are undoubtedly the simplest and fastest method of data collection, they are not without their inherent limitations. Self-reported responses may be exaggerated, respondents may be too embarrassed to reveal personal details, and various biases may influence the results. These include social desirability and social esteem biases, indulgence biases, acquiescence biases, and the need for consistency and rationality. In addition, the inability to understand certain words and the presence of negative, structured, or ambiguously or ambivalently phrased sentences may lead to difficulties in answering for those participants who read the questions quickly or distractedly or who may be influenced by the framing effect. Finally, the interference of memories and emotions in the interpretation of events, especially those from the past, may also be a source of common and sometimes significant biases in participants' approach to questionnaires. These instruments should be improved by incorporating qualitative methods and/or clinical interviews to reduce their typical limitations. Again, a useful strategy to address these constraints is the implementation of a longitudinal design to mitigate the inherent biases associated with self-report interviews and to gain a better understanding of the nature and directions of the relationships between the variables under study. In addition, it would be advantageous to expand the study population through the involvement of a sample of individuals older than 17 years, particularly emerging and young adults, in order to obtain a more complete understanding of the phenomenon under analysis and to monitor the characteristics and dynamics it may acquire in the transition between adolescence and adulthood. Observation of a population of other age groups would allow us to observe the evolution of the phenomenon or its possible later relapse episodes in relation to maladaptive personality traits, which are more stable and defined in adulthood, and to delve into the diachronic dimension of the role of PTSD and/or DSO symptomatology related to traumatic and adverse events experienced later in life or, if they occurred in childhood and adolescence, to verify their effects at a later date.

In addition, it might be interesting to include a sample of adults older than 29 years in the research to allow a broader view of the phenomenon analyzed and how the dynamics related to it work after adolescence and young adulthood, to find out if there are specific differences or characteristics in the development, evolution, and maintenance of this distress in relation to age and different stages of life. Moreover, although the questionnaire utilized to identify the symptomatology of muscle dysmorphia (i.e., the Muscle Dysmorphia Disorder Inventory) has been successfully validated, including in Italy, in both male and female populations, with the objective of gaining a more profound and comprehensive understanding of the prevalence, impact, and characteristics of the symptomatology of muscle dysmorphia in a female population, it is recommended that clearer and more unambiguous definitions be employed in certain items of the MDDI. In this regard, it would be beneficial to provide more detailed specifications of terms that could be interpreted in a biased or unclear manner. For instance, the term "big" could be replaced or augmented with the more precise term "muscular", which could help to prevent any potential mis-

understanding. This could prove crucial for future research endeavors aimed at a more profound and comprehensive assessment of gender-based disparities in the manifestations and characteristics of muscle dysmorphic disorder. It may also be of interest to include information on participants' physical activity in future studies, with a view to identifying any differences or points of contact between those who engage in physical activity or sport and those who do not.

Despite the limitations mentioned above, the results of our study may suggest to researchers and clinicians dealing with discomfort related to body dysmorphia, also in the form of muscle dysmorphia, and discomfort related to the misuse of new technologies, such as the Internet, smartphones and especially social media, that interventions aimed at improving social and relationship skills may be effective in preventing MD-related discomfort, especially in adolescence and young adulthood, when early recognition of the symptoms of psychological distress could help prevent the adoption of dysfunctional behavior, thus offering adequate support at a time when aspects of growth such as the formation of individual identity and the management of social relationships are often perceived as out of control. From this perspective, health professionals working with individuals at risk for or diagnosed with MD might consider interventions aimed at strengthening social support networks and promoting healthier patterns of social media use. Interventions could include psychoeducation about the potential negative effects of excessive social media use, as well as skills training in developing self-efficacy and building and maintaining supportive offline relationships.

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3.1.3 Discussione

Lo studio ha analizzato il ruolo del supporto sociale percepito nella sintomatologia relativa alla dismorfia muscolare esplorando un modello di mediazione sequenziale che include nell'ordine autoefficacia e uso problematico dei *social media*. I risultati mostrano che la percezione di poter contare su una rete di supporto sociale solida (amici, familiari, figure significative) rappresenta un fattore di protezione rispetto alla distorsione dell'immagine corporea. Allo stesso modo, alti livelli di autoefficacia, intesa come fiducia nelle proprie capacità di affrontare situazioni stressanti, problematiche o impreviste, sono associati a un maggiore equilibrio psicologico e a una minore vulnerabilità alla dismorfia muscolare.

In linea con la letteratura analizzata, il supporto sociale percepito si conferma un indicatore di benessere psicologico, poiché favorisce lo sviluppo di risorse interne e di strategie di *coping* funzionali. Il sostegno sociale sembra infatti attenuare gli effetti negativi dell'esposizione ai *social media*, mentre l'autoefficacia protegge dal bisogno di conformarsi a standard estetici esterni, riducendo la vulnerabilità ai giudizi e alle pressioni sociali.

Tra i fattori di rischio emerge l'uso problematico dei *social media*, che mostra un effetto diretto positivo sulla dismorfia muscolare e funge da mediatore di secondo livello tra basso supporto sociale percepito, scarsa autoefficacia e sintomi di dismorfia muscolare. Lo studio conferma dunque le ipotesi iniziali mostrando che la dismorfia muscolare è negativamente associata al supporto sociale percepito e all'autoefficacia e positivamente correlata all'uso problematico dei *social media*.

Tuttavia, la significatività, la generalizzabilità e l'utilizzo dei risultati devono essere valutati considerando alcune criticità legate a due degli strumenti *self-reports* impiegati. Il *Bergen Social Media Addiction Scale* (BSMAS) (Andreassen, 2015, 2016; Monacis et al., 2017) utilizzato per misurare l'uso problematico dei *social media*, rileva soprattutto il tempo trascorso *online*, le preoccupazioni connesse all'uso dei *social*, la difficoltà a interrompere il comportamento e il conseguente impoverimento di altri ambiti della vita dell'individuo (Griffiths, 2005). Questo strumento, però, non distingue i tipi di contenuti fruiti; qualora riguardassero *fitspiration* o *thinspiration*, potrebbero influenzare in modo rilevante il fenomeno esaminato (Mingoia et al., 2017; Raggatt, M., et al., 2018). Un altro strumento *self-report* che può limitare la valutazione e, soprattutto, la generalizzabilità dei risultati è il *Muscle Dysmorphic Disorder Inventory* (MDDI). Sebbene sia stato validato su popolazioni di entrambi i sessi anche in Italia, (Cerea et al., 2022) contiene termini e item che sembrano rivolti principalmente a una popolazione maschile.

In una prospettiva futura potrebbe quindi essere utile modificare e/o integrare alcuni items per rilevare con maggiore precisione eventuali differenze di genere nella percezione distorta

dell'immagine corporea, relativamente a dimensioni, forme e consistenza della massa muscolare. Ad esempio, si potrebbe ampliare l'affermazione “mi vergogno a farmi vedere senza la camicia/T-shirt” includendo “in costume da bagno o in pantaloncini”, oppure affiancare alle espressioni “vorrei che le mie braccia fossero più grandi” o “credo che il mio torace sia troppo piccolo” riferimenti ad altre aree corporee, come addominali, glutei e adduttori, verso cui l'ideale estetico femminile risulta generalmente più sensibile.

Nonostante i limiti sopra identificati, il presente studio si distingue per alcuni rilevanti punti di forza, tra cui il coinvolgimento di un campione particolarmente ampio, composto da oltre duemila partecipanti, comprendente sia adolescenti (14–17 anni) sia giovani adulti (fino ai 29 anni). La numerosità del campione insieme all'estensione dell'intervallo di età considerato, consente di cogliere con maggiore accuratezza le specificità evolutive e le eventuali continuità o discontinuità nei fenomeni indagati, aumentando la solidità e la generalizzabilità dei risultati.

Un ulteriore punto di forza è rappresentato dall'utilizzo di un'analisi di mediazione sequenziale, che permette non solo di testare il ruolo di un predittore, di un mediatore e di una variabile di esito, ma anche di introdurre un mediatore di secondo livello, in grado di incidere ulteriormente sull'esito finale. Questo approccio analitico consente una comprensione più articolata e approfondita delle relazioni complesse e multilivello tra le variabili, offrendo un quadro interpretativo più completo e preciso rispetto a modelli più semplici.

3.1.4 Implicazioni pratiche e prospettive future

I risultati dello studio evidenziano l'importanza, per i professionisti che si confrontano con problematiche legate alla percezione dell'immagine corporea, della rete sociale dell'individuo a rischio o affetto da tale disturbo, nonché la sua percezione di autoefficacia generale nell'affrontare situazioni impreviste, stressanti e problematiche. La percezione di poter contare su un supporto sociale stabile, proveniente dal contesto familiare, dalle relazioni con i pari e da figure significative quali insegnanti, allenatori o professionisti della salute mentale, favorisce infatti una maggiore fiducia nelle proprie capacità di gestione di sé e dell'ambiente circostante. In assenza di tali risorse, il corpo può diventare il principale ambito attraverso cui l'individuo tenta di esercitare controllo e padronanza, dando luogo a un'attenzione rigida e pervasiva verso l'aspetto fisico.

Nel lavoro clinico con adolescenti e giovani adulti che presentano difficoltà legate alla percezione dell'immagine corporea, risulta inoltre imprescindibile, nel contesto della società contemporanea altamente digitalizzata, esplorare le modalità di utilizzo delle piattaforme digitali e dei *social media*. È fondamentale comprendere il grado di influenza esercitato dai messaggi veicolati da tali

strumenti nel modo in cui gli individui valutano il proprio corpo, strutturano l'attività fisica e scelgono i regimi alimentari. Attualmente, la maggior parte degli strumenti di valutazione si concentra prevalentemente su aspetti quantitativi dell'uso delle tecnologie digitali, quali il tempo di utilizzo, la difficoltà nel ridurre o interrompere il comportamento e il progressivo abbandono di altre attività significative.

Al fine di ottenere un quadro più completo ed esaustivo dell'impatto dei *social media* sulla percezione dell'immagine corporea e sulle conseguenze comportamentali in ambito alimentare e dell'esercizio fisico, sarebbe auspicabile integrare tali strumenti con metodologie qualitative e interviste cliniche, in grado di rilevare la qualità dei contenuti fruiti, le interazioni con altri utenti e i significati attribuiti a tali esperienze. Un approccio di questo tipo consentirebbe di superare una valutazione circoscritta alla quantità dell'esposizione, includendo anche la tipologia e il valore simbolico dei messaggi interiorizzati.

In un'ottica di prevenzione e trattamento dei disturbi legati alla dispercezione dell'immagine corporea, appare dunque fondamentale intervenire simultaneamente su più livelli: promuovere un uso sano e consapevole delle piattaforme digitali, sia in termini quantitativi che qualitativi, rafforzare la rete sociale di riferimento e potenziare le competenze emotive, comunicative e relazionali dell'individuo. Parallelamente, un lavoro mirato allo sviluppo dell'autostima e dell'autoefficacia può favorire una maggiore fiducia nella capacità di affrontare eventi stressanti, frustrazioni, fallimenti e battute d'arresto nel percorso di realizzazione personale, riducendo il ricorso a strategie di controllo corporeo disfunzionali.

3.2 Studio 2: Binge Eating Disorder Interacting with Distress Overtolerance and Parental Psychological Control

3.2.1 Sommario

Lo studio esplora il disturbo da alimentazione incontrollata (Binge Eating Disorder), caratterizzato da episodi ricorrenti di alimentazione eccessiva con perdita di controllo e significativa compromissione nel funzionamento dell'individuo su un campione di giovani adulti di età compresa tra i 18 e i 30 anni e di entrambi i sessi.

Utilizzando un Modello di Mediazione, si è indagato il controllo psicologico materno e paterno come predittore diretto e indiretto della sintomatologia del *Binge Eating Disorder*, attraverso la mediazione di una eccessiva tolleranza allo stress.

Sono stati rilevati effetti indiretti significativi del Controllo Psicologico Materno ($\beta = 0.07$; $p < 0.001$) e Paterno ($\beta = 0.13$; $p < 0.001$) sul Disturbo da *Binge Eating* tramite l'ipertolleranza allo stress.

I risultati sottolineano la rilevanza di interventi mirati al miglioramento delle relazioni genitori/figli, alla regolazione emotiva e allo sviluppo di strategie di *coping* funzionali, in particolare in relazione alla gestione di situazioni stressanti, al fine di prevenire e trattare la sintomatologia dell'alimentazione incontrollata nei più giovani.

Binge Eating Disorder Interacting with Distress Overtolerance and Parental Psychological Control

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Abstract

Binge eating is a rapidly growing eating disorder that severely compromises an individual's physical and psychological health, particularly affecting young adults of both sexes. Our study aims to examine the impact that parental psychological control and the tendency to overtolerate distress have on binge eating disorder.

The sample consists of individuals of both sexes aged 14-30 years. Measures include the Psychological Control Scale, the Distress Overtolerance Scale and the Binge Eating Scale. A mediation model was tested using a structural equation model with maternal and paternal psychological control as predictors, distress overtolerance as mediator and binge eating disorder as outcome. The model showed good fit indices and revealed that maternal psychological control directly influenced both distress overtolerance and binge eating disorder, while paternal psychological control directly influenced only distress overtolerance. The indirect effects of both predictors on binge eating through distress overtolerance were found to be significant.

The results highlight that high parental psychological control may lead to greater distress overtolerance, which in turn may increase the risk of developing binge eating disorder. Findings suggest that treatment of binge eating disorder may benefit from considering family interactions and the ways in which the young cope with distress.

Keywords: binge eating disorder, distress overtolerance, parental psychological control, young adults

Introduction

Binge eating disorder (BED) is defined by recurrent overeating episodes, in which individuals consume significantly more food than they would normally consume and experience a lack of control over their eating behavior (Agüera et al., 2020; Giel et al., 2022; Hilbert et al., 2020). Both the Diagnostic and Statistical Manual of Mental Disorders 5th edition DSM-5-TR (American Psychiatric Association, 2013) and the International Classification of Diseases ICD 11th revision (Almeida et al., 2020) recognize a number of key characteristics to identify BED: recurrent binges (i.e., consumption of unusually large amounts of food with a sense of loss of subjective control during the overeating episode), marked binge distress and the absence of inappropriate weight-reduction behaviors that characterize bulimia nervosa and anorexia nervosa. BED is recognized as a major public health problem with significant social and economic costs and is considered the most prevalent eating disorder among adults, affecting individuals of both sexes and all racial and ethnic groups (Giel et al., 2022; Keski-Rahkonen, 2021). The literature reports a strong association between BED and an increased risk of psychiatric and medical comorbidities (Agüera et al., 2020; Grilo & Juarascio, 2023; Keski-Rahkonen, 2021) as well as severe psychosocial impairment (Mohajan, 2023). Individuals with BED often experience difficulties in their professional, social, and interpersonal lives, often reporting

feelings of guilt, disgust, and embarrassment as a result of eating (Mohajan, 2023). Although BED is strongly associated with obesity, people diagnosed with BED have different body image-related disorders, eating behaviors, and psychological and neurobiological profiles from people with obesity without BED. Despite the high levels of morbidity and associated psychosocial burdens faced by people with BED, this disorder remains under-recognized by health professionals (Giel et al., 2022; Grilo & Juarascio, 2023).

The role of family in eating disorders

Among the most important factors that the literature recognizes as associated with the development and maintenance of eating disorders and with the related distress in adolescents and youth, a prominent position is occupied by the family system and parent/child relationships (Erriu et al., 2020; Robertson, 2020). Specifically, in the analysis of parenting style, research shows that individuals with eating disorders related to binge eating disorder and obesity report less maternal and paternal care and greater overprotection than healthy individuals (Amianto et al., 2021). Specifically, the research reports that the “control without affection” parenting style, which combines lack of warmth and attention (poor parental care) with overcontrol (such as parental criticism and intrusiveness), is more frequently reported by both individuals with binge eating disorder and those with obesity, with no significant differences

between the two discomforts, compared to healthy individuals (Amianto et al., 2021; Depestele et al., 2017).

Several studies point to the significant impact of the family as a primary social agent in influencing the development and maintenance of dysfunctional eating behaviors in children (Amianto et al., 2021; Cella et al., 2022; Depestele et al., 2017; Erriu et al., 2020; Monteleone et al., 2020; Robertson, 2020). In fact, it is likely that the family context and parenting practices and styles in the area of eating may be a key risk factor for the development of negative eating habits in childhood, which may consolidate later and evolve into eating disorders. In exploring the nature and characteristics of the impact of parents on their children's dysfunctional eating behavior, research has found that families with children and adolescents who present with dysfunctional eating disorders are either entangled, intrusive and hostile towards the child's emotional needs or overly concerned about parenting. In contrast, affective and warm parenting has been found to moderate children's poor eating habits or maladaptive eating behavior (Erriu et al., 2020; Robertson, 2020). An important point in this regard is that the development of eating disorders in adolescence appears to be influenced by family members' perceptions of family functioning, particularly with regard to family cohesion, adaptability, and communication (Robertson, 2020; Romm et al., 2020). Some empirical evidence has indicated, in

particular, that families with poor cohesion, low affective expression and excessive interpersonal dependence among members were found to have a higher risk of developing pathological eating behavior within them (Cella et al., 2022). In addition, research has shown that adolescents with eating disorders report high levels of dissatisfaction with family relationships, characterized by poor parental acceptance (family warmth, empathy, emotional support) and limited independence among family members. (Amianto et al., 2021; Cella et al., 2022; Depestele et al., 2017; Robertson, 2020). In contrast, adolescents and young who report emotional support from parents appear to be less likely to develop concerns about excessive weight, body dissatisfaction, and high ideals of thinness (Costa et al., 2015; Giordano et al., 2023, 2024). Research identifies positive perceptions of family relationships as an important protective factor from the risk of developing disturbed eating behaviors (Depestele et al., 2017; Giordano et al., 2023, 2024; Robertson, 2020; Romm et al., 2020). The development of eating disorders also seems to be influenced by the assumption of binding and unfavorable family rules. It has been found that families with eating disorders have particular rules regarding the restriction of thoughts, feelings and self-determination. Family rules related to the prohibition of discussing, solving problems, and talking about circumstances that might cause distress in the family are indicative of family rigidity; rules related to mutual support,

shared decision-making, and emotional bonding, on the other hand, would facilitate family cohesion. In particular, families with rigid rules that hinder or limit the expression of thoughts, feelings, and self (prohibition of exposing and talking about situations that may cause discomfort) are at risk of developing eating disorders, especially in cases where restrictive rules, demands, and controlling practices, such as restriction and monitoring, relate to food. Critical attitudes and family pressures toward body and fitness are also indicative of family involvement and rigidity, which strongly influence the development of distress by facilitating inappropriate eating habits. (Erriu et al., 2020; Giordano et al., 2023, 2024).

Parental psychological control

The association between eating disorders in children and adolescents and parenting styles has been studied by several researches (Amianto et al., 2021; Costa et al., 2016; Depestele et al., 2017; Robertson, 2020) that highlight the deleterious impact of a parenting style characterized by pressuring children to conform to one's schedule through deep and covert manipulative tactics, which generally tend to manifest in a form of parental psychological control. This control results in a restriction of autonomy and independence, which in turn evolves into internalizing symptoms and difficulties in children's relationships and social interactions. Parental psychological control is emotionally manipulative and intrusive parental

behavior, having the aim to control the child's emotional state and to make children act, feel, and think in ways approved by their parents. This involves the use of tactics such as love withdrawal, guilt induction, conditional approval, shaming, or instilling anxiety and thought patterns, which are particularly harmful during adolescence, because they undermine the key function of adolescents' development of autonomy and self-direction, keeping them emotionally dependent on their parents. (Romm et al., 2020).

Parental psychological control is a risk factor for maladjustment not only during childhood and adolescence, but also in different periods of life, including young adulthood. In particular, contingent expression of love based on children's performance creates negative self-evaluations and maladaptive perfectionism, resulting in inducing rigid eating behaviors and related discomforts such as excessive exercise (Costa et al., 2015). In fact, higher levels of psychological control appear to be related to lower self-confidence and self-esteem and fear of failure, as well as higher rates of externalizing problems, such as physical and relational aggression, and moreover, to internalizing and mood problems, such as depressive symptoms, anxiety, loneliness, confusion, and lower social and interpersonal skills (Brenning et al., 2022; Costa et al., 2015, 2016).

According to the literature, parental psychological control seems to consist of two main components: psychological control of

dependence and psychological control of achievement. Psychological control over dependence can be defined as the use of psychological control in the domain of parent-child intimacy, where control is used as a means of keeping children within tight physical and emotional boundaries. Psychological control over achievement can be explained as the use of psychological control in the domain of outcomes, where psychological control is used as a way to make children conform to excessive parental performance standards. Both constructs have been found to be related to maladaptive consequences, particularly internalizing difficulties and disordered eating behaviors. Research shows that adolescents with eating disorders, compared to those without such disorders, tend to perceive parents, and particularly fathers, as more controlling. The quality of the relationship with one's father was found to be an important factor in the development of eating disorders: girls with anorexia described their fathers as intrusive and overprotective and as frequently turning to their daughters for sustenance and support (Monteleone et al., 2020). Studies report no differences between the various types of eating disorders in the area of psychological parental control, highlighting that individuals with eating disorders, regardless of the specific form of disorder they suffer from, tend to perceive lower levels of maternal and paternal care and tend to report a higher level of parental control than healthy individuals. In general, the literature

tends to agree that ED patients tend to report that their parents are less warm and empathetic and that they used to limit their autonomy and independence during childhood (Depestele et al., 2017). At the same time, in much research, families with ED seem to be characterized by the presence of an insecure parental bond, a lack of intimacy and physical expressions of affection from the maternal figure, and, more generally, a reduction in bodily contact and expression (Amianto et al., 2021).

Distress overtolerance

Among the characteristics that research reveals in individuals who experience parental psychological control, one of the most interesting in our view is the tendency to overperform in order to match parental expectations and desires and to gain their approval and affection (Costa et al., 2016). Associated with this condition are attitudes of perfectionism and overcontrol, often accompanied by dysfunctional management of stressful and problematic situations through coping strategies characterized by total avoidance or, conversely, excessive tolerance of distress. The literature defines distress intolerance and distress overtolerance as maladaptive behaviors that result from an interaction between the ability to tolerate distress and the awareness and perception of distress, resulting in its habitual avoidance or overtolerance (Gorey et al., 2018). Scholars point out that, although in opposite ways, the two types of distress response both act in the same way as

a dysfunctional coping mechanism to deal with stressful experiences (Gorey et al., 2018; Lee & Kim, 2021; Lee, 2024). Although the individual's ability to tolerate stressful events and adverse psychological states tends to be emphasized in its adaptive values, most research has shown that excessive tolerance of negative emotions is associated with psychological maladjustment such as depression and anxiety (Gorey et al., 2018; Lee, 2024; Nealis et al., 2022; Zegel et al., 2023). In fact, distress overtolerance (DO) refers to the tendency to persist and endure pain even if it can be avoided (Lee, 2024) and thus can be seen as a lack of cognitive flexibility to cope adequately with negative emotions (Lee & Kim, 2021).

Gorey et al. (2018) hypothesize the existence of two subcomponents of distress overtolerance: the "capacity to harm" and the "fear of negative evaluation". The former would generally be related to individuals' ability to tolerate negative situations despite the fact that they affect their well-being; the latter to individuals' tendency to persist in experiencing stressful situations for fear of receiving negative evaluations from others if they stopped doing so. In the literature, distress overtolerance often appears to be related to the following individual characteristics: poor well-being, greater importance placed on achieving goals and meeting constraints, tendency toward perseverance and perfectionism, inability to disengage, and greater overall negative emotionality. In addition, DO appears to predict clinically relevant distress, such as alcohol

abuse, depression and anxiety (Lee, 2024; Nealis et al., 2022), as well as being a construct of potential relevance to the symptomatology of PTSD, due to the strong inclination of individuals with DO to persist in extremely high levels of distress, ignoring its signs and consequently making the symptomatology more severe and seriously hindering its remission (Zegel et al., 2023). The link between a hyper-controlling family environment and the tendency to over tolerate distress can be detected in parent-child dynamics as early as childhood: for example, in a family with strict parents and high-performance standards, a child is unlikely to receive praise unless he or she performs a task at an exceptionally high level. Because of infrequent rewards, the child may learn to be a perfectionist and to persist in negative emotions no matter what; traits that would not be present in a child with low distress tolerance. These traits may continue into adulthood, resulting in an individual who relentlessly persists in the task at hand rather than disengaging and/or incorporating adaptive coping strategies. As a result, the individual with stress overtolerance engages more in strenuous or stressful work than others, reporting a poor sense of well-being, a tendency to judge negative emotions as irrelevant feedback for this/her behaviors, and to resort to dysfunctional ways to manage the exhausting rhythms they undergo and improve mood (e.g., alcohol abuse, restricted diet, and/or overeating) (Lee, 2024). In this sense, distress overtolerance can be conceptualized as both an

inability to disengage from the goal to be achieved and a tendency toward perfectionism (Gorey et al., 2018). One of the constructs analyzed to define the theoretical framework of distress overtolerance and to identify the underlying mechanisms is the hypercontrolled personality (i.e., excessive self-control), which shows numerous points of contact with the tendency to overtolerate distress. The literature argues that individuals with high levels of self-control seem to be biologically predisposed to avoid emotions and, as a result, may produce a pattern of behavior similar to that of individuals who over-tolerate distress, such as emotional inhibition, rigid cognition, and extreme perseveration and perfectionism; the latter two attitudes in particular, although they share many characteristics with OD, exhibit some important peculiarities that may help shed light on the potential relationships between over-tolerance of distress and psychopathology (Gorey et al., 2018; Lee, 2024; Nealis et al., 2022; Rand-Giovannetti et al., 2022; Zegel et al., 2023). Indeed, although persistence and perfectionism tend to be associated with depression and substance abuse in the literature, they seem to be considered strictly task-oriented, without emphasis on the inherent negative aspects. Therefore, they provide a good basis for understanding the mechanism underlying DO without being considered redundant with it, since distress overtolerance, unlike them, exhibits a negative meaning already in its very definition. (Gorey et al., 2018).

Hypotheses and objectives

Our study aims to analyze the role that distress overtolerance may play in the relationship between parental psychological control, analyzed distinctly in maternal and paternal figures, and binge eating disorder in a sample of young adults aged 18-30 years of both sexes, identified through a convenience approach in the Italian territory. Our first hypothesis is that a high level of children's perceived psychological control, by both mothers and fathers, is positively correlated with the risk of developing or aggravating the symptomatology of binge eating disorder, as well as with the tendency to excessively tolerate distress by persisting in stressful situations, even when it is not necessary and would be possible to interrupt them. The second hypothesis of our research is that distress overtolerance may play a mediating role in the relationship between maternal and paternal psychological control - analyzed as two separate independent variables - and binge eating disorder symptomatology as a dependent variable. The latter hypothesis is based on the constitutive features of distress overtolerance, which is structured as the habit of individuals to persevere in stressful and exhausting situations and to endure pain to the bitter end, even though they recognize that this behavior severely affects their physical and psychological well-being, deteriorating and compromising their health due to the habit of putting food and sleep needs, social relationships, and leisure time on the back

burner. To examine the interaction between the identified variables, we decided to test a mediating model consisting of parental psychological control style in the two forms of maternal and paternal psychological control as predictors, overtolerance distress as mediator, and binge eating disorder as outcome. Specific attention was given to the direct and indirect effects, through distress overtolerance, of maternal and paternal psychological control on binge eating symptomatology and the direct and mediating effects of distress overtolerance on binge eating disorder. Finally, we set out to investigate whether maternal and paternal psychological control might affect the variables studied differently, whether one parental figure tends to be perceived as more overprotective and hypercontrolling than the other, and whether the perception of any differences in this regard might be matched with a different impact that the two parental figures exert on both distress overtolerance and binge eating symptomatology.

Materials and Methods

Study Design

In the present study, we performed a preliminary correlation analysis among all of the variables under our study using Pearson's product moment correlation coefficients and then tested a mediation model calculated through Structural Equation Modeling, in order to examine whether distress over-tolerance was a potential mediator in the relationship between the independent variables identified in parental psychological

control, in the double form of maternal and paternal psychological control, and the dependent variable represented by the binge eating disorder.

Procedure

Recruitment was carried out through the snowball method. As the questionnaires were to be administered online, it was necessary for each participant to have an electronic tool, a smartphone, tablet, or PC.

Individuals who took part in the research were asked to fill out a self-report questionnaire, which took about 15 min to complete. The form contained a description of the characteristics and purpose of the research, as well as the informed consent form, that the participants had to previously sign in order to view the questionnaires.

In accordance with the international guidelines of the Declaration of Helsinki 1964, last revision in 2000, and the ethical code of the Italian Association of Psychology (AIP), participation in the questionnaire administration phase was subject to the signature of an informed consent form by each participant. Participation was voluntary and no prizes or compensation were offered. Privacy was ensured at all stages of the study.

The study was approved by the Institutional Review Board of the Institute for the Study of Psychotherapies, School of Specialization in Brief Psychotherapies with a Strategic Approach

(reference number: ISP-IRB-2024-7, 23 May 2024).

Participants

The study targets a population of young adults aged 18–30 years of both sexes, recruited by the convenience sampling method. The only inclusion criteria were an age between 18 and 30 years and an adequate knowledge of the Italian language.

Variables

A mediation analysis was drawn through structural equation modeling (SEM). A structure with maternal psychological control (MPC) and paternal psychological control (PPC), distress over-tolerance (DO), and binge eating disorder (BED) as latent variables was used to examine a model in which MPC and PPC are considered as predictor variables, DO as mediator, and BED as outcome.

Measurement

Perception of parental psychological control: the variable was measured through the 8-item Italian version of the Psychological Control Scale-Youth Self-Report (Barber, 1996). The author provided evidence for the validity and one-dimensional factor structure of this scale. Subjects responded on a 3-point Likert-type scale ranging from 1 “not like her (him)” to 3 “a lot like her (him)”, with higher scores reflecting greater perception of parental psychological control e.g. “my mother/father brings up past mistakes when she/he criticizes

me”. Subjects rated psychological control for both parents separately to examine the individual contribution of mothers and fathers. The scale has adequate psychometric properties and its reliability and validity have been also demonstrated in cross-cultural research (Barber, 1996; Barber et al., 2005; Rohner & Khaleque, 2003). The Italian version of this instrument is widely used in research and showed good internal consistency ($\alpha = .80$ and $.83$ respectively for paternal and maternal psychological control).

- Distress overtolerance: the assessment of the variable was conducted using the Distress Overtolerance Scale (Gorey et al., 2018): a 16-item self-report questionnaire that measures an individual's tendency to endure very high levels of stress despite negative consequences for well-being, e.g., “I care more about completing a stressful task than its negative consequences on my health and happiness.” Each item is rated on a 6-point scale from 1 (*completely untrue of me*) to 6 (*completely true of me*). Scores range from 0–96 with higher scores indicating higher levels of DO. The instrument has a two-factor structure (i.e., Capacity for Harm and Fear of Negative Evaluation). The Italian version (Cheli et al., 2021) showed a very good internal consistency for the total scale which included all the 16 items ($\alpha = .91$). This value resulted slightly lower but anyway good in the two subscales *Capacity of Harm* (CH; $\alpha = .89$) and *Fear of Negative Evaluation* (FNE; $\alpha = .82$).

- Binge eating disorder: the variable was assessed using the Binge Eating Scale, a widely

used self-report instrument developed to identify the presence and behavioral manifestations of binge eating disorder (BED). Developed by Gormally et al. (1982), the scale was designed to identify behaviors, emotions, and attitudes related to binge eating episodes among individuals who might be at risk of developing BED. Comprising of 16 items, the scale evaluates both the severity and frequency of binge eating episodes, which are central in diagnosing and understanding the disorder (Gormally et al., 1982). The scale is designed to capture the behavioral (eight items, e.g., large amount of food consumed), as well as the cognitive and emotional (eight items, e.g., feeling out of control while eating, preoccupation with food and eating) features of objective binge eating in overweight and obese adults. Each item presents a set of four statements arranged in a graded severity format, reflecting an increasing level of binge eating symptomatology. For each item, respondents are asked to select one of three or four response options, coded zero to two or three respectively, that best describes their experience e.g. "I feel incapable of controlling urges to eat. I have a fear of not being able to stop eating voluntarily". The total score ranges from 0 to 46, with a score of <17 indicating the absence of binge eating disorder, a score between 18 and 26 indicating a moderate-grade BED, and a score >27 indicating a severe-grade BED (Barstad et al., 2023). This scoring system has been validated through various studies, showing good internal consistency and satisfactory test-retest reliability

(Timmerman, 1999). The Italian version of the scale reported good internal consistency reliability ($\alpha = .89$).

All of the variables analyzed are quantitative, as evidenced by the exclusive use of self-report survey instruments, and all of the questions that make up the above questionnaire were defined as mandatory to ensure no missing data.

Each of these instruments has been validated in Italy and has been previously administered and analyzed in samples of adults and adolescents, demonstrating good levels of reliability and validity (Cheli et al., 2021; Costa et al., 2015; Di Bernardo et al., 1998). These data were confirmed by the results of our model, as shown in Table 1.

The Statistical Methods

Preliminary statistical analyses were conducted using IBM SPSS (Statistic Package for the Social Sciences) version 29. These included a descriptive analysis of the main characteristics of the sample and a correlational analysis of the identified variables using Pearson's product moment correlation coefficients with a bias-corrected and accelerated 95% confidence interval (CI) (BCa). The internal reliability of each selected instrument was tested through the use of Cronbach's α and the normal distribution through skewness and kurtosis values (Nunnally, 1975). The results are presented in Table 1.

R Studio version 4.3.2 with the lavaan package for R was utilized to assess the factorial validity of the employed measures, regression analysis, and the structural equation modeling (SEM) for the

identified mediation model. We used the parcellation approach in the SEM analysis for several reasons. First, this method reduces model complexity, improves normality (parcels tend to have more normal distributions than individual items), increases long-term sustainability, and ensures more stable parameter estimates. In addition, the parcels not only meet normality assumptions more easily but are also less susceptible to the influence of method effects (Little et al., 2002). In the present study, three parcels were constructed for each observed and latent variable. The resulting model is shown in Figure 1.

Results

Participants: demographic characteristics

A total of 1024 study participants aged between 18 and 30 years (min 18, max 30 years, $M \pm SD$ 25.28 ± 3.53 years), of whom 725 were female (70.8% of the total sample), completed the questionnaires. Regarding the sample's gender/sex identification, participants were asked to identify their male/female biological sex and, in a next question, were given the opportunity to select a third non-binary option to identify their gender identity. In the latter category, 0.9 percent of participants indicated that they identified as a non-binary gender. Both questions were mandatory. In terms of other demographic characteristics, 97.6% of participants reported that their sociocultural background was Italian. Most participants (45.5% of the total sample) were single.

Furthermore, 40.7% of participants are graduated and the 40.7% are students. Regarding the sample size, we referred to the Monte Carlo power analysis for mediation models, which indicates that a minimum of 1000 participants is required to obtain a statistical power of 0.95 (Schoemann et al., 2017). Therefore, the sample size of this study is sufficient to ensure adequate statistical power.

Descriptive Data

The intent of focusing our investigation on young adulthood was in response to the goal of exploring a stage of individual development that, in the context of parenting style and parent-child interactions and relationships, tends to have a marginal space in the literature compared to adolescence, a stage of life which many studies place attention to, when analyzing parent-child relational dynamics. Obviously, the age of adolescence is crucial in individual development and particularly in the redefinition and transformation of parent-child relationships, which become more complex and difficult compared to childhood. However, many of the communicative and relational dynamics that are structured during adolescence tend to persist into early adulthood and sometimes tend to become more rigid and complex than they appeared in the adolescent period and thus more difficult to address and modify. In approaching maladaptive behaviors and psychological distress in young adults, there is a tendency to underestimate the role that the family,

particularly parents, can play in their development and course. This aspect emerges particularly in the treatment of eating disorders, where the parents of adult patients tend to be completely ignored, while they are often not only involved in the origin of the disorder, but continue to influence it overwhelmingly by being an important obstacle or resource in its maintenance and chronicity. Moreover, it is important to note that binge eating disorder, the subject of our study, tends to develop later than other eating disorders such as anorexia or bulimia, and to be more common among adults than among adolescents.

Outcome Data

The internal reliability and normality of the distribution of the data for each instrument used were tested through the use of Cronbach's α , Skewness and Kurtosis, showing good results, as well as all variables demonstrated statistically significant mutual correlation with a p value < 0.001 , as illustrated in Table 1.

The model was evaluated on the basis of multiple indices of fit, as suggested by Bentler and Bonett (1980). All indices of fit were found to be adequate, with values of 0.99 for the comparative fit index (CFI) and the Tucker-Lewis index (TLI), and values of 0.02 and 0.03 for the SRMR (Standardized Mean Quadratic Residuals) and RMSEA (Mean Quadratic Approximation Error), respectively, thus well below the maximum thresholds recommended by Schermelleh-Engel et al. (2003). All values of the fit indices, including

χ^2 values and degrees of freedom, are presented in Table 2.

Main Results

The results of Pearson's correlation coefficient analysis suggest a high degree of significance in the correlation between all the variables examined, with particularly robust correlations observed between distress overtolerance and binge eating disorder ($r = 0.46$, $p < 0.001$).

Comparing maternal and paternal psychological control with both the variables distress overtolerance and binge eating disorder, we observed that paternal psychological control showed a less robust degree of correlation than that observed for maternal psychological control, but still statistically significant with values of ($r = 0.29$ and 0.23 $p < 0.001$) compared with values of ($r = 0.35$ and 0.31 , $p < 0.001$).

In constructing the mediation model, with regard to the independent variables consisting of maternal and paternal psychological control, we used the parental psychological control scale, divided into eight items referring to maternal psychological control and another eight items reflecting paternal psychological control. Accordingly, we considered two different indirect variables: maternal psychological control and paternal psychological control. We chose not to include the total score of parental psychological control, i.e., the sum of the scores of the two scales, because we were interested in observing

perceptions of maternal and paternal parenting styles separately from each other to see if differences emerged in perceptions of the two parental figures and if so, whether a different impact on the variables analyzed would be found. The construct thus determined proved to be sufficiently stable and robust, with very satisfactory indices of fit. As for the mediator, which in our model is represented by distress overtolerance, we used the Distress overtolerance (DSO) scale, referring to its total score rather than to the two different scores related to the two constituent scales: 'ability to harm' and 'fear of negative evaluation'. The choice to use only the total score of the questionnaire arose from the intention to observe how the individual tendency to overtreat stressful situations as a whole, regardless of the specific weight that each of the two constituent scales may have, can act directly on the dependent variable constituted by binge eating disorder and as a mediator in the indirect relationship between the latter and the predictor variables. Finally, with regard to the dependent variable represented by uncontrolled eating disorder, we used the Binge Eating Scale in its total score, given by the sum of the responses of all 16 items that make up the questionnaire.

Since this construct showed good fit indices and the resulting model appeared robust and stable, it was decided to use it as the final model for the mediation analysis. The results that the model thus identified - reported in the structural equation modeling analysis - indicate that the

direct effects of the MPC predictor variable on uncontrolled eating disorder are significant and seem to confirm the results of previous studies and the initial hypotheses proposed in this research. Different matter for PPC whose direct effects on BED were not found to be significant. Nevertheless, the indirect effect of both independent variables on binge eating disorder through distress overtolerance was found to be statistically significant, thus confirming our initial hypotheses.

The results are presented in Figure 2 and Table 3.

Errore. L'origine riferimento non è stata trovata.

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Discussion

The research findings seem to confirm our initial hypotheses, showing that the perception of being subjected to a high level of psychological control by parents may directly and indirectly influence, through the tendency to overtolerate distress, the development and/or maintenance of binge eating symptoms among young adults aged 18-30 years. Family functioning, communication among family members, perception of family support, and parent-child relationships appear in the literature as relevant protective or risk factors that are strongly involved in the development and/or maintenance of various and heterogeneous psychological distress, particularly those related to the perception of one's body image and the desire to control weight and body shape, such as eating disorders, compulsive exercise, body dysmorphia, and muscle dysmorphia (Amianto et al., 2021; Costa

et al., 2015; Depestele et al., 2017; Erriu et al., 2020; Giordano et al., 2023, 2024; Robertson, 2020; Romm et al., 2020).

Research recognizes among the most involved the factors in the psychological impairment of adolescents and young people, particularly in the area of eating disorders, a parenting style based on high psychological control, which consists of parents behaving or being perceived as overprotective, hypercontrolling, poorly involved emotionally and empathetically, poorly able to communicate effectively with their children, and above all, poorly inclined to foster their autonomy, independence and decision-making ability. The literature shows that among eating disorders, one of the most common and widespread in the youth population seems to be uncontrolled eating disorder (BED) (Giel et al., 2022); Keski-Rahkonen, 2021), which is characterized by recurrent episodes of objective overeating, without the presence of inappropriate compensatory behaviors, accompanied by the feeling of having lost control over one's eating, the tendency to gain weight, the risk of obesity, cardiovascular and musculoskeletal diseases, and feelings of shame, social isolation and chronic loneliness condition (Agüera et al., 2020; Almeida et al., 2020; Giel et al., 2022; Hilbert et al., 2020; Mohajan, 2023).

Scholars point out that the prevalence and impact of this disorder are of great concern because of the profound association of BED with psychosocial impairment and psychiatric comorbidity, including post-traumatic stress

disorder, substance abuse, mood disorders, suicide risk, as well as significant medical comorbidities such as obesity, type 2 diabetes, hypertension, (Agüera et al., 2020; Keski-Rahkonen, 2021; Mohajan, 2023; Udo & Grilo, 2018). At the same time, research highlights that current used interventions for BED appear to have insufficient efficacy, with a high percentage of patients, nearly 50 percent, failing to achieve complete remission of binge symptoms, as reported by Linardon (2018) in his meta-analysis of 39 randomized controlled trials with 65 treatment conditions, 40 of which were represented by cognitive behavioral therapy, and a total of 2,349 patients. (Linardon, 2018). Thus, there is an urgent need to increase knowledge of the potential risk and maintenance factors that influence the development and chronicity of BED and prevent complete remission of symptoms, in order to identify more targeted strategies that could significantly contribute to improving the effectiveness of clinical interventions. (Forester et al., 2023). Among the factors that may play a significant role in the course of the disorder, studies identify certain individual characteristics that appear to inhibit functional behaviors related to body care and attention, eating habits, and exercise management in adolescents and young people. Among the most common characteristics in individuals suffering from body image, eating, and exercise disorders, the literature highlights perfectionism (Bardone-Cone, 2020), emotional dysregulation, cognitive rigidity (Hovrud et al., 2020; Schaefer et al., 2020;

Williams-Kerver, 2020), hypercontrol with difficulty experiencing and accepting change, and uncertainty (Reilly et al., 2021). In this area, an interesting individual trait, related to those mentioned above but still under-researched, is the tendency to over-tolerate distress despite the knowledge that it compromises one's physical and psychological well-being (Rand-Giovannetti et al., 2022). Individuals who tend to tolerate discomfort excessively tend to ignore their feelings and emotions and move on, often regardless of whether this state of stress actually leads them to achieve their goals, which sometimes do not even correspond to what they really want and expect (Howells et al., 2024). Individuals who over-tolerate discomfort tend to experience in their lives only the dimension of duty, progressively losing the ability to have fun, to relax, to be carefree, and to take an interest in aspects of personal development outside of duties and stress resistance, all traits that appear prevalent and common in at-risk or eating-disordered individuals. Excessive discomfort tolerance often appears to be an end in itself and is aimed solely at proving to oneself and others that one is capable of completing set tasks even in adversity and at the cost of one's mental and physical well-being. Our research has shown that a high level of overtolerance of distress and parental relationships characterized by psychological hypercontrol by parents/caregivers, manifested by intrusiveness and restriction of children's self-determination, corresponding to less attention and lack of

physical displays of affection and emotional closeness, appear to be important risk factors for the development and maintenance of binge eating disorder in young adults, evidencing significant both direct and indirect effects on it. Specifically, in our study, maternal psychological control seems to have a strong direct and indirect effect on BED through mediating distress overtolerance. As for paternal psychological control, it did not show a significant direct effect on BED, but at the same time revealed a significant indirect effect on the disorder through mediating distress tolerance. In future research, it would be interesting to examine the differential impact of parental figures on BED symptomatology using additional self-report questionnaires that can explore in more detail communication and relationships with maternal and paternal figure, as well as the functioning of the family as a whole. It would also be appropriate to supplement these instruments with qualitative interviews that would allow for more comprehensive data collection. Another goal in this regard might be to try to recruit a more gender-balanced sample, with a higher proportion of males than in the current study, to test whether the non-significance of the direct effect of perceived paternal psychological control on uncontrolled eating disorder might also have been influenced by the much higher proportion of females who participated in the current study.

Conclusions

The results of our investigation confirm the initial hypotheses and assumptions in the literature, underscoring the central role that a parenting style based on high psychological control over children and an individual tendency to over-tolerate distress can have on the psychological well-being of young people, particularly on the genesis of dysfunctional eating behaviors that can evolve into eating disorders, in the case of our study the binge-eating disorder. It is likely that young adults who have since childhood experienced parents who excessively controlled their behaviors, judged their achievements severely, trying to make them in line with their goals and expectations, limiting their self-determination and autonomy, have developed tendencies toward perfectionism, hypercontrol rigidity and tolerance of high levels of distress and discomfort. These were means of satisfying the need to meet parental expectations and desires and to gain positive evaluation and appreciation from others, demonstrating that they are able, while achieving their goals, to complete exhausting tasks regardless of their individual physical and emotional states, feelings and desires. However, it should be noted that the cross-sectional nature of the study and the exclusive use of self-reported instruments result in some limitations in the interpretation of the study results.

Limitations

The present study has several limitations. First, the cross-sectional nature of the study design

precludes the possibility of making causal inferences among the variables under study. In fact, because of their inherent characteristics, cross-sectional models can only represent a specific moment in the much larger pathways and operations of the variables under investigation. To confirm the validity of the selected mediation model, future research should use longitudinal or experimental designs that provide a more complete and detailed understanding of the interaction between the examined variables. Such models allow for a more thorough evaluation of the results derived from the cross-sectional model. They allow causal inferences to be drawn and provide stronger evidence for the existence and functionality of the hypothesized relationships between the variables analyzed. A notable shortcoming of the present study is its exclusive reliance on self-report instruments, unsupported by qualitative diagnostic or confirmatory interviews. Although self-report instruments are undoubtedly the quickest method of data collection, they are not without inherent limitations. Self-reported responses may be exaggerated, respondents may be too embarrassed to reveal personal details, and various biases may influence the results. These include social desirability, appreciation, indulgence, acquiescence, and the need for consistency and rationality (Choi. & Pak, 2004). In addition, the failure to understand some words, the presence of sentences in negative form, or the use of language that might elicit

ambiguous or ambivalent interpretations may hinder participants' ability to respond promptly or effectively, especially when they are inattentive or influenced by the framing effect (Choi & Pak, 2004). The influence of personal memories and emotions on the interpretation of events, particularly those in the past, can also be a source of frequent and sometimes significant bias in participants' approach to questionnaires. To improve the accuracy and validity of such instruments, qualitative methods and/or clinical interviews should be incorporated with the aim of mitigating the limitations typically associated with self-report instruments. A viable strategy to mitigate this bias would be the implementation of a longitudinal design, which can reduce the inherent limitations associated with self-report interviews and improve understanding of the nature and direction of the relationships among the variables being examined. In addition, it would be useful to expand the study population by involving a sample of adolescents to gain a more complete understanding of the phenomenon and observe its characteristics and dynamics in the transition from adolescence to adulthood. The study of a population of other age groups would make it possible to observe the evolution of the phenomenon analyzed, particularly with regard to the impact that parenting style can have in a period of life inherently characterized by transformations and conflicts in parent-child relationships and communication, such as adolescence. This analysis would allow us to study, in a diachronic

dimension, the effects of parental psychological control from adolescence to young adulthood, with the possibility of comparing perceptions of parental psychological control from the perspective of adolescents and young adults and identifying early signs of distress that may be related to it. Furthermore, it would allow us to examine the coping mechanisms that adolescents use to deal with stressful situations, which tend to become more stable and defined in adulthood, and the effects that the tendency to over-tolerate distress may have on eating disorders, which often emerge during adolescence and are likely to become chronic in adulthood.

Future Directions

The results of the present study, despite the important limitations mentioned above, may provide insights for the design and testing of clinical, social, or educational interventions to address binge eating disorder among young adults. From this perspective, the exploration of potential risk and protective factors related to binge eating disorder is crucial to make prevention and treatment interventions more effective and timelier, and to identify strategies that are more targeted to the specific characteristics of individuals experiencing the BED symptomatology. In the context of prevention, it would be useful for school professionals to pay attention to children and adolescents who have difficulty coping functionally with stressful tasks, while

experiencing negative emotions and a progressive deterioration of their social relationships and mental and physical health. Moreover, school professionals could be encouraged to pay attention, particularly with regard to adolescents and preadolescents, to potential dysfunctional eating behaviors and attitudes that may also emerge as a coping mode to tolerate a high level of stress in order to meet parental expectations and feel worthy of their love and appreciation. The fear of not meeting others' expectations and the strong need to avoid negative evaluation by others, even at the expense of one's own well-being and personal satisfaction, seem to share the experience of being subjected to parental psychological hypercontrol, dysfunctional distress tolerance, and the development of binge eating symptomatology. For these reasons, it might be important for professionals dealing with eating disorders, particularly binge eating, to pay attention to the role of the family context, particularly how individuals with BED or at risk of BED perceive attitudes and modes of interaction and communication with parents. In light of our findings, we believe that focusing on the relationships that adolescents and young people have with their parents/caregivers, by designing and implementing interventions aimed at improving parent-child interaction and communication and, through it, increasing autonomy and self-determination, can have a positive spin-off in preventing and overcoming binge-eating disorder and related distress.

Similarly, early recognition of the tendency of these individuals to be overly perfectionistic and persistent in completing tasks, even in the presence of illness and unhappiness - an attitude that several scholars and clinicians highlight as typical of eating disorders - can be very helpful. Based on the latter considerations, an important strategy may be to work on young people's management and expression of emotions and cognitive rigidity: here the aim would be to unhook the tendency to hypercontrol which was learned from their parents and then reposed by themselves through dysfunctional interaction with their bodies and maladaptive resistance to pain, improving their ability to respond functionally to difficulties and promoting the practice of more functional coping strategies in dealing with stressful situations.

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Figure 1. The figure portrays the mediation model that was utilized. For purposes of clarity, only the direct paths are reported; parcels are not reported.

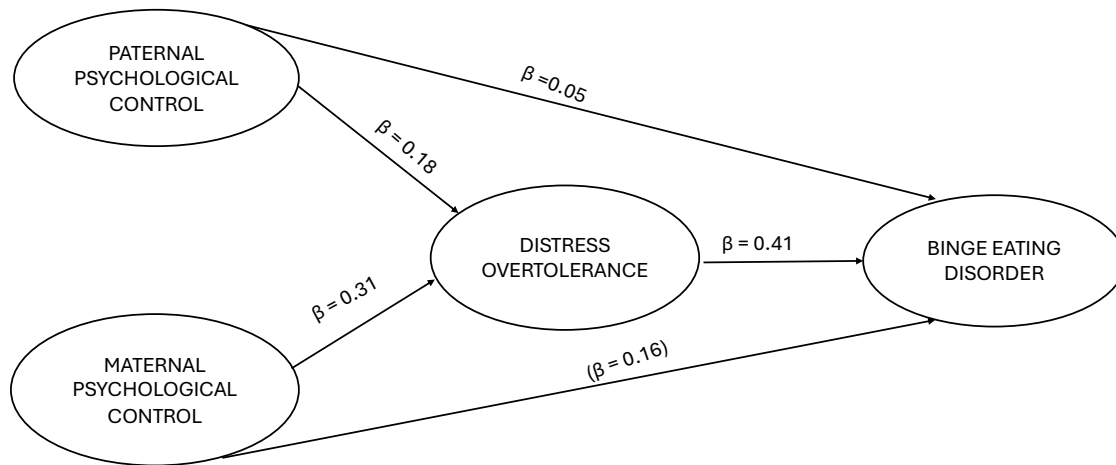


Table 1. Descriptive analyses, reliability and correlations

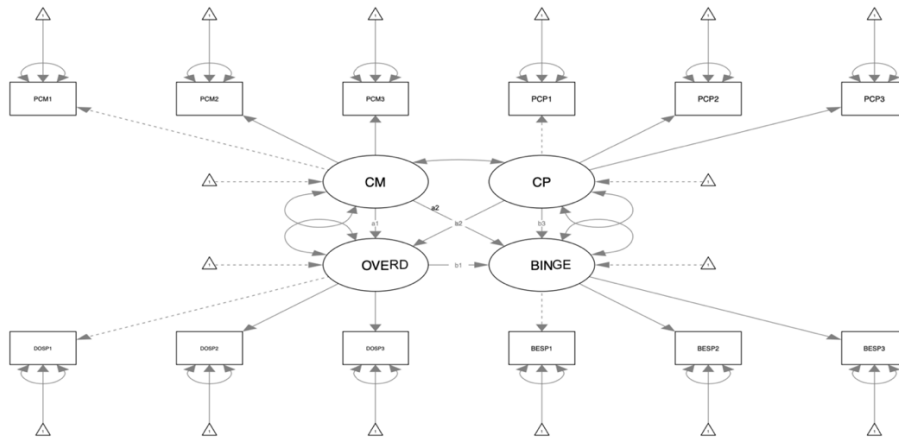
	M	SD	S	K	α	1	2	3
1. Distress overtolerance	88.4	29.9	.07	-.67	.92	-	-	-
2. Binge eating disorder	9.0	9.3	1.43	.76	.92	.46*	-	-
3. Paternal psychological control	11.9	4.0	1.17	.66	.86	.29*	.23*	-
4. Maternal psychological control	12.6	3.8	.84	-.05	.83	.35*	.31*	.39*

Note: N = 1024. *p < .01.

Table 2. Goodness-of-fit indices of the measurement models

	χ^2	p	CFI	TFI	SRMR	RMSEA
Fit Indices	(48)=99.83	<.01	.99	.99	.02	.03

Figure 2. Sem Path of the selected model



Note: This figure outlines the Sem Path of the selected model, determined through the parceling approach. Specifically, in the plot, circles represent latent variables, rectangles represent observed variables, and triangles represent measurement errors. CM = Maternal psychological control with PCM1, PCM2, PCM3 representing its three constituent parcels; CP= Paternal psychological control with PCP1, PCP2, PCP3 representing its three constituent parcels; OVERD = Distress over-tolerance with DOSP1, DOSP2, DOSP3 representing its three constituent parcels; BINGE = Binge eating disorder with BESP1, BESP2, BESP3 representing its three constituent parcels. Only the direct paths are shown in the figure to ensure a clear reading of the model. The paths a1 shows the direct effect between maternal psychological control and distress over-tolerance, b1 shows the direct path between distress over-tolerance and binge eating disorder, a2 indicates the direct effect of maternal psychological control on binge eating disorder, b2 shows the direct path of paternal psychological control on distress over-tolerance, b3 represents the direct effect of paternal psychological control on binge eating disorder. For more details, see Table 3.

Table 3. Path Estimates of the structural model, SE and 95% CIs

Direct effects	β	p	SE	CI LL	CI UL
CP → OVERD	0.18	< .001	0.04	0.11	0.29
CM → OVERD	0.31	< .001	0.05	0.25	0.43
OVERD → BINGE	0.41	< .001	0.04	0.36	0.52
CP → BINGE	0.05	0.186	0.04	-0.03	0.15
CM → BINGE	0.16	< .001	0.05	0.09	0.28

Indirect effect of CP via OVERD	β	p	SE	CI LL	CI UL
CP → BINGE	0.07	< .001	0.02	0.05	0.13

Indirect effect of CM via OVERD	β	p	SE	CI LL	CI UL
CM → BINGE	0.13	< .001	0.02	0.10	0.19

Note: The following table shows the values of standardized beta coefficients, standardized errors, p values and maximum and minimum levels of confidence intervals. OVERD = Distress overtolerance; CP = Paternal psychological control; CM = Maternal psychological control; BINGE = Binge eating disorder; β = standardized beta coefficient; p = level of significance; SE = standard error BC 95%; CI = confidence interval; LL = lower limit; UL = upper limit.

3.2.3 Discussione

Lo studio ha indagato l'impatto del controllo psicologico materno e paterno sul disturbo da alimentazione incontrollata (Binge Eating Disorder, BED), analizzandone gli effetti diretti e indiretti mediati dall'eccessiva tolleranza allo stress.

I risultati mostrano che un elevato controllo psicologico genitoriale, caratterizzato da intrusività, limitazione dell'autonomia e scarsa espressione affettiva, rappresenta un fattore di rischio per lo sviluppo del BED. In particolare, il controllo materno esercita effetti diretti e indiretti significativi sull'alimentazione incontrollata, mentre quello paterno, pur non mostrando effetti diretti statisticamente significativi, incide indirettamente attraverso la mediazione dell'ipertolleranza allo stress. Quest'ultima si manifesta quando l'individuo, pur consapevole dei danni causati dallo stress, non riesce a ridurlo né a porsi limiti adeguati. Tale profilo si associa a negazione dei bisogni emotivi e corporei, eccessiva focalizzazione sul dovere e difficoltà nel provare piacere e nell'essere spontanei. In letteratura sono state evidenziate correlazioni significative tra un'eccessiva tolleranza allo stress e disturbi psicologici quali depressione, ansia, disturbo da stress post-traumatico, autolesionismo e rischio di suicidio (Chung et al., 2025; Zegel et al., 2023).

L'ipertolleranza allo stress appare quindi come una forma rigida di perseveranza, volta a mantenere un'immagine di forza e controllo, spesso a scapito del proprio benessere psicofisico.

Ciò suggerisce che la sperimentazione precoce di un ambiente familiare controllante e poco empatico favorisca la costruzione di modelli di sé basati sulla soppressione dei bisogni emotivi e corporei pur di dar prova a oltranza di spirito di sacrificio e di determinazione, forza e perseveranza nel compiere i propri doveri. Tali modelli possono sfociare, nel tempo, in condotte compensatorie come l'alimentazione incontrollata, che offre un sollievo momentaneo alle tensioni interne. Gli interventi clinici dovrebbero quindi concentrarsi non solo sulla regolazione alimentare, ma anche sulla ricostruzione di un rapporto equilibrato con le emozioni e con il corpo.

3.2.4 Implicazioni pratiche e prospettive future

I risultati del presente studio offrono indicazioni di rilievo per l'individuazione e la programmazione di interventi clinici, sociali ed educativi finalizzati alla prevenzione e al trattamento del *Binge Eating*, in particolare nella popolazione dei giovani adulti. In questa prospettiva, l'analisi dei fattori di rischio e di protezione risulta cruciale per la costruzione di strategie di intervento precoci, mirate e sensibili alle caratteristiche individuali e contestuali. In ambito preventivo, appare fondamentale che, nel contesto scolastico, insegnanti ed educatori prestino attenzione a bambini e adolescenti che manifestano difficoltà nell'identificazione e

nell'utilizzo di strategie di *coping* funzionali per la gestione delle emozioni negative, dello stress e delle frustrazioni, nonché all'emergere di comportamenti alimentari disfunzionali utilizzati come modalità di fronteggiamento di conflitti relazionali e vissuti di ambivalenza, soprattutto in contesti familiari caratterizzati da stili genitoriali eccessivamente controllanti, critici e orientati alla performance.

All'interno di questo quadro, il presente studio introduce un contributo teorico innovativo attraverso l'approfondimento del costrutto di *distress overtolerance*, inteso come la tendenza a tollerare in modo rigido e prolungato livelli elevati di stress psicofisico, pur in presenza di una consapevolezza dei costi emotivi e somatici associati a tale esposizione. Questo costrutto consente di ampliare i modelli esplicativi tradizionali del *Binge Eating*, superando una lettura centrata esclusivamente sulla disregolazione emotiva o sull'impulsività, e mettendo in luce come il comportamento alimentare disfunzionale possa rappresentare l'esito di un processo cumulativo di iper-controllo e auto-soppressione dei bisogni, piuttosto che una semplice perdita di controllo.

I risultati suggeriscono che la *distress overtolerance* possa configurarsi come un meccanismo di vulnerabilità trasversale, capace di integrare in un unico quadro interpretativo esperienze precoci di iper-controllo e scarsa validazione emotiva, lo sviluppo di perfezionismo, rigidità e iper-adattamento, e la successiva comparsa di condotte alimentari disfunzionali. In tale prospettiva, il *Binge Eating* emerge come una risposta compensatoria e tardiva a un funzionamento orientato alla prestazione e alla resistenza a oltranza, in cui l'abbuffata assume la funzione di temporanea sospensione della pressione interna ed esterna. Il corpo diventa così il principale luogo di espressione della sofferenza, trasformandosi progressivamente in un "campo di battaglia" su cui vengono agite pratiche disfunzionali quali diete estreme, cicli di abbuffata, esercizio fisico eccessivo e carichi di stress psicofisico elevati, spesso finalizzati a dimostrare a sé stessi e agli altri il proprio valore personale.

Alla luce di tali evidenze, appare fondamentale che i professionisti che operano nell'ambito dei disturbi dell'alimentazione, in particolare con individui a rischio o con sintomatologia di *Binge Eating*, prestino attenzione non solo ai comportamenti alimentari, ma anche alle modalità di relazione con lo stress, alla capacità di porsi e accettare limiti e al contesto familiare di riferimento. Ne deriva la necessità di interventi che agiscano sia sul piano individuale sia su quello sistemico, promuovendo una ridefinizione del valore personale non più ancorata alla *performance* o alla capacità di sopportazione, legittimando i bisogni emotivi e corporei e sostenendo adolescenti e giovani adulti nei loro percorsi di autonomia, individuazione e indipendenza. In questo senso, l'introduzione della *distress overtolerance* rappresenta un avanzamento concettuale rilevante, offrendo nuove prospettive teoriche e cliniche per la prevenzione e il trattamento del *Binge Eating*.

3.3 Studio 3: *Perception of Loneliness in Adolescence: Role of Maladaptive Personality Traits and Trauma-Related Symptomatology*

3.3.1 Sommario

Lo studio esplora la solitudine, intesa come percezione di un divario tra le relazioni sociali desiderate, sia in termini di qualità che di quantità, e quelle effettivamente esperite in adolescenza. Nello specifico, la ricerca mira a identificare il possibile ruolo che i tratti di personalità disadattivi individuati dal DSM-5 e raggruppati in cinque domini (affettività negativa, distacco, antagonismo, disinibizione, psicoticismo) e la sintomatologia da stress post-traumatico, sotto forma di Disturbo da Stress Post-Traumatico (PTSD) e Disturbo dell'Auto-Organizzazione (DSO) possono esercitare sulla percezione della solitudine.

È stato identificato un modello di mediazione per esaminare la sintomatologia del PTSD e DSO come variabili indipendenti e la personalità disadattiva come mediatore, nella percezione della solitudine in una popolazione di 901 adolescenti (14-17 anni) di entrambi i sessi. Sono emersi effetti indiretti significativi del PTSD ($\beta = 0.05$; $p < 0.001$) e in misura maggiore del DSO ($\beta = 0.14$; $p < 0.001$) sulla solitudine attraverso la personalità disadattiva.

Tali risultati evidenziano la necessità di una valutazione precoce dei sintomi da stress post-traumatico e di sviluppo di strategie funzionali per affrontare e superare esperienze avverse così come di una altrettanto tempestiva rilevazione di tratti di personalità disfunzionali, al fine di individuare interventi mirati atti a migliorare le competenze comunicative e relazionali degli adolescenti riducendo il rischio di solitudine.



Article

Perception of Loneliness in Adolescence: Role of Maladaptive Personality Traits and Trauma-Related Symptomatology

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Abstract: Background/Objectives: Loneliness is a heterogeneous phenomenon, generally defined as an emotional experience based on the perceived distance between an individual's actual social relationships and those he or she would like to have. Adolescence is particularly vulnerable to loneliness because of the many changes in values, feelings, and emotions that characterize it. Among the aspects that may influence this feeling of discomfort, the literature identifies maladaptive personality and a dysfunctional response to traumatic events. Our study aims to identify the possible role that maladaptive personality traits and post-traumatic stress symptomatology in the form of Post-Traumatic Stress Disorder (PTSD) and Disturbance in Self-Organization (DSO) may play in the perception of loneliness in adolescents: Methods: We identified a mediation model constructed through structural equation modeling (SEM) to test PTSD and DSO post-traumatic stress symptomatology as independent variables and maladaptive personality as a mediator in the relationship between these and perceptions of loneliness in a population of adolescents of both sexes, Italian high school students; Results: Our study identifies the significant role of PTSD and DSO symptomatology in influencing the state of loneliness, both directly and indirectly through maladaptive personality traits, which appear to exert a substantial influence on the perception of loneliness, potentially functioning as mediators in the relationship between the latter and PTSD/DSO symptomatology. Presumably, a maladaptive personality may complicate recovery from adverse and traumatic experiences by preventing the implementation of functional coping strategies and promoting dysfunctional responses. Conclusions: Our findings underscore the importance of researchers and clinicians adequately considering different personality traits and the early identification of post-traumatic stress symptomatology. A focus on adolescents' communication and interpersonal skills and their ability to respond effectively to stressful and traumatic events may prove useful in identifying more effective strategies for preventing and managing loneliness and related distress in adolescents.

Keywords: loneliness; personality; trauma; adolescence



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1. Introduction

Human beings are social creatures who flourish when they have meaningful relationships with others [1–4]. However, in today's society, an increasing number of individuals report difficulties in meeting people, socializing, forming friendships, romantic relationships, or other supportive connections, as well as managing the relationships they already have [5,6].

In the context of the difficulties encountered when trying to meet people in the physical world, the online context seems to be the only possible tool for creating and managing relationships. However, it appears that the prevalence of loneliness is increasing globally in conjunction with a surge in social media use (SMU), as evidenced by the parallel growth in the number of individuals using social media platforms such as Facebook, Instagram, and TikTok and the sense of loneliness.

The increase in loneliness and lack of social connections may seem paradoxical in light of the constant stream of new communication technologies that offer unlimited opportunities to socialize and engage in social interactions with a greater number of interlocutors [7,8]. Certainly, online relationships can represent a new and interesting opportunity for socialization, as they are able to connect people from different countries and backgrounds, facilitating encounters, communication, and comparison, especially among adolescents and young adults, who are the main users of social media; however, many researchers have reported that these virtual relationships do not seem to be an effective antidote to the perception of loneliness, especially among younger people.

Arguably, despite the convenience and endless resources of the Internet and social media, it remains difficult to establish and maintain solid, supportive, and appreciative relationships, and as a result, an increasing number of people perceive a persistent sense of loneliness in this digital age [7,8]. Especially during adolescence, social networking sites (SNSs) seem to play a significant role in the phenomenon analyzed, with an increase in the number of young people who engage in online self-disclosure, but at the same time are enclosed and not accessible to the offline world, resulting in a greater negative impact on their levels of loneliness [7,9,10].

The concept of loneliness is inherently complex and difficult to define. Scholars have offered a variety of definitions and perspectives in describing the phenomenon [11–13]. The most important point of convergence among these authors is the identification of loneliness as a subjective experience, independent of the actual social and relational context in which individuals find themselves [2,6,14]. In fact, many scholars agree in defining loneliness as a form of psychological distress experienced in response to perceived deficits in one's social relationships [7,14–17], more specifically, as the result of a perceived discrepancy in both quantity and quality [6,7,14] between desired and actual social relationships, emphasizing its difference from social isolation, considered as a concrete and physical lack of social ties [4,16,17].

The researchers also distinguish between loneliness in some respects physiological and even functional, which is a common experience that many individuals will encounter at some point in their lives, and loneliness as a maladaptive coping mechanism that is a source of suffering for individuals who experience it, affecting their current and future psychophysical well-being. They argue that the distinction depends mainly on the duration of the feeling of loneliness, that is, whether it is transient or not [4,16,18]. Indeed, loneliness is considered an intrinsic biological alarm system that plays a central role in adaptive and motivational processes [19]. It signals potential problems in an individual's social relationships, eliciting a distress response [18,20]. This prompts individuals to invest time and energy in maintaining or repairing their social ties in order to alleviate the distress associated with loneliness [6,14,18,20]. Therefore, if the circumstances responsible for this unpleasant feeling are resolved in due time, it is unlikely to persist over time and be pervasive in all situations. Conversely, a chronic and prolonged state of loneliness may represent a maladaptive and dysfunctional coping strategy that may act as a predictor and/or fundamental maintenance factor for numerous physical and psychological complaints, resulting in significant impairment or long-term negative consequences for the health of individuals

who experience it [18,20], inevitably affecting their psychological well-being and social functioning [6,14,21].

An interesting theory proposed by Hawkley and Cacioppo (2010) that highlights the profound interaction between loneliness and psychological impairment is the “loneliness loop” [2,22,23]. This theory posits that individuals who perceive themselves as socially isolated tend to perceive their environment as unsafe and potentially dangerous. Consequently, they exhibit heightened vigilance for external stimuli, which may contribute to the maintenance of their social isolation [4]. A reduction in social contact may result from the development of cognitive biases associated with the perceived unsafety of the external world and human relationships. This reinforces the individual’s social isolation, which in turn makes it increasingly challenging to establish social relationships. Consequently, the individual may attribute responsibility for his/her condition of isolation to others, which may lead to feelings of being unloved, hostility, anger, stress, low self-esteem, self-disgust, anxiety, restlessness, and despondency [7,17,24,25]. In fact, studies reveal that among individuals who complain of loneliness, it is not uncommon to engage in self-deprecating discourse, including making disparaging remarks about their abilities, comparing themselves unfavorably to others, or offering apologies for circumstances that were not their responsibility [17,20].

The literature points to a deep interconnection between the perception of loneliness and a range of psychological disorders, including depression and anxiety, self-harm, suicidal ideation [5,16,18,25], disordered eating [11,12], and substance addictions and dysfunctional behaviors [26,27], as well as post-traumatic stress disorder (PTSD) and complex PTSD symptomatology [22,23,28,29].

The latest version of the World Health Organization’s International Classification of Diseases 11th Revision (ICD-11) [30,31], published in 2018 and effective from January 2022, includes a new definition of post-traumatic stress disorder (PTSD) consisting of six symptoms and a new diagnosis of complex post-traumatic stress disorder (CPTSD) that covers twelve symptoms (six PTSD symptoms and six “disturbance in self-organization” [DSO] symptoms), each organized in three clusters of symptoms. The PTSD clusters encompass the re-experiencing of the traumatic event in the present, avoidance of reminders of the trauma, and a sense of current threat. CPTSD is characterized by the presence of the three PTSD clusters and three additional symptom clusters that reflect the disturbance in self-organization (DSO): affective dysregulation, negative self-concept, and disturbances in relationships. In order to meet the criteria for a diagnosis, both PTSD and CPTSD must be accompanied by traumatic exposure and a notable decline in functioning [13].

As evidenced in the literature, there is a potential correlation between loneliness and an increased likelihood of manifesting symptoms of Post-Traumatic Stress Disorder (PTSD) and Complex Post-Traumatic Stress Disorder (CPTSD) through various proposed pathways, among which, a considerable number of authors have identified a kind of cyclical relationship between the distress caused by loneliness and that caused by stressful and traumatic experiences [15,20,28,29]. For instance, research has indicated that both conditions share a number of negative cognitive biases, particularly a state of hypervigilance resulting from the perception of continuous threats, regardless of the presence of risks and dangers in the environment [20]. Other common symptoms reported by individuals in both conditions include re-experiencing/intrusion symptoms, avoidance symptoms, negative evaluations of the world, experience of self-disgust, poor sleep quality, and feelings of alienation, detachment, and estrangement from others [17,32].

Some researchers have observed that loneliness hinders the process of coping with and overcoming traumatic experiences, particularly by prolonging and complicating the natural recovery process after bereavement [7,20,28,29]. The relationship between loneliness and

PTSD symptomatology may be understood in two ways. It is evident that a state of loneliness increases the probability of developing PTSD and the duration of its symptoms. In fact, loneliness can lead to social withdrawal [2,4], which can be used as a coping strategy in response to PTSD symptoms, which actually ends up perpetuating PTSD symptoms [32,33].

However, the reverse process may also occur, whereby PTSD symptoms, particularly social withdrawal and relationship difficulties, can lead to behaviors that result in social isolation and intensify feelings of loneliness [17,33].

Based on the results of the above studies, it was decided to conduct further investigation into the potential impact of symptomatology associated with post-traumatic stress disorder (PTSD) and disturbance in self-organization (DSO) on the perception of loneliness. In light of the existing literature, it can be posited that one of the most interesting factors associated with trauma response symptomatology and the perception of loneliness is the influence of personality traits, particularly maladaptive ones.

In fact, in accordance with Osler's (1899) assertion that "It is more important to know the person with the illness than the illness the person has", it may be beneficial to direct attention not only to the symptoms of psychological disorders but also to the underlying personality-related propensity for psychopathology [34]. This approach could enhance both prevention and care interventions by focusing on the specific characteristics of the individual rather than solely on the psychopathology features and symptomatology.

Some scholars have demonstrated that loneliness and personality are closely interrelated, with an association between loneliness and each of the Big Five personality traits [15,35]. The findings indicate a significant association between loneliness and lower perceived conscientiousness, extraversion, and agreeableness, as well as higher neuroticism [15,35]. Conversely, it appears that there is no significant association between loneliness and openness to experience [35], even if the assumption that loneliness is closely related to personality characteristics does not preclude the possibility that there are some individuals who are lonely but nevertheless able to interact effectively in a number of contexts and situations.

In accordance with Costa and McCrae's (1980) five-factor personality model (FFM), the most consistent relationships with loneliness and well-being were identified for neuroticism and extroversion [35,36]. The first was identified as the strongest correlate for reduced well-being and enhanced loneliness. In fact, neuroticism is defined as a personality trait characterized by a tendency to experience negative emotions and a heightened level of distress in response to changing life circumstances. Those who are emotionally unstable (i.e., individuals high on neuroticism) experience fear, depression, and guilt more frequently than those who are emotionally stable and are also more sensitive to cues of social rejection as well as more susceptible to stress and changes in life situations. Consequently, they tend to have more dysfunctional interpersonal relationships and are less satisfied with their relationships. Extraversion, in turn, is associated with engaging in and deriving pleasure from social interactions, participating in social activities, and having a larger number of social connections. Individuals with a high level of extroversion tend to receive more social support from others, suggesting that they can count on more social support when facing stressful or adverse events. Furthermore, individuals high in extraversion demonstrate a greater capacity to experience a positive effect and to maintain it over time, particularly in the context of emotionally ambivalent situations. Extroverts, therefore, typically show a reduced sense of loneliness and greater well-being than introverts, for whom maladaptive cognitive strategies, such as rumination or catastrophizing, were found to be associated with high levels of loneliness [35,36].

In 2013, the American Psychiatric Association introduced an alternative model for personality disorders in the DSM-5 (Diagnostic and Statistical Manual of Mental Disorders, 5th edition) which includes five maladaptive personality traits [37,38]. These domains are regarded as extreme variants of the five-factor model. Negative affectivity, which may be conceived of as the opposite of emotional stability, is associated with a range of emotional states and behaviors, including anxiety, depression, and anger. The trait of detachment (which is the opposite of extraversion) is expressed by the avoidance of social or emotional situations through social withdrawal and the restriction of affectivity. Those with elevated scores in antagonism (the polar opposite of agreeableness) tend to engage in behaviors that precipitate interpersonal discord. Individuals with high scores in disinhibition (the opposite of conscientiousness) tend to prioritize immediate gratification and engage in impulsive behavior. Finally, psychoticism (the inverse of openness) is associated with inappropriate or unconventional conduct, as well as hallucinatory phenomena and peculiar inner experiences [39,40].

Maladaptive personality traits have been demonstrated to frequently co-occur with interpersonal difficulties. In fact, the literature suggests that individuals with maladaptive personalities often encounter significant challenges in their interpersonal relationships, which can lead to increased anxiety, feelings of inadequacy, and social isolation [20,41].

Maladaptive personality traits are associated with an increased risk of psychological distress due to their tendency to be positively correlated with avoidant/maladaptive behaviors and negatively correlated with acceptance and positive reframing, which are forms of coping [32,42].

For instance, among the elderly, personality traits of psychoticism and antagonism emerge as particularly potent predictors of relationship difficulties [43]. Additionally, certain personality traits among adolescents and young adults may impede their ability to form connections with others, potentially leading to feelings of loneliness. These traits include shyness, introversion, unsociability, and neuroticism [7].

Regardless of age, individuals with high levels of abnormal personality dimensions often show a tendency to avoid social situations and activities and may prefer solitude even in the presence of others [44].

Some scholars identify an association between maladaptive personality traits and the presence of internalizing distress symptoms in adults who have experienced childhood trauma [34,45]. Others point to a correlation between maladaptive personality traits and substance abuse and/or dysfunctional behaviors, particularly Internet-related disorders, gaming disorders, and binge-watching [45,46]. These disorders seem to be related to high negative affectivity and disinhibition. The former is characterized by a preponderance of negative affective states, including anxiety, sadness, anger, and other dysphoric moods. The second is suggestive of a propensity for immediate gratification and impulsive behavior. Both aspects are key features of addictive behaviors and serve as primary maintenance factors [47].

Other psychological discomforts associated with maladaptive personality traits include problematic eating behaviors. For example, the dimension of impulsivity has been found to interact with personality traits in predicting orthorexia, as suggested by Awad, E., et al. (2022), who emphasize the role that female gender, maladaptive personality traits, and impulsivity play in the development of orthorexic eating behaviors [48].

In a recent study, Reinhard, M.A., et al. (2022) found that patients with personality disorders (PDs) frequently report feelings of loneliness and disconnection [49]. Additionally, the study revealed that, compared to individuals with other mental health diagnoses, patients with PDs were the most affected by loneliness.

Personality disorders (PDs) are defined by enduring patterns of inner experience and behavior that markedly deviate from the individual's cultural norms and expectations, appearing inflexible, stable, distressing, and negatively affecting cognition, affectivity, interpersonal behavior, and/or impulse control, resulting in impaired personal and interpersonal functioning. As a result, patients with PDs have difficulty establishing and maintaining functional social relationships [49].

Comparison between personality traits and feelings of loneliness is possible thanks to studies such as the one conducted by Mund, M., et al. (2020), who showed that over the life span, the ranking order of loneliness is as stable as that of personality traits [14] and the one designed by Buecker, S., et al. (2020), who highlighted the importance of stable personality factors in explaining individual differences in loneliness [35].

In our study, we aim to explore the adolescent population to understand how much the condition of loneliness is perceived and suffered by younger people, in order to identify the factors that seem to accompany and/or promote it and whether and how the perception of loneliness may interact with other aspects of adolescents' lives, with particular attention to personality traits that may disfavor socialization and communication processes and the impact that problematic or traumatic experiences through the development of PTSD or DSO symptomatology may have on the condition of adolescent loneliness. Although all age groups may experience the unpleasant feeling of loneliness, the literature suggests that this phenomenon may be particularly pronounced in the elderly and adolescents [14]. Often the elderly, after retirement, may suffer from the absence of their socio-working environment and colleagues, or they may lose their landmarks and habits due to the death of friends or partners, or the distance from their children [22,23,50]. Similarly, adolescence is a phase of life that involves changes, particularly in the dynamics of interpersonal relationships [21,50,51]. These changes are significant both in terms of meaning and relevance, as adolescents move away from their parents, who are no longer considered a point of reference and often become the object of conflicting relationships [4,25]. In addition, the transition to a new school with new teachers and classmates, the loss of childhood friends, and the experience of first romantic relationships can all contribute to intricate interpersonal relationships and often generate experiences of loneliness [4,23,51]. During adolescence, the condition of loneliness is associated with a number of social and psychological discomforts including an increased risk of alcohol and substance addiction [27], a greater likelihood of developing depressive symptoms in young adulthood, and an elevated probability of experiencing disability and lower income in midlife [4,21].

The literature indicates that a constellation of adversities, including stressful and traumatic experiences, may be predictive of loneliness in adolescents [7,9,25].

These include psychological maltreatment and victimization, social ostracism, negative affective experiences including bullying from peers and siblings, arguments with parents, and family conflict [1,7]. Additionally, loneliness in adolescence has been linked to parental conflictual relationships and divorce, having an ill family member, poor student-teacher relationships, and problematic use of social media [1,7,25]. A common phenomenon that strongly links bullying and the problematic use of social media consists of cyberbullying, in which adolescents may take on the dual role of victim and perpetrator, thus demonstrating less ability to cope with stress and a greater degree of loneliness [7,10].

Adolescents who experience loneliness often perceive themselves and their role in social relationships in a negative manner. This perception may contribute to a state of mind that hinders social contact. Cacioppo's evolutionary theory posits that loneliness in adolescence is a consequence of heightened social sensitivity in response to the social challenges of adolescence, which among adolescents leads to a self-focused orientation that

impairs their capacity to socially reconnect [4]. More than in adulthood, loneliness may be a functional and adaptive mechanism for adolescents to establish their place in the world. However, as with adults, when this condition persists, it can impair social and interpersonal skills, increase hypervigilance and social avoidance, and reduce trust in others. This is done to protect themselves from fear or even the expectation of being rejected, isolated, or humiliated [4]. This attitude can greatly disrupt interpersonal relationships, intensifying the painful perception of loneliness and social isolation. In particular, the difficulty in trusting others and, in some cases, the inability to trust anyone, seems to be a significant factor contributing to the perpetuation of a vicious cycle of loneliness that can last for months or even years [15,25,51].

Based on the literature reviewed, we hypothesized that the presence of PTSD and/or DSO symptomatology may have an impact on the perception of loneliness in adolescence and that this interaction may be reinforced where maladaptive personality traits are observed. To test these hypotheses, we decided to conduct a mediation analysis using structural equation modeling (SEM), identifying PTSD and DSO symptomatology as the predictors, maladaptive personality traits as the mediator, and perceived loneliness as the outcome.

2. Materials and Methods

2.1. Study Design

In the present study, we performed a preliminary correlation analysis among all the variables under our study using Pearson's product moment correlation coefficients and then tested a mediation model calculated through Structural Equation Modeling in order to examine whether maladaptive personality was a potential mediator in the relationship between the independent variables identified in post-traumatic stress symptomatology, in the form of PTSD and DSO, and the dependent variable represented by the perception of loneliness.

2.2. Setting

Recruitment was carried out through an email invitation to school principals to participate in the research project. The e-mail described the characteristics and objectives of the study, the recruitment methods, the questionnaire administration methods, and the rules for informed consent. The latter was given to the students in paper form by the teachers with a request to return it signed by their parents or guardians. Students who did not return the signed consent form were automatically excluded from the study. As the questionnaires were to be administered online, it was necessary for each student to have an electronic tool, a smartphone, tablet, or PC.

Students who took part in the research were asked to fill out a self-report questionnaire, which was administered online and took about 15 min to complete. The form contained a description of the characteristics and purpose of the research, as well as the informed consent form that previously their relatives/guardians had to sign in order to view the questionnaires.

In accordance with the international guidelines of the Declaration of Helsinki 1964, last revision in 2000, and the ethical code of the Italian Association of Psychology (AIP), participation in the questionnaire administration phase was subject to the signature of an informed consent form by each participant and their parents/guardians. Participation was voluntary and no prizes or compensation were offered. Privacy was ensured at all stages of the study.

The study was approved by the Institutional Review Board of the Institute for the Study of Psychotherapies, School of Specialization in Brief Psychotherapies with a Strategic Approach (reference number: ISP-IRB-2023-5, 9 January 2023).

2.3. Participants

The study targets a population of adolescents aged 14–17 years of both sexes, recruited by the snowball sampling method through the involvement of high schools in the Italian territory that responded to the e-mail invitation to collaborate in the research by expressing their interest and willingness to participate. The only inclusion criteria were an age between 14 and 17 years and adequate knowledge of the Italian language.

2.4. Variables

A mediation analysis was drawn through structural equation modeling (SEM). A structure with PTSD and DOS, MP (Maladaptive personality), and LP (Loneliness Perception) as latent variables was used to examine a model in which PTSD and DOS are considered as predictor variables, MP as mediator, and LP as outcome.

2.5. Measurement

To measure perceived loneliness, we used the UCLA Loneliness Scale (Version 3) [24] a 20-item measure that assesses how often a person feels disconnected from others. The questionnaire contains only a few items that could be seen as asking directly about feelings of loneliness (e.g., “How often do you feel alone?”, “How often do you feel isolated from others?”), and instead focuses primarily on participants’ ratings of various qualitative features of their social networks (e.g., “How often do you feel part of a group of friends?”, “How often do you feel that there are people who really understand you?”). The scale is rated on a four-point Likert scale (from 1 = never to 4 = always), and the total score is given by the sum of all responses ranging from 20 to 80. Results indicated that the measure was highly reliable, both in terms of internal consistency (coefficient alpha ranging from 0.89 to 0.94) and test-retest reliability over a 1-year period ($r = 0.73$) [24,52,53].

The assessment of post-traumatic stress disorder (PTSD) and disturbance in self-organization (DSO) symptoms was conducted using the International Trauma Questionnaire (ITQ), which is the only validated self-report measure for the assessment of ICD-11 PTSD and Complex PTSD/DSO symptomatology [54–56]. The ITQ initially requests that the participant identify the most distressing traumatic event and the time elapsed since its occurrence. The International Trauma Questionnaire (ITQ) comprises six items for each of the PTSD symptoms, which are grouped into three clusters: re-experiencing (e.g., experiencing the traumatic event as if it were happening again in the present), avoidance (of both internal and external reminders), and sense of current threat (e.g., hypervigilance, hyperarousal). Each cluster is represented by two items. Participants are asked to indicate the extent to which they have been bothered by each symptom over the past month. Furthermore, participants indicated the extent to which these symptoms have impeded their ability to function in daily life over the past month, as measured by an additional three items. The assessment of Complex PTSD comprises the three PTSD clusters and three additional symptom clusters that reflect DSO, namely affective dysregulation, negative self-concept, and disturbances in relationships. The questions pertain to the respondents’ typical emotional states, self-perception, and interpersonal dynamics. Additionally, three items are employed to assess the extent to which these symptoms impede functional capacity in the previous month. All ITQ items are based on a five-point Likert scale, ranging from 0 (not at all) to 4 (extremely).

The diagnosis of post-traumatic stress disorder (PTSD) is based on the presence of trauma exposure and the endorsement of at least one symptom from each of the three

symptom clusters, as well as the endorsement of at least one indicator of functional impairment. The endorsement, which is defined as a score of 2 or above on the Likert scale, indicates the presence of a particular symptom. A diagnosis of Complex PTSD necessitates the endorsement of one of two symptoms from each of the three PTSD symptom clusters and one of two symptoms from each of the three Disturbances in Self-Organization (DSO) clusters. In order to meet the criteria for a diagnosis of PTSD or Complex PTSD, it is necessary to identify at least one indicator of functional impairment related to the symptoms of PTSD and at least one indicator of functional impairment related to the symptoms of DSO. The reliability of the measure was $\alpha = 0.88$ for both the PTSD and DSO subscales.

Maladaptive personality traits were evaluated using the Personality Inventory for DSM-5 (PID-5; Krueger et al., 2011) a provisional assessment instrument developed to correspond with a maladaptive personality trait model for DSM-5 [57].

The Personality Inventory for DSM-5—Brief Form (PID-5-BF) is a 25-item self-rated personality trait assessment scale. The instrument identifies five domains of personality traits, including negative affect, detachment, antagonism, disinhibition, and psychoticism. Each domain is composed of five items. The PID-5-BF employs a self-report methodology, wherein respondents are asked to rate the extent to which each item describes their own characteristics. Each item on the measure is rated on a four-point scale, with 0 indicating a response that is “very false” or “often false” and 3 indicating a response that is “very true” or “often true”. The overall measure has a range of scores from 0 to 75, with higher scores indicating greater overall personality dysfunction. Each domain of the trait scale ranges in score from 0 to 15, with higher scores indicating greater dysfunction in the specific domain of the personality trait. The mean total score is calculated by dividing the raw overall score by the total number of items in the measure (i.e., 25).

The reliability and construct validity of the Personality Inventory for DSM-5 Brief Form (PID-5-BF) were also assessed by Fossati and colleagues on a sample of high school students in 2017, demonstrating Cronbach’s alpha values for the PID-5-BF total score of 0.83 and adequate temporal stability after a two-month test-retest interval, as indicated by intraclass r values ranging from 0.78 (Negative Affectivity) to 0.97 (Detachment) [58].

All of the variables analyzed are quantitative, as evidenced by the exclusive use of self-report survey instruments, and all of the questions that make up the above questionnaire were defined as mandatory to ensure no missing data.

Each of these instruments has been validated in Italy and has been previously administered and analyzed in samples of adults and adolescents, demonstrating good levels of reliability and validity [52,56,58].

These results were confirmed by the results of our model, as shown in Table 1.

Table 1. Descriptive Analyses, Reliability, and Correlations.

	M	SD	S	K	α	1	2	3
1. Maladaptive Personality	25.8	11.8	0.37	0.30	0.87	-	-	-
2. Loneliness perceived	45.2	10.6	0.19	-0.24	0.90	0.55 *	-	-
3. Post-Traumatic Stress disorder	15.9	8.4	0.005	-0.56	0.86	0.57 *	0.47 *	-
4. Disturbance of self-organization	13.6	8.3	0.41	-0.54	0.87	0.63 *	0.67 *	0.70 *

Note: $N = 901$. * $p < 0.01$.

2.6. The Statistical Methods

Preliminary statistical analyses were conducted using IBM SPSS (Statistic Package for the Social Sciences) version 29. These included a descriptive analysis of the main characteristics of the sample and a correlational analysis of the identified variables using Pearson’s product moment correlation coefficients with a bias-corrected and accelerated

95% confidence interval (CI) (BCa). The internal reliability of each selected instrument was tested through the use of Cronbach's α and the normal distribution through skewness and kurtosis values [59]. The results are presented in Table 1.

R Studio version 4.3.2 with the lavaan package for R was utilized to assess the factorial validity of the employed measures, regression analysis, and the structural equation modeling (SEM) for the identified mediation model.

In the SEM analysis, we used the parcellation approach; this was done for several reasons. First, this method reduces model complexity, improves normality (plots tend to have more normal distributions than individual items), increases long-term sustainability, and ensures more stable parameter estimates. In addition, the plots not only meet normality assumptions more easily but are also less susceptible to the influence of method effects. In the present study, three plots were constructed for each observed and latent variable.

The resulting model is shown in Figure 1.

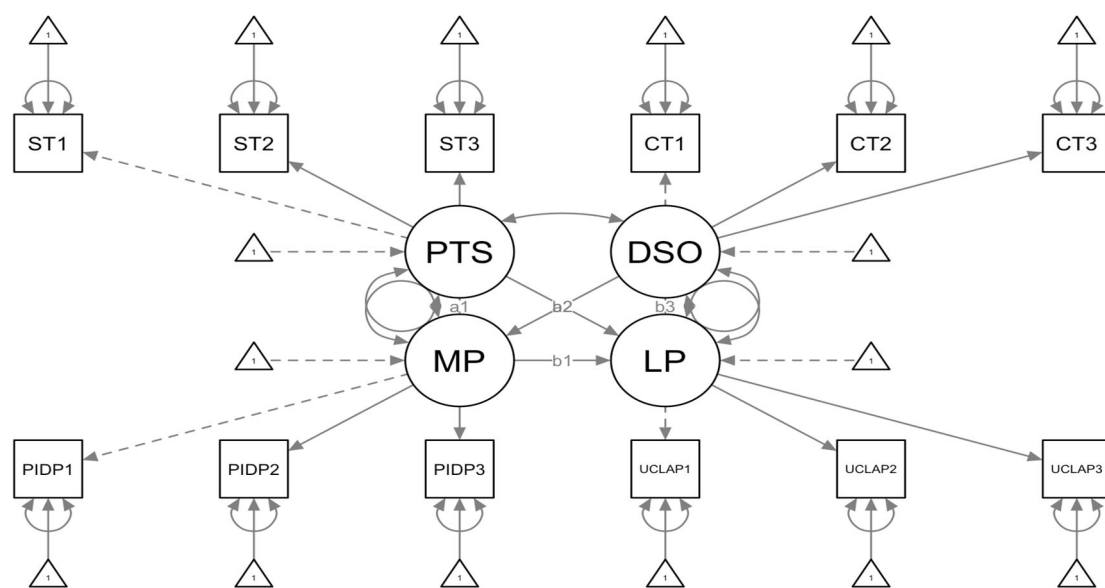


Figure 1. This figure outlines the SEM Path of the selected model, determined through the parceling approach. Specifically, in the plot, circles represent latent variables, rectangles represent observed variables, and triangles represent measurement errors. PTS = Post-traumatic Stress Disorder with ST1, ST2, ST3 representing its three constituent parcels; DSO = Disturbance in Self-Organization with CT1, CT2, CT3 representing its three constituent parcels; MP = Maladaptive Personality Traits with PIDP1, PIDP2, PIDP3 representing its three constituent parcels; LP = Perception of Loneliness with UCLAP1, UCLAP2, UCLAP3 representing its three constituent parcels. a1 is the direct path between Post Traumatic Stress Disorder (PTS) and Maladaptive Personality (MP); b1 is the direct path between Maladaptive Personality (MP) and Perception of Loneliness (LP); a2 represents the direct path between Post Traumatic Stress Disorder (PTS) and Perception of Loneliness (LP); b2 indicates the path between Disturbance in self-organization (DSO) and Maladaptive Personality (MP); b3 represents the direct path between Disturbance in self-organization (DSO) and Perception of Loneliness (LP). For more details, see Table 3.

3. Results

3.1. Participants: Demographic Characteristics

The study population, selected using convenience sampling, consisted of 901 adolescents aged 14–17 years (minimum age 14 years, maximum age 17 years, mean age 15.69 years, standard deviation 1.085 years) of both sexes, of whom 493 were female (54.7 percent). Regarding the sample's gender/sex identification, participants were asked to identify their male/female biological sex and, in a follow-up question, were given the

opportunity to select a third non-binary option to identify their gender identity. In the latter category, 1.6 percent of participants indicated that they identified as a non-binary gender. Both questions were mandatory.

In terms of other demographic characteristics, 95.9% of participants reported that their sociocultural background was Italian. Most participants (79.5%) live with married or cohabiting parents. Furthermore, 47.1% of participants' mothers or equivalent and 46.8% of participants' fathers or equivalent had a high school diploma.

3.2. Descriptive Data

The decision to focus our analysis on the adolescent age group is dictated by the goal of examining a phase of individual development that more than others is recognized in the literature as particularly vulnerable to the perception of loneliness. This is due to the significant transitions that occur during this period of life involving physical appearance, psychological factors, personal identity, educational environments or access to the world of work, interpersonal relationships both in terms of type and intensity with parents, peers, teachers, and early love experiences. Regarding the analysis of the demographic characteristics of the selected sample, it is important to note that in the statistical analyses, we considered only the participants' self-reported biological sex, while the other demographic characteristics were not subject to statistical analysis, except for frequencies and descriptive analyses. Among the characteristics of the selected sample, one of the most important and sensitive aspects that was not included in the analyses was gender identity. In defining and dividing the sample by sex, we considered only the binary male/female sex. The decision not to include the variable of gender identity stems from the knowledge that this topic deserves care and attention that our study probably could not have ensured since this variable was not included in the focus of the current research design. Since gender identity is a very complex and broad concept, in order to study it properly it would have been necessary to define and specify it further, first by trying to better clarify the meaning of the related question, second by adding many more options from which individuals could choose, and finally by allowing participants to choose not to answer this question at all.

3.3. Outcome Data

All data were analyzed using IBM SPSS (Statistic Package for the Social Sciences) version 29 and RStudio version 4.3.2 with the lavaan package.

All variables showed statistically significant mutual correlation with a p -value < 0.001 , as shown in Table 1.

In addition, the internal reliability and normal distribution of the data for each instrument used were verified through the use of Cronbach's α , Skewness, and Kurtosis.

In addition, the model was evaluated on the basis of multiple indices of fit as suggested by Bentler and Bonett (1980) [60].

All fit indices were found to be adequate, with Comparative Fit Index (CFI) and Tucker–Lewis Index (TLI) values above 0.95 and 0.94, respectively [60].

In addition, the SRMR (Standardized Root Mean Square Residuals) and RMSEA (Root Mean Square Error of Approximation) indices were also satisfactory, as they were below the maximum thresholds recommended by Schermelleh-Engel et al. (2003) [61], with values of 0.03 and 0.08, respectively.

All fit indices values, including X^2 values and degrees of freedom, are presented in Table 2.

Table 2. Goodness-of-fit indices of the measurement models.

	χ^2	<i>p</i>	CFI	TFI	SRMR	RMSEA
Fit Indices	(48) = 323.30	<0.01	0.97	0.95	0.03	0.08

3.4. Main Results

The findings of Pearson's correlation coefficient analysis suggest a high degree of significance in the correlation between all the variables examined, with particularly robust correlations observed between the personality trait of psychoticism and loneliness perception ($r = 0.520, p < 0.001$) and psychoticism with PTSD ($r = 0.531, p < 0.001$), and DOS ($r = 0.567, p < 0.001$). Additionally, significant correlations were observed between Negative Affectivity and PTSD and DOS, as well as between Detachment and Loneliness Perception ($r = 0.540, p < 0.001$) and Detachment and DSO ($r = 0.511, p < 0.001$). The correlations of antagonism and disinhibition with all of the analyzed variables, i.e., loneliness perception, PTSD, and DSO, were less robust than those observed for the other variables, but still statistically significant. Furthermore, a marginally stronger correlation was noted between the total score of maladaptive personality traits and loneliness perception with DSO symptoms ($r = 0.631, p < 0.001$), ($r = 0.671, p < 0.001$) than the correlation between the same and PTSD symptoms ($r = 0.571, p < 0.001$), ($r = 0.469, p < 0.001$).

In constructing the mediation model, with regard to the independent variables consisting of PTSD and DSO symptomatology, we used the International Trauma Questionnaire divided into the six items constituting PTSD symptomatology, plus the three items related to the extent to which these symptoms interfered with the individual's ability to function in daily life in the past month, and the six items reflecting DSO symptomatology, with the additional three items assessing the extent to which these symptoms interfered with the individual's ability to function in the past month. Accordingly, we considered two different indirect variables: PTSD symptomatology and DSO symptomatology. We chose not to include Complex Post-Traumatic Stress Disorder (CPTSD), and thus not to integrate PTSD scores with DSO scores, as assessing this distress would require clinical instruments and interviews that are beyond the scope of our study, which does not pursue diagnostic purposes.

The construct thus determined proved to be sufficiently stable and robust with satisfactory fit indices, especially for the DSO scale.

As for the mediator, which in our model is represented by maladaptive personality, we used the Personality Inventory for DSM-5 (PID-5) questionnaire, which was included in the form of a total score rather than in the form of five different scores, one for each of the five domains that make up the questionnaire. The choice to use only the total score of the questionnaire arose from the intention to observe how maladaptive personality as a whole can act directly on the dependent variable consisting of the perception of loneliness and as a mediator in the indirect relationship between the latter and the predictor variables. Only in Pearson's correlation analysis did we decide to examine maladaptive personality both as a total score and in the form of the five different scores specific to each personality trait, to monitor which of them showed greater interaction with the predictive and dependent variables.

Finally, with regard to the dependent variable represented by the perception of loneliness, we used the UCLA Loneliness Scale (version 3) in its total score, given by the sum of the responses of all 20 items that make up the questionnaire.

Since this construct showed good fit indices and the resulting model appeared robust and stable, it was decided to use it as the final model for the mediation analysis.

The results that the model thus identified reported in the structural equation modeling analysis indicate that the direct effects of the predictor variables, namely PTSD and DSO symptomatology, on the perception of loneliness are significant and seem to confirm the results of previous studies and the initial hypotheses proposed in this research.

Moreover, the indirect effect of PTSD and DSO on the perception of loneliness through maladaptive personality traits was shown to be statistically significant, thus confirming our initial hypotheses.

The results are presented in Figure 2 and Table 3.

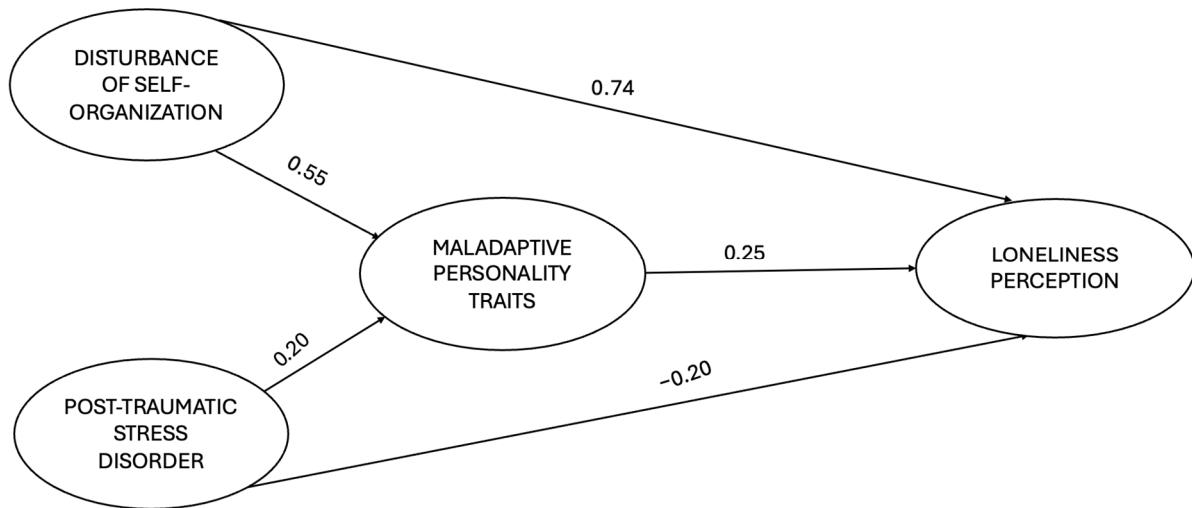


Figure 2. The figure portrays the mediation model that was utilized. For purposes of clarity, only the direct paths are reported; parcels are not reported.

Table 3. Path Estimates of the structural model, SE, and 95% CIs. The following table shows the values of standardized beta coefficients, standardized errors, *p*-values, and maximum and minimum levels of confidence intervals.

Direct Effect	β	<i>p</i>	SE	CI LL	CI UL
MP → PTSD	0.20	<0.001	0.02	0.04	0.14
MP → DSO	0.55	<0.001	0.03	0.19	0.29
LP → MP	0.25	<0.001	0.07	0.21	0.48
LP → PTSD	−0.20	<0.001	0.03	−0.19	−0.06
LP → DSO	0.74	<0.001	0.04	0.35	0.53
Indirect Effect of PTSD via MP					
	β	<i>p</i>	SE	CI LL	CI UL
PTSD → LP	0.05	<0.001	0.01	0.01	0.05
Indirect Effect of DSO via MP					
	β	<i>p</i>	SE	CI LL	CI UL
DSO → LP	0.14	<0.001	0.05	0.05	0.12

Note: MP = Maladaptive Personality traits; PTSD = Post-traumatic stress disorder; DSO = Disturbance of self-organization; LP = Loneliness Perception; β = standardized beta coefficient; *p* = level of significance; SE = standard error BC 95%; CI = confidence interval; LL = lower limit; UL = upper limit.

3.5. Other Analyses

In order to investigate the influence of sex on the selected variables, it was decided to conduct an additional mediation analysis by introducing biological sex as a predictive control variable, to see if this could affect the mediation model both in terms of model fit indices, i.e., influence on model stability and robustness, and in terms of altering the direct paths previously found for the entire undifferentiated sample with respect to the sex variable. The analysis showed that the sex variable had no effect on the stability and goodness of fit indices of the model, as indicated by CFI = 0.96, TLI = 0.94, RMSEA = 0.80,

and SRMR = 0.50, and did not appear to have a significant effect on the direct paths of the variables analyzed, with values of ($\beta = 0.00, p = 0.992$) and ($\beta = -0.04, p = 0.061$) for maladaptive personality and perceived loneliness, respectively. For the reasons discussed above, only the biological sex variable was included in this analysis. Therefore, 1.6% of participants who answered the gender identity question by selecting the third nonbinary option were included in this analysis based on their responses to the biological sex question in the male/female binary code.

4. Discussion

The research results seem to confirm our initial hypotheses, showing that the presence of symptomatology related to PTSD and DSO disorders can directly and indirectly influence, through maladaptive personality traits, the perception of loneliness among adolescents aged 14–17 years.

The fit indices of the model are all satisfactory. The direct effect of both PTSD and DSO symptoms on loneliness, as well as the direct effect of maladaptive personality traits on loneliness perception, are significant ($p < 0.001$), thereby supporting the findings of previous literature and the hypotheses on which our research design was based. The indirect relationship between both PTSD and DSO symptomatology and loneliness, which is mediated by maladaptive personality traits, is also significant, thereby confirming the initial hypotheses.

As a social species, humans are dependent on a secure and supportive social environment to ensure their survival and well-being [3,15,20]. The experience of social isolation or loneliness has been demonstrated to increase an individual's vigilance in the presence of potential threats, thereby heightening feelings of vulnerability [4,15,20].

The experience of inadequate social ties and the perceived lack or absence of close and supportive relationships that can be counted on, accompanied by the need to belong and the desire to feel part of a social, peer, or family group from which to gain recognition and social support, can exacerbate the consequences related to traumatic and stressful experiences. Individuals who have experienced traumatic or stressful events often report a sense of estrangement from the external world and perceive human relationships as remote or unattainable. For instance, experiences of derealization may be accompanied by a longing for close attachments and a sense of belonging within a larger network, which are also hallmarks of loneliness.

Our results seem to confirm the assumptions in the literature and the initial hypothesis from which our research started, namely, that PTSD and DSO symptomatology can play a significant role in generating, maintaining, and reinforcing the condition of loneliness, contributing to transforming a transient experience common to many human beings especially at specific stages of their lives and in some respects functional to their psychological and social well-being into a vicious cycle of suffering that threatens the individual's physical and mental health by becoming pervasive in every aspect of their lives.

An other important hypothesis underlying our study, which seems to be confirmed by the results obtained, is the supposition that maladaptive personality traits may play a significant role in directly influencing the perception of loneliness and in acting as mediators in the relationship between the latter and PTSD/DSO symptomatology, probably in that they may complicate recovery from adverse and traumatic events experienced, hindering the implementation of functional coping strategies and increasing dysfunctional responses. These responses may consist of attitudes and behaviors characterized by isolation and closure or a prevalence of impulsivity that may evolve into substance abuse, eating disorders, behavioral addictions such as gambling, dysfunctional behaviors such as binge-watching, problematic social media use, Internet gaming, etc. to reduce unpleasant feeling [7,45,46].

Negative affectivity deteriorates feelings of trust in others, complicating the building and maintenance of satisfying interpersonal relationships [51]. In addition, individuals in whom this personality trait is prevalent tend to experience great anxiety, anger, or feel down and hopeless, all of which undermine their ability to deal with adverse events and to reacquire self-confidence, trust in others, and self-efficacy. The personality trait of detachment is naturally related to social isolation. Individuals with a high level of this personality trait tend to exhibit a strong tendency to avoid social contact and interpersonal relationships. The psychotic personality trait does not help to overcome traumatic experiences and reduce PTSD- and DSO-related symptomatology; in fact, strange inner experiences such as hallucinatory phenomena and/or paranoid aspects, i.e., the belief that one is the object of ridicule or persecution, make social interactions almost impossible. Antagonism is considered a dysfunctional personality trait, as individuals who predominantly exhibit this personality trait tend to interpret and experience interpersonal relationships as highly conflictual, overly competitive, and consequently, as a source of problems and discomfort rather than a source of support. Disinhibition may represent a personality trait that may drive the individual to implement dysfunctional coping strategies stemming from impulsivity and the compelling need for gratification that may be embodied in dysfunctional behaviors such as the abuse of the Internet, social media, sports and physical activity, etc., or that may evolve into mental disorders such as substance addiction, eating disorders, etc., which serve as self-medication to reduce intolerable moods and to achieve a sense of gratification and well-being as soon as possible [62,63].

Scholars point out that some of the characteristics and symptoms of PTSD, particularly those related to avoidance of interpersonal relationships and DSO symptoms associated with difficulty maintaining close relationships, can lead to increased feelings of loneliness [17,18,23]. Based on these assumptions, all the dysfunctional personality traits seem to share some important characteristics with the symptomatology associated with PTSD and DSO disorders, from isolation and sociability to alcohol and other substance abuse, from emotional overreactions, such as uncontrolled anger and/or extremely low mood, to dissociative experiences such as depersonalization and/or derealization, to the tendency to regard people with whom one is in contact as unreliable, antagonistic, enemies, etc.

A significant percentage of individuals are likely to experience transient and intermittent episodes of loneliness at some point in their lives. If the underlying causes are addressed early, these episodes are unlikely to persist over time and become pervasive in all situations [15,16,18,20,25]; The literature points out that loneliness can prolong over time until it becomes chronic [20,51] in individuals who tend to be hypersensitive to the opinions, judgments, and expectations of others and suffer greatly from any feedback perceived as non-positive. Fearing possible criticism, rejection, or disapproval, these individuals tend to experience interpersonal relationships and social interactions in a constant state of alertness, becoming hypervigilant to social threats and paying attention to potential negative social feedback to avoid future distress [20].

Loneliness creates negative expectations about social encounters and the intentions of others, leading to guarded behaviors and social difficulties [15,41]. The presence of guarding behaviors reinforces these maladaptive beliefs, further exacerbating the disconnect between individuals and their social context. Social withdrawal may also occur, in which the individual observes others from afar and worries about how to interact with others, instead of actually experiencing social relationships [4,25]. When an individual enacts an avoidant approach to socialization, it can elicit negative reactions from others, which in turn increases withdrawal from social interactions, creating a vicious cycle of loneliness [20,51].

The transition from childhood to adolescence is marked by a major shift in emotional support as children begin to seek autonomy from parents who previously provided such emotional support [4,7,25]. During this period, adolescents also feel the need for a greater level of intimacy in their friendships as they begin to explore their identity and undergo changes in values and beliefs. They also begin to acquire new perspectives through which to observe and evaluate themselves and others [15,20].

In other words, adolescence is one of the developmental periods at greatest risk of loneliness [7,50,51]. During this period, adolescents manage more complex relationships as they move away from the protection of the family [15]. The desire for autonomy and self-determination, coupled with the anxiety of taking on greater responsibilities and commitments, cognitive maturation, and physical changes, are all inherent features of this stage of life that could facilitate the perception of loneliness [4,20,25,51].

Some studies have found that people who perceive higher levels of loneliness are described by those closest to them as having low self-esteem, insufficient self-awareness, and shyness, with a tendency to use self-deprecating language, excessive self-criticism, such as making negative comments about oneself or showing constant feelings of guilt [7,15,17].

In interpersonal relationships, these individuals, according to people who know them best, also show difficulty in maintaining eye contact and initiating or sustaining conversation. Interestingly, not all are described as quiet or reserved; on the contrary, some are described as talkative, outgoing, and confident. In some cases, however, this talkativeness is described as excessive and socially inappropriate, a sign of nervousness or difficulty interpreting social contexts [15].

Regarding the life experiences that seem to unite individuals complaining of lonely conditions, the literature points to heterogeneous past and/or present adversities and challenging events, such as lack of work or difficulty in finding it; economic difficulties; conflicting family relationships or family members with serious mental or physical health problems; frequent moves, often to other countries, resulting in loss or difficulty maintaining relationships and meeting with friends and relatives; frequent school or job changes resulting in a sense of instability and uncertainty and often accompanied by the pressure to adapt quickly to a new and unfamiliar environment without their own points of reference, such as some former teachers or former colleagues, who helped them cope with their relational difficulties [7,15,50].

Another important aspect highlighted by the literature is the reluctance of many people who complain of loneliness to seek help either from family members, who are often perceived as more distant than they actually are, or from professionals such as psychologists, psychotherapists, etc. to overcome this unpleasant experience. The reasons seem to be many, from a lack of trust in others and/or the habit of considering this condition as part of one's nature and, therefore, unchangeable, to the belief that one is hopeless and that any attempt to improve the situation will be a failure [15].

In other cases, some people who ask for and receive some form of help do not appear fully involved and are reluctant to act and, in fact, benefit from such support [15,41]. This further demonstrates the complexity of the phenomenon under consideration and the difficulty of successfully addressing it without a thorough investigation of the potential protective and risk factors that act in giving it certain forms and characteristics.

5. Conclusions

In conclusion, the results of our investigation seem to confirm the initial hypotheses and the assumptions in the relevant literature, underscoring the central role that PTSD and DSO symptoms, as well as maladaptive personality traits, may have on adolescents' perceptions of loneliness, affecting their psychological well-being.

5.1. Limitations

The research is subject to a number of limitations, primarily the cross-sectional nature of the design, which precludes the possibility of drawing causal inferences among the variables under examination. Indeed, cross-sectional models, by their inherent characteristics, can only represent a snapshot of a specific moment in time in the much broader path and operation of the variables investigated. To confirm the validity of the selected mediating model, future research should use longitudinal or experimental designs, which would provide a more complete and detailed understanding of the interaction between the variables examined. Such models, in fact, allow for better evaluation of the results derived from the cross-sectional model, enabling causal inferences to be drawn and providing stronger evidence for the existence and functioning of the hypothesized relationships between the variables analyzed. A further significant limitation is the exclusive use of self-report instruments, without qualitative or confirmatory diagnostic interviews. Although self-report instruments are undoubtedly the easiest and fastest method of data collection, they are not without inherent limitations. Self-reported responses may be exaggerated, respondents may be too embarrassed to reveal personal details, and various biases may influence the results. These include social desirability and social appreciation bias, indulgence bias, acquiescence bias, and the need for consistency and rationality [64]. In addition, the failure to understand some words, the presence of sentences expressed in a negative form, structured in a particular way, or phrased in language that could give rise to ambiguous or ambivalent interpretations, could lead to difficulties in responding by participants who might read questions quickly or with distractions, or be influenced by the framing effect [64]. The role of personal memories and emotions in the interpretation of events, particularly those from the past, can also be a source of frequent and sometimes significant bias in participants' approach to questionnaires. It would be appropriate to improve these instruments through the inclusion of qualitative methods and/or clinical interviews with the aim of reducing the typical limitations of self-report instruments. Again, a useful strategy for reducing this type of bias is the implementation of a longitudinal design to mitigate the inherent limitations associated with self-report interviews and to gain a greater understanding of the nature and directions of the relationships between the variables being investigated.

In addition, it would be advantageous to expand the study population through the involvement of a sample of individuals older than 17 years, particularly emerging and young adults, in order to obtain a more complete understanding of the phenomenon under analysis and to monitor the characteristics and dynamics it may acquire in the transition between adolescence and adulthood. Observation of a population of other age groups would allow us to observe the evolution of the phenomenon or its possible later relapse episodes in relation to maladaptive personality traits, which are more stable and defined in adulthood, and to delve into the diachronic dimension of the role of PTSD and/or DSO symptomatology related to traumatic and adverse events experienced later in life or, if they occurred in childhood and adolescence, to verify their effects at a later date.

5.2. Future Directions

The results of the present study, despite the important limitations mentioned above, may provide insights for the design and testing of clinical, social, or educational interventions to address the perception and condition of loneliness among adolescents.

Loneliness is increasingly recognized as a major health and social problem, so much so that some health professionals have called it an epidemic. Initiatives have been launched around the world to address the "loneliness epidemic", and in 2018, the United Kingdom named the world's first minister for loneliness [41].

As loneliness is increasingly considered a public health problem, scholars say public health approaches are needed to address it, starting with defining the extent and distribution of the problem in different settings, environments, and age groups. With this in mind, it may be important to explore the potential risk and protective factors related to loneliness in order to make interventions to prevent and manage it more effectively and timelier, and to identify strategies more targeted to the specific characteristics of individuals experiencing chronic and pervasive loneliness [5,7,16]. Schools, for example, should monitor children who are friendless or lonely and pay attention, with regard to adolescents, to potential dysfunctional behaviors that might emerge as a way to cope with feelings of loneliness [7,27].

Our research design is inspired by the hypothesis, derived from the reviewed literature, that a better understanding of potential factors that may be involved in the exacerbation of experiences of loneliness may be useful for the development and promotion of more targeted prevention interventions. Because our study highlights, among the factors that undermine an individual's ability to interact and integrate with the social context, family environment, peers, etc., the significant role of various maladaptive personality traits and dysfunctional coping strategies in relation to the adversity and trauma experienced, it is recommended that researchers and clinicians dealing with pervasive and chronic loneliness conditions consider the importance of personality traits and early recognition of the presence of PTSD- and DSO-related symptoms which appear to have a significant impact on perceptions of loneliness, in order to prevent this condition, which is somehow intrinsically linked to adolescence, from taking on dysfunctional characteristics and transforming over time into severe distress, isolation, and social avoidance that can seriously impair adolescents' psychological and social development.

On the basis of our findings, we believe that paying attention to adolescents' communication and interpersonal skills and their ability to respond functionally to stressful and traumatic events, designing and implementing interventions aimed at improving the social and interpersonal skills of those who are at risk or are facing this unpleasant experience, may facilitate the identification of more targeted strategies that, as such, may be more successful in preventing and overcoming the perception of loneliness and related discomforts, which are often risk or maintenance factors [4,20,25].

The results of this study can be generalized to adolescents who report feelings of loneliness and have symptoms of post-traumatic stress disorder and/or self-organization disorders accompanied by maladaptive personality traits.

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3.3.3 Discussione

La ricerca ha analizzato gli effetti diretti e indiretti che la sintomatologia da stress post-traumatico, sia nella forma di Disturbo da stress post-traumatico (PTSD), sia nella forma di Disturbo dell'auto-organizzazione (DSO), esercita sulla percezione di solitudine negli adolescenti e il potenziale ruolo di mediatore che in questa relazione può essere interpretato dai cinque tratti di personalità disfunzionale identificati dal DSM-5 e valutati attraverso il questionario self-report *Personality Inventory for the DSM-5 (PID-5)*: disinibizione, antagonismo, affettività negativa, psicoticismo e distacco (Krueger *et al.*, 2011; Al-Dajani, N., *et al.*, 2016).

I risultati hanno mostrato correlazioni significative tra tutte le variabili analizzate all'interno delle quali il PTSD e il DSO si sono rivelati entrambi predittori statisticamente significativi sia della percezione di solitudine sia dei tratti di personalità disfunzionali esaminati. Tra questi ultimi si sono rivelate particolarmente robuste le relazioni dirette di psicoticismo e distacco con la percezione di solitudine, e quella tra affettività negativa e PTSD/DSO. Le correlazioni dell'antagonismo e della disinibizione, sia con la percezione di solitudine che con la sintomatologia da stress post-traumatico, si sono rivelate più deboli ma restano statisticamente significative. Riguardo alle analisi di mediazione, psicoticismo e affettività negativa mostrano effetti più marcati, mentre disinibizione, distacco e antagonismo appaiono meno rilevanti come mediatori tra la sintomatologia post-traumatica e la percezione di solitudine.

Nel complesso, la presenza di tratti di personalità disfunzionali e la percezione di solitudine sembrano associati in misura maggiore al DSO rispetto al PTSD, suggerendo che le difficoltà di autoregolazione e integrazione emotiva rappresentano un elemento chiave nella genesi di difficoltà relazionali, isolamento e solitudine in adolescenza. I tratti di personalità maladattivi ostacolano il recupero post-traumatico, impedendo strategie di coping efficaci e favorendo risposte disadattive come ritiro sociale, impulsività o comportamenti di dipendenza. L'affettività negativa riduce la fiducia interpersonale, il distacco limita la costruzione di legami significativi, e lo psicoticismo, caratterizzato da pensieri paranoidi e distorsioni percettive, compromette la capacità di connessione. Anche antagonismo e disinibizione contribuiscono al mantenimento della solitudine: il primo induce a percepire le relazioni come minacciose, il secondo favorisce comportamenti impulsivi di gratificazione immediata. Queste caratteristiche, condivise con la sintomatologia PTSD/DSO (iperattivazione, evitamento, difficoltà relazionali), rendono la solitudine una condizione pervasiva e autoalimentata.

La solitudine cronica è sostenuta da aspettative negative verso gli altri e da iper-vigilanza sociale, che inducono comportamenti difensivi e ulteriore isolamento che a loro volta rafforzano la disconnessione emotiva e relazionale compromettendo il benessere psicologico complessivo.

Questi meccanismi rafforzano convinzioni disfunzionali verso sé stessi, come il non sentirsi all'altezza degli altri, e verso il mondo esterno avvertito come ostile e pericoloso, trasformando un'esperienza che, soprattutto in adolescenza, è fisiologica e sotto molti aspetti funzionale alla crescita dell'individuo e allo sviluppo delle sue competenze sociali e relazionali in una condizione cronica di isolamento e sofferenza.

3.3.4 Implicazioni pratiche e prospettive future

La solitudine rappresenta oggi una delle principali criticità psicologiche e sociali della società contemporanea, con una diffusione crescente che ha assunto i contorni di una vera e propria emergenza. In alcuni Paesi, come la Gran Bretagna, tale fenomeno è stato riconosciuto come prioritario anche a livello istituzionale, con l'attivazione di politiche e programmi specifici di contrasto. La solitudine si manifesta in modo particolarmente significativo in alcune fasi del ciclo di vita, tra cui l'adolescenza, periodo di profonda trasformazione emotiva, relazionale e identitaria. In questo contesto, la ricerca assume un ruolo fondamentale nel fornire indicazioni utili alla progettazione di interventi preventivi e clinici, attraverso l'individuazione dei fattori di rischio e di protezione coinvolti nello sviluppo e nella cronicizzazione dei vissuti di solitudine.

In questa prospettiva, il presente studio ha preso in esame i cinque tratti di personalità disfunzionale descritti dal DSM-5, in quanto dimensioni che possono ostacolare la socializzazione, la fiducia interpersonale, la capacità di chiedere e ricevere supporto e la costruzione di relazioni affettive e sociali stabili. L'identificazione precoce di tali tratti consente di orientare interventi psicologici personalizzati, volti a rafforzare le competenze relazionali e a promuovere modalità di funzionamento più adattive.

Il contesto scolastico rappresenta un osservatorio privilegiato per l'identificazione precoce di bambini e adolescenti che mostrano difficoltà nelle relazioni interpersonali, assenza di legami amicali significativi, scarso senso di appartenenza o il ricorso a strategie di *coping* disfunzionali, quali l'isolamento e il ritiro sociale, come modalità prevalenti di gestione dello stress e della frustrazione.

L'analisi dell'interazione tra la sintomatologia da stress post-traumatico e la presenza di tratti di personalità disfunzionali può favorire una comprensione più approfondita dei meccanismi che contribuiscono a una percezione di solitudine più intensa e pervasiva. Le risposte che l'individuo sviluppa in seguito a esperienze traumatiche influenzano in modo significativo la qualità delle relazioni interpersonali e il senso di connessione sociale. Sintomi quali la sfiducia negli altri, lo stato di iperattivazione, la difficoltà nella regolazione emotiva e il ritiro sociale risultano centrali sia nella solitudine pervasiva sia nella sintomatologia post-traumatica, soprattutto nella forma di

DSO. Queste evidenze sottolineano la necessità di interventi clinici integrati, capaci di affrontare congiuntamente il trauma e i vissuti di isolamento, interrompendo i circoli di mantenimento tra solitudine e disagio psicologico.

Dal punto di vista clinico e scolastico risulta quindi fondamentale distinguere la solitudine fisiologica, transitoria e in parte funzionale ai compiti evolutivi dell'adolescenza, da quella che assume caratteristiche di persistenza e pervasività. Quest'ultima, se non adeguatamente riconosciuta e trattata, può evolvere in forme di psicopatologia più strutturate, quali disturbi dell'umore, evitamento sociale e condizioni di isolamento cronico, con un impatto significativo sul funzionamento scolastico, relazionale ed emotivo.

In tale ottica, gli interventi dovrebbero focalizzarsi sul potenziamento delle competenze comunicative e relazionali, sullo sviluppo di strategie di *coping* adattive e sulla capacità di elaborare eventi stressanti ed esperienze traumatiche. Programmi di prevenzione e intervento in ambito scolastico e clinico, rivolti in particolare agli adolescenti a rischio o che già sperimentano livelli elevati di solitudine, possono favorire il rafforzamento del senso di appartenenza, della fiducia interpersonale e dell'autoefficacia. Tali interventi risultano cruciali per prevenire la cronicizzazione della solitudine e ridurre il rischio di esiti psicopatologici nel passaggio alla giovane età adulta.

3.4 Studio 4: *Pathways from Family Functioning to Internet Gaming Disorder: The Mediating Role of the Dark Triad* e **Studio 5:** *Cyberbullying and Cybervictimization: The Role of Parental Psychological Control and Dark Triad*

3.4.1 Sommario

Nell'ambito dei tratti di personalità disfunzionali, caratterizzati da un'avversione verso la socialità, e dunque da scarse competenze emotive e relazionali, emerge il costrutto identificato come Triade Oscura, costituito da tratti di personalità sovrapposti, ma distinti: machiavellismo (manipolazione, cinismo), narcisismo (senso di grandiosità, supponenza, dominanza e superiorità) e psicoticismo (elevata impulsività, ricerca di sensazioni ed emozioni forti, bassa empatia e ansia). Analogie rilevanti e di particolare interesse sono emerse dai due studi in cui la Triade Oscura è stata esaminata su un campione di giovani adulti di entrambi i sessi come variabile mediatrice tra il contesto familiare e i comportamenti problematici *online*. Alla luce di tali convergenze, i due contributi vengono qui messi a confronto e integrati all'interno di un quadro interpretativo unitario che ne consenta una lettura congiunta.

Il primo studio ha analizzato il ruolo di mediazione della Triade Oscura nella relazione tra Funzionamento Familiare e Disturbo da Gioco su Internet (IGD), definito dal DSM-5-TR come un *pattern* di comportamenti compulsivi di gioco *online* associati a compromissione del funzionamento dell'individuo, perdita di controllo e disagio psicologico. I risultati hanno evidenziato effetti indiretti significativi del Funzionamento Familiare sull'IGD attraverso la Triade Oscura ($\beta = -0.20$; $p \leq 0.001$), suggerendo che un buon funzionamento familiare riduce la probabilità di interiorizzare comportamenti manipolatori e privi di empatia, che dimostrano di interpretare un ruolo significativo nello sviluppo del Disturbo da Gioco su Internet.

Il secondo studio ha esplorato il ruolo dei tratti della Triade Oscura come mediatori tra il controllo psicologico genitoriale e i fenomeni di *cyberbullismo* e *cybervittimizzazione*. Il *cyberbullismo* si esprime in azioni dannose, intenzionali e ripetute, volte a ferire, ridicolizzare, isolare un altro individuo, intraprese attraverso canali di comunicazione digitale. La *cybervittimizzazione* si riferisce all'essere presi di mira e danneggiati dai comportamenti di *cyberbullismo*.

Nel modello in cui i due stili di controllo psicologico genitoriali sono stati analizzati congiuntamente sono emersi effetti indiretti particolarmente significativi del controllo psicologico materno sul *cyberbullismo* tramite machiavellismo ($\beta = 0.11$) e psicoticismo ($\beta = 0.09$) e sulla *cybervittimizzazione* tramite psicoticismo ($\beta = 0.07$). Nel modello in cui il controllo psicologico materno è stato considerato come predittore distinto sono stati evidenziati effetti indiretti significativi di quest'ultimo sul *cyberbullismo* tramite machiavellismo ($\beta = 0.14$) e psicoticismo

($\beta = 0.11$) e sulla *cybervittimizzazione* tramite psicoticismo ($\beta = 0.09$). Infine, nel modello in cui il controllo psicologico paterno è stato esaminato come predittore distinto ha rivelato di esercitare effetti indiretti significativi sul *cyberbullismo* tramite machiavellismo ($\beta = 0.10$) e psicoticismo ($\beta = 0.07$).

Nel complesso, i risultati dei due studi indicano che un funzionamento familiare disfunzionale e un elevato controllo psicologico genitoriale sono associati a una maggiore propensione a comportamenti manipolativi e privi di empatia, favorendo lo sviluppo di condotte devianti *online*. Infine, relativamente al genere, sono emerse differenze significative nelle variabili dipendenti considerate con punteggi medi più elevati nei soggetti di sesso biologico maschile.

Article

Pathways from Family Functioning to Internet Gaming Disorder: The Mediating Role of the Dark Triad

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Abstract: With internet gaming disorder (IGD) becoming more common, there are growing worries about the health of those it affects. This study examines how traits like Machiavellianism, psychopathy, and narcissism might connect family functioning to IGD. The research involved 1190 young adults who answered an online survey, sharing their personal experiences. To examine the mediation effects, latent variable structural equation modeling (SEM) was used, revealing complex relationships among the variables under investigation. Although all direct and indirect paths were statistically significant, the mediation effects of narcissism were positive only when Machiavellianism and psychopathy were not included as parallel mediators, but negative otherwise. The findings suggest that individuals with strong family functioning could be less likely to internalize manipulative behaviors and show a lack of empathy, traits that could contribute to their involvement in IGD. The results underscore the importance of recognizing the multifaceted nature of this phenomenon and provide valuable insights for developing comprehensive strategies to prevent and tackle IGD. Therefore, prevention and intervention efforts should consider the combined influences of family functioning, personality traits, and individual and contextual factors in the online environment to effectively address this problem.

Keywords: family functioning; Machiavellianism; psychopathy; narcissism; internet gaming disorder; emerging adults



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1. Introduction

During the digital age, the increase in problematic internet gaming has become a global and pressing issue, attracting the interest of researchers and clinicians around the world. Due to technological progress, online gaming has become more accessible and attractive, leading some individuals to engage in problematic internet gaming behavior [1]. The DSM-5-TR formally acknowledges this conduct as internet gaming disorder (IGD), which involves compulsive and extreme gaming behaviors that result in negative consequences like academic and work problems, social isolation, and mental anguish [2]. The worrying consequences linked to IGD prompt concerns about potential behavioral addiction, with significant implications for public health and overall well-being. Given these worries, it is crucial to explore further the root causes and psychological processes that fuel IGD. Comprehending the reasons and stimuli for excessive gaming can assist in creating precise and successful interventions for tackling this escalating worldwide problem. Recognizing factors that pose risks, like personal characteristics, family interactions, and ways of dealing with stress, can help forecast and stop the development of problematic gaming habits. In addition, identifying the possible connections between IGD and other mental health problems can assist healthcare professionals in offering holistic and cohesive assistance to those facing this type of behavioral dependency.

1.1. Family Functioning

The way a family operates is crucial in molding a person's mental well-being and conduct, significantly impacting their growth and adaptation [3]. Common Italian parenting styles are influenced by cultural values emphasizing family unity and hierarchical structures. Specifically, Italian parents often exhibit an authoritative style, balancing warmth and support with clear expectations and guidance and fostering a nurturing environment while encouraging children to adhere to familial and societal norms [4,5]. Cultural values related to family relationships in Italy underscore the importance of family as a central social unit. Indeed, family loyalty, respect for elders, and a strong sense of duty towards family members are deeply ingrained in Italian culture [4,5]. These values contribute to a family environment that supports emotional strength, interpersonal skills, and adaptive coping strategies, laying the foundation for positive emotional and social development [3].

1.2. Family Functioning and Internet Gaming Disorder

According to the literature [6,7], family members who show care, understanding, and effective communication can provide emotional support and connection, potentially decreasing the urge to turn to excessive online gaming for comfort. In environments that encourage growth and development, family members can offer emotional support, empathy, and validation to each other, resulting in better emotional control and less dependence on online distractions. Conversely, dysfunctional family relationships marked by constant conflicts, lack of emotional support, and insufficient supervision can lead to problematic internet behaviors, ultimately affecting an individual's mental well-being [6,7]. Indeed, during difficult times, people might potentially resort to playing video games on the internet to distract themselves from stressful situations in life or manage emotional issues tied to family conflicts [6,7]. The internet provides a feeling of power, enjoyment, and momentary respite from the stresses faced at home.

1.3. The Dark Triad

The dark triad is a combination of three separate characteristics of personality: Machiavellianism, psychopathy, and narcissism [8,9]. Machiavellianism refers to a personality trait characterized by strategic, manipulative, and deceitful behavior aimed at achieving personal goals. Individuals high in Machiavellianism tend to be calculating and pragmatic, often using deception and manipulation to advance their objectives [8,9]. Furthermore, psychopathy is marked by a lack of empathy, guilt, and remorse, combined with impulsive and antisocial behaviors. Individuals with high levels of psychopathy often exhibit a cold and callous demeanor towards others, demonstrating a disregard for social norms and the well-being of others [8,9]. Finally, narcissism involves an inflated sense of self-importance, a strong need for admiration, and a lack of empathy. Individuals with high levels of narcissism have an exaggerated perception of their own achievements and may exploit others to maintain their self-esteem and grandiose self-image [8,9].

1.4. Family Functioning and the Dark Triad

The familial setting is crucial in influencing a person's character traits, which may include those related to the dark triad. A supportive and caring family environment, along with effective communication and empathy, can promote positive personality development and serve as a shield against the development of dark triad characteristics [10,11]. In settings that provide support, people are more likely to acquire positive behaviors and skills in managing emotions, which can offset the negative traits associated with the dark triad [11,12]. Having caring and empathetic adults around can promote the growth of compassion, generosity, and accountability towards others. Conversely, maladaptive characteristics linked to the dark triad may be impacted by dysfunctional family dynamics and negative interpersonal interactions [10,13]. Kids raised in homes with abusive or neglectful behaviors might show manipulative and indifferent traits in their relationships with others due to negative interaction patterns [12,13]. Experiencing negative family dynamics during

childhood can impact an individual's perspective on relationships, resulting in a skewed understanding of social interactions. Both family dynamics and the dark triad have a mutual influence on each other, forming a bilateral relationship [11,13]. Unfavorable family settings can worsen current dark personality traits, causing an increase in destructive actions [10,12]. Conversely, having dark triad traits in the family can cause conflicts and disruptions in the family dynamic [14,15].

Family Functioning and the Individual Role of the Dark Triad Traits

In the context of family functioning, the individual dark triad traits can interact in complex ways. Individuals high in Machiavellianism might strategically influence family dynamics to serve their own interests, often through deception or manipulation [12,13]. This behavior can lead to increased conflict and instability within the family, as these individuals may exploit family members for their gain, causing trust issues and interpersonal strife [12,13]. Those with high levels of psychopathy may disregard the feelings and needs of others which can undermine emotional support within the family, leading to strained relationships and a lack of mutual trust and understanding [11,13]. This disregard for social norms and family welfare can contribute to a toxic family environment, which may exacerbate conflicts and emotional distress [11,13]. The self-centeredness of narcissistic individuals can create significant friction within the family, as narcissistic individuals may neglect or belittle the needs of others in favor of maintaining their own self-esteem [11,14]. The resultant strain on family relationships can lead to persistent conflicts and a lack of harmony, further exacerbating issues related to family functioning [11,14].

1.5. *The Dark Triad and Internet Gaming Disorder*

Researchers are currently investigating the possible correlation between the dark triad traits and problematic internet behaviors to determine if individuals with these traits are more likely to partake in excessive and detrimental online activities. Initial results indicate that the dark triad characteristics could be linked to a higher chance of problematic internet usage. Specifically, the relationship between the dark triad traits and IGD can be understood through the lens of impulsivity, emotional regulation, social manipulation, and the need for validation [14,16,17]. Each of these traits influences gaming behavior in distinct but overlapping ways, potentially leading to excessive gaming as a form of escape, gratification, or social engagement [14,15,18].

Internet Gaming Disorder and the Individual Role of the Dark Triad Traits

More precisely, people with high scores in those characteristics might use the internet for asserting dominance, control, and self-improvement [16,18]. It is reasonable to consider that individuals with high levels of Machiavellianism might use dishonest strategies, such as cheating or taking advantage of less powerful players, in order to outperform others in online gaming [14,15]. This kind of conduct can result in a negative gaming experience for both the manipulator and the people they are influencing. Moreover, people with psychopathic characteristics could exhibit a deficiency in empathy and guilt, leading to unfriendly and hostile behavior in online gaming societies. They might partake in trolling, cyberbullying, or other disruptive and harmful behaviors without feeling remorse [14,17]. Those displaying narcissistic tendencies may become overly fixated on their accomplishments within the game and continually seek praise from others for their gaming abilities. This desire for acknowledgment and approval might lead them to prioritize online interactions over their actual duties and connections in reality [15,17].

1.6. *Aims of the Study*

IGD is increasingly worrying on a worldwide scale, with the possibility of harming individual mental health, social connections, and general happiness. It is important to understand the reasons behind problematic gaming behavior in order to create successful prevention and intervention strategies to tackle this problem. The way a family operates

is highly influential in determining how individuals behave and develop psychologically. Studying the correlation between family dynamics and IGD can offer an understanding on how family settings might influence or lessen the likelihood of excessive gaming. This information can assist families in recognizing possible risk factors and enhancing their support systems for their loved ones. The dark triad traits involve manipulative tendencies, lack of empathy, and a craving for power and dominance. Comprehending how these characteristics play a role in the connection between family functioning and IGD can provide insights into the fundamental reasons why individuals with these traits resort to excessive gaming as a way to cope or escape. Investigating how the dark triad traits influence problematic gaming behavior can enhance psychology's knowledge of the intricate relationship between personality traits and online activities. This study can enhance the increasing knowledge base about the psychological dimensions of gaming and personality, providing valuable insights to scholarly works and deepening our comprehension of human interactions in digital spaces.

Expanding on the points mentioned earlier, the main aim of this study is to explore the potential mediating roles of Machiavellianism, psychopathy, and narcissism in the associations between family functioning and IGD (Figure 1). We hypothesize the following:

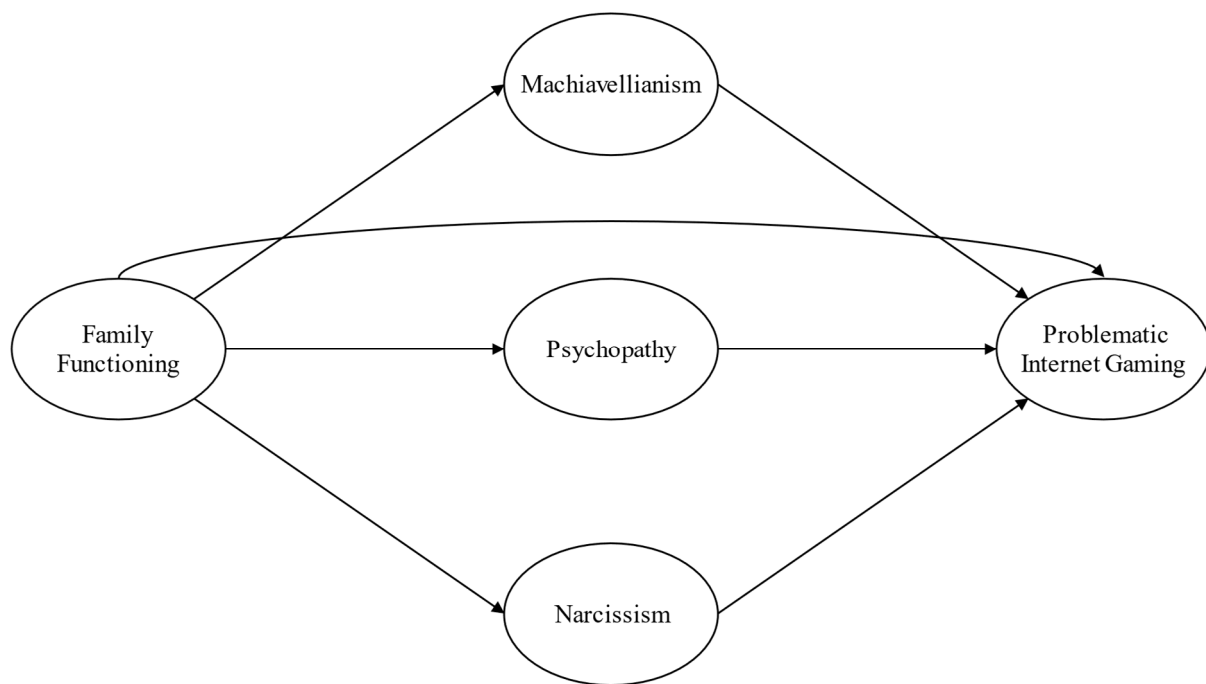


Figure 1. Hypothesized main model.

H1. *Poor family functioning will be positively associated with higher levels of IGD.*

H2. *Machiavellianism, psychopathy, and narcissism will mediate the relationship between family functioning and IGD.*

2. Materials and Methods

2.1. Participants

The study included a convenience sample of 1190 young adults in Italy, evenly split between 595 women and 595 men. The age of the participants ranged from 18 to 25 years ($M = 21.76$, $SD = 2.18$). The participants were recruited through online channels, utilizing several social networks. The criteria for inclusion encompassed individuals aged between 18 and 25 years, possessing fluency in Italian, having engaged in video gaming within the last six months, and maintaining an average of 7 h of video gaming per week. Regarding

educational attainment, 11% of participants had completed middle school, 56% held a high school diploma, 25% had obtained a university degree, and 8% had pursued postgraduate studies. With respect to occupational status, 35% of participants were students, 35% were unemployed, 23% were employed, and 7% were self-employed. In terms of marital status, 42% of participants were single, 41% were engaged, 9% were cohabiting, and 8% were married.

2.2. Procedures

The current study adhered to ethical guidelines outlined in the Declaration of Helsinki and the Italian Association of Psychology (AIP). Approval for the study was granted by the Institutional Review Board of the Institute for the Study of Psychotherapy, School of Specialization in Brief Psychotherapies with a Strategic Approach (reference number: ISP-IRB-2023-5). Participants were invited to take part in a comprehensive online survey via Google Forms. Their completion of the survey was required to ensure the collection of comprehensive data; hence, there were no missing data (e.g., [19]). Only individuals who provided informed consent were included in the study, and their participation was voluntary, without any form of compensation. The privacy and confidentiality of the participants were strictly upheld throughout all stages of the research process.

2.3. Measures

2.3.1. Family Functioning

Family functioning was assessed using the Italian version of the General Functioning Subscale of the McMaster Family Assessment Device (FAD), developed by Epstein et al. [20] and adapted by Roncone et al. [21]. The General Functioning Subscale refers to the overall health/pathology of the family and is composed of 12 items, such as “Making decisions is a problem for our family”. Each item was measured on a 4-point Likert scale, ranging from 1 (strongly agree) to 4 (strongly disagree). To calculate the overall level of family functioning, the scores for the 12 items were averaged, with higher scores indicating higher levels of general functioning. In this study, the internal consistency of the scale was found to be good, as indicated in Table 1.

Table 1. Descriptive analyses and correlations.

	M	SD	α	ω	1	2	3	4
1. Family Functioning	2.88	0.71	0.89	0.89	-	-	-	-
2. Machiavellianism	0.83	0.96	0.86	0.86	-0.23 *	-	-	-
3. Psychopathy	0.92	0.88	0.80	0.80	-0.23 *	0.59 *	-	-
4. Narcissism	1.47	1.08	0.83	0.84	-0.22 *	0.61 *	0.44 *	-
5. Problematic Internet Gaming	1.46	0.81	0.94	0.94	-0.26 *	0.44 *	0.49 *	0.27 *

Note: * $p < 0.01$.

2.3.2. Dark Triad

The Dark Triad Dirty Dozen (DTDD) scale, developed by Jonason and Webster [22] and validated in Italian by Schimmenti et al. [8], was employed to assess dark personality traits. This measurement scale comprises 12 items, with each of the three traits within the dark triad (narcissism, psychopathy, and Machiavellianism) being measured by four items. For example, items measuring narcissism include statements such as “I tend to want others to admire me”. Items assessing psychopathy include statements like “I tend to lack remorse”, while Machiavellianism is measured using items such as “I tend to manipulate others to get my way”. Higher scores on each subscale indicate a greater presence of the corresponding personality trait. In this study, the internal consistency of the DTDD scale was found to be good, as shown in Table 1.

2.3.3. Internet Gaming Disorder

To measure IGD, the study utilized the Italian version of the Internet Gaming Disorder Scale—Short-Form (IGDS9-SF) developed by Pontes and Griffiths [23] and adapted by Monacis et al. [24]. The IGDS9-SF is a 9-item self-report scale which assesses the severity of gaming-related issues and identifies individuals who may require further assessment or intervention. An example item is “Do you systematically fail when trying to control or cease your gaming activity?”. Participants were asked to rate each item on a 5-point Likert scale, ranging from 1 (never) to 5 (very often). Higher scores indicate higher levels of IGD. In this study, the internal consistency of the IGDS9-SF demonstrated good reliability, as shown in Table 1.

2.4. Statistical Analyses

Descriptive statistics and correlation analyses were conducted using the IBM SPSS 27 software. The primary analyses utilized the lavaan package in RStudio 2023.09.1 +494 to perform the subsequent statistical procedures.

To assess the potential impact of gender, we used a multivariate analysis of variance (MANOVA). This analysis examined the effects of gender on multiple dependent variables, including family functioning, Machiavellianism, psychopathy, narcissism, and IGD. When significant multivariate effects of gender were found, we performed additional univariate analyses and pairwise comparisons, applying Bonferroni correction to control for multiple comparisons.

To examine the mediation models, a latent variable structural equation modeling (SEM) technique was utilized. The first model included family functioning as the predictor variable, Machiavellianism, psychopathy, and narcissism as the mediator variables, and IGD as the outcome variable. The second model included family functioning as the predictor variable, Machiavellianism as the only mediator variable, and IGD as the outcome variable. The third model included family functioning as the predictor variable, psychopathy as the only mediator variable, and IGD as the outcome variable. The fourth model included family functioning as the predictor variable, narcissism as the only mediator variable, and IGD as the outcome variable. In assessing the significance of the indirect effects within the mediation models, the bias-corrected confidence interval method was utilized. This was generated through bootstrap resampling with 5000 resamples, allowing for the estimation of confidence intervals and determining statistical significance.

3. Results

3.1. Descriptive Statistics and Correlations

Table 1 presents the descriptive statistics and correlations among the variables examined in this study. The obtained means in this investigation align with previous research findings [8,25,26].

Initial analyses were carried out to examine the potential influence of gender on the study variables. A MANOVA was conducted, which showed significant multivariate effects of gender, indicated by Wilks' $\lambda = 0.97$ ($F(5, 1184) = 7.91, p < 0.001, \eta^2 = 0.03$). Subsequent univariate analyses indicated that gender had effects on Machiavellianism ($F(1, 1188) = 18.68, p < 0.001, \eta^2 = 0.02$), psychopathy ($F(1, 1188) = 25.63, p < 0.001, \eta^2 = 0.02$), narcissism ($F(1, 1188) = 6.03, p = 0.01, \eta^2 = 0.01$), and IGD ($F(1, 1188) = 29.98, p < 0.001, \eta^2 = 0.03$). Specifically, men exhibited higher levels of Machiavellianism, psychopathy, narcissism, and IGD compared to women. Given the significant multivariate effects, gender was included as a control variable in the main analyses.

3.2. Mediation Models

The proposed models, which employed structural equation modeling (SEM) with latent variables, were assessed for their goodness of fit using the collected data.

The first model (Figure 2) showed a good fit: $\chi^2(90) = 346.94, p < 0.001, CFI = 0.98, RMSEA = 0.05$ (90% CI = 0.04–0.05), and SRMR = 0.04. Significant relationships, both direct and indirect, were observed between all the study variables (Table 2).

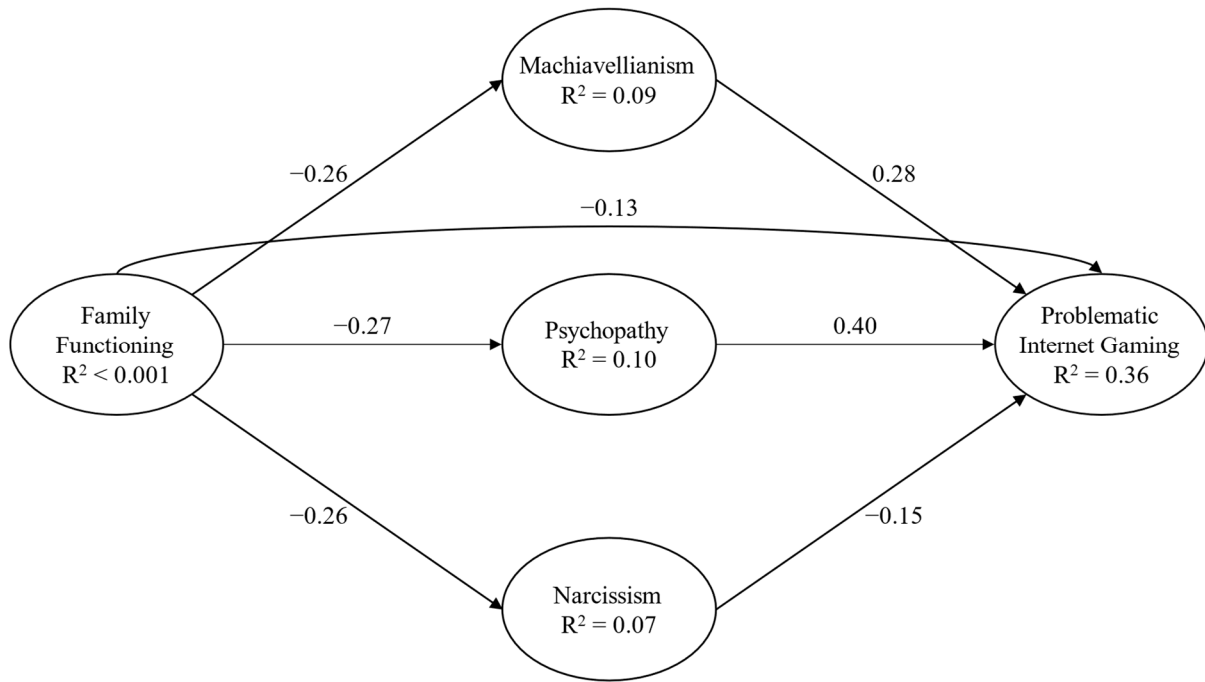


Figure 2. Structural Model 1. Note: only direct paths are reported for presentation and clarity purposes; paths from background variables were not presented for presentation and clarity purposes; and parcels were not presented for presentation and clarity purposes.

Table 2. Path estimates, SEs, and 95% CIs of Structural Model 1.

	β	p	SE	CI	CI
				LL	UL
Direct Effect					
Family Functioning → Machiavellianism	−0.26	<0.001	0.04	−0.44	−0.27
Family Functioning → Psychopathy	−0.27	<0.001	0.04	−0.42	−0.26
Family Functioning → Narcissism	−0.26	<0.001	0.05	−0.46	−0.26
Family Functioning → Problematic Internet Gaming	−0.13	<0.001	0.03	−0.22	−0.13
Machiavellianism → Problematic Internet Gaming	0.28	<0.001	0.07	0.13	0.40
Psychopathy → Problematic Internet Gaming	0.40	<0.001	0.06	0.29	0.50
Narcissism → Problematic Internet Gaming	−0.15	0.01	0.05	−0.22	−0.04
Indirect Effect via Machiavellianism					
Family Functioning → Problematic Internet Gaming	−0.04	0.003	0.01	−0.07	−0.02
Indirect Effect via Psychopathy					
Family Functioning → Problematic Internet Gaming	−0.05	<0.001	0.02	−0.09	−0.03
Indirect Effect via Narcissism					
Family Functioning → Problematic Internet Gaming	0.02	0.03	0.01	0.01	0.04
Total Effect					
	−0.20	<0.001	0.05	−0.34	−0.14

Note: β standardized regression coefficients; p level of significance; SE standard error; CI confidence interval; LL lower limit; and UL upper limit.

The second model (Figure 3) exhibited a satisfactory fit: $\chi^2(30) = 104.16, p < 0.001, CFI = 0.99, RMSEA = 0.05$ (90% CI = 0.04–0.06), and SRMR = 0.03. Significant paths, both direct and indirect, were highlighted between all the study variables (Table 3).

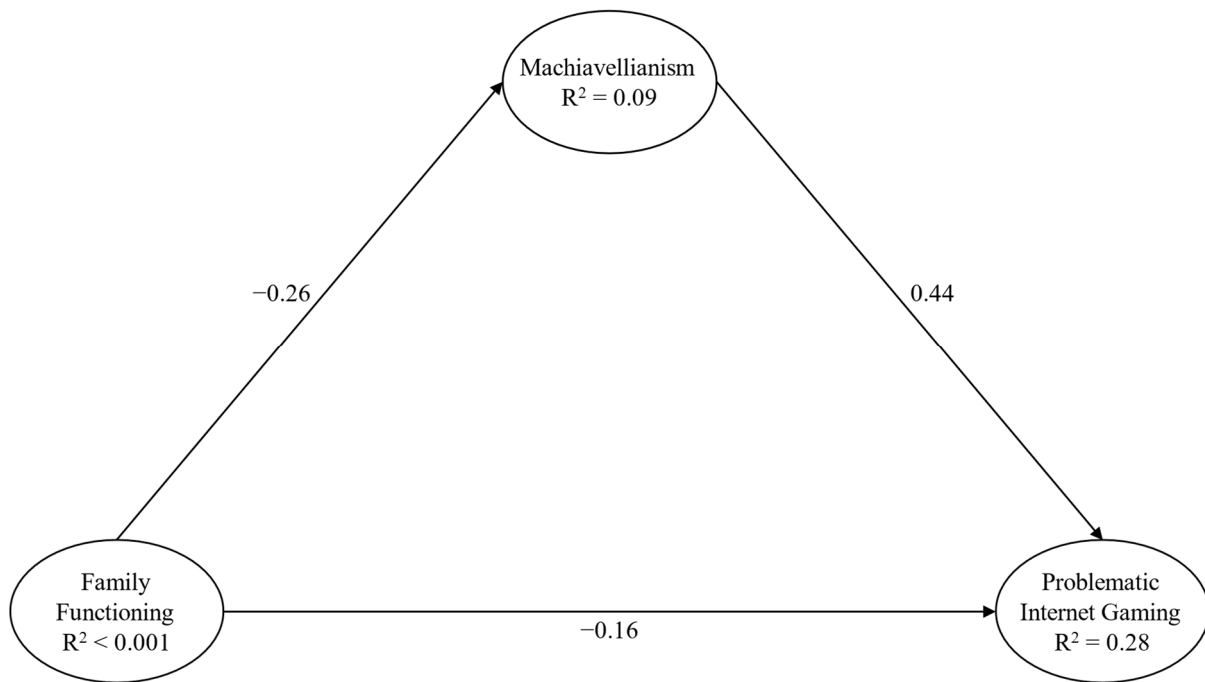


Figure 3. Structural Model 2 Note: only direct paths are reported for presentation and clarity purposes; paths from background variables were not presented for presentation and clarity purposes; and parcels were not presented for presentation and clarity purposes.

Table 3. Path Estimates, SEs and 95% CIs of Structural Model 2.

	β	p	SE	CI	CI
				LL	UL
Direct Effect					
Family Functioning → Machiavellianism	−0.26	<0.001	0.14	−0.44	−0.27
Family Functioning → Problematic Internet Gaming	−0.16	<0.001	0.03	−0.26	−0.13
Machiavellianism → Problematic Internet Gaming	0.44	<0.001	0.04	0.32	0.49
Indirect Effect via Machiavellianism					
Family Functioning → Problematic Internet Gaming	−0.07	<0.001	0.01	−0.10	−0.05

Note: β standardized regression coefficients; p level of significance; SE standard error; CI confidence interval; LL lower limit; and UL upper limit.

The third model (Figure 4) highlighted a good fit: $\chi^2(30) = 48.50, p = 0.02, CFI = 0.997, RMSEA = 0.02$ (90% CI = 0.01–0.03), and SRMR = 0.02. Significant paths, both direct and indirect, were highlighted between almost all the study variables (Table 4).

Table 4. Path Estimates, SEs and 95% CIs of Structural Model 3.

	β	p	SE	CI	CI
				LL	UL
Direct Effect					
Family Functioning → Psychopathy	−0.27	<0.001	0.04	−0.42	−0.25
Family Functioning → Problematic Internet Gaming	−0.13	<0.001	0.03	0.23	−0.10
Psychopathy → Problematic Internet Gaming	0.51	<0.001	0.04	0.43	0.60
Indirect Effect via Psychopathy					
Family Functioning → Problematic Internet Gaming	−0.07	<0.001	0.02	−0.12	−0.05

Note: β standardized regression coefficients; p level of significance; SE standard error; CI confidence interval; LL lower limit; and UL upper limit.

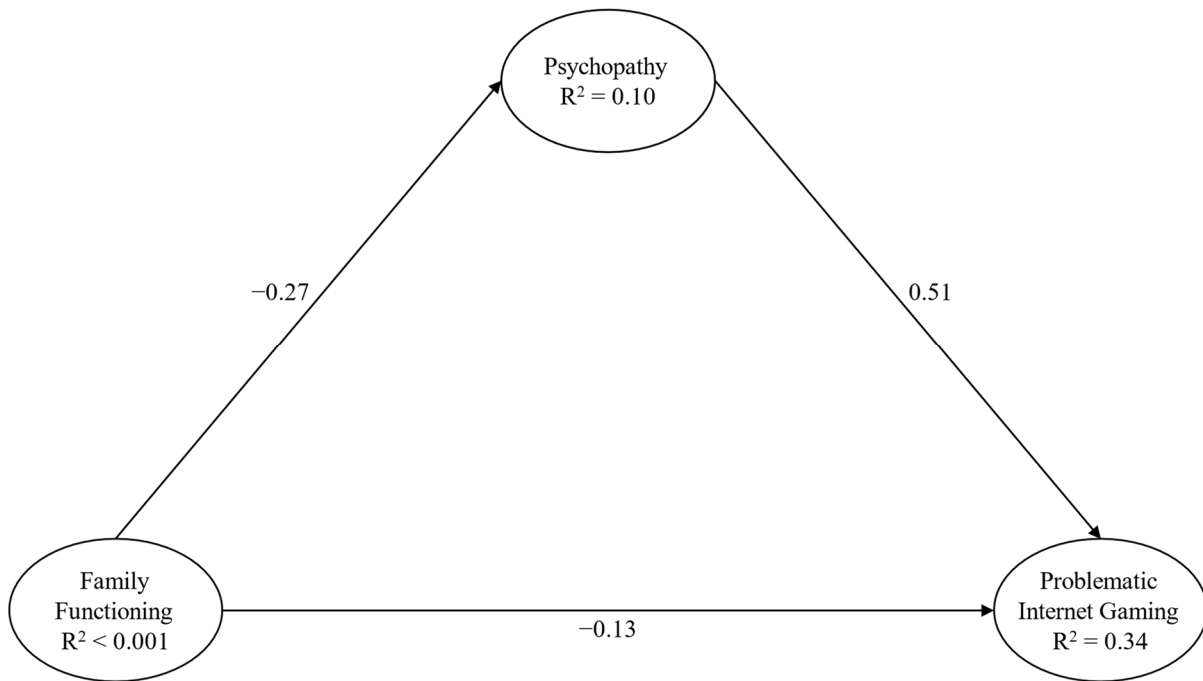


Figure 4. Structural Model 3 Note: only direct paths are reported for presentation and clarity purposes; paths from background variables were not presented for presentation and clarity purposes; and parcels were not presented for presentation and clarity purposes.

The fourth model (Figure 5) underlined a satisfactory fit: $\chi^2(30) = 139.70$, $p < 0.001$, CFI = 0.98, RMSEA = 0.06 (90% CI = 0.05–0.07), and SRMR = 0.04. Significant paths, both direct and indirect, were highlighted between almost all the study variables (Table 5).

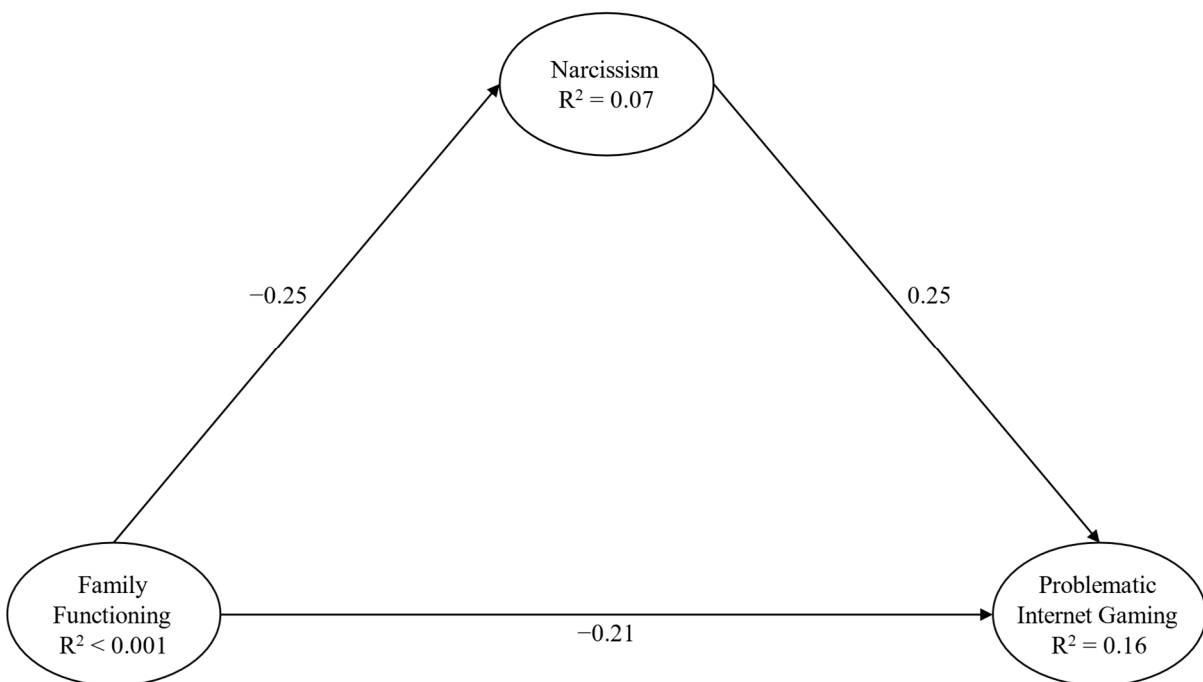


Figure 5. Structural Model 4 Note: only direct paths are reported for presentation and clarity purposes; paths from background variables were not presented for presentation and clarity purposes; and parcels were not presented for presentation and clarity purposes.

Table 5. Path Estimates, SEs and 95% CIs of Structural Model 4.

	β	p	SE	CI	CI
				LL	UL
Direct Effect					
Family Functioning → Narcissism	−0.25	<0.001	0.05	−0.48	−0.27
Family Functioning → Problematic Internet Gaming	−0.21	<0.001	0.04	−0.32	−0.19
Narcissism → Problematic Internet Gaming	0.25	<0.001	0.03	0.15	0.28
Indirect Effect via Narcissism					
Family Functioning → Problematic Internet Gaming	−0.05	<0.001	0.01	−0.07	−0.04

Note: β standardized regression coefficients; p level of significance; SE standard error; CI confidence interval; LL lower limit; and UL upper limit.

4. Discussion

The main aim of this research was to investigate how Machiavellianism, psychopathy, and narcissism may act as mediators between family functioning and IGD. The study's results offer a valuable understanding of the complex relationships between family functioning, the dark triad traits, and behaviors associated with internet gaming.

More precisely, we found that higher levels of family functioning were linked to lower likelihood of engaging in IGD among emerging adults. This is consistent with previous research that emphasizes the adverse effects of dysfunctional family environments on the social and psychological growth of children [3]. Additionally, our research discovered a significant mediating impact of the dark triad personality traits on the correlation between family functioning and IGD. This indicates that the dark triad characteristics serve as pathways by which family dynamics impact IGD in young adults. Our results support past studies that have individually explored the connections between the dark triad traits and IGD [14,15], and the relationship between family functioning and IGD [10,11]. Nevertheless, our research adds to the field by offering empirical proof for the involvement of the dark triad traits in this connection. Furthermore, our research also revealed intricate connections among the factors being studied, suggesting that the interaction between family dynamics, the dark triad characteristics, and IGD is complex and warrants additional investigation.

Individuals who grow up in dysfunctional family environments face a myriad of challenges that can profoundly impact their well-being and emotional development. The elevated stress, frequent conflicts, and emotional struggles in such environments create a complex emotional landscape for these individuals to navigate [3]. As a result, some individuals may develop coping mechanisms to adapt to these difficult family dynamics. One such coping mechanism is observed in individuals with Machiavellian traits, who are known for their strategic and manipulative tendencies. The skillset honed through Machiavellianism may offer them a way to navigate the complexities of their family life [12,13]. IGD then becomes a refuge for these individuals, a place where they can exercise control and seek escape from the challenges they experience in their real-life environment. Within the virtual world of online gaming, where social interactions, alliances, and competitions abound, Machiavellian individuals find fertile ground to exploit others and gain advantages [10,12]. This can become especially relevant when their dysfunctional family dynamics fail to provide positive role models or healthy social connections, making online gaming an appealing platform to assert control and satisfy their strategic inclinations.

Similarly, psychopathic individuals, with their callous and unemotional traits, may find solace in IGD as a coping mechanism to cope with the emotional difficulties they encounter in their family life [11,13]. The virtual realm of gaming offers a sanctuary to numb or escape from these challenging emotional experiences, allowing them to avoid confronting the negative feelings associated with their upbringing. Psychopathy is also linked to a craving for excitement and stimulation, making fast-paced and action-packed games particularly enticing for these individuals [14,15]. Within dysfunctional family environments that lack sufficient stimulation or excitement, the allure of excessive gaming becomes even more attractive. In addition, their natural inclination for power and control is

well-suited for online gaming, where they can demonstrate dominance and wield authority over rivals [14,17]. The online arena transforms into a platform where individuals can satisfy their desire for dominance and authority, meeting a longing that might not be fulfilled in their actual familial environment.

For individuals with narcissistic traits, IGD offers a canvas for their self-centered inclinations and a means to compensate for perceived inadequacies or negative emotions stemming from their family life [10,15]. The virtual world of gaming becomes a stage where they receive the adoration and recognition they crave, temporarily boosting their fragile self-esteem. Dysfunctional family dynamics that fail to provide sufficient positive reinforcement or validation can fuel the need for external affirmation, leading these individuals to seek validation through excessive gaming [11,14]. The desire for self-enhancement and attention-seeking behaviors draws them to multiplayer or competitive settings, where they can showcase their skills and accomplishments to a larger audience, garnering the admiration they seek. The virtual stage offers them a platform to express their grandiose fantasies and aspirations, creating avatars that embody their idealized selves [15,17]. Within the immersive communities of online gaming, opportunities arise for them to exploit or manipulate others for their benefit, further reinforcing their sense of self-importance. The dynamic and competitive nature of online gaming aligns with their yearning to be perceived as superior, especially if they feel unacknowledged or undervalued within their family environment [13,14]. The detachment from real-life consequences in the virtual world enables them to express their self-centered behaviors without the burden of empathy or social expectations.

The discrepancy between the positive correlation found in the Pearson's correlation analysis between narcissism and IGD and the negative relationship observed in the mediation model can be attributed to various theoretical factors. One possible explanation is the influence of a third variable (Machiavellianism and psychopathy in this case), which can alter the relationship between the two variables. The strong positive relationships between Machiavellianism, psychopathy, and cyberbullying behaviors may overshadow the relationship between narcissism and cyberbullying behaviors when considered together in the mediation model. This could lead to a negative relationship between narcissism and IGD when mediated by narcissism. Moreover, each dark triad trait may have distinct mediation effects on the relationship between family functioning and IGD. While the fourth model indicates a positive mediation effect for narcissism when examined independently, the more complex model including all three traits shows narcissism acting as a negative mediator, inhibiting the direct relationship between family functioning and IGD. These findings underscore the significance of considering the combined effects of dark triad traits when studying their mediation effects on the link between family functioning and IGD. The study's results align with recent research indicating that while narcissism seems to have a positive relationship with problematic internet behaviors like cyberbullying, its mediating effects can become insignificant or negative when accounting for the other two dark triad traits [27,28]. However, it is crucial to interpret the finding regarding the negative mediating effect of narcissism cautiously, as the effect size was small, similar to the latter study [28]. Furthermore, the literature on narcissism's mediating effects reveals intricate relationships, with different outcomes observed in various dimensions of narcissism. For example, covert narcissism and overt narcissism or pathological narcissism vulnerability and grandiosity can lead to different results [29,30]. While the present study contributes to understanding these complexities, further research is needed to gain deeper insights into these phenomena.

Finally, the significant gender differences identified in our MANCOVA highlight the necessity of incorporating gender as a critical factor when examining the relationships between family dynamics, dark triad traits, and IGD. Men's higher levels of Machiavellianism, psychopathy, and narcissism suggest that they may be more prone to using manipulative or exploitative strategies and seeking validation through gaming [31,32]. This may imply

that interventions for IGD could benefit from being tailored to address these specific traits more effectively in men.

5. Conclusions

5.1. Limitations

Our research has several limitations that need to be addressed. The use of a cross-sectional design restricts our ability to determine causality between variables. Longitudinal studies tracking participants over time would provide a better understanding of these relationships and offer stronger evidence for the observed correlations. Furthermore, relying on self-reported data introduces potential bias, as participants' perceptions and responses may affect the accuracy of the information. Future research should integrate multiple data sources, including objective measures and external feedback, to enhance the reliability and comprehensiveness of the findings. Finally, our study used only online data collection methods, which may exclude individuals without internet access or those less likely to participate in online surveys. To obtain a more representative sample, future studies should consider alternative data collection methods, such as face-to-face interviews or non-online sources, to ensure broader inclusivity and a more accurate reflection of the target population.

5.2. Clinical Implications and Future Research

The findings of this research offer an important understanding into the complex relationships among family dynamics, the dark triad traits, and IGD. The mediation techniques used in this study reveal the underlying factors that lead to the development of IGD in young adults.

Clinicians are advised to consider the presence of these traits when addressing issues related to family dynamics and gaming behaviors. Recognizing how Machiavellianism, psychopathy, and narcissism act as mediators can lead to more tailored interventions. For those with Machiavellian or psychopathic traits, interventions might target manipulative behaviors both in gaming and real life. In contrast, individuals with narcissistic traits may benefit from strategies that help them build self-worth and find validation through healthier channels rather than excessive gaming. The findings also underscore the potential benefits of family therapy. Since family functioning plays a crucial role in IGD, therapeutic approaches that address dysfunctional family dynamics and teach better stress management and conflict resolution could be particularly effective.

Looking ahead, incorporating diverse age groups in research could shed light on how the influence of dark triad traits evolves over different life stages, helping to pinpoint key moments for intervention and prevention. Additionally, examining these relationships across various cultural contexts might reveal whether the connections are universally applicable or specific to certain cultures. Exploring the mechanisms through which dark triad traits mediate the relationship between family dynamics and IGD could further refine intervention strategies. Ultimately, understanding these complexities will aid in developing comprehensive treatment plans that address the multifaceted nature of gaming disorders.

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Informed Consent Statement: Informed consent was obtained from all participants involved in the study.

Data Availability Statement: The data presented in this study are available on request from the corresponding author (the data are not publicly available due to privacy and ethical restrictions).

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Article

Cyberbullying and Cybervictimization: The Role of Parental Psychological Control and Dark Triad

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Abstract: The rising prevalence of cyberbullying in online environments has raised concerns about the well-being and safety of individuals. The objective of this research is to explore if the dark triad traits (Machiavellianism, psychopathy, and narcissism) function as mediators in the connections between maternal psychological control, paternal psychological control, cyberbullying, and cybervictimization. A sample of 1016 young adults participated in an online survey, providing self-reported data. The results revealed complex relationships among the variables examined. While most direct and indirect links were statistically significant, the direct connection between maternal psychological control and cyberbullying was significant only when paternal psychological control was not simultaneously included as a predictor. Furthermore, narcissism's mediating effects were beneficial when Machiavellianism and psychopathy were excluded and negative otherwise. The results highlight that individuals with high degrees of parental psychological control are more prone to engage in manipulative actions and lack empathy, leading to cyberbullying and cybervictimization. Future research should disentangle the distinct roles of maternal and paternal control, investigate the interplay among dark triad traits in different social contexts, and consider how peer dynamics and digital environments may amplify or mitigate these effects.

Keywords: parental psychological control; dark triad traits; cyberbullying; cybervictimization; emerging adults



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1. Introduction

Cyberbullying entails purposeful and repeated harmful actions conducted through digital communication channels, such as social media, text messages, or online platforms (Baldry et al. 2015; Pozzoli and Gini 2020). It poses a growing threat to the well-being and safety of individuals, especially youths. Conversely, cybervictimization refers to being targeted and harmed by cyberbullying behaviors (Baldry et al. 2015; Pozzoli and Gini 2020). As digital platforms become increasingly embedded in daily life, the potential for online aggression and victimization has expanded, prompting urgent calls to understand and address the factors contributing to these behaviors. Among the known predictors of cyberbullying and cybervictimization, family dynamics, such as parental psychological control, play a pivotal role.

Parental psychological control involves the utilization of manipulative and intrusive strategies by parents to influence their child's thoughts, emotions, and actions (Scharf and Goldner 2018). These methods encompass techniques like guilt-inducing,

shaming, dismissing emotions, and imposing restrictions on the child's independence. When youths experience heightened degrees of parental psychological control, it can lead to adverse psychological consequences, including heightened anxiety and depression (Rogers et al. 2020). Some studies propose that youths subjected to heightened levels of parental psychological control may be more susceptible to engaging in cyberbullying or experiencing cybervictimization (Kokkinos et al. 2016; Lin et al. 2020). In relation to cyberbullying, research suggests that adolescents exposed to controlling parental practices may internalize these behaviors and, in turn, replicate them in their peer interactions (Verrastro et al. 2024a, 2024b). The online environment may offer them a space to assert power or vent feelings of frustration and helplessness. Consequently, these youths might perceive the internet as an avenue to exert power and dominance over others, similar to their experiences of being controlled in their personal lives (Baldry et al. 2019; Padir et al. 2020). Engaging in cyberbullying may offer them a sense of empowerment and a way to vent their feelings of frustration, anger, or powerlessness anonymously in the online realm.

Regarding cybervictimization, the emotional vulnerabilities instilled by psychological control, such as low self-esteem, poor emotional regulation, and dependence on external validation, may render adolescents more susceptible to being targeted by online aggressors (Lozano-Blasco et al. 2024). In fact, youths who have experienced parental psychological control may be more prone to becoming targets of cyberbullying themselves (Lin et al. 2020; Padir et al. 2020). The emotional distress induced by controlling parenting practices can leave them open to manipulation and online attacks from cyberbullies. The cycle of experiencing psychological control and then becoming a cybervictim may perpetuate the child's emotional distress and sense of powerlessness (Baldry et al. 2019; Kokkinos et al. 2016). Furthermore, youths raised in an environment of psychological control might encounter challenges in forming healthy and assertive interpersonal relationships. This could result from their lack of experience in making independent decisions, expressing their emotions, or advocating for themselves due to the restrictive nature of their upbringing (Kokkinos et al. 2016; Lin et al. 2020). As a consequence, they may struggle to set boundaries and respond effectively to cyberbullying situations, thus becoming easier targets for online harassment and victimization.

In addition to parenting, maladaptive personality traits, such as those within the Dark Triad, have emerged as significant predictors of cyberbullying and cybervictimization. The Dark Triad, encompassing narcissism, Machiavellianism, and psychopathy, represents three socially aversive personality traits. Individuals with heightened levels of narcissism exhibit an inflated sense of self-importance, constantly seeking admiration and lacking empathy toward other individuals (Schimmenti et al. 2019; Vize et al. 2020). They may exploit others to achieve personal goals and be highly sensitive to perceived criticism or rejection. Those high in Machiavellianism display manipulative and strategic tendencies, willing to exploit other people for personal advantage (Jonason and Webster 2010; Vize et al. 2020). They often engage in deception and manipulation to achieve their objectives, showing little concern for the well-being of their targets. Meanwhile, individuals with elevated psychopathy levels demonstrate a lack of empathy, remorse, and conscience (Jonason and Webster 2010; Schimmenti et al. 2019). Their tendencies towards impulsivity and antisocial behaviors disregard the feelings and rights of others.

Research indicates that certain parenting practices, such as psychological control, may contribute to the development of personality traits associated with the Dark Triad. For example, parental psychological control, characterized by manipulation, invalidation of emotions, and an emphasis on the child's compliance with parental expectations, can lead to the development of narcissistic traits (Jonason et al. 2014; Li et al. 2020). When youths are raised in an environment where their self-worth hinges on meeting their parents'

demands, they may develop an inflated sense of self-importance and entitlement. Similarly, parental psychological control might inadvertently nurture Machiavellian traits in youths (Jonason et al. 2014; Liu et al. 2021). If youths observe that manipulation and strategic behaviors are effective means of achieving goals or avoiding punishment, they may adopt similar tactics in their own interactions with others. While it is thought that psychopathy arises from a blend of genetic and environmental influences, some studies suggest that harsh and controlling parenting practices could be connected with an elevated risk of psychopathic traits in youths (Li et al. 2020; Liu et al. 2021). Such parenting approaches may disrupt the development of empathy and conscience in a child, thereby contributing to the development of psychopathic tendencies (Calaresi et al. 2024b).

Research findings suggest that individuals with elevated Dark Triad traits display a higher likelihood of engaging in cyberbullying and cybervictimization. The Dark Triad encompasses personality traits characterized by manipulative, exploitative, and callous tendencies, which can find a fitting avenue for expression in the digital realm (Goodboy and Martin 2015; Hajlo et al. 2015). The correlation of the Dark Triad with cyberbullying can thus be influenced significantly by the relative anonymity and detachment that online platforms provide. With the shield of anonymity, cyberbullies can act without immediate consequences or accountability for their actions (Hajlo et al. 2015; Panatik et al. 2022). For those high in Dark Triad traits, this anonymity can become particularly enticing, as it can remove the fear of facing social backlash or retaliation that might otherwise curb their harmful behaviors in face-to-face interactions (Calaresi et al. 2024b). The manipulative and exploitative inclinations of individuals with Dark Triad traits may thus play a critical role in cyberbullying incidents (Panatik et al. 2022; Schade et al. 2021). They possess a keen ability to identify vulnerabilities in their targets and exploit them to cause emotional harm. Personal information shared online, such as insecurities or weaknesses, can become a weapon for these cyberbullies to effectively humiliate and torment their victims (Goodboy and Martin 2015; Schade et al. 2021). Furthermore, individuals exhibiting elevated Dark Triad levels often lack empathy and remorse, which can further fuel their engagement in cyberbullying. Individuals high in Dark Triad traits exhibit diminished empathic responses, enabling them to dismiss the emotional impact of their cyberbullying behavior on their victims (Hajlo et al. 2015; Schade et al. 2021). The absence of guilt or remorse means they are less likely to experience moral dilemmas or regret regarding their harmful actions, leading them to persist in their cyberbullying behaviors without remorse (Goodboy and Martin 2015; Panatik et al. 2022).

Additionally, those with Dark Triad traits may also be involved in cybervictimization, either as targets of retaliation or due to the interpersonal conflicts their behaviors provoke. Their antagonistic and provocative interpersonal style can increase the likelihood of negative interactions online, leading to peer rejection or targeted attacks (Azami and Taremian 2021; Gajda et al. 2023). In some cases, individuals high in Dark Triad traits may perceive themselves as victims when their manipulations are exposed or challenged, thereby contributing to a subjective sense of victimization. Moreover, their low empathy and poor emotion regulation can hinder effective coping with online hostility, making them more vulnerable to emotional distress when they become targets themselves (Azami and Taremian 2021; Gajda et al. 2023). The absence of guilt or remorse further complicates this cycle, as such individuals may neither recognize the harm they cause nor learn from being harmed, sustaining maladaptive interaction patterns in digital environments.

The present study focuses on parental psychological control, Dark Triad personality traits, and cyberbullying/cybervictimization to better understand the interplay of family, personality, and online behavior in adolescence. These variables are considered together based on theoretical and empirical evidence suggesting that negative parenting

practices can shape the development of maladaptive personality traits, which in turn may increase the likelihood of involvement in online aggression, either as perpetrators or victims. Parental psychological control, in particular, has been linked to emotional dysregulation and antisocial tendencies, which may foster traits such as Machiavellianism, narcissism, and psychopathy. These traits are especially relevant in digital contexts, where the reduced accountability of online interactions may encourage manipulative and harmful behavior. Furthermore, by examining both cyberbullying and cybervictimization, this study acknowledges that adolescents with high Dark Triad traits may not only engage in online aggression but also provoke or become entangled in hostile exchanges. Bringing these variables together in a unified model allows for a more integrated understanding of the mechanisms through which family dynamics and personality traits shape adolescents' online experiences and can inform targeted prevention and intervention efforts.

The primary objective of the present research is to examine whether the Dark Triad traits, Machiavellianism, psychopathy, and narcissism, mediate the relationships between maternal and paternal psychological control and adolescents' involvement in cyberbullying and cybervictimization (see Figure 1). Specifically, based on the existing literature, we hypothesize that higher levels of parental psychological control will be positively associated with higher levels of Dark Triad traits in adolescents (H1) and that each of these traits will, in turn, predict increased engagement in cyberbullying (H2) and a higher likelihood of experiencing cybervictimization (H3). A further hypothesis (H4) is that the Dark Triad traits will mediate the links between both maternal and paternal psychological control and cyberbullying/cybervictimization behaviors. Moreover, the study will explore, through multiple models, the unique contributions of maternal versus paternal psychological control and of each individual Dark Triad trait to provide a more nuanced understanding of their roles in adolescents' online behaviors. This approach aims to clarify the underlying mechanisms through which family dynamics and maladaptive personality traits interact to influence both perpetration and victimization in digital contexts.

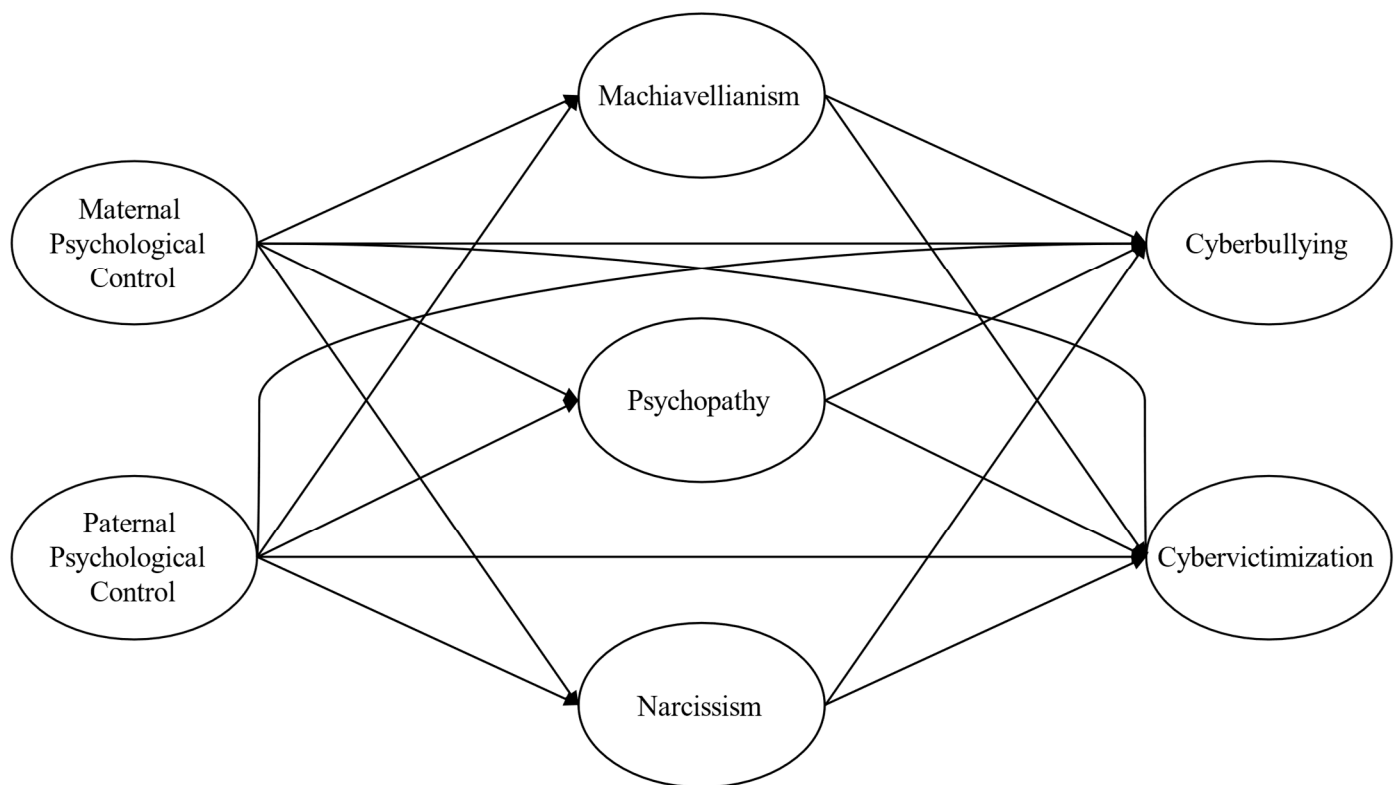


Figure 1. Hypothesized Main Model.

2. Materials and Methods

2.1. Participants

A sample of 1016 young people in Italy, equally divided between 508 women and 508 men, made up the study. The age range of participants was 18–25 years old ($M = 21.64$, $SD = 2.22$), meaning they generally had at least 13 years of schooling, corresponding roughly to the period following completion of upper secondary education or end of high school. All participants in the current study were living with their parents at the time of data collection. This condition was ensured during recruitment to maintain consistency in assessing perceived maternal and paternal psychological control. A convenience sampling method was used, and participants were recruited online through various widely used social media platforms, including Facebook, Instagram, and WhatsApp. The survey link was shared in public groups, community pages, and through personal networks. To increase reach, participants were encouraged to share the link with others, allowing for broader dissemination through a snowball sampling effect. In terms of educational achievement, 57% of participants completed high school, 31% university, 11% postgraduation, and 11% middle school. Thirty percent of participants were students, thirteen percent were jobless, forty-four percent were working, and thirteen percent worked for themselves. In the sample, 46% were not in a relationship, 41% were engaged, 6% were cohabiting, and 7% were married. The research complied with the standards set out by the Italian Association of Psychology (AIP) and the Helsinki Declaration. The Institute for the Study of Psychotherapies, Specialization School in Brief Psychotherapies with a Strategic Approach (ISP; number: ISP-IRB-2023-5) IRB approved the study. Participants were fully informed about their rights before participation, including the voluntary nature of the study and their ability to withdraw at any time without any issue. Contact information for support resources was provided in the debriefing materials to assist participants who might have experienced distress due to the sensitive nature of the topic. The survey was conducted anonymously to protect participants' privacy. No incentives were offered, and the survey remained open for one month to facilitate broad recruitment.

2.2. Measures

2.2.1. Parental Psychological Control

These variables were examined using the Italian form of the Psychological Control Scale (PCS) (Barber 1996; Costa et al. 2015). The sample was requested to determine the degree of psychological control they bore from their mothers and fathers separately. This was performed by responding to a set of eight items, such as “My mother/father changes the subject whenever I have something to say”. Each item was evaluated using a 3-point Likert scale, spanning from 1 (not like her/him) to 3 (a lot like her/him). To calculate the comprehensive extent of parental psychological control, The average of the scores for the eight items was computed, with elevated scores reflecting heightened perceived psychological control. The original Italian validation of the PCS demonstrated good internal consistency, with Cronbach's alpha coefficients ranging from 0.78 to 0.81 (Costa et al. 2015). In this study, the internal consistency of the scale was found to be good, as indicated in Table 1.

Table 1. Descriptive analyses and correlations.

	M	SD	α	1	2	3	4	5	6
1. Maternal Psychological Control	1.61	0.51	0.84	-	-	-	-	-	-
2. Paternal Psychological Control	1.53	0.53	0.87	0.36 **	-	-	-	-	-
3. Machiavellianism	0.78	0.94	0.87	0.28 **	0.22 **	-	-	-	-
4. Psychopathy	0.88	0.92	0.81	0.25 **	0.17 **	0.57 **	-	-	-

Table 1. *Cont.*

	M	SD	α	1	2	3	4	5	6
5. Narcissism	1.45	1.08	0.84	0.26 **	−0.24 **	0.60 **	0.43 **	-	-
6. Cyberbullying	1.39	0.66	0.82	0.24 **	0.25 **	0.50 **	0.50 *	0.32 **	-
7. Cybervictimization	1.51	0.77	0.81	0.32 **	0.27 **	0.39 **	0.40 **	0.26 **	0.64 **

Note: $n = 1016$. * $p < 0.05$; ** $p < 0.01$.

2.2.2. Dark Triad

The Italian validation of the Dark Triad Dirty Dozen scale (DTDD) (Jonason and Webster 2010; Schimmenti et al. 2019) was carried out to evaluate such traits. The DTDD measurement scale comprises 12 items, 4 for each dark triad trait (narcissism, psychopathy, Machiavellianism). An item assessing narcissism is “I tend to want others to admire me”. Items assessing psychopathy comprise statements like “I tend to lack remorse”. An item measuring Machiavellianism is “I tend to manipulate others to get my way”. A greater presence of the associated personality characteristic is indicated by higher scores on each subscale. The initial Italian validation of the DTDD reported satisfactory internal consistency, with Cronbach’s alpha values reaching 0.82 for the global scale (Schimmenti et al. 2019). As seen in Table 1, the DTDD scale’s internal consistency was found to be good in this study.

2.2.3. Cyberbullying and Cybervictimization

To measure cyberbullying and cybervictimization, the study utilized the Italian version of the cyberbullying subscale and cybervictimization subscale of the behaviors in cyberbullying scale (Pozzoli and Gini 2020). The cyberbullying subscale, consisting of four items, assessed behaviors related to cyberbullying, such as “I threatened or insulted someone using the Internet or the phone”. The cybervictimization subscale, also comprising four items, measured experiences of being a victim of cyberbullying, for example, “Someone created an online group in which people made fun of me”. Participants were instructed to answer on a Likert scale, going from 1 to 5 (never to almost always). Greater values on both subscales indicated greater cyberbullying and cybervictimization, respectively. The original Italian validation of the subscales indicated acceptable internal consistency, with Cronbach’s alpha coefficients ranging from 0.75 to 0.77 (Pozzoli and Gini 2020). In the present research, Cronbach’s values were found to be good (Table 1).

2.3. Statistical Analyses

To perform correlation analysis and descriptive statistics, IBM SPSS 27 software was used. The following statistical operations were carried out in the primary analysis using RStudio’s Lavaan package.

A MANOVA was conducted to examine the effect of sex on multiple dependent variables, which included maternal psychological control, paternal psychological control, Machiavellianism, psychopathy, narcissism, cyberbullying, and cybervictimization. Sex was treated as the independent variable, and the rest of the variables were treated as dependent variables. When a significant multivariate effect of sex was found, follow-up univariate analyses were performed, with Bonferroni correction applied to control for multiple comparisons.

To assess the hypothesized paths, the Structural Equation Modeling (SEM) technique was applied. The first model had maternal and paternal psychological control as predictor variables, dark triad traits as mediator variables, and cyberbullying and cybervictimization as outcome variables. The second model included maternal psychological control as the only predictor, the dark triad traits as mediator variables, and cyberbullying and cybervic-

timization as outcome variables. The third model included paternal psychological control as the only predictor, Machiavellianism, psychopathy, and narcissism as mediator variables, and cyberbullying and cybervictimization as outcome variables. The second and third models investigated the independent role of maternal and paternal psychological control, respectively. The fourth model included maternal and paternal psychological control as predictor variables, Machiavellianism as the only mediator variable, and cyberbullying and cybervictimization as outcome variables. The fifth model included maternal and paternal psychological control as predictor variables, psychopathy as a mediator, and cyberbullying and cybervictimization as outcome variables. The sixth one considered maternal and paternal psychological control as predictor variables, narcissism as the only mediator variable, and cyberbullying and cybervictimization as outcome variables. The fourth, fifth and sixth models investigated the independent role of Machiavellianism, psychopathy, and narcissism, respectively. The bias-corrected confidence interval approach was used to assess the importance of indirect routes in the mediation models. In order to estimate confidence intervals and ascertain statistical significance, this was produced using bootstrap resampling using 5000 resamples.

3. Results

3.1. Preliminary Analysis

Table 1 shows the results of the preliminary analysis. The means are similar to the ones found in the literature (Costa et al. 2015; Pozzoli and Gini 2020; Schimmenti et al. 2019).

Initial analyses were performed to explore the possible impact of sex on the variables under investigation in the study. A MANOVA was carried out, revealing significant multivariate effects for sex, indicated by Wilks’s $\lambda = 0.97$, $F(7, 1008) = 4.58$, $p < 0.001$, $\eta^2 = 0.03$. Subsequent univariate analyses of variance (ANOVAs) highlighted the influence of sex on Machiavellianism, $F(1, 1014) = 6.45$, $p = 0.01$, $\eta^2 = 0.01$, psychopathy, $F(1, 1014) = 25.02$, $p < 0.001$, $\eta^2 = 0.02$, narcissism, $F(1, 1014) = 5.23$, $p = 0.02$, $\eta^2 = 0.01$, cyberbullying, $F(1, 1014) = 13.55$, $p < 0.001$, $\eta^2 = 0.01$, and cybervictimization, $F(1, 1014) = 8.75$, $p = 0.003$, $\eta^2 = 0.01$. Specifically, men reported greater values of dark triad traits, cyberbullying, and cybervictimization. Considering the influence of sex on the main variables, sex was incorporated as a control variable in the main analyses.

3.2. Hypothesized Paths

Model 1 (Figure 2) had the following fit indices: $\chi^2(182) = 561.69$, $p < 0.001$, CFI = 0.97, RMSEA = 0.05 (90% CI = 0.04–0.05), and SRMR = 0.04. Significant paths were highlighted among all variables, excluding the direct path between maternal psychological control and cyberbullying (Table 2).

Table 2. Path Estimates, Standard Errors and 95% Confidence Intervals of Model 1.

	β	p	SE	CI LL	CI UL
Direct Path					
Maternal Psychological Control → Machiavellianism	0.27	<0.001	0.10	0.39	0.77
Maternal Psychological Control → Psychopathy	0.26	<0.001	0.09	0.33	0.70
Maternal Psychological Control → Narcissism	0.22	<0.001	0.12	0.37	0.85
Maternal Psychological Control → Cyberbullying	0.03	0.44	0.06	−0.08	0.16
Maternal Psychological Control → Cybervictimization	0.17	<0.001	0.07	0.15	0.43
Paternal Psychological Control → Machiavellianism	0.15	<0.001	0.08	0.13	0.44
Paternal Psychological Control → Psychopathy	0.10	0.02	0.08	0.04	0.34
Paternal Psychological Control → Narcissism	0.18	<0.001	0.10	0.24	0.63

Table 2. Cont.

	β	p	SE	CI LL	CI UL
Paternal Psychological Control → Cyberbullying	0.15	<0.001	0.05	0.10	0.31
Paternal Psychological Control → Cybervictimization	0.14	<0.001	0.06	0.09	0.33
Machiavellianism → Cyberbullying	0.40	<0.001	0.05	0.19	0.40
Machiavellianism → Cybervictimization	0.26	<0.001	0.06	0.09	0.34
Psychopathy → Cyberbullying	0.36	<0.001	0.05	0.18	0.37
Psychopathy → Cybervictimization	0.29	<0.001	0.06	0.14	0.36
Narcissism → Cyberbullying	-0.16	0.001	0.03	-0.14	-0.04
Narcissism → Cybervictimization	-0.12	0.02	0.03	-0.14	-0.02
InDirect Path via Machiavellianism					
Maternal Psychological Control → Cyberbullying	0.11	<0.001	0.04	0.09	0.26
Maternal Psychological Control → Cybervictimization	0.07	0.01	0.04	0.05	0.22
Paternal Psychological Control → Cyberbullying	0.06	0.004	0.03	0.04	0.15
Paternal Psychological Control → Cybervictimization	0.04	0.02	0.03	0.02	0.12
InDirect Path via Psychopathy					
Maternal Psychological Control → Cyberbullying	0.09	<0.001	0.04	0.08	0.22
Maternal Psychological Control → Cybervictimization	0.07	0.001	0.04	0.05	0.22
Paternal Psychological Control → Cyberbullying	0.04	0.04	0.02	0.01	0.10
Paternal Psychological Control → Cybervictimization	0.03	0.047	0.02	0.01	0.09
InDirect Path via Narcissism					
Maternal Psychological Control → Cyberbullying	-0.04	0.01	0.02	-0.10	-0.02
Maternal Psychological Control → Cybervictimization	-0.03	0.03	0.02	-0.09	-0.01
Paternal Psychological Control → Cyberbullying	-0.10	0.01	0.02	-0.07	-0.02
Paternal Psychological Control → Cybervictimization	-0.02	0.04	0.02	-0.07	-0.01

Note: p = level of significance; SE = standard error; CI LL = lower limit of the confidence interval; UL LL = upper limit of the confidence interval.

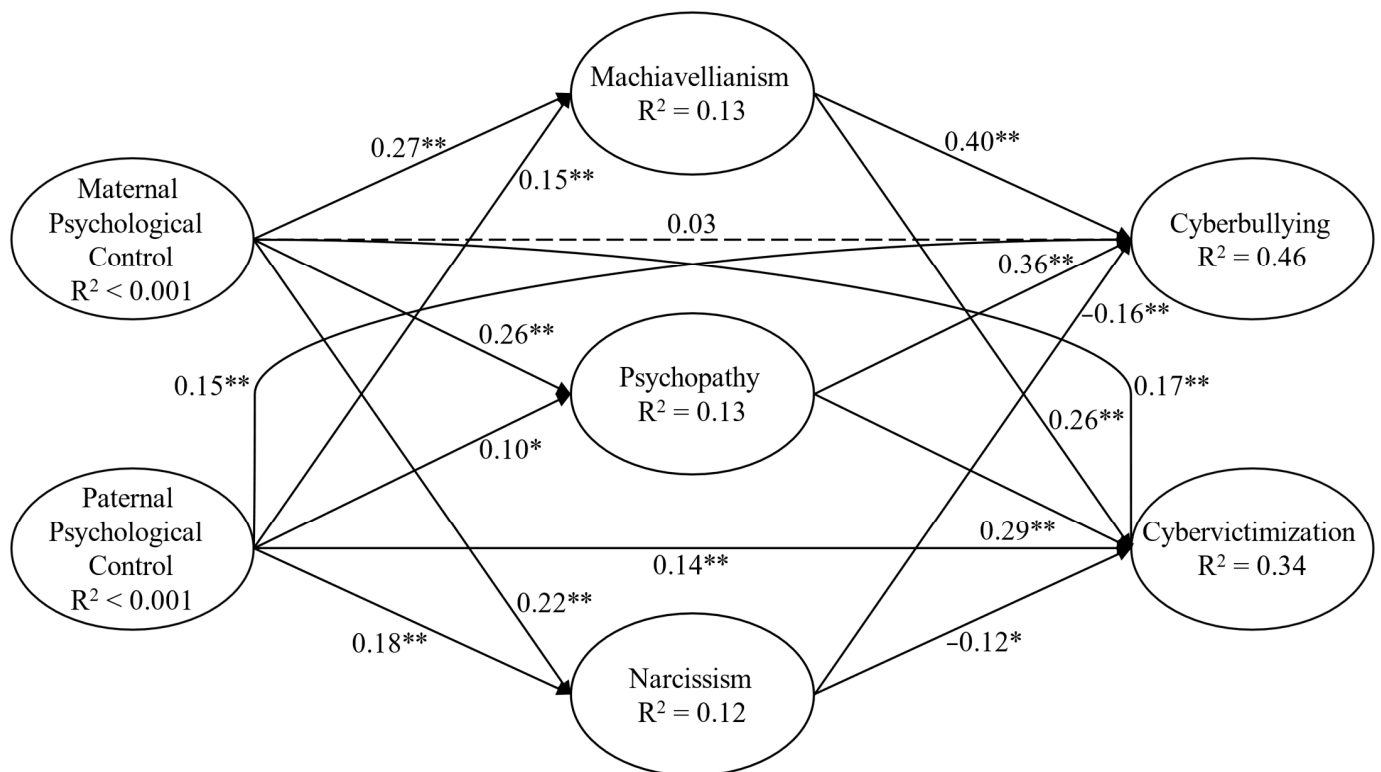


Figure 2. Model 1; Note: * $p < 0.05$, ** $p < 0.01$, paths originating from control variables and parcels are omitted for clarity.

Model 2 (Figure 3) had the following fit indices: $\chi^2(132) = 494.60, p < 0.001, CFI = 0.96, RMSEA = 0.05$ (90% CI = 0.05–0.06), and SRMR = 0.04. Significant paths, both direct and indirect, were highlighted between all the study variables (Table 3).

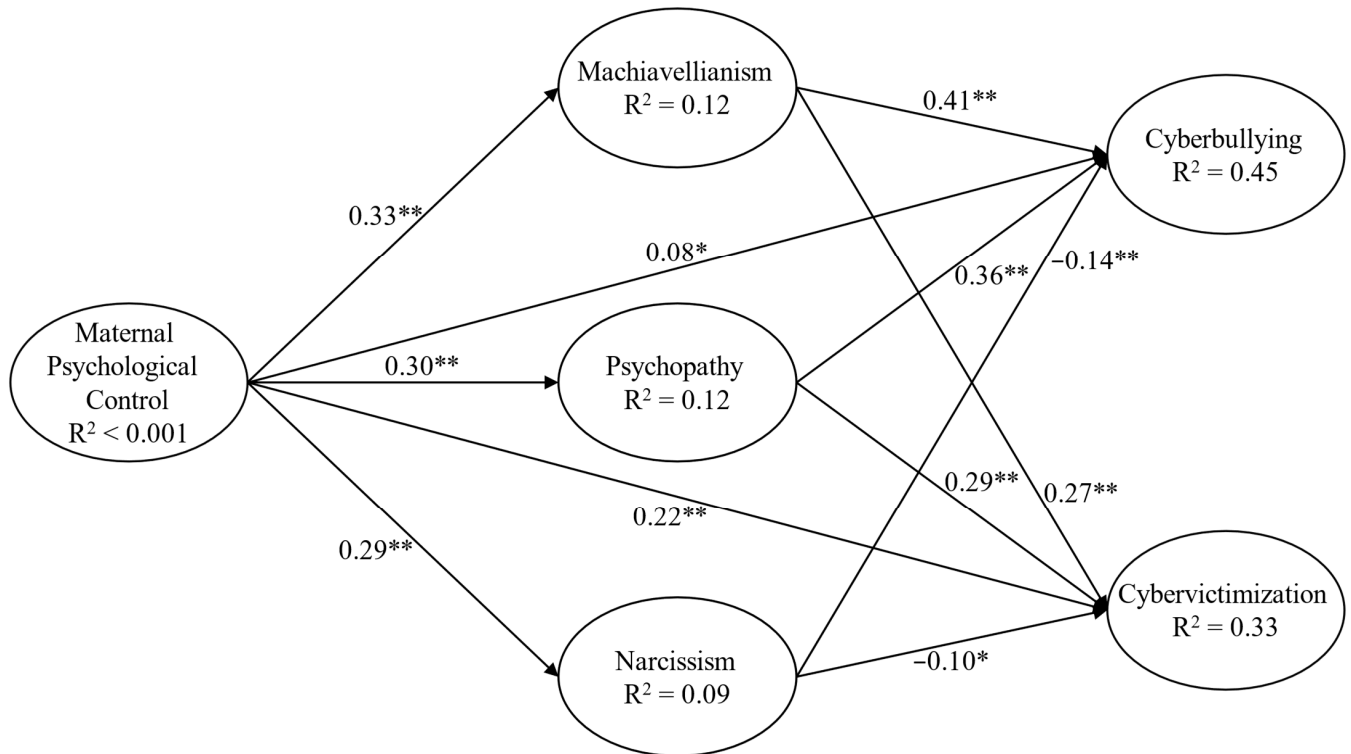


Figure 3. Model 2; Note: * $p < 0.05, ** p < 0.01$, paths originating from control variables and parcels are omitted for clarity.

Table 3. Path Estimates, Standard Errors and 95% Confidence Intervals of Model 2.

	β	p	SE	CI LL	CI UL
Direct Path					
Maternal Psychological Control → Machiavellianism	0.33	<0.001	0.09	0.54	0.89
Maternal Psychological Control → Psychopathy	0.30	<0.001	0.09	0.44	0.77
Maternal Psychological Control → Narcissism	0.29	<0.001	0.11	0.60	1.03
Maternal Psychological Control → Cyberbullying	0.08	0.03	0.06	0.01	0.24
Maternal Psychological Control → Cybervictimization	0.22	<0.001	0.07	0.24	0.50
Machiavellianism → Cyberbullying	0.41	<0.001	0.06	0.20	0.41
Machiavellianism → Cybervictimization	0.27	=0.001	0.07	0.10	0.35
Psychopathy → Cyberbullying	0.36	<0.001	0.05	0.18	0.38
Psychopathy → Cybervictimization	0.29	<0.001	0.06	0.14	0.36
Narcissism → Cyberbullying	-0.14	0.002	0.03	-0.13	-0.03
Narcissism → Cybervictimization	-0.10	0.03	0.03	-0.13	-0.01
Indirect Path via Machiavellianism					
Maternal Psychological Control → Cyberbullying	0.14	<0.001	0.05	0.13	0.32
Maternal Psychological Control → Cybervictimization	0.09	0.003	0.05	0.07	0.26
Indirect Path via Psychopathy					
Maternal Psychological Control → Cyberbullying	0.11	<0.001	0.04	0.10	0.25
Maternal Psychological Control → Cybervictimization	0.09	<0.001	0.04	0.08	0.24
Indirect Path via Narcissism					
Maternal Psychological Control → Cyberbullying	-0.04	0.01	0.02	-0.11	-0.02
Maternal Psychological Control → Cybervictimization	-0.03	0.04	0.03	-0.11	-0.01

Note: p = level of significance; SE = standard error; CI LL = lower limit of the confidence interval UL LL = upper limit of the confidence interval.

Model 3 (Figure 4) had the following fit indices: $\chi^2(132) = 487.20, p < 0.001, CFI = 0.97, RMSEA = 0.05$ (90% CI = 0.05–0.06), and SRMR = 0.04. Significant paths, both direct and indirect, were highlighted between almost all the study variables (Table 4).

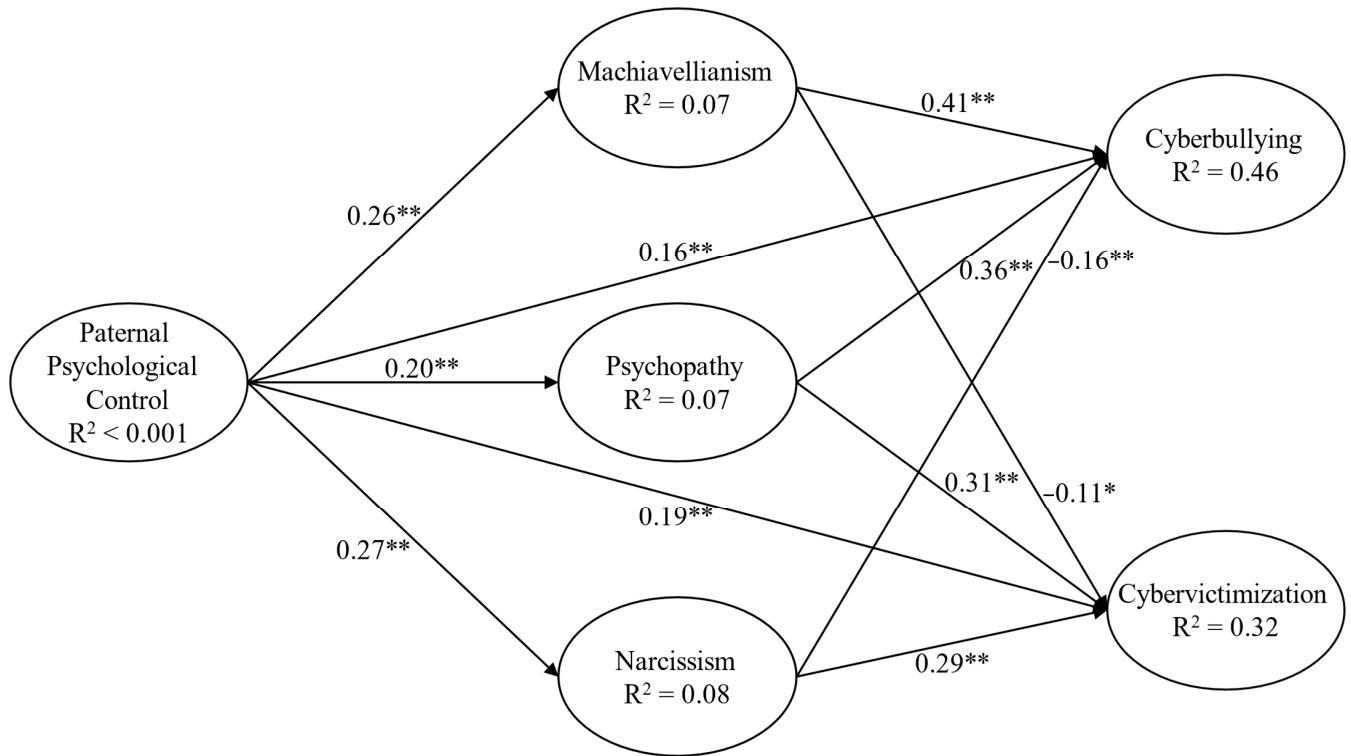


Figure 4. Model 3; Note: * $p < 0.05, ** p < 0.01$, paths originating from control variables and parcels are omitted for clarity.

Table 4. Path Estimates, Standard Errors and 95% Confidence Intervals of Model 3.

	β	p	SE	CI LL	CI UL
Direct Path					
Paternal Psychological Control → Machiavellianism	0.26	<0.001	0.07	0.35	0.64
Paternal Psychological Control → Psychopathy	0.20	<0.001	0.07	0.23	0.51
Paternal Psychological Control → Narcissism	0.27	<0.001	0.09	0.48	0.83
Paternal Psychological Control → Cyberbullying	0.16	<0.001	0.05	0.12	0.31
Paternal Psychological Control → Cybervictimization	0.19	<0.001	0.06	0.18	0.41
Machiavellianism → Cyberbullying	0.41	<0.001	0.05	0.19	0.40
Machiavellianism → Cybervictimization	0.28	0.001	0.07	0.10	0.36
Psychopathy → Cyberbullying	0.36	<0.001	0.05	0.19	0.38
Psychopathy → Cybervictimization	0.31	<0.001	0.06	0.16	0.38
Narcissism → Cyberbullying	-0.16	0.001	0.03	-0.14	-0.04
Narcissism → Cybervictimization	-0.11	0.03	0.03	-0.13	-0.01
InDirect Path via Machiavellianism					
Paternal Psychological Control → Cyberbullying	0.10	<0.001	0.04	0.08	0.22
Paternal Psychological Control → Cybervictimization	0.07	0.002	0.04	0.05	0.19
InDirect Path via Psychopathy					
Paternal Psychological Control → Cyberbullying	0.07	<0.001	0.03	0.05	0.16
Paternal Psychological Control → Cybervictimization	0.06	0.001	0.03	0.05	0.16
InDirect Path via Narcissism					
Paternal Psychological Control → Cyberbullying	-0.04	0.003	0.02	-0.10	-0.02
Paternal Psychological Control → Cybervictimization	-0.03	0.05	0.02	-0.09	-0.004

Note: p = level of significance; SE = standard error; CI LL = lower limit of the confidence interval UL LL = upper limit of the confidence interval.

Model 4 (Figure 5) had the following fit indices: $\chi^2(90) = 222.76, p < 0.001, CFI = 0.98, RMSEA = 0.04$ (90% CI = 0.03–0.04), and SRMR = 0.03. Significant paths, both direct and indirect, were highlighted between almost all the study variables (Table 5).

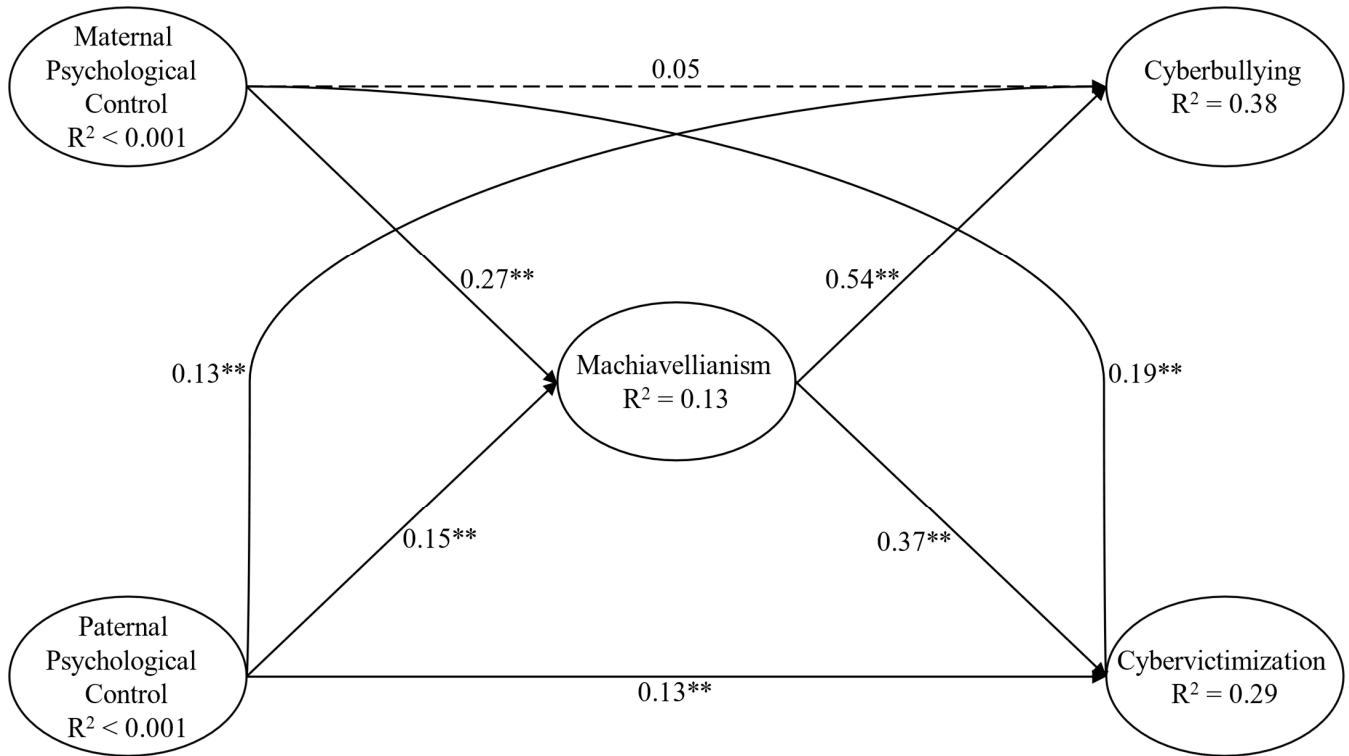


Figure 5. Model 4; Note: ** $p < 0.01$, paths originating from control variables and parcels are omitted for clarity.

Table 5. Path Estimates, Standard Errors and 95% Confidence Intervals of Model 4.

	β	p	SE	CI LL	CI UL
Direct Path					
Maternal Psychological Control → Machiavellianism	0.27	<0.001	0.10	0.38	0.76
Maternal Psychological Control → Cyberbullying	0.05	0.20	0.06	−0.04	0.20
Maternal Psychological Control → Cybervictimization	0.19	<0.001	0.07	0.18	0.46
Paternal Psychological Control → Machiavellianism	0.15	<0.001	0.08	0.13	0.44
Paternal Psychological Control → Cyberbullying	0.13	<0.001	0.05	0.09	0.29
Paternal Psychological Control → Cybervictimization	0.13	=0.002	0.06	0.07	0.32
Machiavellianism → Cyberbullying	0.54	<0.001	0.04	0.31	0.48
Machiavellianism → Cybervictimization	0.37	<0.001	0.05	0.21	0.40
InDirect Path via Machiavellianism					
Maternal Psychological Control → Cyberbullying	0.15	<0.001	0.05	0.14	0.33
Maternal Psychological Control → Cybervictimization	0.10	<0.001	0.04	0.10	0.26
Paternal Psychological Control → Cyberbullying	0.08	0.001	0.03	0.05	0.18
Paternal Psychological Control → Cybervictimization	0.06	0.002	0.03	0.04	0.14

Note: p = level of significance; SE = standard error; CI LL = lower limit of the confidence interval UL LL = upper limit of the confidence interval.

Model 5 (Figure 6) had the following fit indices: $\chi^2(90) = 183.45, p < 0.001, CFI = 0.99, RMSEA = 0.03$ (90% CI = 0.03–0.04), and SRMR = 0.02. Significant paths, both direct and indirect, were highlighted between almost all the study variables (Table 6).

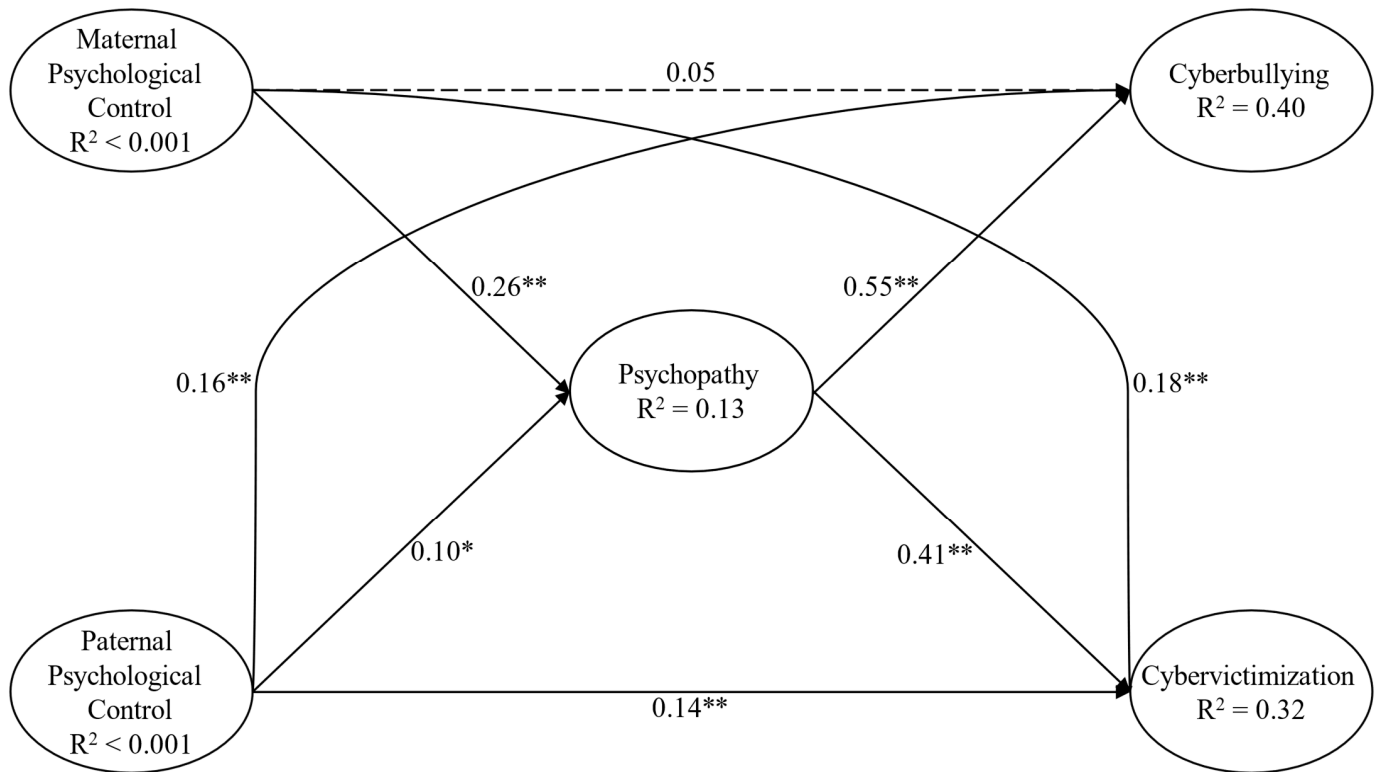


Figure 6. Model 5; Note: * $p < 0.05$, ** $p < 0.01$, paths originating from control variables and parcels are omitted for clarity.

Table 6. Path Estimates, Standard Errors and 95% Confidence Intervals of Model 5.

	β	p	SE	CI LL	CI UL
Direct Path					
Maternal Psychological Control → Psychopathy	0.26	<0.001	0.09	0.33	0.69
Maternal Psychological Control → Cyberbullying	0.05	0.15	0.06	−0.03	0.20
Maternal Psychological Control → Cybervictimization	0.18	<0.001	0.07	0.17	0.45
Paternal Psychological Control → Psychopathy	0.10	0.02	0.08	0.04	0.34
Paternal Psychological Control → Cyberbullying	0.16	<0.001	0.05	0.12	0.32
Paternal Psychological Control → Cybervictimization	0.14	<0.001	0.06	0.10	0.33
Psychopathy → Cyberbullying	0.55	<0.001	0.05	0.35	.53
Psychopathy → Cybervictimization	0.41	<0.001	0.05	0.26	0.45
InDirect Path via Psychopathy					
Maternal Psychological Control → Cyberbullying	0.14	<0.001	0.05	0.14	0.32
Maternal Psychological Control → Cybervictimization	0.10	<0.001	0.04	0.11	0.27
Paternal Psychological Control → Cyberbullying	0.06	0.03	0.04	0.02	0.15
Paternal Psychological Control → Cybervictimization	0.04	0.03	0.03	0.01	0.12

Note: p = level of significance; SE = standard error; $CI LL$ = lower limit of the confidence interval $UL LL$ = upper limit of the confidence interval.

Model 6 (Figure 7) had the following fit indices: $\chi^2(90) = 302.98$, $p < 0.001$, $CFI = 0.97$, $RMSEA = 0.05$ (90% $CI = 0.04–0.05$), and $SRMR = 0.04$. Significant associations were highlighted among all variables. Differently from all the other models, which included all three dark personality traits, in the sixth model, narcissism had a positive relationship with both cyberbullying and cybervictimization and a positive mediating effect between all the indirect paths (Table 7).

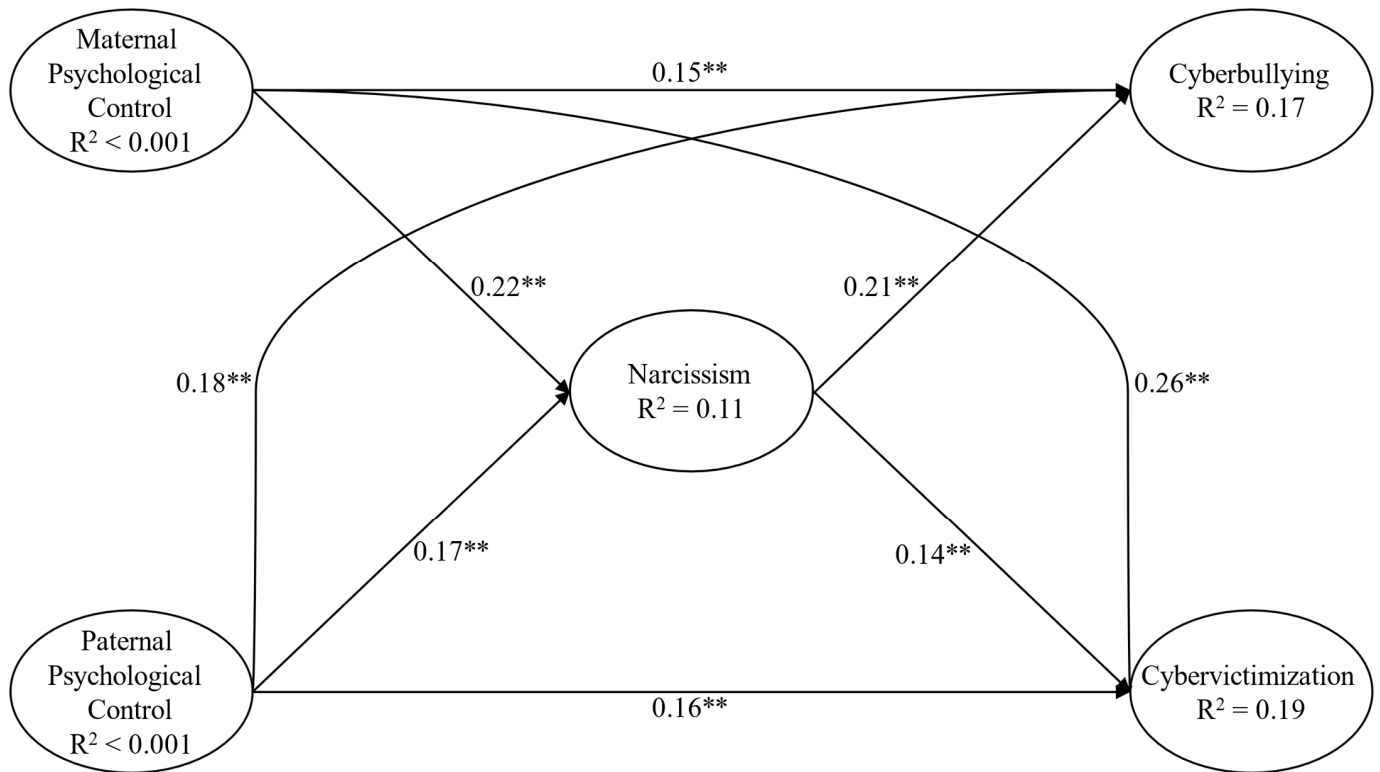


Figure 7. Model 6; Note: ** $p < 0.01$, paths originating from control variables and parcels are omitted for clarity.

Table 7. Path Estimates, Standard Errors and 95% Confidence Intervals of Model 6.

	β	p	SE	CI LL	CI UL
Direct Path					
Maternal Psychological Control → Narcissism	0.22	<0.001	0.12	0.38	0.86
Maternal Psychological Control → Cyberbullying	0.15	<0.001	0.06	0.11	0.36
Maternal Psychological Control → Cybervictimization	0.26	<0.001	0.08	0.29	0.59
Paternal Psychological Control → Narcissism	0.17	<0.001	0.10	0.23	0.64
Paternal Psychological Control → Cyberbullying	0.18	<0.001	0.06	0.14	0.36
Paternal Psychological Control → Cybervictimization	0.16	<0.001	0.06	0.12	0.37
Narcissism → Cyberbullying	0.21	<0.001	0.02	0.07	0.16
Narcissism → Cybervictimization	0.14	0.001	0.03	0.04	0.14
InDirect Path via Narcissism					
Maternal Psychological Control → Cyberbullying	0.05	<0.001	0.02	0.04	0.11
Maternal Psychological Control → Cybervictimization	0.03	0.008	0.02	0.02	0.10
Paternal Psychological Control → Cyberbullying	0.04	0.001	0.02	0.02	0.08
Paternal Psychological Control → Cybervictimization	0.02	0.01	0.01	0.01	0.07

Note: p = level of significance; SE = standard error; $CI LL$ = lower limit of the confidence interval $UL LL$ = upper limit of the confidence interval.

4. Discussion

The main aim of the research was to assess the influencing effect of Machiavellianism, psychopathy, and narcissism in the pathways connecting maternal and paternal psychological control with cyberbullying and cybervictimization. The results of the research offer significant considerations into the complex links among these variables, shedding light on the complex dynamics involving parental psychological control, the dark triad, and behaviors related to cyberbullying. Our study findings support previous research

emphasizing the significant impact of parental influences and personality traits on influencing youth behavior (Saladino et al. 2024b). Specifically, we observed a significant connection between parental psychological control and cyberbullying behaviors, indicating that emerging adults who experienced heightened degrees of parental psychological control had a higher likelihood of participating in cyberbullying. This aligns with existing studies highlighting the negative outcomes associated with overly controlling parenting practices on the social and psychological development of children (Costa et al. 2015; Lin et al. 2020). Furthermore, our study unveiled a noteworthy influencing role of negative traits on the link between parental psychological control and cyberbullying behaviors. This suggests that the dark traits act as a process by which parental psychological control influences cyberbullying behaviors among emerging adults. Our findings corroborate previous research that has separately analyzed the association linking the dark triad and cyberbullying (Panatik et al. 2022) and the connection of parental psychological control with cyberbullying (Padır et al. 2020). However, our study contributes by providing evidence for the mediating effect of the dark traits in that link. Moreover, our study also uncovered complex relationships of the variables under investigation, indicating that the link between parental psychological control, the dark triad, and cyberbullying behaviors is multifaceted and requires further exploration.

4.1. The Unique Impact of Maternal and Paternal Psychological Control

The observed non-significant direct relationship linking maternal psychological control with cyberbullying, as highlighted in the combined mediation model where both maternal and paternal psychological control are included as predictors, indicates a complex interplay between parental psychological control, dark personality traits, and cyberbullying behaviors. Some theoretical explanations can provide insight into these findings. One possible explanation is that the cumulative impact of maternal and paternal psychological control interacts to influence cyberbullying behaviors. It is conceivable that parental psychological control from both figures has a cumulative effect on emerging adults, amplifying their engagement in cyberbullying behaviors. This combined influence may overshadow the specific impact of maternal psychological control when examined in isolation. In other words, the presence of paternal psychological control might contribute to additional variability in cyberbullying behaviors that was previously attributed solely to maternal psychological control. Furthermore, it is worth considering that maternal and paternal psychological control might result in different impacts on the involvement of young adults in cyberbullying activities. Previous research has suggested that the style and methods of psychological control can differ between mothers and fathers (Yang et al. 2022; Yu et al. 2021). Therefore, it is plausible that the effect of maternal psychological control on cyberbullying behaviors can be stronger or more pronounced when examined independently. However, when both maternal and paternal control is simultaneously considered, the unique impact of maternal control may become less discernible, as paternal psychological control could overshadow its influence.

In contrast to cyberbullying, cybervictimization reflects the experience of being targeted by harmful online behaviors, which may be influenced differently by parental psychological control. The present findings suggest that both maternal and paternal psychological control can contribute to an increased risk of cybervictimization, potentially by fostering environments where young adults feel less supported or more controlled, which may reduce their resilience against online victimization (Lozano-Blasco et al. 2024). Unlike the mechanisms that drive engagement in cyberbullying, the pathways to becoming a victim may be more closely related to vulnerability factors such as lowered self-esteem, diminished coping resources, or impaired social skills, which can be exacerbated by controlling

parenting styles (Lozano-Blasco et al. 2024). Moreover, the differential impact of maternal versus paternal psychological control on cybervictimization remains an important area for further investigation, as distinct parenting behaviors may uniquely affect how young adults navigate social risks online. Recognizing these differences is critical for tailoring prevention and support strategies that address the specific needs of cybervictims as separate from those of perpetrators.

4.2. The Mediation Effects of the Dark Triad

In all the examined models, significant positive mediation effects of Machiavellianism and psychopathy were observed for the indirect paths. These mediation effects can be explained through various theoretical perspectives. One such perspective is Social Learning Theory, which suggests that individuals learn behaviors through observation, imitation, and reinforcement (Navarro and Marcum 2019; Shadmanfaat et al. 2020). In the framework of our research, young adults who encounter elevated degrees of parental psychological control may observe and internalize the manipulative behaviors associated with Machiavellianism, as well as the lack of empathy and remorse associated with psychopathy. These emerging adults may perceive these traits as effective strategies for gaining power and control in their social interactions. Consequently, they have a higher tendency to participate in cyberbullying activities, which involve the use of manipulation and a disregard for the feelings of others. Furthermore, both Machiavellianism and psychopathy are characterized by a general antagonism (Schimmenti et al. 2019; Vize et al. 2020). Young adults who encounter elevated degrees of parental psychological control may internalize these traits (Li et al. 2020; Vize et al. 2020), which may manifest in cyberbullying behaviors (Panatik et al. 2022; Schade et al. 2021). In cyberbullying, individuals intentionally harm others online without considering the consequences or the impact on their victims. This aligns with the power-seeking, controlling, and manipulative tendencies associated with Machiavellianism, as well as the lack of remorse and disregard for others' well-being linked to psychopathy. Additionally, it is important to consider that Machiavellianism is associated with a desire for power, control, and manipulation, while psychopathy is linked to a lack of remorse and a disregard for the rights and well-being of others (Schimmenti et al. 2019; Vize et al. 2020). Parental control, characterized by intrusive and overbearing parenting practices, may create a power imbalance within the relationship between parents and their children (Costa et al. 2015; Whittington and Turner 2023). Youth who experience such power imbalances may develop Machiavellian and psychopathic tendencies to restore a sense of power and control in how they engage with other individuals (Panatik et al. 2022; Schade et al. 2021), including engaging in cyberbullying behaviors. Lastly, it is worth considering that parental psychological control, characterized by excessive domination and interference in the lives of emerging adults, may inadvertently reinforce negative behaviors associated with Machiavellianism and psychopathy (Jonason et al. 2014; Li et al. 2020). Youth who engage in manipulative and remorseless behaviors may receive reinforcement or validation from their parents when these behaviors align with the parental control style. This reinforcement has the potential to enhance the connection between parental psychological control and the emergence of Machiavellian and psychopathic traits, ultimately leading to increased engagement in cyberbullying behaviors.

Notably, although the mediating effect of the dark triad traits was stronger for cyberbullying, these traits also showed significant associations with cybervictimization. This finding aligns with the existing literature, which emphasizes the interconnection between cyberbullying and cybervictimization as two closely related aspects of online aggression and harassment (Azami and Taremian 2021; Gajda et al. 2023). While it is not always the case, there are instances where individuals who engage in cyberbullying also experience

cybervictimization, creating a cyclic pattern of aggression and victimization. This can occur when the same person who perpetrates bullying behaviors becomes a target of retaliation or aggression from others. The reciprocal nature of online interactions can lead to individuals playing the roles of both aggressors and victims at different times (Ademiluyi et al. 2022; Baldry et al. 2019; Pozzoli and Gini 2020). Additionally, certain individuals may be more susceptible to both perpetrating and experiencing cyberbullying due to underlying vulnerability factors. As an illustration, people with diminished self-esteem, social difficulties, or prior experiences of victimization could exhibit a greater tendency to engage in aggressive behaviors as a coping mechanism or to gain a sense of control (Azami and Taremi 2021; Gajda et al. 2023). However, these same vulnerability factors can also increase their likelihood of becoming targets of cyberbullying themselves (Ademiluyi et al. 2022; Baldry et al. 2019; Pozzoli and Gini 2020). This highlights the complex interplay between aggression and victimization in the online environment. It is important to highlight that while the dark personality traits showed significant mediation effects concerning cybervictimization, the effect sizes were smaller compared to their effects on cyberbullying. This suggests that other factors beyond dark personality traits can have a more significant impact on individuals' experiences of being victimized online. These factors could include contextual influences, such as peer dynamics or features of the online context, in addition to personal vulnerabilities that contribute to the likelihood of becoming a target of cyberbullying.

4.3. *The Specific Role of Narcissism*

The discrepancy between the positive correlation observed between narcissism and cyberbullying/cybervictimization in Pearson's correlation analysis and the negative relationship observed in the mediation model, where narcissism acts as a negative mediator while Machiavellianism and psychopathy act as positive mediators, can be explained by several theoretical considerations. One potential explanation is the presence of a third variable (in this case, both Machiavellianism and psychopathy), which can suppress or alter the relationship between two variables (Pandey and Elliott 2010). It is possible that the stronger links between Machiavellianism and psychopathy with cyberbullying are higher than the connection between narcissism and cyberbullying when simultaneously present in the mediation paths. In such a scenario, the presence of the remaining two dark personality traits suppresses the Direct Path of narcissism on cyberbullying, resulting in a negative relationship when mediated by narcissism. The stronger associations of Machiavellianism and psychopathy with engaging in cyberbullying behaviors compared to narcissism may overshadow the influence of narcissism when the collective presence of the three dark triad traits is taken into account, leading to the observed negative relationship in the mediation model. In addition, each trait can have different impacts on the connection between parental psychological control and engagement in cyberbullying activities. In the first model, which considers only narcissism, narcissism shows a significant impact, suggesting that when considered alone, narcissism enhances the path linking parental psychological control with cyberbullying behaviors. However, in the more complex model that includes Machiavellianism, psychopathy, and narcissism, narcissism acts as a negative influencing variable, lowering the link between parental psychological control and cyberbullying behaviors. The results indicate that the mediation effect of narcissism may fluctuate based on whether other dark triad traits are present or absent. The complex interplay among Machiavellianism, psychopathy, and narcissism results in different mediation effects for narcissism in the two models. This highlights the importance of keeping in mind the collective influence of dark personalities if examining their influencing impact on the association of parental psychological control with cyberbullying behaviors. These results are in line with other studies showing that although narcissism appears to have a link with cyberbullying episodes, its

mediating effects become non-significant or negative if considering the other traits (Fanti et al. 2012; Fernández-del-Río et al. 2021). Nonetheless, it is important to consider the result concerning the negative impact of narcissism with cautiousness, considering that the beta value was small, similar to the latter study (Fernández-del-Río et al. 2021). The relevant literature highlights complex paths, with different outcomes highlighted based on the type of narcissism (Fan et al. 2019; Zerach 2016). Although this research helps to comprehend such intricate relationships, additional studies are needed to develop a wider knowledge and comprehension of these phenomena.

4.4. Limitations

The research presents some limits. Firstly, the use of a cross-sectional methodology employed in this research prevents our capacity to confirm temporal connections among the study variables. To acquire a more thorough comprehension of the observed findings over time, it could be valuable to carry out longitudinal studies that track individuals' experiences and behaviors over an extended period. By incorporating longitudinal designs, we can obtain more robust evidence regarding the associations observed in our research. Secondly, it is important to recognize the exclusive use of self-reports, which may introduce bias. To mitigate such bias, research could include different types of measures to obtain a more comprehensive assessment of the variables under investigation. By using diverse data sources, we can enhance the validity and reliability of the results. Thirdly, it is worth noting that our study solely relied on online data collection, potentially constraining the applicability of our results. To address this limitation and ensure a more diverse and representative sample, future research could employ different data collection methods, including in-person interviews or data obtained from offline sources. By adopting a more comprehensive approach to data collection, we can obtain a better understanding of the phenomenon across a wider range of populations and contexts. Lastly, although our analyses employed robust parametric methods and bootstrap techniques, the data showed some deviations from normality. Although it is important to note that normality tests are extremely sensitive to large sample sizes, we acknowledge this as a potential limitation and suggest that future research, including replication studies with different samples and analytic strategies, could further investigate and confirm the robustness of our study findings.

4.5. Future Research Suggestions

To advance the credibility and breadth of our knowledge, future studies should seek to duplicate and build upon our results by investigating varied populations and considering various factors. This can involve investigating individuals from different age groups, cultural backgrounds, and clinical populations. By conducting studies with a broader range of participants, we can determine the generalizability of the observed relationships and develop a wider comprehension of the impact of psychological control from parents and the dark triad traits on individuals' engagement in cyberbullying behaviors. Moreover, the clinical implications derived from our study emphasize the importance of developing targeted interventions to address cyberbullying. Future research should focus on designing and evaluating interventions that effectively target the identified risk factors, including parental psychological control and dark personality traits. Assessing the effectiveness of interventions in reducing cyberbullying behaviors, improving parent-child relationships, and fostering positive social skills would provide valuable evidence for the creation of evidence-based programs. Given the complex nature of cyberbullying, it is crucial for future research to adopt a multidisciplinary approach. Integrating perspectives from psychology, sociology, education, and technology can offer a deeper understanding of such behavior.

Collaborative efforts across disciplines would enable researchers to explore the multifaceted nature of cyberbullying, considering factors such as peer influences, school environments, and technological platforms in conjunction with individual and familial factors.

5. Conclusions

The results of the present study give valuable insights into the intricate connections between parental psychological control, the dark triad, and cyberbullying behaviors. The models employed in the present research shed light on the underlying mechanisms that contribute to the emergence of cyberbullying behaviors among young adults.

From a clinical point of view, the results of this study have several implications. Firstly, they underscore the importance of conducting a comprehensive assessment that considers both individual and familial factors when addressing cases of cyberbullying. Recognizing the impact of parental psychological control and the dark triad traits can aid in identifying emerging adults who may be at a heightened risk of engaging in cyberbullying behaviors. This knowledge can guide the creation of specific prevention and intervention initiatives that specifically address these risk factors. Moreover, the differential effects observed in the mediation models highlight the significance of tailoring interventions based on the specific influences of parental psychological control. It is crucial to consider that addressing maternal psychological control may require a different approach compared to paternal psychological control. Clinicians and practitioners should be mindful of these nuances to design effective intervention strategies that consider the unique dynamics within each family unit. Furthermore, the negative mediating effect of narcissism suggests that interventions solely targeting narcissistic tendencies may not be sufficient in reducing cyberbullying behaviors. It is important to adopt a more comprehensive approach that takes into account the interplay between parental control, personality traits, and other contextual factors. For example, promoting healthy parent-child relationships, improving communication skills, and fostering empathy, prosocial behavior and healthier coping mechanisms (Calaresi et al. 2024a; Giordano et al. 2025a, 2025b; Saladino et al. 2024a; Verrastro et al. 2025) may prove beneficial in reducing the likelihood of cyberbullying.

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Data Availability Statement: The data is available upon request to the authors.

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3.4.4 Discussione

Lo studio in cui è stato indagato l'effetto dei tratti di personalità riconducibili al costrutto noto come Triade Oscura (machiavellismo, narcisismo e psicoticismo) nella relazione tra Funzionamento Familiare e Disturbo da Gioco su Internet (IGD) ha mostrato un effetto diretto positivo sull'IGD e un ruolo di mediazione positiva tra uno scarso funzionamento familiare e lo sviluppo della sintomatologia legata all'IGD. Il funzionamento familiare è stato indagato sulla base del *Modello McMaster sul funzionamento familiare* (MMFF), che si basa sulla valutazione di sei dimensioni principali, selezionate in base alla rilevanza mostrata in ambito clinico: Risoluzione dei problemi; Comunicazione; Ruoli; Risposta Affettiva; Coinvolgimento Emotivo; Controllo Comportamentale.

I risultati hanno evidenziato il ruolo protettivo di un buon funzionamento familiare rispetto al rischio di sviluppare il Disturbo da Gioco su Internet (IGD). Al contrario, una carenza di tale fattore è associata a una maggiore probabilità di insorgenza di malessere psicologico, poiché favorisce un contesto in cui possono svilupparsi tratti di personalità disfunzionali che, insieme alle condotte devianti di gioco *online*, costituiscono meccanismi di *coping* disadattivi. Il gioco *online* offre un ambiente emotivamente protetto, dove le interazioni sociali si basano su manipolazioni, alleanze strategiche e competitività e non richiedono da parte dell'utente intelligenza emotiva, empatia, abilità comunicative e relazionali. All'interno delle comunità immersive dei giochi *online*, inoltre, la natura dinamica e competitiva del *gaming* si accorda con il bisogno, comune in individui che presentano tratti di personalità riconducibili alla Triade Oscura, di essere percepiti come superiori e speciali, di esercitare potere e controllo sugli altri, soprattutto quando si sentono non riconosciuti o svalutati nel loro ambiente familiare e quest'ultimo non fornisce modelli di ruolo positivi o relazioni sane.

In presenza di dinamiche familiari fortemente problematiche, il gioco su Internet può offrire agli individui che presentano tratti della Triade Oscura un contesto inedito in cui trovare conforto e appagamento. Il machiavellismo può spingere gli individui a utilizzare il gioco *online* come uno spazio in cui compensare vissuti di impotenza e ristabilire un senso di controllo, soddisfacendo le loro inclinazioni strategiche. La psicopatia, con la sua impulsività e il distacco emotivo, può favorire l'uso del gioco come mezzo per provare emozioni intense senza il coinvolgimento affettivo richiesto dalle relazioni con persone reali. Il narcisismo, infine, può alimentare un coinvolgimento orientato alla ricerca di ammirazione e riconoscimento per le proprie abilità di gioco. Questo bisogno di approvazione può portare l'individuo a privilegiare le interazioni *online* a scapito delle relazioni nella vita quotidiana.

Relazioni complesse tra controllo genitoriale, tratti disfunzionali di personalità e condotte aggressive *online*, sia agite sia subite, sono emerse anche dall'analisi dell'intervento della Triade Oscura nella relazione tra il controllo psicologico genitoriale e i comportamenti di *cyberbullismo* e *cybervittimizzazione*. Un eccessivo controllo psicologico da parte dei genitori si manifesta come una forma di intrusività che mira a modellare lo stato emotivo dei figli e a influenzarne azioni, scelte e sentimenti affinché rispecchino le aspettative e i desideri genitoriali. Questo controllo può esprimersi attraverso l'induzione di sensi di colpa, l'approvazione condizionata, l'umiliazione, l'instillazione di ansia e l'imposizione di schemi mentali rigidi.

Nello specifico è emersa una correlazione significativa tra controllo psicologico genitoriale e *cyberbullismo*: i giovani che percepiscono livelli elevati di controllo tendono più facilmente a mettere in atto comportamenti aggressivi *online*, confermando l'associazione tra stili educativi intrusivi e difficoltà socio-emotive. Considerato come fattore unico, il controllo genitoriale risulta un predittore più forte rispetto a quando si opera una distinzione tra la figura materna e quella paterna. Risultati analoghi emergono per la *cybervittimizzazione*, indicando che modalità di controllo esercitate congiuntamente da entrambi i genitori possono ridurre nei figli la percezione di supporto e la capacità di resilienza.

In linea con la teoria dell'apprendimento sociale, i giovani tendono a interiorizzare comportamenti manipolativi e poco empatici osservati in contesti familiari caratterizzati da dinamiche controllanti, riproducendoli nei contesti digitali, dove tratti manipolativi e aggressivi possono emergere anche nelle esperienze di *cybervittimizzazione*, suggerendo che chi mette in atto condotte aggressive possa talvolta diventare vittima di ritorsioni o esporre più facilmente le proprie vulnerabilità.

I tratti della Triade Oscura svolgono complessivamente un ruolo di mediazione importante tra il contesto familiare e i comportamenti problematici *online*. In particolare, machiavellismo e psicopatia emergono come mediatori più forti e coerenti, mentre il narcisismo mostra un andamento più complesso. Quando il narcisismo è analizzato come mediatore unico mostra un effetto di mediazione positivo. Esaminato insieme agli altri due tratti della Triade Oscura, il narcisismo mostra, invece, un effetto di mediazione negativo e sembra inibire la relazione diretta tra contesto familiare disfunzionale e comportamenti problematici *online*. Ciò può dipendere da un effetto di soppressione legato al peso maggiore di machiavellismo e psicopatia, oppure da un possibile ruolo inibitorio del narcisismo quando interagisce con gli altri due tratti oscuri.

In entrambi gli studi emerge, infatti, una discrepanza rilevante tra le correlazioni di *Pearson*, nelle quali il narcisismo risulta positivamente associato sia al disturbo da gioco su Internet (IGD) sia ai fenomeni di *cyberbullismo* e *cybervittimizzazione*, e i modelli di mediazione in cui il narcisismo

produce un effetto negativo. Le forti associazioni di machiavellismo e psicopatia con i comportamenti problematici *online* possono attenuare l'effetto del narcisismo quando i tre tratti sono inclusi simultaneamente nei modelli, determinando una relazione negativa con IGD e *cyberbullismo*. Questo risultato è coerente con la letteratura, che mostra come il narcisismo possa esercitare effetti deboli o inversi in interazione con gli altri tratti della Triade Oscura. Tale andamento potrebbe essere spiegato dall'eterogeneità del costrutto narcisistico, le cui diverse forme non sono state distinte nei due studi presentati.

3.4.5 Implicazioni pratiche e prospettive future

Le analisi di mediazione effettuate nei due studi hanno contribuito a chiarire le complesse interazioni tra stili genitoriali, funzionamento familiare e tratti di personalità della Triade oscura implicate nello sviluppo e nel mantenimento di comportamenti devianti *online*, quali il gioco problematico su Internet e il *cyberbullismo*. I tratti di personalità disfunzionali emergono sia come indicatori sia come esiti di contesti familiari compromessi, caratterizzati da elevati livelli di stress, conflittualità, difficoltà comunicative e scarso supporto emotivo.

Alla luce di questi risultati, appare di primaria importanza che i professionisti impegnati nella prevenzione e nel trattamento dei comportamenti problematici *online* adottino un approccio attento al contesto familiare e alle caratteristiche di personalità dei giovani. Un intervento tempestivo su tali dimensioni consente di agire sui principali fattori di rischio e di mantenimento che ne ostacolano la prevenzione, l'individuazione precoce e l'efficacia dei trattamenti.

In questo quadro, la psicoterapia sistemico-relazionale può svolgere un ruolo particolarmente rilevante. Agendo sull'intero sistema familiare, essa consente di portare alla luce modalità comunicative disfunzionali, convinzioni, credenze, abitudini e comportamenti reiterati, favorendo una maggiore consapevolezza delle dinamiche relazionali in atto. Al contempo, tale approccio permette di intervenire concretamente sul cambiamento, attraverso il potenziamento delle competenze comunicative, il riconoscimento e l'espressione delle emozioni, la costruzione di un equilibrio più funzionale tra vicinanza e autonomia e lo sviluppo di strategie efficaci di gestione dei conflitti e dello stress.

Parallelamente, esplorare i meccanismi attraverso cui i tratti della Triade oscura mediano la relazione tra funzionamento familiare, stili genitoriali e comportamenti problematici *online* consente di comprendere più a fondo la complessità di questi fenomeni e i molteplici attori coinvolti nella loro manifestazione. Solo una lettura integrata e multifattoriale consente di individuare strategie di prevenzione e di intervento che non si limitino alla gestione del comportamento disfunzionale in sé, ma che tengano conto dei fattori individuali, relazionali e

familiari coinvolti nell'insorgenza, mantenimento e cronicizzazione del disagio. In particolare, riconoscere la presenza di tratti di personalità disfunzionali permette di intervenire sui comportamenti manipolatori messi in atto sia nella vita reale sia nelle interazioni *online*. Nei soggetti con tratti prevalentemente narcisistici, invece, l'intervento dovrebbe essere orientato al potenziamento dell'autostima e dell'autoefficacia attraverso modalità che non compromettano il benessere altrui, favorendo l'individuazione di canali alternativi e funzionali per la costruzione e il riconoscimento del proprio valore.

In una prospettiva clinica, tali evidenze sottolineano l'importanza di includere sistematicamente, nei percorsi di *assessment* e intervento, l'analisi del contesto familiare e dei tratti di personalità degli individui che presentano queste condotte. Riconoscere l'impatto congiunto di stili genitoriali controllanti, funzionamenti familiari disfunzionali e tratti della Triade oscura consente di individuare precocemente i giovani maggiormente a rischio e di attivare interventi clinici, educativi e sociali mirati.

Promuovere relazioni genitori-figli più sane, incrementare le competenze comunicative ed empatiche, favorire comportamenti prosociali e strategie di *coping* funzionali rappresenta una direzione di intervento cruciale per contrastare l'insorgenza di comportamenti problematici *online*. È inoltre necessario considerare il diverso impatto che ciascuna figura genitoriale può esercitare sul giovane e individuare quali aspetti delle interazioni familiari incidano maggiormente sul suo benessere, tenendo conto anche del tratto di personalità predominante coinvolto nelle condotte disfunzionali.

Data la natura complessa e multifattoriale dei fenomeni indagati, appare auspicabile l'adozione di un approccio multidisciplinare che integri contributi della psicologia, della pedagogia, della sociologia e delle *digital policies*. Una collaborazione sinergica tra discipline e attori sociali permetterebbe di sviluppare programmi di intervento *evidence-based*, capaci di operare a più livelli: individuale, familiare, scolastico e sociale, e di ampliare significativamente le possibilità di prevenzione e trattamento dei comportamenti problematici *online*.

3.5 Studio 6: Longitudinal pathways from emotional abuse to problematic gaming in adolescents: The role of psychoticism

3.5.1 Sommario

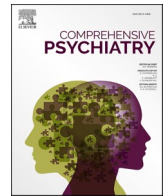
Lo studio esplora, in una prospettiva longitudinale, il Gioco Problematico in adolescenza in relazione a esperienze di abuso emotivo infantile e al tratto di personalità disfunzionale rappresentato dallo Psicoticismo.

Il Gioco Problematico è individuato dall'International Classification of Diseases 11th Revision (ICD-11) come persistente o ricorrente comportamento di gioco *online* oppure *offline* che provoca significativo disagio e compromissione sul piano personale, familiare, sociale, delle *performances*, o in altre aree di funzionamento del soggetto, per un periodo di tempo prolungato. Lo studio ha coinvolto 1902 adolescenti (14-17 anni) di entrambi i sessi. I dati sono stati raccolti in tre momenti temporali: all'inizio dello studio (T1), sei mesi dopo (T2) e dodici mesi dopo (T3). Utilizzando modelli di Equazioni Strutturali, è stato identificato un effetto indiretto dell'Abuso Emotivo misurato alla prima rilevazione sul Gioco Problematico alla terza rilevazione. Questo effetto è mediato dall'Abuso Emotivo alla seconda rilevazione ($\beta = 0.07$), dallo Psicoticismo alla seconda rilevazione ($\beta = 0.02$) e dal Gioco Problematico alla seconda rilevazione ($\beta = 0.05$). Allo stesso modo, lo Psicoticismo misurato alla prima rilevazione mostra un effetto indiretto sul Gioco Problematico alla terza rilevazione, mediato dallo Psicoticismo alla seconda rilevazione ($\beta = 0.08$) e dal Gioco Problematico alla seconda rilevazione ($\beta = 0.04$). I risultati suggeriscono che gli adolescenti che hanno sperimentato abuso emotivo durante l'infanzia sono più inclini a sviluppare comportamenti di gioco problematico e che la presenza del tratto di personalità dello psicoticismo aggrava questo effetto.



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Longitudinal pathways from emotional abuse to problematic gaming in adolescents: The role of psychoticism

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ABSTRACT

Background: Problematic gaming (PG) has emerged as a major concern due to its potential impact on adolescents' everyday lives. Emotional abuse (EA) and psychoticism are considered factors influencing PG, but their long-term interactions have not been extensively studied. This research investigates these relationships over time using the Interaction of Person–Affect–Cognition–Execution (I-PACE) model. Methods: The study involved 1902 Italian adolescents (mean age = 15.45, SD = 1.10) in a three-wave longitudinal study. Surveys were conducted at the beginning (T1), after six months (T2), and after twelve months (T3). Structural equation modeling (SEM) was used to evaluate bidirectional relationships and mediation effects among the variables. Results: The findings indicated that EA consistently predicted both psychoticism and PG, while psychoticism consistently predicted PG. However, psychoticism did not predict EA, and PG did not predict either EA or psychoticism. Significant mediation effects were found from EA at T1 to PG at T3 through EA at T2, psychoticism at T2, and PG at T2, as well as from psychoticism at T1 to PG at T3 through psychoticism at T2 and PG at T2. No significant indirect effect was observed from psychoticism at T2 to PG at T3 through EA at T2. Conclusions: The results suggest that adolescents experiencing EA are more prone to PG, with psychoticism worsening this effect. Effective interventions might include emotional support programs and therapies targeting psychoticism traits. Combining these approaches could improve treatment outcomes for adolescents with PG.

1. Introduction

In the digital age, the Internet has reshaped daily life, transforming communication, work, and information access. While offering benefits like education, entertainment, and social connection, its maladaptive use can lead to problematic gaming (PG). Gaming disorder, recognized as a potential mental health concern by the World Health Organization [1], is considered a behavioral condition where an individual's gaming habits become unmanageable, take precedence over other activities, and lead to major disruptions in personal, social, educational, or work-related areas of life. Recent studies indicate a concerning increase in the prevalence of PG, with global estimates ranging from 6.7 % to 9.9 % [2,3]. Notably, similar findings have been reported within the Italian population, where the prevalence rate stands at approximately 7.5 % [4]. These findings underscore the growing recognition of PG as an issue that primarily affects youth [5,6] with potential associations to psychological factors such as emotional trauma [7] and dysfunctional

personality traits [8,9]. Specifically, it appears that the frequency and intensity of video game use are significantly greater among younger individuals, compared to older ones [10], as well as the significance of the effects of individual-based predictors of PG such as emotional dysregulation and maladaptive personality traits [11]. Therefore, this three-wave longitudinal study aims to enhance existing research by exploring the connections between emotional abuse (EA), psychoticism, and PG in adolescents, using the Interaction of Person–Affect–Cognition–Execution (I-PACE) model [12] as its theoretical foundation.

1.1. The interaction of person–affect–cognition–execution model

The I-PACE model has become a leading theoretical framework for understanding PG [12,13]. This model describes how various predisposing and mediating factors interact to shape the development and continuation of problematic gaming behaviors. A recent update to the I-

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PACE model [14] identified early negative experiences, such as EA, as a key predisposing factor for various addictive behaviors. This is supported by emerging research demonstrating that individuals with histories of emotional trauma are more likely to engage in maladaptive coping strategies, such as excessive gaming, as a means of escape or emotional relief [15,16]. Theoretically, psychoticism might also serve as both a predisposing and mediating factor, enhancing the relationship between EA and PG, similar to how psychological issues like stress and depression have been linked to addictive behaviors [7,16]. Indeed, research indicates that individuals exhibiting high levels of psychoticism often struggle with emotional regulation and social interactions [17], potentially making them more susceptible to problematic gaming behaviors [8].

Supporting evidence can also be drawn from other theoretical frameworks. The Cognitive-Behavioral Model (CBM) of Internet gaming disorder [18] aligns with the I-PACE framework by identifying cognitive distortions, such as excessive reliance on internet-based activities to cope with life stressors, as central to the development of problematic online behaviors. This model may suggest that individuals exposed to EA may develop maladaptive beliefs about internet use, such as viewing online gaming as a safe haven or primary source of social support, which may gradually lead to PG. Psychoticism can intensify these cognitive distortions by fostering a detachment from reality [19], potentially making individuals more vulnerable to becoming immersed in virtual environments as a substitute for real-life connections and achievements [8]. Similarly, the Compensatory Internet Use Model (CIU) model [20] complements the I-PACE model by highlighting the role of negative affect as a driving factor in problematic internet use behaviors, including PG. For adolescents with EA backgrounds, high levels of psychoticism, characterized by impulsivity, emotional dysregulation, and social difficulties [19], may make compensatory behaviors even more pronounced, increasing their reliance on online gaming as a coping mechanism. This tendency aligns with the CIU model's assertion that when offline coping resources are perceived as inadequate or unavailable, individuals are more likely to seek emotional compensation through internet-based activities [7]. Over time, this compensatory use of online gaming may evolve into a maladaptive, habitual behavior, potentially reinforcing the association between EA, psychoticism, and PG.

1.2. The link between EA, PG and psychoticism

EA, marked by ongoing emotional harm and degradation [21], has been linked to a higher likelihood of developing problematic behaviors, such as problematic internet use [22], as individuals seek to escape emotional pain and find validation. Gan et al. [23] found that adolescents with higher emotional trauma levels are more likely to exhibit symptoms of problematic gaming (PG), indicating that online gaming provides an alternative reality where they can achieve a sense of control and build relationships. The immersive nature of these games offers temporary relief from negative emotions, appealing to those with a history of EA [16]. Similarly, Evren et al. [15] noted a significant link between childhood psychological trauma and PG severity, suggesting gaming serves as an unhealthy coping strategy. Nonetheless, the aforementioned studies are cross-sectional in design, underscoring the need for longitudinal research to elucidate the dynamic relationships among these variables.

1.3. The connections between psychoticism, EA and PG

Psychoticism is a personality trait characterized by atypical behaviors and thoughts, including altered perceptions and interpersonal hostility [19]. Individuals with high psychoticism often face difficulties in emotional regulation and social relationships, making them more prone to maladaptive coping strategies like problematic gaming (PG). Research indicates that those with elevated psychoticism may develop PG as they seek control and achievement in virtual environments, where

the engaging nature of online games can provide a sense of community lacking in their real lives [8]. Additionally, gaming serves as a temporary escape from the negative emotions and stressors linked to psychoticism, allowing individuals to detach from real-life problems [17]. Emotional abuse (EA) is associated with feelings of inadequacy, low self-worth, and emotional distress [21,24], which can contribute to the development of maladaptive traits like psychoticism, complicating social interactions. Victims of EA often develop distorted perceptions of reality, leading to self-doubt and potential psychotic symptoms over time [25]. Moreover, individuals who have experienced emotional abuse frequently endure chronic stress and a pervasive sense of powerlessness [21], which disrupts cognitive and emotional processing, similar to the issues faced by those with psychotic traits [19]. This ongoing undermining of reality and self-worth can compromise mental stability, increasing the risk of psychotic features as a defense mechanism or a result of prolonged trauma [26]. Nevertheless, the studies mentioned earlier employed a cross-sectional approach, emphasizing the necessity for longitudinal investigations to clarify the evolving interactions between these variables.

1.4. Aims of the study

This study seeks to fill important gaps in the understanding of PG by examining the longitudinal relationships between EA, psychoticism, and PG among adolescents, using the I-PACE model as a theoretical framework. To date, only a limited number of studies have investigated these associations, and they have been primarily focused on cross-sectional analyses. As far as longitudinal studies are concerned, to our knowledge, only one recent study appears quite relevant as far as the longitudinal relationships between early traumatic experiences and psychotic traits in adolescents are concerned [27]. Similarly, one recent study assessed the longitudinal pathways between family maltreatment and internet gaming [28]. No recent studies have been found to specifically assess the longitudinal links psychoticism and problematic gaming in adolescents. However, these studies do not fully address the complex and dynamic interplay between EA, psychoticism, and PG over time, nor do they investigate these links in an integrative manner that considers psychoticism as a mediating factor in this context. Our study uniquely explores the specific longitudinal associations between EA, psychoticism, and PG simultaneously, addressing gaps in understanding how these relationships evolve over time. By examining these links within a three-wave framework, our research is positioned to identify potential bidirectional influences and the mediating role of psychoticism in a manner that has not yet been fully explored. Consequently, we aimed to examine the bidirectional relationships among: (1) EA and psychoticism; (2) EA and PG; and (3) psychoticism and PG (see Fig. 1). We also investigated potential mediation effects involving these variables. We hypothesize that higher levels of EA will predict increased psychoticism and PG over time, as well as that higher levels of psychoticism will predict increased PG over time, as well as that will serve as a mediator in the relationship between EA and PG.

2. Material and methods

2.1. Participants and procedures

The study included adolescents aged 14 to 17 from various regions of Italy who played internet games for at least one hour per week on average. The sample was divided into three geographic regions: North, Central, and South Italy. Data collection was carried out by thirty trained research assistants, with ten assistants assigned to each region, who gathered information from schools in their respective areas. A random class from each grade level was chosen from each school. Informed consent was obtained from all eligible participants and their guardians before participation. Participants then completed an online survey through Google Forms, which took around 15 min. The study,

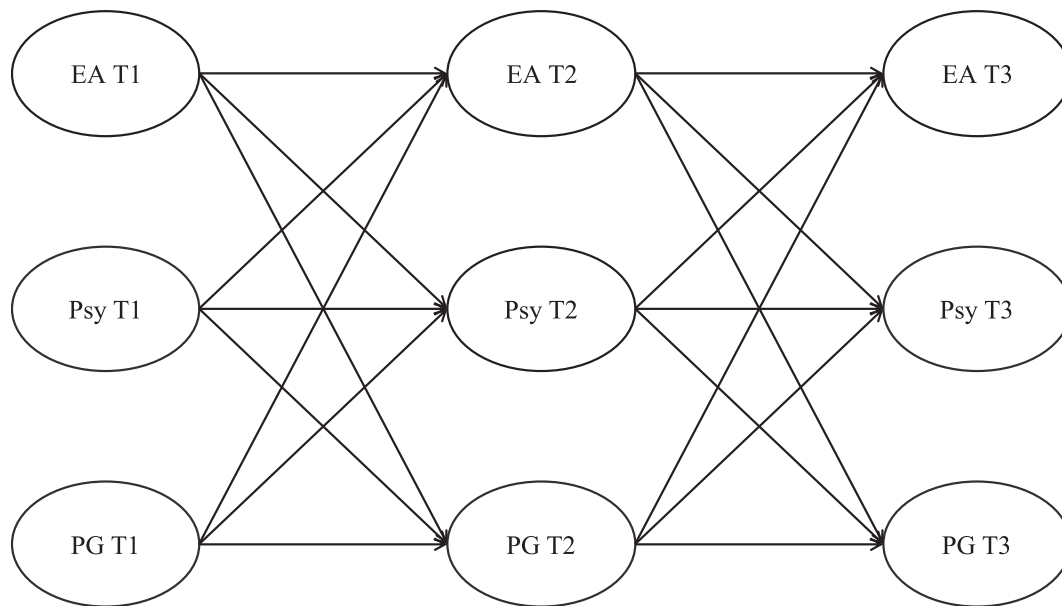


Fig. 1. Hypothesized three-wave SEM model.

Note. EA = Emotional Abuse; Psy = Psychoticism; PG = Problematic Gaming.

conducted over a one-year period, used a three-wave longitudinal design with data collected at three intervals: baseline (May 2023), six months later (November 2023), and twelve months later (May 2024). At baseline (T1), we initially contacted 1978 eligible participants, of whom 1902 completed the survey, resulting in a response rate of approximately 96.1 %. Follow-up participation rates were 93.9 % at T2 (1785 participants) and 88.2 % at T3 (1677 participants). The research was carried out in compliance with the Declaration of Helsinki and the guidelines set by the Italian Association of Psychology (AIP). The study received approval from the (masked for peer review).

2.2. Measures

2.2.1. Emotional abuse

EA was measured using the Italian version of the emotional abuse subscale from the Childhood Trauma Questionnaire-Short Form (CTQ-SF) [29,30]. The CTQ-SF is a widely utilized self-report tool designed to assess experiences of childhood maltreatment, including various forms of abuse (emotional, physical, and sexual) and neglect (emotional and physical). The emotional abuse subscale contains 5 items that gauge the degree of emotional abuse participants experienced during childhood. For instance, one item asks: "I thought that my parents wished I had never been born." Participants rate each item on a 5-point Likert scale from 1 (never true) to 5 (very often true). Higher scores on this subscale reflect higher levels of emotional abuse. In this study, Cronbach's alpha for the subscale was 0.81, 0.81, and 0.82.

2.2.2. Psychoticism

Psychoticism was assessed using the Italian version of the Psychoticism subscale from the Personality Inventory for DSM-5-Brief Form (PID-5-BF) [31,32]. This inventory evaluates personality dimensions such as negative affectivity, detachment, antagonism, disinhibition, and psychoticism. The psychoticism subscale includes 5 items that measure the intensity of psychotic traits. For example, one item is: "My thoughts often don't make sense to others." Participants rated each item on a 4-point Likert scale from 0 (Very False or Often False) to 3 (Very True or Often True). Higher scores reflect a greater degree of psychotic traits. In this study, Cronbach's alpha values were 0.86, 0.87, and 0.85.

2.2.3. Problematic gaming

PG was assessed using the Italian version of the Internet Gaming Disorder Scale (IGDS9-SF) [33,34], which aligns with the diagnostic criteria for PG as specified in the DSM-5-TR. This 9-item self-report scale measures the severity of PG symptoms experienced over the past year. For example, one item asks: "Do you feel the need to spend increasing amounts of time gaming to achieve satisfaction or pleasure?" Participants rate each item on a 5-point Likert scale from 1 (never) to 5 (very often). Higher scores on the PGS indicate more severe PG symptoms. In this study, Cronbach's alpha values were 0.85, 0.82, and 0.82.

2.3. Data analysis

Data analysis was conducted using IBM SPSS software and RStudio. Initial analyses included descriptive statistics, which provided a comprehensive overview of the demographic and psychological characteristics of the sample. Following this, Pearson's correlation analyses were performed through the IBM SPSS software to assess the linear relationships between the study variables at each wave, offering preliminary insights into the associations prior to more complex modeling.

To minimize the occurrence of missing responses, all survey questions in Google Forms were designated as mandatory, although an option to refrain from answering was still available. This approach mitigated the risk of inadvertent omissions and facilitated the collection of a comprehensive dataset for analysis, while still allowing participants the ethical option to choose not to answer specific questions.

To address potential concerns about common method bias, we conducted an exploratory factor analysis (EFA) using Harman's single-factor test through the IBM SPSS software. This test included all items from the questionnaires. Harman's test evaluates the proportion of variance explained by a single factor; a threshold of 50 % indicates the potential presence of common method bias [35].

Confirmatory factor analyses (CFAs) were then performed through the RStudio software to assess the internal validity of the self-report instruments. We evaluated how well the data fit the hypothesized internal structures and examined the relationships between the variables and their indicators. This process involved reviewing fit indices, including the Goodness-of-Fit Index (GFI), Adjusted Goodness-of-Fit Index (AGFI), Normed Fit Index (NFI), Comparative Fit Index (CFI), Root Mean Square Error of Approximation (RMSEA), Standardized Root

Mean Square Residual (SRMR), and Tucker–Lewis Index (TLI), to ascertain the adequacy of the model fit [36].

Following the CFA, we conducted discriminant validity testing through the RStudio software to confirm that the study variables were distinct from one another. This analysis involved examining factor correlation estimates and their confidence intervals. Specifically, we compared the baseline model to several nested models, constraining each factor correlation individually, to evaluate whether the study variables could be treated as separate constructs [37].

We also carried out structural equation modeling (SEM) with latent variables, through the RStudio software. This approach allowed for the assessment of the hypothesized relationships among the variables while accounting for measurement error. The analysis was designed to explore both the longitudinal and reciprocal effects among (EA, psychoticism, and PG). Specifically, a three-wave SEM with latent variables was employed to explore the proposed longitudinal and reciprocal relationships among the study variables. This analysis controlled for autoregressive effects over time and accounted for cross-sectional (residual) correlations among variables at each time point [38]. Model parameters were estimated using maximum likelihood estimation, which is robust to non-normality and provides unbiased estimates under certain conditions [38]. To enhance the precision of the model, a parceling approach was utilized. This involved aggregating questionnaire items into three indicators for each latent variable, which is recommended for model evaluation, as it reduces measurement error compared to using observed variables alone [39]. To assess the significance of indirect effects, we applied a bias-corrected confidence interval method using bootstrap resampling with 5000 iterations. This method provided robust estimates of confidence intervals for indirect effects, allowing us to determine statistical significance accurately [39]. We evaluated how well the data fit the hypothesized structural model and examined the relationships between latent variables and their indicators. This evaluation involved assessing model fit indices, including chi-square, chi-square to degrees of freedom ratio, CFI, RMSEA, and SRMR, to determine the adequacy of model fit and ensure that the model captured the underlying data structure accurately, based on the criteria suggested by the relevant literature (e.g., [40]). Specifically, the chi-square to degrees of freedom ratio should be below 3, the CFI should be above 0.90, the RMSEA should be below 0.10, and the SRMR should be below 0.08. Additionally, the analysis controlled for the effects of age and gender.

Lastly, in light of participant attrition between waves, we conducted Little's MCAR test through the SPSS software, which yielded significant results ($\chi^2 = 129,815$; $df = 57$; $p < .001$). This indicated that the missing data was not random. To enhance the robustness of our findings, we performed several analyses: a) an imputation analysis using the Expectation Maximization algorithm in SPSS, which allowed us to estimate missing values based on available data; b) a complete case analysis, which included only participants with no missing data across all waves; and c) a sensitivity analysis involving a random subsample of 1000 participants who provided data across all three waves, ensuring the reliability of our conclusions. In all the aforementioned analyses, the effects of age and gender were controlled for.

3. Results

3.1. Preliminary analyses

The descriptive statistics for all variables across the three waves are presented in Table 1, outlining key demographic characteristics, including gender and age distribution, severity levels for EA and PG, and the means and standard deviations of the study variables across time points.

To assess common method bias, an EFA was performed using Harman's single-factor test, including all variables. The primary factor accounted for 20.94 % of the variance, which is below the critical 50 % threshold [35]. This suggests that the questionnaires in this study did not

Table 1
Descriptive statistics of the variables.

	Wave 1 (N = 1902)	Wave 2 (N = 1785)	Wave 3 (N = 1677)
	%	%	%
Gender			
Boys	49.3	49.3	49.7
Girls	50.7	50.7	50.3
EA Severity			
None	53.0	53.3	53.7
Low	26.9	26.8	26.1
Moderate	14.7	15.1	15.2
Severe	5.4	4.8	5.0
PG Severity			
Non-Disordered Gamers	91.3	89.0	94.0
Disordered Gamers	9.7	11.0	6.0
Variables	M (SD)	M (SD)	M (SD)
EA	8.99 (3.65)	8.96 (3.61)	8.89 (3.63)
Psy	5.29 (3.63)	5.31 (4.13)	5.20 (4.17)
PG	13.63 (4.27)	13.74 (4.64)	13.58 (3.72)
Age	15.45 (1.10)	–	–

Note. EA = Emotional Abuse; Psy = Psychoticism; PG = Problematic Gaming.

exhibit significant common method bias.

CFAs validated the factor structure of the measures by evaluating the measurement models and reviewing fit indices (Table 2). This involved assessing how well the models fit the data and examining the relationships between the variables and their respective indicators [36]. Across all waves, models demonstrated acceptable fit, with indices such as CFI values near or at 1.0 and RMSEA values generally below the recommended threshold of 0.10, suggesting robust model fit and measurement consistency over time [40].

Discriminant validity testing confirmed that the study variables were distinct from each other (Table 3). We examined factor correlation estimates and their confidence intervals, all of which were significantly below the 0.85 threshold [37]. Additionally, we compared the baseline model to several nested models with individually constrained factor correlations. Furthermore, chi-square difference testing between the baseline model and several nested models with constrained factor correlations supported discriminant validity (all comparisons were significant at $p < .001$) [37].

Table 4 displays the correlations between the study variables. All variables across the different waves exhibit significant associations with each other, consistent with the expected direction. The range of correlation coefficients across waves was moderate, with correlations ranging from 0.20 to 0.54, indicating significant associations consistent with hypothesized relationships. Specifically, within each variable, the correlations across waves indicated moderate stability over time. Cross-variable correlations also showed consistent patterns, with significant associations between variables across all three waves, supporting the

Table 2
Goodness-of-fit indices of the measurement models.

Variable	GFI	AGFI	NFI	CFI	RMSEA	SRMR	TLI
EA T1	0.998	0.994	0.997	0.998	0.021	0.010	0.997
EA T2	0.999	0.996	0.998	1.000	0.012	0.008	0.999
EA T3	0.999	0.998	0.999	1.000	0.000	0.005	1.002
Psy T1	0.999	0.996	0.998	1.000	0.010	0.007	0.999
Psy T2	0.999	0.996	0.999	1.000	0.007	0.006	1.000
Psy T3	0.996	0.987	0.994	0.996	0.040	0.013	0.992
PG T1	0.991	0.985	0.984	0.989	0.032	0.019	0.985
PG T2	0.989	0.982	0.976	0.983	0.036	0.022	0.977
PG T3	0.994	0.990	0.987	0.995	0.020	0.016	0.993

Note. EA = Emotional Abuse; Psy = Psychoticism; PG = Problematic Gaming; GFI = goodness-of-fit index; AGFI = adjusted goodness-of-fit index; NFI = normed fit index; CFI = comparative fit index; RMSEA = root-mean-square error of approximation; SRMR = standardized root-mean-square residual; TLI = Tucker–Lewis Index.

Table 3
Estimated factor loadings and chi-square difference tests for discriminant validity.

Comparison	FCE	CI		χ^2	df	$\Delta\chi^2$	Δdf
		LL	UP				
EA T1 – Psy T1	0.39	0.35	0.44	1358.02	150	1161.72 *	1
EA T1 – PG T1	0.42	0.38	0.47	1255.25	150	1058.95 *	1
Psy T1 – PG T1	0.37	0.32	0.42	1550.51	150	1344.12 *	1
EA T2 – Psy T2	0.38	0.33	0.43	1374.98	150	1135.91 *	1
EA T2 – PG T2	0.47	0.42	0.52	1022.74	150	783.67 *	1
Psy T2 – PG T2	0.39	0.34	0.44	1399.13	150	1160.06 *	1
EA T3 – Psy T3	0.36	0.31	0.41	1332.07	150	1154.04 *	1
EA T3 – PG T3	0.45	0.40	0.50	1010.68	150	832.65 *	1
Psy T3 – PG T3	0.39	0.34	0.44	1244.60	150	1066.57 *	1

Note. EA = Emotional Abuse; Psy = Psychoticism; PG = Problematic Gaming; FCE = factor correlation estimates; CI = confidence interval; LL = lower limit; UL = upper limit; χ^2 = chi-square; df = degrees of freedom; Δ = Delta; * $p < .001$.

anticipated relationships among them.

3.2. Three-wave SEM analysis

The results of the proposed model indicated a good fit with the data, with fit indices as follows: $\chi^2(330) = 382.723$; $p = .024$, $\chi^2/df = 1.159$, CFI = 0.998, RMSEA = 0.010 (90 % CI = 0.004–0.014), and SRMR =

Table 4
Descriptive analyses and Pearson's correlations.

Variable	1	2	3	4	5	6	7	8	9
1. EA T1	–								
2. EA T2	0.53*	–							
3. EA T3	0.42*	0.50*	–						
4. Psy T1	0.33*	0.26*	0.20*	–					
5. Psy T2	0.29*	0.32*	0.25*	0.51*	–				
6. Psy T3	0.25*	0.28*	0.30*	0.40*	0.54*	–			
7. PG T1	0.35*	0.27*	0.22*	0.32*	0.23*	0.20*	–		
8. PG T2	0.32*	0.38*	0.26*	0.29*	0.33*	0.25*	0.43*	–	
9. PG T3	0.25*	0.31*	0.37*	0.23*	0.31*	0.33*	0.36*	0.42*	–

Note. $p < .01$. EA = Emotional Abuse; Psy = Psychoticism; PG = Problematic Gaming.

0.014. Significant relationships were observed among the study variables (Fig. 2). The SEM analysis revealed significant associations among the primary study variables, depicted in Fig. 2. Specifically:

- EA consistently predicted both Psychoticism and PG across all waves, highlighting the role of EA in influencing mental health and gaming behaviors over time.
- Psychoticism predicted PG consistently but did not significantly predict EA, suggesting a unidirectional influence of Psychoticism on PG rather than a reciprocal relationship.
- PG did not predict either EA or Psychoticism, indicating that problematic gaming behaviors were more likely to be outcomes rather than predictors in this model.

3.3. Mediation effects

The three-wave SEM analysis explored potential indirect effects from EA at T1 and Psychoticism at T1 on PG at T3. The bootstrap analysis highlighted significant indirect paths. Specifically, mediation effects were observed from EA at T1 to PG at T3 through EA at T2 ($\beta = 0.07$), Psychoticism at T2 ($\beta = 0.02$), and PG at T2 ($\beta = 0.05$). Similarly, mediation effects were found from Psychoticism at T1 to PG at T3 through Psychoticism at T2 ($\beta = 0.08$) and PG at T2 ($\beta = 0.04$). However, no indirect effects were found from Psychoticism at T2 to PG at T3 through EA at T2.

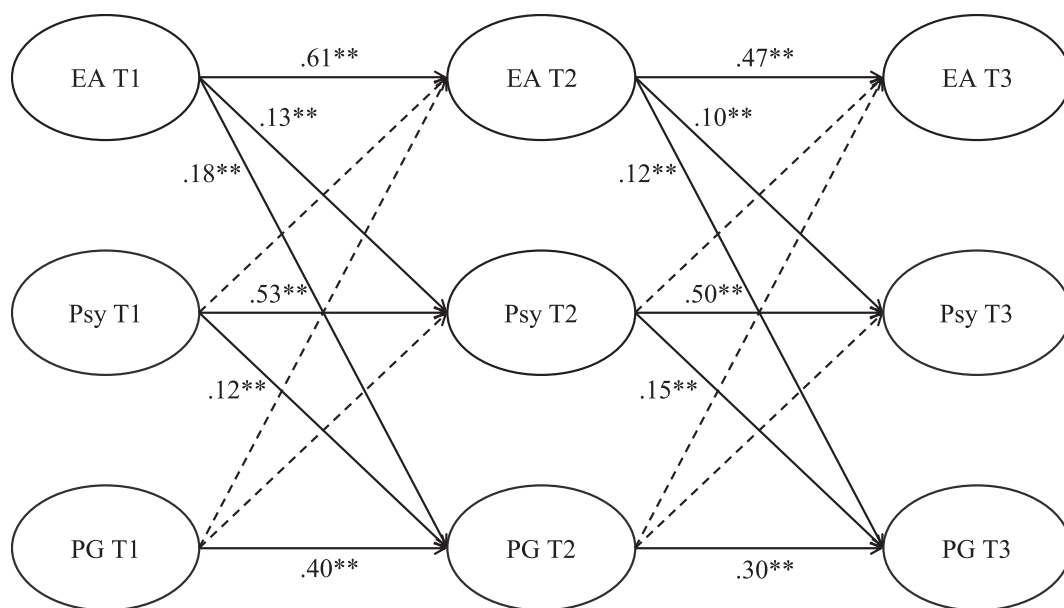


Fig. 2. Three-wave SEM model.
Note. * $p < .01$, ** $p < .001$. EA = Emotional Abuse; Psy = Psychoticism; PG = Problematic Gaming; Standardized coefficients are presented; Dotted lines represent non-significant paths. Parcels and mediation effects are not shown for clarity purposes.

3.4. Sensitivity checks

All three robustness checks indicated good model fit, specifically:

a) Expectation maximization imputation approach: $\chi^2(330) = 445.447$; $p < .001$, $\chi^2/df = 1.349$, CFI = 0.995, RMSEA = 0.014 (90 % CI = 0.010–0.017), and SRMR = 0.013.

b) Complete case analysis approach: $\chi^2(330) = 385.380$; $p = .019$, $\chi^2/df = 1.167$, CFI = 0.997, RMSEA = 0.010 (90 % CI = 0.004–0.014), and SRMR = 0.014.

c) Analysis with a random subsample of 1000 participants with no missing data: $\chi^2(330) = 355.341$; $p < .162$, $\chi^2/df = 1.076$, CFI = 0.998, RMSEA = 0.009 (90 % CI = 0.000–0.015), and SRMR = 0.018.

Moreover, across all three approaches, the statistical significance of each cross-lagged path coefficient remained consistent with the main analyses, confirming the reliability of our findings.

4. Discussion

The present study revealed that EA predicts both psychoticism and PG over time, with a one-way influence from psychoticism to PG. Mediation analysis indicated that EA at Time 1 indirectly affects PG at Time 3 through EA and psychoticism at Time 2, highlighting the cascading effects of EA and psychoticism on PG.

The findings align with the I-PACE model and support existing research on the impact of adverse childhood experiences on the development of maladaptive personality traits and behavioral issues [7,26]. Persistent emotional harm from EA can foster a tendency toward addictive behaviors related to internet use [6,22]. Online games, especially, may offer a temporary escape from negative emotions and daily stressors, which is particularly attractive to those who have experienced EA [13,16]. This is fully in line with the I-PACE model's emphasis on affective regulation as a factor driving maladaptive behaviors, as well as with its consideration of EA as an early vulnerability factor which may intensify sensitivity to stress and promote responses that seek maladaptive forms of gratification. Notably, while psychoticism was a predictor of PG, it did not predict EA, suggesting a one-way influence from EA to psychoticism. This result underscores EA's role as a precursor to maladaptive personality traits and subsequent excessive gaming, potentially as a coping mechanism. These results are consistent with Gan et al. [23], who found that adolescents with higher emotional trauma were more likely to show PG symptoms, and Saldaña et al. [26], who noted that a history of EA was linked to higher maladaptive personality traits such as psychoticism, which, under the I-PACE model, could be understood as contributing to risk factors for internet-related disorders like PG. Thus, online gaming may serve as an unhealthy coping strategy for those with a history of EA, providing temporary relief from painful emotions and unmet needs [7,22]. The one-way effect observed is thus fully aligned with the gratification processes in the I-PACE model, where EA might increase the likelihood of psychoticism, and consequently PG by reinforcing negative coping mechanisms and the search for compensatory experiences online. The absence of a reciprocal relationship between PG and both EA and psychoticism suggests that once PG is established, it may continue independently of these factors. This finding is crucial, as it indicates that interventions should address the underlying causes of EA and psychoticism rather than focusing solely on the gaming behavior itself, aligning with previous research showing a unidirectional relationship from psychological distress to PG [41,42].

The mediation analysis provided further insights into how EA and psychoticism impact PG. Significant indirect effects from EA at T1 to PG at T3 through EA at T2, psychoticism at T2, and PG at T2 suggest a cascading effect, where initial EA exacerbates psychotic traits and problematic gaming over time. This finding is consistent with the cascading effects described by the I-PACE model, where early vulnerability factors like EA amplify maladaptive personality traits and problematic behaviors. By illuminating this chain of events, the model stresses the importance of considering these constructs within a

temporal framework, as early negative experiences may have far-reaching effects on both personality traits and behavioral outcomes. Additionally, the mediation effects from psychoticism at T1 to PG at T3 through psychoticism at T2 and PG at T2 highlight the crucial role of psychoticism in PG progression. Individuals with high psychoticism often face unusual perceptions and thoughts that complicate their offline lives [19], which may increase their vulnerability to the immersive and gratifying elements of online gaming as outlined in the I-PACE model. Here, the gratification/compensation process is particularly relevant, as online gaming may provide a sense of control and achievement often lacking in the offline experiences of individuals with high psychoticism [8]. This finding also aligns with Müller et al. [17], which showed that individuals with maladaptive personality traits are more likely to experience internet gaming issues, as gaming may help manage dissociative symptoms and avoid negative emotions.

4.1. Limitations

While this study has several strengths, it is essential to recognize some limitations. First, the reliance on self-reported data may introduce biases due to social desirability or inaccuracies in recall, potentially affecting the reliability of the results. Future research could improve methodological rigor by incorporating reports from multiple informants to provide a more comprehensive view of participants' experiences. Second, although the sampling involved stratification by geographic zones and random selection of classes within schools, the schools themselves were not randomly selected. Characteristics of the chosen schools, such as whether they are urban or rural, public or private, and varying levels of school participation, may have influenced the generalizability of the findings. Future studies should focus on more rigorous sampling methods and aim for greater diversity in their samples to ensure broader representation and improve the reliability and applicability of the results.

4.2. Future directions

Future research should focus on a deeper exploration of the mechanisms affecting the relationship between EA, psychoticism, and PG. Investigating potential mediators and moderators, such as the quality of peer relationships, the presence of mental health issues like anxiety or depression, and other relevant psychosocial factors, could shed light on how and why EA and psychoticism might influence the development and persistence of PG. Additionally, conducting longitudinal studies with longer follow-up periods would be highly advantageous. Tracking participants over several years would allow researchers to observe how these relationships develop and change over time. This approach would offer a more detailed understanding of the long-term impact of emotional trauma on personality traits and gaming behaviors, clarifying whether these effects persist, diminish, or evolve across different developmental stages or life transitions.

4.3. Theoretical and practical implications

The findings highlight the crucial role of mental health professionals in recognizing signs of emotional damage and maladaptive personality traits in adolescents. Interventions should focus on strengthening emotional support networks and developing vital social skills [43,44]. By addressing these areas, such interventions could help reduce the tendency to use internet gaming as a primary coping mechanism. Additionally, implementing parental education programs aimed at improving emotional bonding and reducing abusive behaviors in the family setting [45,46] could lead to lasting positive effects by nurturing healthier parent-child relationships and a supportive home environment. Besides addressing emotional needs and family dynamics, targeted therapeutic approaches for PG should be considered. Cognitive-behavioral therapy (CBT), for example, has proven effective in

treating PG by helping individuals identify and alter problematic gaming behaviors and thought patterns [47,48]. Practical steps such as establishing structured routines, limiting gaming time, and encouraging alternative rewarding activities are useful in managing PG. Overall, these strategies aim not only to reduce the risk of psychoticism and PG but also to enhance overall well-being and resilience, focusing on symptom management as well as increasing life satisfaction [49].

5. Conclusion

Overall, these findings emphasize the complex and interrelated nature of EA, psychoticism, and PG. They stress the importance of addressing EA and psychotic traits early in development to reduce the risk of PG. This study adds to the existing literature on the impact of early adverse experiences on long-term behavioral outcomes and offers a basis for future research and intervention efforts focused on preventing and treating PG.

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Informed consent

Written informed consent was obtained from all participants and their guardians prior to their inclusion in the study.

Unmasked ethics

The research was conducted in accordance with the Declaration of Helsinki and the Italian Association of Psychology (AIP). Approval for the study was granted by the Institutional Review Board of the Institute for the Study of Psychotherapy, School of Specialization in Brief Psychotherapies with a Strategic Approach (reference number: ISP-IRB-2023-6).

CRediT authorship contribution statement

Valeria Verrastro: Methodology, Investigation, Data curation, Conceptualization, Writing – original draft. **Valeria Saladino:** Visualization, Validation, Methodology, Formal analysis, Writing – review & editing. **Fiorenza Giordano:** Visualization, Validation, Supervision, Resources, Project administration. **Danilo Calaresi:** Supervision, Methodology, Investigation, Formal analysis, Writing – review & editing.

Declaration of competing interest

The authors declare that they have no known competing financial interests or personal relationships that could have appeared to influence the work reported in this paper.

Data availability

The data is available upon request to the authors.

Appendix A. Supplementary data

Supplementary data to this article can be found online at <https://doi.org/10.1016/j.comppsy.2024.152569>.

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3.5.3 Discussione

L'analisi longitudinale dell'impatto sul gioco problematico in adolescenza delle esperienze di abuso emotivo infantile e del tratto di personalità dello psicoticismo ha evidenziato che l'abuso emotivo rappresenta un predittore significativo sia dello psicoticismo sia del gioco problematico. In particolare, l'abuso emotivo predice entrambi gli esiti, mostrando un'influenza unidirezionale sul gioco problematico. L'analisi di mediazione evidenzia un effetto a cascata: l'abuso emotivo valutato nella prima misurazione (T1) incide indirettamente sul gioco problematico evidenziato nella terza misurazione (T3) attraverso lo psicoticismo valutato nella seconda misurazione (T2). Ciò suggerisce che le esperienze emotive negative favoriscono lo sviluppo di tratti di personalità disfunzionali, che a loro volta promuovono comportamenti compensatori devianti.

Questi risultati sono coerenti con il modello I-PACE (Interaction of Person, Affect, Cognition, Execution) (Brandtner, *et al.*, 2021; Brand *et al.*, 2025), sul quale si è basato lo studio, che integra caratteristiche di personalità insieme a meccanismi affettivi e cognitivi per spiegare come si sviluppano e si mantengono i comportamenti di dipendenza. Le esperienze traumatiche precoci, infatti, mostrano di incidere sulla regolazione emotiva, aumentando la vulnerabilità a condotte disadattive, che nel caso specifico sono rappresentate dal gioco d'azzardo patologico.

In questo quadro, lo psicoticismo, con le sue caratteristiche costitutive, emerge come un mediatore significativo del gioco problematico, confermando un percorso che parte dall'abuso emotivo e conduce allo sviluppo di tratti di personalità disfunzionali associati al rischio di dipendenza. La mediazione dello psicoticismo evidenzia come individui caratterizzati da distacco emotivo, bisogno di controllo e percezioni distorte siano più vulnerabili all'attrazione immersiva e compensatoria del gioco. Una volta instaurato, il gioco problematico tende a mantenersi autonomamente, indipendentemente dalla persistenza dell'abuso o dei tratti di personalità. Ne consegue che gli interventi clinici dovrebbero concentrarsi sui fattori predisponenti, come l'abuso emotivo e la disregolazione affettiva, piuttosto che sul sintomo comportamentale.

In questa prospettiva, la possibilità di individuare tali relazioni diacroniche e di chiarire la direzionalità degli effetti osservati è stata resa possibile dalle scelte metodologiche adottate nel presente studio. L'adozione di un disegno di ricerca longitudinale, unitamente al coinvolgimento di un campione ampio, composto da oltre mille partecipanti, rappresenta infatti un rilevante punto di forza dello studio. Tale impostazione metodologica consente di formulare inferenze causali più attendibili e di individuare con maggiore precisione le dinamiche e i meccanismi di interazione nel tempo tra le variabili analizzate. Nonostante la sua elevata validità, questo tipo di disegno risulta

ancora poco diffuso nel panorama scientifico, soprattutto italiano, evidenziando la necessità di una sua più ampia applicazione nella ricerca futura.

3.5.4 Implicazioni pratiche e prospettive future

I risultati dello studio sottolineano l'importanza, per i professionisti della salute mentale, di riconoscere precocemente segnali di difficoltà emotiva, quali ridotta empatia, scarsa affettività e distacco emotivo, nonché di individuare tratti di personalità disfunzionali che possono favorire l'insorgenza e il mantenimento di comportamenti problematici. Particolare attenzione dovrebbe essere rivolta anche all'esplorazione di vissuti di abuso emotivo sperimentati durante l'infanzia, i quali possono aver contribuito allo sviluppo di modalità di funzionamento emotivo caratterizzate da evitamento e distacco.

In tale prospettiva, il gioco può assumere la funzione di meccanismo di *coping* disfunzionale, finalizzato alla desensibilizzazione della sofferenza emotiva. Esso offre un contesto percepito come protetto, controllabile e prevedibile, in cui le emozioni, pur intense, risultano più tollerabili e gestibili rispetto a quelle sperimentate nella realtà quotidiana e nelle relazioni familiari e sociali. Questo processo può rafforzare ulteriormente strategie di evitamento emotivo e comportamentale, contribuendo alla cronicizzazione del problema.

Alla luce di tali evidenze, appare opportuno estendere l'intervento all'intero sistema familiare, spesso coinvolto in modalità di interazione emotiva disfunzionali. Supportare la famiglia nella costruzione di un clima emotivo più sano e funzionale, attraverso il miglioramento della comunicazione e della responsività emotiva, rappresenta un obiettivo centrale per la promozione del benessere di tutti i suoi membri. Tenere conto dei bisogni emotivi, delle dinamiche comunicative e delle relazioni all'interno del contesto familiare di appartenenza consentirebbe di individuare strategie di prevenzione e trattamento del gioco patologico negli adolescenti maggiormente mirate e coerenti con le specificità del singolo individuo e del suo ambiente di riferimento.

3.6 Studio 7: Emotional neglect, hikikomori behaviors and internet gaming disorder in adolescents: A three-wave longitudinal study

3.6.1 Sommario

Lo studio esplora le relazioni longitudinali tra Negligenza Emotiva (EN), vissuta durante l'infanzia, e Comportamenti *Hikikomori* (HB) nello sviluppo di una sintomatologia legata al Gioco Problematico su Internet in un campione di adolescenti di entrambi i sessi. I dati sono stati raccolti all'inizio dello studio (T1), sei mesi dopo (T2) e dodici mesi dopo (T3) e analizzati utilizzando i Modelli di Equazioni Strutturali (SEM).

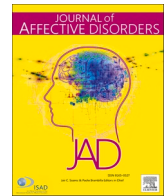
Sono risultati statisticamente significativi gli effetti indiretti della Negligenza Emotiva (EN) al T1 sul Disturbo da Gioco su Internet (IGD) e al T3 attraverso l' EN al T2 ($\beta = 0.08$), l'*Hikikomori* (HB) al T2 ($\beta = 0.01$) e l' IGD al T2 ($\beta = 0.05$). Significativi si sono mostrati anche gli effetti indiretti dell'HB al T1 sull'IGD e al T3 attraverso l'HB al T2 ($\beta = 0.04$), e l'IGD al T2 ($\beta = 0.04$).

I risultati indicano che gli adolescenti che riportano esperienze di trascuratezza emotiva durante l'infanzia sono più a rischio di manifestare sintomi di Disturbo da Gioco su Internet. Nella relazione tra queste due variabili la presenza di comportamenti *Hikikomori* interviene nel potenziare questo effetto deleterio.

Nel delineare strategie efficaci, volte a prevenire e trattare il Disturbo da Gioco su Internet in adolescenza, i dati rilevati suggeriscono l'importanza di mettere in atto interventi volti a potenziare le competenze emotive degli adolescenti e a promuoverne il reinserimento sociale.

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Research paper

Emotional neglect, hikikomori behaviors and internet gaming disorder in adolescents: A three-wave longitudinal study

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ABSTRACT

Internet Gaming Disorder (IGD) has become a significant concern due to its potential impact on daily functioning, particularly among adolescents. Emotional neglect (EN) and hikikomori behaviors (HB) are two factors thought to influence IGD, yet their interplay remains underexplored. This study explores their longitudinal relationships guided by the Interaction of Person–Affect–Cognition–Execution (I-PACE) model. A total of 1865 adolescents from Italy ($M = 15.34$, $SD = 1.08$) participated in a three-wave longitudinal study. Surveys were administered at baseline (T1), six months (T2), and twelve months later (T3). Structural equation modeling (SEM) was employed to analyze bidirectional relationships and mediation effects between the variables. The analysis revealed that EN consistently predicted HB and IGD, as well as that HB consistently predicted IGD. HB didn't predict EN, and IGD didn't predict either EN or HB. Furthermore, significant mediation effects were found from EN T1 to IGD T3 through EN T2, HQ T2, AND IGD T2, as well as from HB T1 to IGD T3 through HB T2 and IGD T2. No significant indirect effect was found from HB T2 to IGD T3 through EN T2. The findings indicate that adolescents experiencing EN are more prone to IGD, with HB exacerbating this effect. Effective strategies may include emotional support programs and therapies that promote social re-engagement. Integrating these approaches could improve treatment outcomes for IGD among adolescents.

1. Introduction

Internet Gaming Disorder (IGD) is a condition characterized by excessive and compulsive use of internet games, leading to significant impairment or distress in daily life. Recognized by the American Psychiatric Association in the Diagnostic and Statistical Manual of Mental Disorders (DSM-5-TR; [APA, 2022](#)) as a potential mental health issue, IGD involves symptoms such as preoccupation with gaming, withdrawal symptoms when not playing, tolerance, unsuccessful attempts to control participation in games, loss of interest in previous hobbies, continued excessive use despite knowledge of psychosocial problems, using gaming to escape or relieve negative moods, and jeopardizing or losing a significant relationship, job, or educational or career opportunity because of participation in games. Despite emerging evidence suggesting that internet-related issues significantly affect youths ([Verrastro et al., 2024](#)) and that it may be intertwined with psychological issues such as emotional trauma ([Kircaburun et al., 2019](#)) and social withdrawal behaviors ([Fong et al., 2024](#)), their underlining dynamics remain unclear.

For such reasons, the present three-wave longitudinal study aims to expand the relevant literature by examining the relationships between emotional neglect (EN), hikikomori behaviors (HB) and IGD in adolescents, using the Interaction of Person–Affect–Cognition–Execution (I-PACE; [Brand et al., 2016](#)) model as the theoretical framework.

1.1. The I-PACE model

The I-PACE model has emerged as one significant theoretical frameworks for internet gaming disorder ([Brand et al., 2016](#)). The model explains how various predisposing and mediating factors interact to influence the onset and persistence of problematic gaming behaviors. A more recent revision of the I-PACE model ([Brand et al., 2019](#)) included early negative experiences (e.g., EN) as a significant predisposing factor of different types of addictive behaviors. Theoretically, HB may also act as a predisposing factor, as well as a mediating one by empowering the connection between EN and IGD, similarly to the linking role of other psychological issues such as stress and depressive symptoms ([Jhone](#)

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et al., 2021; Kircaburun et al., 2019).

1.2. IGD and EN

EN, characterized by a lack of emotional support, validation, and nurturing (Rees, 2008), can lead to a propensity for dysfunctional behaviors, similarly to other early maladaptive experiences (Calaresi et al., 2024; Saladino et al., 2024; Verrastro et al., 2024). Individuals who experience emotional neglect may turn to online gaming as a coping mechanism to fill emotional voids and seek validation and social connection absent in their offline lives. For instance, Gan et al. (2023) found that adolescents with higher levels of perceived emotional neglect were more likely to exhibit symptoms of IGD. This correlation suggests that online gaming offers an alternative reality where neglected individuals can exert control, achieve a sense of accomplishment, and form relationships that might be missing in their real lives. Indeed, the immersive nature of online games provides a temporary escape from the negative emotions and stressors of everyday life, which is particularly appealing to those who have experienced emotional neglect (Jhone et al., 2021). Similarly, literature (Evren, 2019; Verrastro et al., 2025) also demonstrated that childhood psychological trauma significantly related to IGD severity, with traumatized individuals potentially using gaming to escape negative emotions and alleviate feelings of loneliness. Specifically, the study also highlights that the dissociative experiences facilitated by online gaming can serve as a maladaptive coping strategy for those with a history of emotional neglect. This dissociation may allow them to temporarily distance themselves from painful emotions and unmet emotional needs (Verrastro et al., 2024). Additionally, literature has also identified a link between insecure emotional abuse and the development of problematic internet behaviors. Verrastro et al. (2024) observed that emotionally abused individuals are more prone to seeking out online environments where they can experience a sense of belonging and acceptance that they lack in their real-world interactions. These individuals often form strong links to their online personas and the virtual communities they engage with, further exacerbating their internet addiction.

1.3. The links between HB, EN and IGD

Hikikomori, a term originating from Japan, describes individuals who withdraw from social life, often confining themselves to their homes for extended periods. These individuals avoid social interactions, including school, work, and relationships outside their immediate family (Kato et al., 2019). Consequently, these individuals may find solace in online gaming, which offers an accessible and non-threatening means of social interaction and achievement. The DSM-5-TR (APA, 2022) does not list hikikomori under a separate diagnostic category but includes it in a brief reference to cultural concepts of distress under the larger heading of culture-related diagnostic considerations. Accordingly, leading researchers in the field (Kato et al., 2020) have attempted to develop simplified diagnostic criteria to standardize evaluations and support cross-cultural research comparisons of hikikomori. They specifically suggest that a person could be diagnosed with hikikomori if they meet criteria for (a) severe social withdrawal in the home; (b) duration of at least 6 consecutive months; and (c) significant functional impairment/psychological distress due to withdrawal. Literature has shown that the immersive and interactive nature of online games can provide a semblance of community and accomplishment that is missing in the offline lives of those with hikikomori behaviors. For instance, Stavropoulos et al. (Stavropoulos et al., 2019) found that hikikomori individuals were more likely to develop IGD, as gaming may serve as a substitute for face-to-face social interactions. The virtual environments created by online games allow these individuals to assume different identities and escape the reality of their emotional and social isolation. Online gaming offers an immersive experience that can temporarily alleviate feelings of loneliness and emotional pain by engaging them in a

virtual world where they can alienate from their real-life problems, but such strategies appear to be dysfunctional in the long term (Lin et al., 2021). Considering the features of the hikikomori phenomenon, it's reasonable to think that, for those who have faced EN, withdrawing from society can serve as a coping mechanism. EN, characterized by a lack of necessary emotional support, validation, and nurturing during developmental years, can lead to feelings of inadequacy, low self-worth, and emotional distress (Rees, 2008). Consequently, avoiding social situations reduces the risk of additional emotional harm, creating a protective barrier against the external world. Indeed, Hikikomori individuals may retreat into their homes to escape the harsh realities of their unmet emotional needs and the distress they associate with social interactions (Calaresi et al., 2025; Ranieri and Loscalzo, 2023). Of note, EN can also relate to anxiety, depression, and maladaptive personality traits (Giordano et al., 2025; Kealy et al., 2023), making social interactions particularly challenging and distressing. Possibly, they may worry about being judged, criticized, or rejected by others, which exacerbates their anxiety and makes social engagements highly stressful.

1.4. The present study

The present study aims to address significant gaps in the understanding of IGD by exploring the longitudinal relationships between EN, HB, and IGD among adolescents by employing the I-PACE model as a theoretical framework. To the best of our knowledge, it represents the first study in the relevant field. While relevant research on the field supports the hypothesis that EN and HB may contribute to the development and persistence of IGD, there is a notable lack of longitudinal studies that examine these relationships over time. Furthermore, the concept of hikikomori has been primarily studied in Japan and is not well-explored in other cultural contexts, particularly in conjunction with other variables and through a longitudinal design. In addition, research on EN is crucial because it remains relatively underexplored, as evidenced by the academic literature where studies on emotional abuse significantly outnumber those on EN. For these reasons, we examined the bidirectional relationships between: (1) EN and HB; (2) EN and IGD; and (3) HB and IGD (Fig. 1). Additionally, we tested mediation effects involving the study's variables. Specifically, we hypothesize that:

1. Higher levels of EN at baseline will predict increases in both HB and IGD over time.
2. Elevated levels of HB at baseline will be associated with higher levels of IGD in the longitudinal follow-up.
3. HB will mediate the longitudinal relationship between EN and IGD, potentially indicating that EN may contribute to gaming-related problems indirectly via increased social withdrawal.

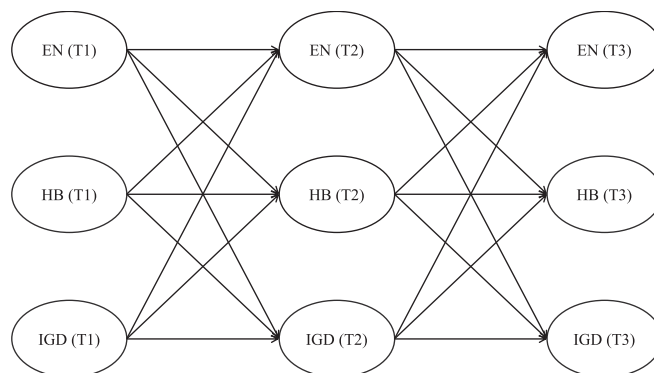


Fig. 1. Hypothesized three-wave SEM model
Note. EN = Emotional Neglect; HB = Hikikomori Behaviors; IGD = Internet Gaming Disorder; T1 = Time 1; T2 = Time 2; T3 = Time 3.

2. Method

2.1. Participants and procedures

The study involved adolescents aged 14–17 years from across Italy who, on average, spent at least one hour per week playing internet games. The population was stratified into distinct categories: North, Central, and South Italy. Twenty-seven trained research assistants, with nine residing in each geographic zone, gathered the data in schools within their respective cities. From each school, a random class was selected for each educational year. Written informed consent was obtained from all participants and their guardians prior to their inclusion in the study. Subsequently, participants completed an online survey via Google Forms, which took approximately 15 min to finish. Conducted over a one-year period, the research employed a three-wave longitudinal design with data collection at baseline (May 2023), six months later (November 2023), and twelve months later (May 2024). The sample sizes for each wave were 1865 participants at T1, 1744 participants at T2, and 1634 participants at T3.

2.2. Measures

2.2.1. Emotional neglect

EN was assessed using the Italian version of the emotional neglect subscale of the Childhood Trauma Questionnaire-Short Form (CTQ-SF; Bernstein et al., 1997; Sacchi et al., 2018). The CTQ-SF is a widely used self-report inventory designed to measure childhood maltreatment experiences, including emotional, physical, and sexual abuse, as well as emotional and physical neglect. The emotional neglect subscale consists of 5 items that evaluate the extent to which participants experienced emotional neglect during their childhood. An example item is: "There was someone in my family who helped me feel important or special". Participants respond to each item using a 5-point Likert scale ranging from 1 (never true) to 5 (very often true). Higher scores on this subscale indicate greater levels of emotional neglect. In the current study, Cronbach's alpha was 0.82, 0.81, 0.82.

2.2.2. Hikikomori behaviors

HB were measured using the Italian version of the Hikikomori Questionnaire (HQ; Sulla et al., 2020; Teo et al., 2018), which is designed to assess the presence and severity of hikikomori behaviors. The questionnaire consists of 11 items that evaluate social withdrawal, avoidance of social interactions, and preference for solitary activities over the past six months. An example item is: "I stay away from other people". Participants rate each item on a 5-point Likert scale ranging from 0 (Strongly Disagree) to 4 (Strongly Agree). Higher scores indicate a higher degree of hikikomori behaviors. In the current study, Cronbach's alpha was 0.93, 0.92, 0.91.

2.2.3. Internet gaming disorder

IGD was evaluated using the Italian version of the Internet Gaming Disorder Scale (IGDS9-SF; Monacis et al., 2016; Pontes and Griffiths, 2015), which is based on the diagnostic criteria for IGD as outlined in the DSM-5-TR. The IGDS is a 9-item self-report measure that assesses the severity of internet gaming disorder symptoms over the past year. An example item is: "Do you systematically fail when trying to control or cease your gaming activity?". Participants rate each item on a 5-point Likert scale ranging from 1 (never) to 5 (very often). Higher scores on the IGDS indicate a greater severity of IGD symptoms. In the current study, Cronbach's alpha was 0.86, 0.83, 0.84.

2.3. Statistical analyses

Preliminary analyses, descriptive statistics and Pearson's correlation analysis were conducted using IBM SPSS software. The structural equation modeling (SEM) with latent variables' analysis utilized the

lavaan package in RStudio.

There were no missing answers, as the survey responses were set as required fields on Google Forms, ensuring that participants could not inadvertently skip any questions.

To mitigate potential concerns of common method bias, an exploratory factor analysis (EFA) was conducted using Harman's single-factor test, in which all items were included. Harman's single-factor test tests the amount of variance explained by the single factor. If the variance explained is above the critical standard of 50 %, it underlines the presence of common method bias (Podsakoff et al., 2003).

Confirmatory factor analyses (CFAs) were performed to evaluate the internal validity of the self-report instruments by examining their fit to the data and the relationships between the variables and their indicators, in line with their hypothesized internal structures (Williams and Vogt, 2011).

Discriminant validity testing was performed to determine if the study variables are distinct from one another. This was done by examining the correlations between the variables relative to their respective indicators. Specifically, we analyzed the factor correlation estimates and their confidence intervals, and compared the baseline model to a series of nested models where each factor correlation was constrained individually (Rönkkö and Cho, 2022).

A three-wave SEM with latent variables was performed to examine the hypothesized longitudinal and reciprocal relationships between the study's variables. This analysis controlled for the auto-regressive effects of each variable over time and the cross-sectional (residual) correlations among all variables at each time point. The model parameters were estimated using maximum-likelihood estimation. A parceling approach was used to obtain the indicators of the latent variables present in our model. Specifically, the items from the questionnaire were aggregated in three indicators of each latent variable, which is an optimal strategy compared to models based on observed variables in terms of model evaluation (Little et al., 2013). The model parameters were estimated using maximum-likelihood estimation. A bias-corrected confidence interval method was also used to evaluate the significance of indirect effects. This method involved bootstrap resampling with 5000 iterations, which enabled the estimation of confidence intervals and determination of statistical significance.

Finally, a sensitivity check was conducted using a complete case analysis with a subsample of 1000 participants who provided data across all three waves.

2.4. Ethics

The research was conducted in accordance with the Declaration of Helsinki and the Italian Association of Psychology (AIP). Approval for the study was granted by the Institutional Review Board of the Institute for the Study of Psychotherapy, School of Specialization in Brief Psychotherapies with a Strategic Approach (reference number: ISP-IRB-2023-6).

3. Results

3.1. Common method Bias testing

An Exploratory Factor Analysis (EFA) was conducted using Harman's single-factor test, incorporating all variables. The primary factor explained 19.87 % of the variance, which is below the critical 50 % threshold (Podsakoff et al., 2003). This indicates that the questionnaires used in this study did not show significant common method bias.

3.2. Confirmatory factor analyses

CFAs confirmed the factor structure of the measures by evaluating the measurement models and examining fit indices (Table 1). Specifically, we assessed the adequacy of the models in fitting the data and the

Table 1
Goodness-of-fit indices of the measurement models.

Variable	GFI	AGFI	NFI	CFI	RMSEA	SRMR	TLI
EN T1	0.998	0.993	0.996	0.998	0.025	0.010	0.996
EN T2	0.998	0.995	0.997	0.999	0.015	0.009	0.999
EN T3	1.000	0.999	1.000	1.000	0.000	0.003	1.003
HB T1	0.980	0.968	0.987	0.989	0.045	0.020	0.986
HB T2	0.961	0.937	0.972	0.975	0.069	0.043	0.966
HB T3	0.972	0.955	0.973	0.977	0.056	0.027	0.969
IGD T1	0.987	0.979	0.979	0.984	0.040	0.021	0.979
IGD T2	0.987	0.978	0.971	0.978	0.041	0.024	0.971
IGD T3	0.992	0.987	0.984	0.991	0.027	0.018	0.988

Note. EN = Emotional Neglect; HB = Hikikomori Behaviors; IGD = Internet Gaming Disorder; T1 = Time 1; T2 = Time 2; T3 = Time 3. GFI = goodness-of-fit index; AGFI = adjusted goodness-of-fit index; NFI = normed fit index; CFI = comparative fit index; RMSEA = root-mean-square error of approximation; SRMR = standardized root-mean-square residual; TLI = Tucker–Lewis Index.

relationships between variables and their respective indicators (Williams and Vogt, 2011).

3.3. Discriminant validity testing

Discriminant validity testing verified that the study variables were distinct from one another (Table 2). We specifically looked at the factor correlation estimates and their confidence intervals, all of which were well below the 0.85 cut-off criterion (Rönkkö and Cho, 2022). Furthermore, we assessed nested models that compared the baseline model to a series of restricted models with individually constrained factor correlations. The chi-square significance of these comparisons supported discriminant validity (Rönkkö and Cho, 2022).

3.4. Descriptive analysis

The descriptive statistics of all variables at three waves are shown in Table 3.

3.5. Correlational analysis

Correlations between study variables are shown in Table 4. All variables across all waves show significant associations with each other in the anticipated direction.

3.6. Three-wave SEM analysis

The results of the hypothesized model demonstrated that the model fit the data well, $\chi^2(294) = 480.842$; $p < .001$, $\chi^2/df = 1.636$, CFI = 0.994, RMSEA = 0.019 (90 % CI = 0.016–0.022), SRMR = 0.014.

Table 2
Estimated factor loadings and chi-square difference tests for discriminant validity.

Comparison	FCE		CI	CI	χ^2	df	$\Delta\chi^2$	Δdf
	LL	UL						
EN T1 – HB T1	0.31	0.26	0.36	3913.87	273	1634.80 *	1	
EN T1 – IGD T1	0.32	0.27	0.37	3675.89	273	1396.82 *	1	
HB T1 – IGD T1	0.28	0.23	0.33	4125.10	273	1846.03 *	1	
EN T2 – HB T2	0.32	0.27	0.36	4505.70	273	1480.40 *	1	
EN T2 – IGD T2	0.39	0.33	0.44	4058.68	273	1033.37 *	1	
HB T2 – IGD T2	0.34	0.29	0.38	4498.86	273	1473.56 *	1	
EN T3 – HB T3	0.39	0.34	0.44	2545.42	273	1158.59 *	1	
EN T3 – IGD T3	0.41	0.36	0.46	2344.57	273	957.74 *	1	
HB T3 – IGD T3	0.33	0.28	0.38	2765.25	273	1378.42 *	1	

Note. EN = Emotional Neglect; HB = Hikikomori Behaviors; IGD = Internet Gaming Disorder; T1 = Time 1; T2 = Time 2; T3 = Time 3. FCE = factor correlation estimates; CI = confidence interval; LL = lower limit; UL = upper limit; χ^2 = chi-square; df = degrees of freedom; Δ = Delta; * $p < .001$.

Table 3
Descriptive statistics of the variables.

	Wave 1 (N = 1.865)	Wave 2 (N = 1.744)	Wave 3 (N = 1.634)
	%	%	%
Gender			
Boys	50.5	50.7	50.0
Girls	49.5	49.3	50.0
EN Severity			
None	52.8	52.2	52.8
Low	31.8	33.5	32.2
Moderate	12.4	11.9	12.7
Severe	3	2.4	2.3
HB Severity			
Not at Risk	63.2	65.0	69.8
At risk	36.8	35.0	30.2
IGD Severity			
Non-Disordered Gamers	91.6	88.9	93.9
Disordered Gamers	9.4	11.1	6.1

Variables	M (SD)	M (SD)	M (SD)
EN	9.74 (3.96)	9.71 (3.93)	9.67 (3.98)
HB	14.69 (10.60)	14.94 (10.14)	14.59 (9.41)
IGD	13.37 (4.39)	13.49 (4.76)	13.36 (3.86)
Age	15.34 (1.08)	–	–

Note. EN = Emotional Neglect; HB = Hikikomori Behaviors; IGD = Internet Gaming Disorder.

Significant paths were found between study variables (Fig. 2). Specifically, EN consistently predicted HS and IGD, HS consistently predicted IGD but did not predict EN, and IGD did not predict either EN or HS.

3.7. Mediation effects

Based on the findings of the three-wave SEM analysis, potential indirect effects were examined from EN T1 and HB T1 to IGD T3. Significant indirect paths were underlined by the findings of the bootstrap analysis. Specifically, mediation effects were found from EN T1 to IGD T3 through EN T2 ($\beta = 0.08$), HQ T2 ($\beta = 0.01$), AND IGD T2 ($\beta = 0.05$), as well as from HB T1 to IGD T3 through HB T2 ($\beta = 0.04$) and IGD T2 ($\beta = 0.04$). No indirect effects were found from HB T2 to IGD T3 through EN T2.

3.8. Sensitivity check

The complete case analysis, with a subsample of 1000 participants who had no missing values on all the three waves, highlighted a good fit, $\chi^2(294) = 416.577$; $p < .001$, $\chi^2/df = 1.417$, CFI = 0.993, RMSEA = 0.020 (90 % CI = 0.016–0.025), SRMR = 0.019. Additionally, the statistical significance of the coefficient for each cross-lagged path remained consistent, confirming the reliability of the current findings.

4. Discussion

The present study aimed to investigate the longitudinal and reciprocal relationships between EN, HB, and IGD across three waves using SEM with latent variables. The findings provide substantial insights into the dynamic interplay among these constructs over time and underscore the significance of EN in predicting HB, as well as the predictive roles of both in relation to IGD.

Specifically, EN consistently predicted both HB and IGD across all three waves. This finding aligns with previous literature suggesting that adverse childhood experiences, such as EN, have a profound impact on the development of social withdrawal and problematic gaming behaviors (Kircaburun et al., 2019; Wakuta et al., 2023). EN, characterized by

Table 4
Descriptive analyses and Pearson's correlations.

Variable	1	2	3	4	5	6	7	8	9
1. EN T1	–								
2. EN T2	0.54*	–							
3. EN T3	0.42*	0.53*	–						
4. HB T1	0.27*	0.21*	0.19*	–					
5. HB T2	0.23*	0.27*	0.21*	0.39*	–				
6. HB T3	0.21*	0.25*	0.35*	0.34*	0.43*	–			
7. IGD T1	0.27*	0.18*	0.15*	0.25*	0.16*	0.15*	–		
8. IGD T2	0.25*	0.32*	0.20*	0.23*	0.29*	0.20*	0.45*	–	
9. IGD T3	0.23*	0.28*	0.34*	0.21*	0.27*	0.29*	0.34*	0.46*	–

Note. $p < .01$. EN = Emotional Neglect; HB = Hikikomori Behaviors; IGD = Internet Gaming Disorder; T1 = Time 1; T2 = Time 2; T3 = Time 3.

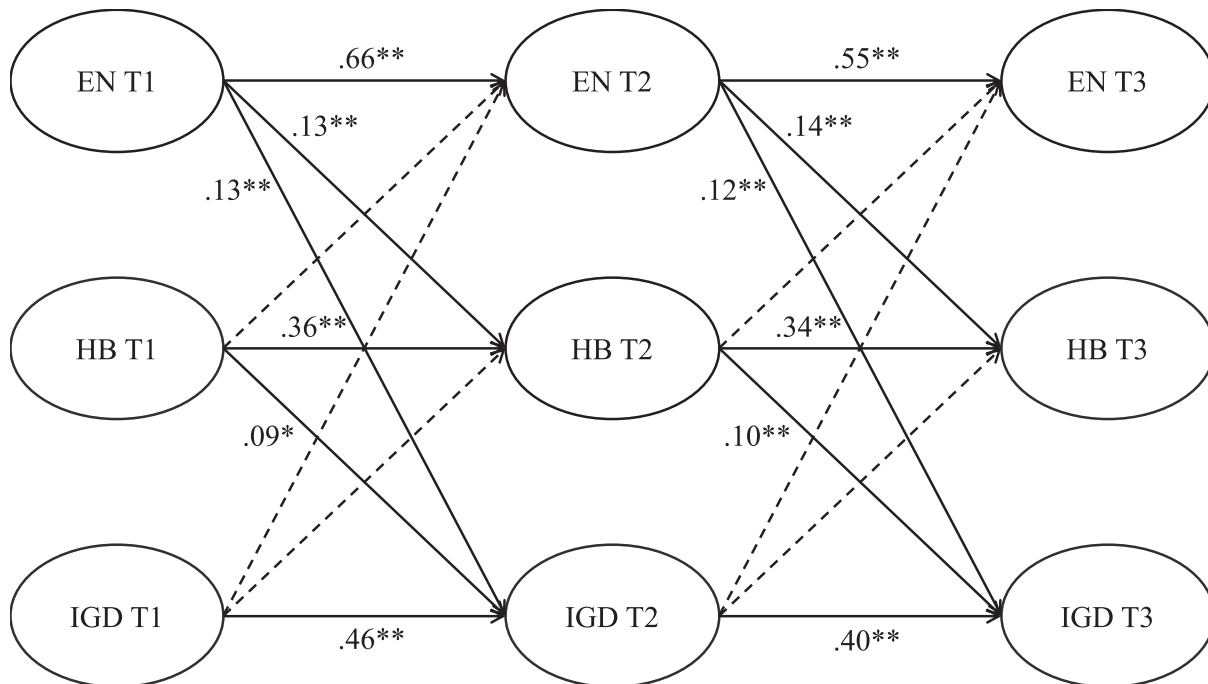


Fig. 2. Three-wave SEM model

Note. * $p < .01$, ** $p < .001$. Standardized coefficients are presented. Dotted lines represent non-significant paths. EN = Emotional Neglect; HB = Hikikomori Behaviors; IGD = Internet Gaming Disorder; T1 = Time 1; T2 = Time 2; T3 = Time 3. Parcels and mediation effects are not shown for clarity purposes.

a lack of emotional support, validation, and nurturing, can lead to a propensity for addictive behaviors, similarly to other early maladaptive experiences (Verrastro et al., 2024). The immersive nature of online games may thus provide a temporary escape from the negative emotions and stressors of everyday life, which is particularly appealing to those who have experienced EN (Jhone et al., 2021; Liu et al., 2024). Interestingly, while HB predicted IGD, they did not predict EN, suggesting a unidirectional influence of emotional neglect on hikikomori behaviors. This finding highlights the role of EN as a precursor to social withdrawal and subsequent engagement in excessive gaming, possibly as a coping mechanism. These results are consistent with the work of Gan et al. (2023), who found that adolescents with higher levels of perceived EN were more likely to exhibit symptoms of IGD, as well as the study of Chen et al. (2021), who underlined that individuals with a history of EN were more prone to retire from social activities such as school. The dissociative experiences facilitated by online gaming can thus serve as a maladaptive coping strategy for those with a history of EN who are more socially retired, allowing them to temporarily distance themselves from painful emotions and unmet emotional needs (Kircaburun et al., 2019; Verrastro et al., 2024). The lack of a reciprocal relationship between IGD and both EN and HB suggests that once established, IGD may perpetuate independently of these factors. This finding is crucial because it implies

that interventions aimed at reducing IGD need to address the root causes of emotional neglect and social withdrawal early on, rather than focusing solely on the gaming behavior itself. This aligns with previous studies indicating unidirectional relationships to IGD rather than from IGD (Dang et al., 2024; Teng et al., 2021).

The mediation analysis further elucidated the pathways through which emotional neglect and hikikomori behaviors influence Internet gaming disorder. The significant indirect effects from EN T1 to IGD T3 through EN T2, HB T2, and IGD T2 suggest a snowball effect, where initial EN exacerbates HB and gaming disorder over time. This finding supports the cascading I-PACE model proposed by previous researchers (Brand et al., 2019, 2016), which outlines how early negative experiences such as emotional neglect can set in motion a chain of events that exacerbate hikikomori behaviors and lead to the progression of IGD. This framework underscores the complexity of gaming disorders and the importance of considering multiple factors in understanding their development and maintenance. Moreover, the mediation effects from HB T1 to IGD T3 through HB T2 and IGD T2 further reinforce the critical role of HB in the progression of IGD. Hikikomori individuals often retreat into their homes to escape the harsh realities of their unmet emotional needs and the distress they associate with social interactions (Ranieri and Loscalzo, 2023). The immersive and interactive nature of

online games can thus give a semblance of community and accomplishment that is missing in the offline lives of those with HB (Stavropoulos et al., 2019). This finding is consistent with a study of Fong et al. (2024), that have shown that socially withdrawn individuals are more likely to develop IGD, as gaming may serve as a substitute for face-to-face social interactions.

4.1. Limitations

Despite the strengths of this study, it is important to acknowledge several limitations. Firstly, the reliance on self-reported data may introduce bias due to social desirability or recall inaccuracies, which could potentially impact the robustness of the findings. Future studies could enhance methodological rigor by incorporating multi-informant reports to offer a more comprehensive understanding of participants' experiences. Secondly, while the sampling method involved stratification into distinct geographic zones, and random selection of classes within schools, the schools themselves were not chosen randomly. Factors such as the characteristics of the selected schools (e.g., urban vs. rural, public vs. private) and varying levels of school participation may have influenced the generalizability of the results. Moving forward, future research should prioritize more rigorous sampling techniques and strive to include more diverse samples to ensure broader representation and enhance the reliability and applicability of the findings. Furthermore, comorbid psychiatric symptoms and disorders, such as depression, social anxiety and attention-deficit/hyperactivity disorder, were not considered in this study. This might have been a source of unmeasured confounding, which could have decreased the precision of our associations. In addition, other potential confounding factors, including sedentary behaviors, exposure to bullying victimization, and stressors related to family were not included in this study and, hence, future research should also take them into account to achieve a more complete understanding of the developmental routes through which social withdrawal and problematic gaming may evolve.

4.2. Future directions

Future investigations should delve deeper into understanding the mechanisms that influence the relationship between EN, HB, and IGD. Exploring potential mediators and moderators, such as the quality of peer relationships, the presence of mental health symptoms like anxiety or depression, and other relevant psychosocial factors, could provide valuable insights into how and why EN and HB may contribute to the development and persistence of IGD. Moreover, conducting longitudinal studies with extended follow-up periods would be particularly beneficial. Such studies could track participants over years, allowing researchers to observe how these relationships unfold and evolve over time. This approach would provide a more nuanced understanding of the long-term effects of emotional traumatic experiences on social withdrawal and gaming behaviors, elucidating whether these effects persist, diminish, or change over different developmental stages or life transitions.

4.3. Theoretical and practical implications

The findings underscore the critical role of mental health professionals in actively identifying signs of emotional void and social withdrawal among adolescents. Interventions could prioritize strategies aimed at bolstering emotional support networks and fostering essential social skills (Grossman, 2017; Silić et al., 2019). By addressing these factors, interventions could aim to diminish the inclination toward using Internet gaming as a primary coping mechanism. Furthermore, it could be important to implement parental education programs focused on enhancing emotional bonding and reducing neglectful behaviors within the family environment (Silvestre and Tarquinio, 2022; Stavrianopoulos et al., 2014). Such programs could have the potential to yield enduring

positive outcomes by fostering healthier parent-child relationships and creating a supportive home environment. In addition to addressing underlying emotional needs and family dynamics, specific therapeutic approaches for IGD should be considered. Cognitive-behavioral therapy (CBT) has shown efficacy in treating IGD by helping individuals recognize and modify problematic gaming behaviors and cognitive patterns (Han et al., 2020; Stevens et al., 2019). Specifically, implementing structured routines, setting limits on gaming time, and promoting alternative rewarding activities, appear to be practical steps in managing IGD. The results also have important clinical implications for those already with hikikomori. This population frequently encounters co-occurring psychological issues such as depression, anxiety, and social skills deficits, which can further exacerbate withdrawal and impede efforts at reintegration. These established associations between EN, HB and IGD imply that interventions should go beyond behavioral modification and should also target the emotional and relational aspects of the issue. It may be particularly relevant to take note of the emotional histories of hikikomori, including experiences of early neglect or invalidation, which may underpin their avoidance of social contexts. Integrative treatment modalities may also be especially valuable. For example, slow reintroduction of social situation, help to rebuild their trust in others, and psychological interventions regarding self-worth and independence may have a significant positive impact on treatment outcome. It is therefore important to interpret HB not only as a behavioral issue but also as an indication of deeper emotional alienation, in order to provide compassionate, tailored interventions toward long-term recovery and the restoration of psychosocial functioning. Ultimately, these efforts could not only aim to mitigate the risk of HB and IGD but could also promote overall higher well-being and resilience among individuals, focusing not just on symptom reduction but also on increasing life meaning (Glaw et al., 2016).

5. Conclusions

Overall, these findings highlight the intricate and multifaceted relationships between emotional neglect, hikikomori behaviors, and Internet gaming disorder. They underscore the necessity of addressing emotional neglect and social withdrawal behaviors early in development to mitigate the risk of developing IGD. This study contributes to the growing body of literature emphasizing the significance of early adverse experiences in shaping long-term behavioral outcomes and provides a foundation for future research and intervention strategies aimed at preventing and treating Internet gaming disorder.

CRediT authorship contribution statement

Danilo Calaresi: Writing – original draft, Investigation, Conceptualization, Methodology, Data curation. **Valeria Verrastro:** Visualization, Methodology, Writing – review & editing, Validation, Formal analysis. **Fiorenza Giordano:** Visualization, Supervision, Project administration, Validation, Resources. **Valeria Saladino:** Supervision, Investigation, Writing – review & editing, Methodology, Formal analysis.

Informed consent

Written informed consent for participation and publication was obtained from all individual participants in the study, as well as from their legal guardians.

Ethics approval

The research was conducted in accordance with the Declaration of Helsinki and the Italian Association of Psychology (AIP). Approval for the study was granted by the Institutional Review Board of the Institute for the Study of Psychotherapy, School of Specialization in Brief

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Declaration of competing interest

We have nothing to declare.

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Data availability

The data are available from the corresponding author on reasonable request.

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3.6.3 Discussione

Lo studio ha esaminato in una prospettiva longitudinale le relazioni tra Negligenza Emotiva (EN), comportamenti di *Hikikomori* (HB) e Disturbo da Gioco su Internet (IGD). La Negligenza Emotiva è emersa come un predittore sia dei comportamenti di *Hikikomori*, sia del Disturbo da Gioco su Internet. In linea con la letteratura, lo studio ha mostrato che la Negligenza Emotiva rilevata al tempo T1 è associata a un progressivo peggioramento dei livelli di HB e IGD nelle fasi successive (T2 e T3). Il comportamento *Hikikomori*, a sua volta, ha dimostrato di mediare la relazione tra EN e IGD, suggerendo che il ritiro sociale possa spingere gli individui a ricorrere al gioco *online* come forma compensatoria di appartenenza, connessione e successo personale. I risultati indicano inoltre che l'HB predice l'IGD, mentre il percorso opposto non si osserva. Ciò conferma l'esistenza di un'influenza unidirezionale: la trascuratezza emotiva conduce al ritiro sociale, che può poi evolvere in un uso problematico dei videogiochi come strategia di *coping*. In questo senso, il gioco può offrire un sollievo temporaneo dalle emozioni dolorose e dai bisogni affettivi insoddisfatti.

L'analisi di mediazione ha messo in evidenza un effetto "a valanga" o "a cascata" coerente con il modello I-PACE, secondo cui fattori di personalità interagiscono con componenti affettive e cognitive nel processo di sviluppo delle dipendenze comportamentali.

Gli effetti indiretti dell'EN al T1 sull'IGD al T3, attraverso la mediazione di EN, HB e IGD al T2, confermano una dinamica a cascata in cui la trascuratezza emotiva iniziale innesca una sequenza di eventi che intensificano progressivamente ritiro sociale e gioco problematico. Anche gli effetti di mediazione dell'HB al T1 sull'IGD al T3 sottolineano il ruolo cruciale del ritiro sociale nella progressione del disturbo.

Una volta instaurato, l'IGD tende a mantenersi autonomamente, senza essere influenzato dai livelli successivi di EN e HB. Tale evidenza è coerente con la letteratura, che descrive relazioni unidirezionali verso l'IGD, ma non dall'IGD verso altri ambiti psicopatologici. Questa assenza di un effetto dell'IGD sui fattori emotivi e sociali che lo precedono rafforza l'importanza di intervenire precocemente sulle condizioni psicologiche e relazionali che favoriscono la sua insorgenza, piuttosto che concentrarsi nel delineare e proporre interventi volti ad agire esclusivamente o prioritariamente sul comportamento di gioco problematico su Internet.

La possibilità di identificare le relazioni tra le variabili e di chiarirne la direzionalità è strettamente connessa alle scelte metodologiche adottate nel presente studio. In particolare, uno dei principali punti di forza della ricerca risiede nel coinvolgimento di un campione numeroso, che comprende oltre mille partecipanti, e nell'adozione di un disegno longitudinale che ha permesso di analizzare le variabili di interesse in tre differenti momenti temporali. Tale impostazione metodologica

consente non solo di osservare l'evoluzione nel tempo dei fenomeni indagati, ma anche di formulare inferenze causali più robuste, cogliendo in modo più stabile e definito le relazioni reciproche e le dinamiche di interazione tra le variabili.

Attualmente, studi che adottano questo tipo di campionamento, disegno di ricerca e strategie analitiche risultano ancora limitati, soprattutto nel contesto scientifico italiano, rendendo il contributo della presente ricerca particolarmente rilevante e innovativo.

3.6.4 Implicazioni pratiche e prospettive future

I risultati dello studio sottolineano il ruolo cruciale dei professionisti della salute mentale nell'identificazione precoce di segnali di difficoltà nella regolazione emotiva e di comportamenti di ritiro e isolamento sociale negli adolescenti. Gli interventi preventivi e terapeutici dovrebbero pertanto orientarsi verso la costruzione di reti di supporto emotivo e il potenziamento delle competenze sociali e relazionali, al fine di ridurre il rischio che il gioco *online* diventi l'unico o comunque il principale meccanismo di *coping* per fronteggiare difficoltà emotive e interpersonali. In questa prospettiva appare fondamentale esplorare eventuali vissuti precoci di trascuratezza o di scarsa validazione emotiva, al fine di promuovere un lavoro mirato sullo sviluppo delle competenze emotive, sul riconoscimento, l'espressione e la validazione delle emozioni proprie e altrui. In tale prospettiva, risulta particolarmente rilevante l'implementazione di interventi mirati al rafforzamento del contesto familiare come fattore protettivo, attraverso programmi di *parent training* focalizzati sul consolidamento dei legami affettivi, sul miglioramento della comunicazione e sulla riduzione dei comportamenti di evitamento emotivo all'interno della famiglia. La promozione di un ambiente familiare supportivo e validante appare infatti funzionale allo sviluppo di adeguate risorse emotive negli adolescenti, contribuendo a prevenire il ritiro nel mondo virtuale e il coinvolgimento in modalità di gioco *online* disfunzionali. In questo quadro, gli interventi rivolti alla famiglia dovrebbero includere anche una regolamentazione condivisa e coerente dei tempi di gioco, affiancata dalla strutturazione di attività ricreative alternative volte a favorire la partecipazione sociale e il benessere psicologico. Tali interventi assumono particolare rilevanza anche nella prevenzione e nel trattamento del fenomeno dell'*Hikikomori*, frequentemente associato a sintomatologia depressiva e/o ansiosa. Un approccio efficace dovrebbe prevedere l'introduzione graduale di attività sociali strutturate, finalizzate a ricostruire la fiducia nell'altro, il senso di appartenenza a un gruppo o a una comunità e la percezione di poter contare su un supporto sociale stabile.

Nel complesso, tali interventi non agirebbero esclusivamente sui comportamenti disfunzionali analizzati nello studio, ma favorirebbero un miglioramento significativo del benessere

psicosociale dell'adolescente. In particolare, contribuirebbero a rafforzare la fiducia in sé e negli altri, il senso di autonomia e indipendenza, l'autostima e l'autoefficacia, promuovendo l'adozione di strategie di *coping* più adattive nelle situazioni di stress e frustrazione e ostacolando il ricorso a modalità di fronteggiamento disfunzionali.

4. Conclusioni

4.1 Valutazione complessiva dei risultati

Le ricerche presentate mostrano come i diversi fenomeni di disagio psicologico analizzati risultino significativamente interconnessi con i fattori socio-familiari, considerati come predittori, e con le caratteristiche individuali, esaminati come mediatori dei processi osservati. Nel complesso, sono emersi effetti diretti e indiretti statisticamente significativi delle variabili indipendenti, quali interazioni socio-familiari ed esperienze traumatiche precoci, sulle variabili dipendenti indagate, tra cui i disagi legati alla percezione dell'immagine corporea, l'utilizzo problematico delle nuove tecnologie digitali e la percezione di solitudine.

I risultati ottenuti, pur in linea con la letteratura di riferimento, forniscono contributi originali al panorama scientifico, sia sul piano metodologico sia su quello teorico. L'impiego di analisi di mediazione parallela e sequenziale, unitamente all'adozione di disegni di ricerca longitudinali e al coinvolgimento di campioni numericamente ampi, ha consentito di esplorare in modo più articolato le relazioni tra le variabili e i meccanismi sottostanti ai fenomeni di disagio esaminati. Inoltre, l'analisi di costrutti di recente elaborazione, tra cui la Triade Oscura della personalità e la *Distress overtolerance* (eccessiva tolleranza dello stress), ha permesso di ampliare i modelli esplicativi tradizionali, offrendo nuove chiavi di lettura per la comprensione delle problematiche psicologiche emergenti in adolescenza e nella giovane età adulta.

L'adozione di un approccio sistemico, inoltre, capace di integrare dimensioni familiari, sociali, individuali e di personalità, rappresenta un ulteriore elemento di valore degli studi che costituiscono la ricerca presentata. Tale prospettiva ha consentito di cogliere la complessità e la multidimensionalità dei fenomeni analizzati, contribuendo a una comprensione più profonda delle forme di disagio che caratterizzano l'età evolutiva nella società contemporanea e ponendo solide basi per lo sviluppo di interventi preventivi e clinici mirati ed efficaci.

Nello specifico, dalle analisi dei risultati, sono rivelate come statisticamente significative le seguenti variabili, qui suddivise sulla base del loro ruolo di predittori, mediatori e variabili dipendenti:

Fattori predittivi

Dall'analisi dei predittori sono emerse diverse variabili che, in conformità con i dati presenti in letteratura, risultano avere un ruolo significativo nello sviluppo, nel mantenimento e nella

cronicizzazione di comportamenti disfunzionali e disagio psicologico durante l'adolescenza e la prima età adulta, tra cui:

- gli stili genitoriali caratterizzati da un controllo psicologico eccessivo, da scarsa promozione dell'autonomia e dell'indipendenza dei figli, da modalità comunicative giudicanti o critiche, da tendenza alla colpevolizzazione (Affrunti & Ginsburg, 2012; Goagoses et al., 2023; Gómez-Ortiz et al., 2019; Li et al., 2018) hanno mostrato di avere un impatto significativo sui disagi psicologici indagati;
- i funzionamenti familiari disfunzionali in termini di comunicazione, *problem solving*, ruoli, risposte affettive, coinvolgimento emotivo e controllo comportamentale, identificati dal *McMaster Model of Family Functioning* (Epstein, 1982, 2003), hanno rivelato di giocare un ruolo di primo piano nello sviluppo di tratti di personalità disfunzionali e nella messa in atto di comportamenti a rischio da parte di adolescenti e giovani adulti (Barragán Martín et al., 2021; Caño González & Rodríguez-Naranjo, 2024; Mphaphuli, 2023; Yu et al., 2022).
- esperienze traumatiche infantili di natura emotiva, come abuso o trascuratezza affettiva, che insieme a forme di abuso fisico e sessuale, non oggetto di indagine in questa sede, costituiscono il costrutto delle "Esperienze Infantili Avverse" (Brewer-Smyth, 2022) si sono confermate importanti fattori di vulnerabilità nei disagi psicologici analizzati (De Rossi et al., 2023; Farina et al., 2021).

Mediatori

Un contributo essenziale alla comprensione delle relazioni tra fattori socio-familiari e variabili di esito emerge dall'analisi dei meccanismi di mediazione, individuati negli studi presentati in specifiche caratteristiche individuali e di personalità.

- La Triade Oscura in particolare nei tratti di psicoticismo e machiavellismo, si è rivelata un significativo fattore di rischio per lo sviluppo e il mantenimento di comportamenti problematici e disagio psicologico in età evolutiva, con un impatto maggiore negli individui di sesso biologico maschile (Babakr & Fatahi, 2023; Blasco-Belled *et al.*, 2024; Kowalski *et al.*, 2001, Saladino *et al.*, 2025).
- L'eccessiva tolleranza allo stress si è dimostrata un importante fattore di mediazione tra stili genitoriali controllanti e lo sviluppo del *Binge Eating Disorder*. Tale costrutto descrive la tendenza a sopportare livelli estremamente elevati di disagio, anche a costo di una grave compromissione del benessere psicofisico (Cheli *et al.*, 2020; Gorey *et al.*, 2018; Lee, 2024).
- La percezione di autoefficacia generalizzata è emersa come un rilevante fattore protettivo sia nei confronti della dismorfia muscolare sia dell'uso problematico dei social media. Essa

riflette la fiducia dell'individuo nelle proprie capacità di raggiungere obiettivi e portare a termine compiti con successo, influenzando motivazione, impegno, perseveranza e capacità di recupero dopo un insuccesso (Bandura & Wessels, 1994; Schwarzer & Luszczynska, 2008; Waddington, 2023).

Variabili dipendenti

Tra le variabili dipendenti analizzate, fattori di rischio significativi emergono nei processi di digitalizzazione, in particolare nei legami tra ambiente virtuale, immagine corporea e percezione di solitudine.

- L'interazione tra percezione corporea, ambiente virtuale e isolamento sociale si è rivelata un elemento centrale nel determinare comportamenti problematici e diverse forme di disagio psicologico, tra cui dismorfia muscolare, disturbi dell'alimentazione e della nutrizione, uso problematico delle tecnologie digitali e percezione di solitudine (Fontana *et al.*, 2023; Kadiroğlu & Akay, 2024; Nowland *et al.*, 2018; Roza *et al.*, 2023; Fioravanti *et al.*, 2022; Imperatori *et al.*, 2022; Twenge *et al.*, 2021).
- La digitalizzazione ha contribuito in modo significativo all'emergere di nuove forme di disagio psicologico, quali il *cyberbullismo* e la *cybervittimizzazione* (Aljasir & Alsebaei, 2022; Sorrentino *et al.*, 2023a, 2023b; Strohmeier & Gradinger, 2022), il disturbo da gioco d'azzardo, che nell'ambiente *online* ha trovato condizioni di accessibilità e diffusione senza precedenti, soprattutto in adolescenza, (Gao *et al.*, 2022; Kim *et al.*, 2022; Ropovik *et al.*, 2023; Stevens *et al.*, 2021), e la propagazione di ideali estetici artificiali e stili di vita disfunzionali, basati su modelli di performance irrealistica, controllo corporeo e perfezionismo, promossi dalla realtà virtuale come paradigmi di successo, desiderabilità e potere (Boursier *et al.*, 2020; Fioravanti *et al.*, 2022; Gianicola *et al.*, 2024).

Gli studi effettuati mettono in evidenza la complessità delle interazioni tra dinamiche familiari, tratti di personalità disfunzionali e comportamenti problematici in adolescenza e giovane età adulta.

Le evidenze convergono su alcuni punti centrali:

1. Il funzionamento familiare disfunzionale, contraddistinto da dinamiche relazionali rigide, carenza di cooperazione e sostegno reciproco, eccessiva interdipendenza e comunicazione inefficace o frammentaria, così come gli stili genitoriali iper-controllanti che ostacolano il naturale processo di autodeterminazione e indipendenza dei figli, e le esperienze infantili avverse caratterizzate da trascuratezza o abuso emotivo rappresentano fattori di rischio trasversali che possono predisporre allo sviluppo di tratti di personalità disfunzionali e di condotte di dipendenza o aggressività.

2. La Triade Oscura e i cinque tratti di personalità maladattiva individuati dal DSM-5 agiscono come mediatori nel trasformare le esperienze di disconnessione emotiva in strategie compensatorie: uso problematico delle nuove tecnologie, isolamento sociale, comportamenti aggressivi online.

3. Fattori protettivi, quali il supporto sociale percepito e l'autoefficacia personale, riducono l'impatto dei rischi di natura familiare e attenuano la tendenza all'uso disfunzionale della tecnologia, al ritiro sociale, ai disturbi alimentari e alle distorsioni dell'immagine corporea.

Nel complesso, gli studi sopra riportati mostrano come le esperienze familiari precoci, i tratti di personalità disfunzionali e le interazioni con l'universo virtuale interagiscano in modo complesso nel determinare comportamenti problematici e vulnerabilità psicologiche. Da ciò emerge la necessità di un approccio clinico integrato, capace di intervenire su piani multipli: relazionale, personologico e comportamentale, e di promuovere esperienze correttive fondate su connessione, regolazione emotiva e autonomia personale.

4.2 Limiti metodologici, punti di forza e generalizzabilità dei risultati

Gli studi presentano alcune limitazioni metodologiche che è opportuno considerare nella valutazione e nella generalizzabilità dei risultati.

L'uso prevalente di strumenti quantitativi basati su questionari *self-reports*, non supportati da metodologie qualitative o interviste cliniche che consentirebbero di approfondire la comprensione dei vissuti individuali e ridurre l'ambiguità interpretativa, espone la ricerca a diversi *bias* intrinseci. Sebbene i *self-reports* siano strumenti semplici, economici e adatti a grandi campioni, non sono immuni da errori sistematici e distorsioni legate alla tendenza dei partecipanti a fornire risposte socialmente accettabili o semplificate. Le risposte ai *self-reports* potrebbero essere esagerate in un senso o nell'altro; i partecipanti potrebbero essere imbarazzati e sentirsi a disagio nel riferire aspetti personali e diversi *bias* potrebbero incidere sulle loro risposte, tra cui, la desiderabilità sociale, l'acquiescenza, il bisogno di approvazione e la tendenza alla coerenza e alla razionalità. Da non sottovalutare è anche il rischio di incorrere in fraintendimenti semantici, dovuti ad esempio alla fretta nella compilazione, soprattutto in presenza di *item* formulati in modo negativo o ambiguo, così come quello di essere influenzati dagli effetti di *framing* nella formulazione delle domande. Altro aspetto che può incidere sull'interpretazione dei quesiti, in particolare quando si fa riferimento a esperienze passate, è la soggettività della memoria e delle emozioni associate agli eventi ricordati a distanza di molto tempo.

La natura trasversale di gran parte degli studi, che offre una "fotografia" momentanea di fenomeni complessi, non consente di trarre inferenze causali o di effettuare una ricostruzione precisa delle

traiettorie temporali delle relazioni tra le variabili. L'uso di modelli longitudinali consentirebbe invece di verificare la direzionalità e la stabilità delle relazioni ipotizzate.

In questo senso gli studi, per i quali sono stati adottati disegni di ricerca longitudinali, rappresentano un avanzamento rilevante rispetto ai disegni trasversali, in quanto permettono di esplorare in modo più accurato le relazioni temporali e i possibili nessi causali tra le variabili indagate. Tuttavia, anche questi ultimi non sono immuni da alcune criticità e potrebbero beneficiare, in prospettiva futura, di alcuni importanti accorgimenti. In particolare, la durata complessiva del periodo di osservazione, non superiore ai dodici mesi, e il numero limitato di rilevazioni, circoscritto a tre misurazioni a intervalli di quattro mesi, possono aver ridotto la capacità di cogliere pienamente la complessità e la dinamicità dei processi analizzati. Tali vincoli metodologici potrebbero incidere sulla possibilità di rilevare variazioni nella direzione o nell'intensità delle relazioni tra le variabili indagate nel medio-lungo periodo. Un'estensione del periodo di osservazione e un più ampio numero di misurazioni permetterebbe una comprensione più approfondita delle dinamiche di sviluppo e interazione evidenziate nei costrutti analizzati, migliorando la robustezza e la validità dei risultati.

Anche le modalità di campionamento rappresentano una criticità rilevante. L'uso di campioni di convenienza e del metodo "a palla di neve" limita la generalizzabilità dei risultati, poiché riflette le specificità dei contesti di reclutamento. Studi futuri dovrebbero estendere l'indagine a campioni più eterogenei, includendo diverse fasce d'età, in particolare preadolescenti e adulti oltre i trent'anni di età, al fine di esplorare l'evoluzione dei comportamenti disfunzionali e del disagio psicologico lungo l'arco di vita. Tale prospettiva consentirebbe di osservare come determinate caratteristiche psicologiche si consolidino, si modifichino o si estinguano nel tempo, offrendo una visione dinamica dei processi di adattamento e vulnerabilità individuale. L'analisi dell'età adulta risulta cruciale, poiché in questa fase i tratti di personalità tendono a stabilizzarsi e possono modulare l'impatto di esperienze traumatiche tardive, mentre lo studio dei preadolescenti permetterebbe di individuare precocemente dinamiche di rischio e di attuare strategie di prevenzione tempestive.

Parallelamente, è opportuno ampliare le ricerche includendo variabili legate alla nazionalità, alla cultura, all'identità di genere e all'orientamento sessuale, per comprendere come le caratteristiche psicologiche e comportamentali varino in contesti culturali diversi e in relazione a specifiche dimensioni individuali, che potrebbero risultare significative soprattutto nell'analisi dei disagi legati alla percezione dell'immagine corporea e alle condotte alimentari disfunzionali.

In prospettiva, gli studi futuri dovrebbero adottare un approccio multimodale, integrando strumenti quantitativi e qualitativi e sviluppando disegni longitudinali più estesi, in grado di

esplorare la direzionalità e la stabilità delle relazioni tra variabili nel tempo. Attraverso disegni di ricerca più articolati, campioni diversificati e metodologie integrate sarà possibile cogliere con maggiore precisione la complessità e l'evoluzione dei processi psicologici indagati e approfondire la comprensione delle dinamiche alla base dei fenomeni studiati migliorando l'affidabilità e la validità esterna dei risultati in modo da fornire basi più solide per la prevenzione e l'intervento clinico.

Pur presentando alcune importanti prospettive di miglioramento, nel loro complesso gli studi qui descritti offrono un contributo scientifico ampio, solido e innovativo alla comprensione del disagio psicologico in adolescenza e nella giovane età adulta, distinguendosi innanzitutto per importanti punti di forza metodologici. Tra questi, emergono in modo particolarmente rilevante l'impiego di campioni numericamente consistenti, l'inclusione di due fasi del ciclo di vita, adolescenza e giovane età adulta, e, in più studi, l'adozione di disegni di ricerca longitudinali e di modelli statistici avanzati, quali analisi di mediazione sequenziale. Tali scelte metodologiche consentono di formulare inferenze più robuste e attendibili, di cogliere le dinamiche evolutive dei fenomeni indagati e di comprendere in modo più profondo i meccanismi causali e i processi di mantenimento alla base delle diverse forme di disagio psicologico.

Un ulteriore elemento di innovazione risiede nell'approccio integrato e multifattoriale che accomuna tutti gli studi. Il disagio psicologico non viene mai letto come esito di un singolo fattore isolato, ma come il risultato dell'interazione dinamica tra dimensioni individuali, relazionali e contestuali. I risultati complessivi mettono infatti in luce il ruolo centrale dei tratti di personalità disfunzionali, delle difficoltà di regolazione emotiva, della percezione di autoefficacia e delle strategie di *coping*, in costante interazione con la qualità delle relazioni familiari e sociali, gli stili genitoriali esperiti, il supporto sociale percepito e le caratteristiche del contesto socioculturale e digitale in cui adolescenti e giovani adulti sono immersi. Questa lettura complessa e integrata rappresenta un significativo avanzamento rispetto a modelli più riduzionistici adottati nel passato, offrendo una cornice interpretativa più aderente alla realtà clinica.

Dal punto di vista teorico, gli studi introducono e approfondiscono costrutti innovativi che arricchiscono i modelli esplicativi tradizionali. In particolare, la messa in evidenza del concetto di *distress overtolerance* consente di superare una visione del disturbo da *Binge Eating* centrata esclusivamente sull'impulsività o sulla disregolazione emotiva, rilevando come le condotte alimentari disfunzionali possano rappresentare l'esito di un prolungato processo di iper-controllo, difficoltà nell'interrompere attività faticose e stressanti e soppressione dei bisogni.

Analogamente, l'analisi congiunta dei tratti della Triade oscura, dei vissuti di abuso emotivo e del funzionamento familiare offre nuove chiavi di lettura per comprendere fenomeni emergenti e in

rapida crescita, quali il gioco problematico *online*, il *cyberbullismo* e il ritiro sociale, mettendo in luce meccanismi di vulnerabilità transdiagnostici e trasversali.

I risultati mostrano come, in assenza di adeguate risorse emotive e relazionali, il corpo possa diventare il principale ambito di esercizio del controllo e dell'autoefficacia, dando origine a pratiche disfunzionali legate all'immagine corporea, all'alimentazione e all'esercizio fisico.

Parallelamente, l'ambiente *online* e i *social media* emergono come contesti ambivalenti, in grado sia di amplificare il disagio, attraverso dinamiche di confronto sociale, isolamento e aggressività mediata dallo schermo, sia di fungere da strategie di *coping* disfunzionali, orientate all'evitamento emotivo e relazionale.

4.3 Implicazioni pratiche e prospettive future

Alla luce delle criticità e dei punti di forza degli studi presentati, è possibile delineare alcune linee di intervento che, in una prospettiva futura, potrebbero contribuire al miglioramento della ricerca, sia sul piano metodologico sia, soprattutto, in relazione alle rilevanti implicazioni cliniche che ne potrebbero derivare. In particolare, dal punto di vista metodologico, l'integrazione di strumenti quantitativi con approcci qualitativi e interviste cliniche consentirebbe di approfondire non solo la dimensione quantitativa dei fenomeni indagati, ma anche la qualità dell'esperienza e il significato soggettivo attribuitole.

L'adozione di disegni di ricerca longitudinali potrebbe inoltre offrire un contributo significativo sia alla ricerca empirica sia alla pratica clinica. La possibilità di analizzare le variabili oggetto di studio lungo un arco temporale esteso permetterebbe infatti un'osservazione diacronica dei processi psicologici, favorendo la comprensione della loro evoluzione, delle traiettorie di sviluppo e delle modalità di interazione reciproca nel tempo.

In ambito clinico, la possibilità di fare riferimento a dati di tipo longitudinale risulta particolarmente rilevante in quanto rende possibile individuare quali variabili esercitino un ruolo più incisivo nei diversi momenti del percorso, offrendo indicazioni utili per la valutazione, la formulazione del caso e la pianificazione degli interventi. Inoltre, rispetto alle analisi di tipo *cross-sectional*, tuttora prevalenti in letteratura, i disegni longitudinali favoriscono l'identificazione di relazioni potenzialmente causali, aumentando la capacità di distinguere tra fattori predittivi, mediatori e variabili di esito. Nell'ambito delle analisi di mediazione, questo approccio consentirebbe di verificare in modo più rigoroso se le relazioni ipotizzate tra i costrutti analizzati trovano effettivo riscontro empirico e in quale misura, contribuendo così a una maggiore integrazione tra evidenze empiriche e decisioni cliniche.

Le implicazioni cliniche e preventive emerse da questi studi sono di grande rilievo e chiaramente orientate alla pratica, in quanto evidenziano la necessità di interventi precoci, personalizzati e multilivello, in grado di coinvolgere non solo l'individuo, ma anche la famiglia, la scuola e il più ampio contesto sociale. Il rafforzamento delle competenze emotive, comunicative e relazionali, la promozione dell'autostima e dell'autoefficacia, la costruzione di reti di supporto stabili e la legittimazione dei bisogni emotivi e corporei si configurano come obiettivi centrali per la prevenzione della cronicizzazione del disagio. In tale prospettiva, la psicoterapia, in particolare di approccio sistemico-relazionale, il *parent training*, la psicoeducazione e i programmi di prevenzione in ambito scolastico assumono un ruolo strategico e innovativo, soprattutto nel contrasto a fenomeni complessi come il Disturbo da gioco su Internet, il *Cyberbullismo*, l'*Hikikomori* e la solitudine pervasiva.

In conclusione, interventi che coinvolgano il contesto sociale e familiare e che tengano conto delle caratteristiche individuali e di personalità potrebbero rivelarsi particolarmente efficaci nel sostenere adolescenti e giovani adulti nei complessi compiti evolutivi legati all'autonomia, alla costruzione dell'identità personale e al mantenimento di un benessere psicologico duraturo. Tali interventi risultano ancora più rilevanti nel contesto della società contemporanea, caratterizzata da rapide trasformazioni relazionali, culturali e digitali, che spesso offre punti di riferimento instabili o disfunzionali, ostacolando lo sviluppo di competenze sociali, comunicative e relazionali e incidendo negativamente sulla salute psicofisica.

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