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**INTERVENCIÓN PSICOSOCIAL CON APOYO DIGITAL EN FAMILIAS DE NIÑAS Y
NIÑOS CON TRASTORNO DEL ESPECTRO AUTISTA (TEA) Y TRASTORNO POR
DÉFICIT DE ATENCIÓN CON HIPERACTIVIDAD (TDAH)**

TESIS DOCTORAL

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CERTIFICA que la tesis titulada Intervención psicosocial con apoyo digital en familias de niños y niñas con trastorno del espectro autista (TEA) y trastorno por déficit de atención (TDAH), presentada por ANA BELÉN PARDO SALAMANCA para optar por el grado de Doctor, ha sido realizada en el Departamento de Psicología Evolutiva y de la Educación de la Universidad de Valencia, Programa de Investigación en Psicología bajo mi dirección, cumpliendo los requisitos necesarios de calidad y originalidad para su defensa.

Y para que conste, expido la presente en Valencia, a 16 de octubre de 2025.

Carmen Berenguer Forner

Fdo.

A mi abuela Nati

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RESUMEN

El Trastorno por Déficit de Atención e Hiperactividad (TDAH) y el Trastorno del Espectro Autista (TEA) son dos de los trastornos del neurodesarrollo más prevalentes en la infancia y generan un impacto funcional y emocional significativo tanto en los niños/as como en sus familias. La evidencia científica ha demostrado la eficacia de las intervenciones psicosociales parentales basadas en la psicoeducación y la terapia cognitivo-conductual para reducir síntomas y mejorar la dinámica familiar; sin embargo, su validez externa y accesibilidad continúan siendo limitadas debido a la escasez de ensayos controlados y a las barreras logísticas que dificultan la participación de las familias.

En respuesta a estas limitaciones, esta tesis doctoral propone el desarrollo y evaluación del programa psicosocial digital INPSYD, diseñado para intervenir de manera sincrónica y en línea con familias de niños con TEA sin discapacidad intelectual y TDAH, integrando estrategias de entrenamiento parental, manejo del estrés, psicoeducación y técnicas cognitivo-conductuales orientadas a la mejora del funcionamiento ejecutivo, las habilidades sociales y el bienestar familiar.

El estudio incluyó una muestra total de 120 familias con hijos con TEA, TDAH y desarrollo típico, reclutadas en asociaciones y unidades de orientación (UEOs) de Valencia y Alicante. La muestra clínica presentaba diagnósticos clínicos confirmados según los criterios del DSM-5, el ADI-R y/o ADOS.

Los resultados de los estudios iniciales indicaron diferencias significativas entre los grupos clínicos y el grupo control en el estrés parental, apoyo social y características del niño, siendo el apoyo social confidencial un predictor relevante del estrés en ambos grupos clínicos. Además, los perfiles de bajo afrontamiento se asociaron con mayor disfuncionalidad parental y con un incremento de problemas conductuales, sociales y de sueño en los hijos, mientras que en el ámbito del funcionamiento ejecutivo se evidenciaron déficits específicos en memoria de trabajo y monitorización en el grupo TDAH frente al grupo TEA y al control. El estudio experimental principal, un ensayo controlado aleatorizado (RCT) registrado en [clinicaltrials.gov](https://clinicaltrials.gov/ct2/show/study/NCT06303791) (NCT06303791), contó con 82 familias asignadas a grupos experimental y control, y evaluadas en tres momentos (línea base, post-intervención y seguimiento). El programa INPSYD, compuesto por 12 sesiones semanales de 90 minutos, mostró mejoras estadísticamente significativas en el grupo experimental en estrés parental ($p < .01$, $\eta^2_p = 0.29$), afrontamiento positivo ($p < .01$, $\eta^2_p = 0.24$) y apoyo social ($p = .025$, $\eta^2_p = 0.10$), junto con beneficios en el funcionamiento social y ejecutivo infantil, manteniéndose los efectos a los seis meses.

Estos hallazgos confirman la hipótesis de que un programa psicosocial digital puede generar beneficios simultáneos en dominios parentales e infantiles, constituyendo una alternativa válida, escalable y sostenible frente a los formatos presenciales tradicionales. En conclusión, esta investigación aporta evidencia empírica sólida sobre la eficacia del formato digital sincrónico para la intervención en TEA y TDAH, destacando la importancia del apoyo social y las estrategias de afrontamiento como mediadores clave en la reducción del estrés parental y la mejora del funcionamiento familiar, y contribuyendo a la promoción de una atención psicoeducativa más equitativa y accesible para las familias neurodiversas.

RESUM

El Trastorn per Dèficit d'Atenció i Hiperactivitat (TDAH) i el Trastorn de l'Espectre Autista (TEA) són dos dels trastorns del neurodesenvolupament més prevalents a la infància i generen un impacte funcional i emocional significatiu tant en els infants com en les famílies. L'evidència científica ha demostrat l'eficàcia de les intervencions psicosocials parentals basades en la psicoeducació i la teràpia cognitivoconductual per reduir símptomes i millorar la dinàmica familiar; no obstant això, la validesa externa i l'accessibilitat continuen sent limitades a causa de l'escassetat d'assajos controlats i de les barreres logístiques que dificulten la participació de les famílies.

En resposta a aquestes limitacions, aquesta tesi doctoral proposa el desenvolupament i avaluació del programa psicosocial digital INPSYD, dissenyat per intervenir de manera sincrònica i en línia amb famílies de nens amb TEA sense discapacitat intel·lectual i TDAH, integrant estratègies d'entrenament parental, maneig de l'estrès, psicoeducació i tècniques cognitiu-conductuals familiar.

L'estudi va incloure una mostra total de 120 famílies amb fills amb TEA, TDAH i desenvolupament típic, reclutades en associacions i unitats d'orientació (UEO) de València i Alacant. La mostra clínica presentava diagnòstics clínics confirmats segons els criteris del DSM-5, ADI-R i/o ADOS.

Els resultats dels estudis inicials van indicar diferències significatives entre els grups clínics i el grup control a l'estrès parental, suport social i característiques del nen, sent el suport social confidencial un predictor rellevant de l'estrès en ambdós grups clínics. A més, els perfils de baix afrontament es van associar amb més disfuncionalitat parental i amb un increment de problemes conductuals, socials i de son en els fills, mentre que en l'àmbit del funcionament executiu es van evidenciar dèficits específics en memòria de treball i monitorització al grup TDAH davant del grup TEA i al control. L'estudi experimental principal, un assaig controlat aleatoritzat (RCT) registrat a [clinicaltrials.gov](https://clinicaltrials.gov/ct2/show/study/NCT06303791) (NCT06303791), va comptar amb 82 famílies assignades a grups experimental i control, i avaluades en tres moments (línia base, postintervenció i seguiment). El programa INPSYD, compost per 12 sessions setmanals de 90 minuts, va mostrar millores estadísticament significatives en el grup experimental en estrès parental ($p < .01$, $\eta^2_p = 0.29$), afrontament positiu ($p < .01$, $\eta^2_p = 0.24$) i social ($p = .$). juntament amb beneficis en el funcionament social i executiu infantil, mantenint-se els efectes als sis mesos.

Aquestes troballes confirmen la hipòtesi que un programa psicossocial digital pot generar beneficis simultanis en dominis parentals i infantils, constituint una alternativa vàlida, escalable i sostenible davant dels formats presencials tradicionals. En conclusió, aquesta investigació aporta evidència empírica sòlida sobre l'eficàcia del format digital sincrònic per a la intervenció a TEA i TDAH, destacant la importància del suport social i les estratègies d'afrontament com a mediadors clau en la reducció de l'estrès parental i la millora del funcionament familiar, i contribuint a la promoció d'una atenció psicoeducativa més equitativa.

ABSTRACT

Attention Deficit Hyperactivity Disorder (ADHD) and Autism Spectrum Disorder (ASD) are two of the most prevalent neurodevelopmental disorders in childhood and have a significant functional and emotional impact on both children and their families. Scientific evidence has demonstrated the effectiveness of parent-focused psychosocial interventions based on psychoeducation and cognitive-behavioral therapy in reducing symptoms and improving family dynamics; however, their external validity and accessibility remain limited due to the scarcity of controlled trials and logistical barriers that hinder family participation.

In response to these limitations, this doctoral dissertation proposes the development and evaluation of the INPSYD digital psychosocial program, designed to provide synchronous online intervention for families of children with ASD without intellectual disability and ADHD. The program integrates parental training strategies, stress management techniques, psychoeducation, and cognitive-behavioral approaches aimed at enhancing executive functioning, social skills, and overall family well-being.

The study included a total sample of 120 families with children diagnosed with ASD, ADHD, and typical development, recruited through associations and specific educational guidance units (UEOs) in Valencia and Alicante. The clinical sample comprised children with confirmed diagnoses according to DSM-5 criteria, the Autism Diagnostic Interview-Revised (ADI-R), and/or the Autism Diagnostic Observation Schedule (ADOS).

The results of the initial studies revealed significant differences between the clinical and control groups in parental stress, social support, and child characteristics, with confidential social support emerging as a significant predictor of stress in both clinical groups. Furthermore, low coping profiles were associated with greater parental dysfunction and increased behavioral, social, and sleep problems in children, while specific deficits in working memory and monitoring were observed in the ADHD group compared to the ASD and control groups. The main experimental study, a randomized controlled trial (RCT) registered at clinicaltrials.gov (NCT06303791), involved 82 families randomly assigned to intervention and control groups, assessed at three time points (baseline, post-intervention, and follow-up). The INPSYD program, consisting of twelve weekly 90-minute online sessions, produced statistically significant improvements in the experimental group in parental stress ($p < .01$, $\eta^2_p = 0.29$), positive coping ($p < .01$, $\eta^2_p = 0.24$), and perceived social support ($p = .025$, $\eta^2_p = 0.10$), along with benefits in children's social and executive functioning, with effects maintained at six-month follow-up.

These findings confirm the hypothesis that a digital psychosocial program can generate simultaneous benefits in both parental and child domains, representing a valid, scalable, and sustainable alternative to traditional in-person formats. In conclusion, this research provides robust empirical evidence supporting the effectiveness of synchronous digital interventions for families of children with ASD and ADHD, underscoring the role of social support and coping strategies as key mediators in reducing parental stress and enhancing family functioning, while contributing to the promotion of more equitable and accessible psychoeducational care for neurodiverse families.

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PRIMERA PARTE: MARCO TEÓRICO

El Trastorno por Déficit de Atención e Hiperactividad (TDAH) y el Trastorno del Espectro Autista (TEA) constituyen dos de los trastornos del neurodesarrollo más prevalentes en la edad escolar. Ambos generan un impacto significativo tanto en los niños/as que los presentan como en sus familias, debido a su gravedad, persistencia y repercusión funcional a lo largo del ciclo vital. En este contexto, las intervenciones dirigidas a padres de niños/as con TEA o TDAH, basadas en programas psicosociales, estrategias de psicoeducación y técnicas cognitivo-conductuales, han mostrado resultados positivos en la reducción de síntomas y en la mejora de la dinámica familiar.

A pesar de su eficacia demostrada, los programas psicosociales dirigidos a padres de niños/as con TEA o TDAH presentan diversas limitaciones. Entre ellas destacan la escasa generalización de los resultados y la falta de ensayos clínicos controlados que respalden su validez externa. La efectividad de estas intervenciones puede verse influida por factores familiares, como el nivel de estrés parental asociado al impacto de los síntomas nucleares del TEA o del TDAH, así como por variables individuales del niño/a (Siegenthaler et al., 2013). Asimismo, el formato predominantemente presencial de estos programas restringe su accesibilidad, especialmente para familias que enfrentan dificultades de conciliación laboral, limitaciones de tiempo o que residen en zonas rurales. En este sentido, estudios recientes subrayan que las barreras logísticas constituyen un obstáculo relevante para la participación y continuidad en las intervenciones (Tan-McNeill et al., 2021). Como resultado, una proporción considerable de niños/as con diagnóstico de TEA o TDAH continúa sin acceder a tratamientos psicosociales basados en la evidencia (Danielson et al., 2018; DuPaul et al., 2018).

En respuesta a estas limitaciones, el presente proyecto de investigación propone el diseño y desarrollo de un programa psicosocial estructurado con apoyo digital, dirigido a familias de niños con TEA y TDAH. Este programa integrará estrategias validadas empíricamente para potenciar las habilidades sociales, la atención y los procesos cognitivos en los niños, junto con componentes de entrenamiento parental orientados al manejo conductual, la mejora de las competencias educativas y la reducción del estrés familiar. Se espera que el formato digital del programa favorezca la accesibilidad, la adherencia y la sostenibilidad de la intervención, contribuyendo así a la mejora del bienestar tanto de los niños/as como de sus familias.

1. El trastorno del Espectro Autista

1.1. Definición y síntomas nucleares

El Trastorno del Espectro Autista (TEA) constituye una condición compleja y altamente heterogénea, tanto en su etiología como en sus manifestaciones clínicas y en su curso evolutivo a lo largo de la vida. El Diagnostic and Statistical Manual of Mental Disorders, en su quinta edición, texto revisado (DSM-5-TR, APA, 2022), clasifica el TEA dentro de los trastornos del neurodesarrollo y lo define por la presencia de dos síntomas nucleares:

- (a) Déficits persistentes en la comunicación y en la interacción social
- (b) Patrones restrictivos, repetitivos y estereotipados de comportamiento, intereses o actividades (APA, 2022).

Además, el DSM-5-TR establece tres niveles de severidad, en función del grado de apoyo requerido: nivel 1 (requiere apoyo), nivel 2 (requiere apoyo sustancial) y nivel 3 (requiere apoyo muy sustancial).

En la misma línea, la Clasificación Internacional de Enfermedades en su undécima edición (CIE-11) adopta igualmente el término unificado de Trastorno del Espectro del Autismo, incorporando descriptores adicionales para distinguir entre autismo con y sin discapacidad intelectual, así como entre autismo con y sin alteraciones del lenguaje funcional (World Health Organization, 2019). A diferencia del DSM-5-TR, la CIE-11 también contempla la pérdida de habilidades previamente adquiridas como un criterio relevante para el diagnóstico. Estas aproximaciones evidencian el esfuerzo de los sistemas clasificatorios internacionales por precisar los criterios diagnósticos, considerando la heterogeneidad clínica del TEA y sus implicaciones para la evaluación e intervención.

Los síntomas del TEA se manifiestan desde la primera infancia y comprometen el funcionamiento diario, siendo los padres quienes suelen advertir inicialmente que su hijo/a no alcanza los hitos del desarrollo esperados para su edad. Entre los signos de alarma más frecuentemente señalados destacan la falta de respuesta afectiva y comunicativa, así como la presencia de problemas conductuales, factores que motivan la búsqueda de ayuda profesional y conducen posteriormente a un posible diagnóstico (McConkey, Truesdale-Kennedy, & Cassidy, 2009).

Siguiendo la clasificación diagnóstica del DSM-5-TR (APA, 2022) los diferentes síntomas asociados a cada uno de los dominios afectados en el TEA serían

Déficits persistentes en la comunicación social y en la interacción social

- Reciprocidad socioemocional: Dificultad para mantener conversaciones, compartir intereses y responder a interacciones sociales.
- Alteraciones en la comunicación no verbal: Uso limitado de gestos, expresiones faciales y contacto visual.
- Dificultades en la comprensión y desarrollo de relaciones sociales: Problemas para establecer amistades o comprender normas sociales implícitas.

Patrones restrictivos y repetitivos de comportamiento, intereses o actividades

- Movimientos estereotipados o repetitivos: Flapping, ecolalia, alineación de objetos.
- Insistencia en la rutina y resistencia al cambio: Malestar extremo ante alteraciones en el entorno.
- Intereses intensos y altamente focalizados: Fascinación con temas específicos.
- Alteraciones en el procesamiento sensorial: Hipersensibilidad o hiposensibilidad a estímulos del entorno.

1.2. Prevalencia del TEA

Recientes estudios muestran un aumento gradual en la incidencia y prevalencia del TEA (Zeidan et al., 2022). Este incremento podría deberse a cambios en los criterios para el diagnóstico, en la forma de definir los casos y en un mayor reconocimiento del TEA por parte de los profesionales (Zuñiga et al., 2017).

En España no existe un censo oficial que sea riguroso, pero según la Confederación Española de Autismo, el porcentaje actual con el que nos encontramos se sitúa en 1 de cada 100 niños/as. Durante el año 2020-2021, el alumnado con TEA aumentó un 8,07%.

Según el Centro para el Control y la Prevención de Enfermedades (CDC), en el año 2020, en EE.UU. 1 de cada 36 niños de 8 años fue diagnosticado de TEA. Estos datos representaban el 2,8% de la población.

En el año 2022, según el CDC, la prevalencia aumentó a 1 de cada 31 niños. Estos datos representan el 3,2% de la población de EE. UU.

1.3. Manifestaciones clínicas y variabilidad del espectro

Las manifestaciones clínicas del TEA son diversas y varían en gravedad. Entre las más relevantes se encuentran:

1.3.1. Lenguaje y comunicación

Los déficits en el lenguaje y la comunicación constituyen uno de los síntomas nucleares del Trastorno del Espectro Autista (TEA) y se manifiestan tanto en la dimensión estructural del lenguaje como en su uso pragmático. Diversas investigaciones han documentado retrasos en la adquisición del vocabulario, limitaciones en la comprensión de significados abstractos y dificultades en la construcción gramatical (Tager-Flusberg, Paul, & Lord, 2005). Sin embargo, las

alteraciones más significativas se observan en la pragmática, con problemas en la reciprocidad conversacional, el uso de gestos, la entonación prosódica y la interpretación de ironías o dobles sentidos, lo que afecta la eficacia comunicativa en contextos sociales (APA, 2013). Estas limitaciones dificultan la construcción de interacciones sociales recíprocas y contribuyen a la aparición de conductas repetitivas como medio alternativo de expresión (Aguaded et al., 2016). En consecuencia, los déficits en lenguaje y comunicación en el TEA no solo comprometen el desarrollo académico, sino también la adaptación social y emocional, configurándose como un objetivo central en la intervención temprana (Eigsti, 2013).

1.3.2. Interacción social

Las dificultades de interacción social en TEA constituyen uno de los rasgos clínicos más distintivos y han sido ampliamente documentadas en la literatura. La evidencia señala alteraciones en la orientación social, la búsqueda de interacciones, el disfrute de estas y el mantenimiento de vínculos, lo que limita la participación en contextos sociales cotidianos (Chevallier et al., 2012). Estas dificultades incluyen problemas para comprender normas sociales implícitas, interpretar emociones ajenas y establecer relaciones interpersonales recíprocas. La investigación ha mostrado que tales limitaciones se relacionan con alteraciones en la teoría de la mente, entendida como la capacidad para atribuir estados mentales a los demás (Baron-Cohen, 2000), así como con déficits en intersubjetividad, lo que repercute en la comprensión de intenciones y emociones. Estudios recientes han evidenciado que estas dificultades se asocian a una conectividad atípica en redes cerebrales socioemocionales, como la red por defecto y la corteza prefrontal medial, las cuales participan en la cognición social y en el procesamiento empático (Cheng et al., 2019; Gotts et al., 2020). En consecuencia, los déficits en la interacción

social en el TEA no solo afectan la calidad de las relaciones interpersonales, sino que también condicionan la adaptación académica y laboral, subrayando la necesidad de intervenciones tempranas dirigidas a mejorar la reciprocidad social y la comprensión emocional.

1.3.3. Conductas repetitivas y estereotipadas.

Las conductas repetitivas constituyen una de las manifestaciones nucleares del Trastorno del Espectro Autista (TEA) y engloban movimientos motores como el aleteo de manos, el balanceo o la manipulación repetitiva de objetos, así como patrones verbales estereotipados o ecolálicos (Leekam et al., 2011). Asimismo, los niños con TEA suelen mostrar una marcada resistencia al cambio y una elevada ansiedad ante la alteración de rutinas establecidas (South et al., 2005). Estas manifestaciones se han asociado con disfunciones en el control inhibitorio y en la flexibilidad cognitiva, componentes esenciales del funcionamiento ejecutivo, así como con una tendencia hacia la búsqueda de predictibilidad ambiental (Ozonoff et al., 1991). Estudios recientes han profundizado en esta relación, señalando que las conductas repetitivas pueden cumplir una función autorregulatoria y adaptativa frente a la sobrecarga sensorial o la incertidumbre contextual y destacan la heterogeneidad de estas conductas en función de la edad, el nivel cognitivo y la comorbilidad con otros trastornos del neurodesarrollo (Keller et al., 2021).

1.3.4. Procesamiento sensorial

Las alteraciones en el procesamiento sensorial representan otro dominio clave en el fenotipo del TEA y se manifiestan como hipersensibilidad o hiposensibilidad a estímulos auditivos, visuales, táctiles o propioceptivos (Ben-Sasson et al., 2009). Estas diferencias sensoriales pueden generar reacciones desproporcionadas ante estímulos cotidianos, como

sonidos estridentes o luces brillantes, o bien una búsqueda intensa de determinadas sensaciones (Robertson & Baron-Cohen, 2017).

1.4. Principales teorías explicativas del TEA

1.4.1. Teoría de la Mente

La Teoría de la Mente (ToM) se define como la habilidad cognitiva de atribuir estados mentales a uno mismo y a otros, permitiendo interpretar, explicar, comprender, predecir y controlar comportamientos (Marocchini, 2023).

Esta teoría fue planteada por Baron-Cohen et al. (1985) y sostiene que las personas con TEA tienen dificultades para inferir estados mentales en los demás, es decir, comprender que los otros poseen pensamientos, creencias, deseos e intenciones diferentes a los propios. Este déficit en la teoría de la mente explicaría muchas de las dificultades sociales de las personas con TEA, como la incapacidad para interpretar el lenguaje figurado o comprender emociones ajenas (Baron-Cohen, 2000).

La teoría de la mente (ToM) se relaciona con el autismo con la hipótesis de que las personas con esta condición tienen dificultades para atribuir estados mentales a sí mismas y a los demás, lo que afecta su capacidad para predecir y explicar comportamientos.

La correlación entre la teoría de la mente y las habilidades sociales en la vida real muestra que las destrezas de teoría de la mente en niños con autismo están significativamente relacionadas con su comportamiento social en contextos cotidianos. Esto sugiere que las pruebas de teoría de la mente no solo miden aspectos de cognición social en laboratorio, sino que también tienen relevancia práctica para entender las dificultades sociales en la vida diaria (Frith, 1994).

Según Alan Leslie (1987), los niños con autismo presentan deficiencias en el juego de ficción, lo cual sugiere que el mecanismo cognitivo necesario para representar estados mentales está alterado en ellos. Esta incapacidad para "mentalizar" es una característica distintiva del autismo, ya que los niños con esta condición tienden a realizar juegos orientados a la realidad en lugar de los simbólicos.

1.4.2. Teoría de la disfunción ejecutiva.

Propuesta por Ozonoff et al. (1991), esta teoría sugiere que las dificultades en la planificación, inhibición de respuestas impulsivas y flexibilidad cognitiva explican algunos síntomas del TEA. Se ha observado que las personas con TEA tienen dificultades en la resolución de problemas y en la adaptación a nuevas situaciones, lo que podría justificar la rigidez cognitiva y la insistencia en rutinas características del trastorno

Ozonoff y Cathcart (1998) definieron la función ejecutiva como la capacidad que permite a los individuos mantenerse orientados en entornos de resolución de problemas con objetivos futuros. Esta función abarca diversas habilidades cognitivas, tales como la planificación, la inhibición de respuestas irrelevantes, la persistencia en la ejecución de acciones, el control de impulsos y la flexibilidad del pensamiento y la conducta. Los autores afirman que la deficiencia en la función ejecutiva es la única alteración cognitiva que aparece de forma constante en todos los grupos dentro del espectro autista. Esto sugiere que esta disfunción podría ser la causa principal de otros síntomas asociados al trastorno.

1.4.3. Teoría de la coherencia central débil.

La teoría propuesta por la psicóloga alemana Uta Frith (1989) postula que las personas con trastorno del espectro autista procesan la información de manera fragmentada, enfocándose con mayor precisión en los detalles que en la totalidad de los estímulos. Este sesgo hacia el detalle podría explicar tanto la memoria sobresaliente para información específica como las dificultades para interpretar situaciones en su contexto global. En el ámbito social, dicho procesamiento fragmentado se traduce en limitaciones para construir interpretaciones completas de las interacciones, especialmente en la inferencia de las intenciones de los demás a partir de señales como la mirada, los gestos y el contexto en el que se encuentran. Además, este patrón cognitivo se asocia con la presencia de intereses restringidos y conductas repetitivas, evidenciando cómo una misma característica subyacente puede generar tanto dificultades como fortalezas. Según Frith (1989, 1994), esta perspectiva permite comprender las dificultades observadas en habilidades como la atención conjunta y la comprensión de la mente de otros, al tiempo que ofrece una explicación para ciertas capacidades extraordinarias, la preferencia por la rutina y la persistencia de comportamientos repetitivos. En conjunto, la teoría proporciona un marco integrador que articula las particularidades cognitivas y conductuales que caracterizan el autismo.

2. Trastorno por déficit de atención e hiperactividad (TDAH)

2.1. Definición y criterios diagnósticos

El trastorno por déficit de atención con hiperactividad es el trastorno del desarrollo neurológico más común en niños/as en edad escolar. En las últimas dos décadas se ha producido un incremento de la investigación sobre el TDAH. Algunas razones de este aumento son: un

mayor reconocimiento del impacto del TDAH en el funcionamiento diario y numerosos avances en la metodología y tecnología de investigación (Cortese et al., 2018).

El Manual Diagnóstico y Estadístico de los Trastornos Mentales en su quinta edición (DSM-5) define el TDAH como un trastorno del neurodesarrollo caracterizado por un patrón persistente de inatención y/o hiperactividad-impulsividad que interfiere con el funcionamiento o el desarrollo (APA, 2013).

Se distinguen tres subtipos de TDAH y cada uno de ellos presenta una serie de características que lo identifican (APA, 2013):

- 1) Subtipo inatento: manifiestan síntomas de inatención, pero no de impulsividad e hiperactividad. Se diagnostica más en niñas y se asocia a problemas internalizantes como depresión y ansiedad.
- 2) Subtipo impulsivo/hiperactivo: se caracterizan mostrar síntomas de impulsividad e hiperactividad, pero no de inatención. Es el subtipo con menos prevalencia.
- 3) Subtipo combinado: es el subtipo más diagnosticado y en el cual los tres síntomas nucleares confluyen. Este subtipo se asocia con problemas internalizantes e externalizantes como problemas de comportamiento.

2.2. Prevalencia del TDAH

La prevalencia de este trastorno, según encuestas de población, sugiere que el TDAH ocurre en aproximadamente el 5% de los niños y el 2,5% de los adultos en la mayoría de las culturas (APA, 2013).

Por su parte, la prevalencia del TDAH se sitúa en el 11% entre los niños y adolescentes de 4 a 17 años en EE. UU. (Danielson et al., 2018).

Los datos más recientes del CDC de 2020-2022 indican una prevalencia del 11,3% de TDAH diagnosticado en niños de 5 a 17 años, con una tasa del 14,5% en niños frente al 8,0% en niñas.

Según la OMS, la prevalencia mundial del TDAH es de aproximadamente 8.8%, según un reporte de salud de 2022.

En España alcanza el 9,92%. De este porcentaje, el 47,8% cumplía los criterios para la presentación combinada; el 44,2% lo hacía para la presentación inatenta y el 7,96% era diagnosticado con la presentación predominantemente hiperactiva/impulsiva (Bosch et al., 2022).

2.3. Manifestaciones clínicas del TDAH

Las manifestaciones más frecuentes, y haciendo referencia a los síntomas nucleares del trastorno (DSM-5; APA, 2013) son las siguientes:

Inatención: se manifiesta como la dificultad o incapacidad para mantener la atención de manera continua en tareas que no resultan atractivas o motivadoras, pérdida de objetos, despistes, dificultad para seguir instrucciones de varios pasos, dificultad para acabar tareas sin supervisión. Rechazo a las tareas que suponen una sobrecarga atencional y un rendimiento inferior a su capacidad por la comisión de errores por descuido (Suárez et al., 2018).

Impulsividad: se manifiesta en una tendencia recurrente a actuar o responder sin una reflexión previa, lo que conlleva dificultades para regular la conducta en función de las demandas contextuales. Estos niños/as suelen contestar de manera precipitada, incluso antes de que la pregunta haya sido formulada en su totalidad, mostrando problemas para procesar enunciados largos o complejos. Asimismo, presentan una marcada dificultad para esperar su turno en situaciones que requieren control inhibitorio, lo que se traduce en interrupciones

frecuentes durante conversaciones o juegos, generando conflictos en las interacciones sociales (Mrug et al., 2012). Esta falta de autocontrol también se asocia con una mayor propensión a sufrir accidentes, dado que la conducta impulsiva reduce la capacidad de anticipar las consecuencias de sus actos.

Hiperactividad: se caracteriza por un patrón persistente de actividad motora excesiva y poco regulada. En el contexto escolar o en situaciones que requieren permanecer en reposo, los niños/as manifiestan una inquietud motora constante. Esto se evidencia en movimientos continuos del cuerpo, cambios de postura frecuentes al estar sentados o movimientos repetitivos de piernas y manos. A menudo, estos movimientos están acompañados de conductas como golpear o hacer ruidos con objetos, lo que puede provocar molestias en otras personas. Es habitual que se levanten en momentos en los que se espera que permanezcan sentados, y que recurran a correr o trepar en situaciones inapropiadas, lo cual incrementa el riesgo de accidentes. Esta hiperactividad se relaciona también con una actividad general desorganizada, la tendencia a iniciar tareas sin finalizarlas y la producción de un entorno ruidoso debido al exceso de movimiento o a la generación de sonidos. En el aspecto verbal, la hiperactividad se muestra a través de conductas como habla excesiva, rápida y, a veces, con un tono de voz más alto de lo que es apropiado para la situación social. Esto puede afectar la dinámica del grupo y la comunicación efectiva (Rusca & Cortez, 2020).

Los niños diagnosticados con TDAH presentan una percepción de su calidad de vida inferior en comparación con el grupo de niños que no padecen esta condición. De modo que, la condición de padecer TDAH ejerce un impacto directo en la vida de los niños y afecta a la percepción que el niño tiene sobre su entorno (Hernández et al., 2017).

2.4. Principales teorías explicativas del TDAH

2.4.1. Teoría de la disfunción ejecutiva

Brown (2006), en sintonía con Barkley (1997), plantea una concepción integral de las funciones ejecutivas (FE). Este enfoque sugiere que todas las personas con TDAH tienen, en diferente grado, problemas en la autorregulación que están relacionados con las funciones ejecutivas. Esto permite definir el TDAH principalmente como un trastorno en el desarrollo de esas funciones. Sin embargo, Brown se diferencia de Barkley en un punto crucial: mientras Barkley considera que la inhibición conductual es la función ejecutiva principal de la que surgen las demás, Brown argumenta que la inhibición es solo una parte de un sistema interdependiente y dinámico de funciones que se autorregulan. De manera que Brown propone un modelo integrador en el que identifica seis grupos de funciones ejecutivas alteradas en el TDAH. Estos son la activación (organizar, priorizar y comenzar tareas), la atención (mantener y cambiar el foco atencional), el esfuerzo (regular el nivel de alerta y sostener la productividad), la emoción (gestión de la frustración y regulación emocional), la memoria (uso de la memoria de trabajo y recuperación de información) y la acción (monitoreo y autorregulación de la conducta). La disfunción ejecutiva no se limita a un déficit medible con pruebas neuropsicológicas. Se pone de manifiesto de manera más clara en la vida cotidiana, en la medida en que las demandas de organización, autorregulación emocional y memoria de trabajo superan los recursos que la persona tiene disponibles.

2.4.2. Teoría de la inhibición conductual

La capacidad de inhibición de respuesta es un proceso multidimensional. En él participan de forma interrelacionada tres procesos: inhibición de la respuesta para la que existe un refuerzo

inmediato. (positivo o de huida para evitar una consecuencia negativa), detener la respuesta que ya estaba en curso para dar tiempo antes de responder y controlar la inferencia (Barkley, 1997, 2006).

Para Barkley, los niños/as con TDAH tienen dificultades tanto en la inhibición de la conducta prepotente como en la capacidad para interrumpir un patrón de respuesta que ha demostrado ser ineficaz. Los problemas en la capacidad de inhibición afectan de forma muy directa a varias funciones ejecutivas.

2.4.3. Teoría de la aversión a la demora:

El modelo de aversión a la demora (Sonuga-Barke et al., 1992) mantiene que los individuos diagnosticados con TDAH prefieren una recompensa menor pero proporcionada de forma inmediata que una mayor que se prolongue en el tiempo. Además, está relacionada con la impulsividad y la dificultad para esperar una gratificación, ya que esta espera les produce malestar.

Por lo que, el modelo explica los problemas que muchas personas con TDAH tienen a la hora de enfrentar tareas complejas que implican nula gratificación o en que la recompensa está muy dilatada en el tiempo.

Esta teoría se basa en el circuito cerebral de recompensa en el que la dopamina cumple una función clave como neuromodulador de la recompensa. La amígdala también interviene en este proceso y es la encargada de determinar el grado de motivación de la recompensa (Artigas, 2009).

3. Comorbilidad TEA y el TDAH

A pesar de las diferencias en la sintomatología nuclear, el TEA y el TDAH comparten múltiples características clínicas. El TEA y el TDAH constituyen dos de los trastornos del neurodesarrollo más prevalentes en la etapa escolar, y ambos presentan un impacto considerable tanto en el ámbito familiar como en la conducta y desarrollo adaptativo de los sujetos. La literatura científica ha estimado que entre un 30% y un 80% de los niños con TEA presentan sintomatología propia del TDAH y, de manera recíproca, entre un 30% y un 65% de los diagnosticados con TDAH muestran características clínicas asociadas al TEA (Velarde et al., 2022). Mientras que el TEA se caracteriza por alteraciones en la comunicación y en la interacción social, junto con conductas repetitivas e intereses restringidos, el TDAH se define por déficits atencionales, hiperactividad e impulsividad. Sin embargo, la evidencia empírica señala una convergencia significativa entre ambos trastornos.

El reconocimiento de esta coexistencia se consolidó con la inclusión en el DSM-5 (APA, 2013) de la posibilidad de un diagnóstico comórbido, lo que ha favorecido un incremento en la investigación al respecto. Las tasas de comorbilidad, estimadas entre el 30% y el 70% (Rau et al., 2020), indican que el subtipo combinado de TDAH es el más frecuente en su asociación con el TEA (Joshi et al., 2017). La comorbilidad se asocia a un mayor deterioro en el funcionamiento cognitivo, social y adaptativo, y los niños con diagnóstico dual manifiestan más manierismos, conductas estereotipadas y patrones repetitivos que aquellos diagnosticados únicamente con TEA (Rao & Landa, 2013). Estas alteraciones se reflejan en dificultades de adaptación en diversos contextos y en un incremento del rechazo social, derivado en el caso del TDAH de la dificultad para compartir, esperar turnos y regular la conducta (Mrug et al., 2012), y en el TEA de la reciprocidad emocional limitada y el bajo interés en la interacción social (APA, 2013).

Así mismo, la investigación en neurociencia ha aportado evidencia de mecanismos explicativos comunes a ambos trastornos. Se han identificado alteraciones en circuitos cerebrales como el ejecutivo, el atencional dorsal, el somatomotor y el visual. La disfunción del circuito ejecutivo, esencial para la conducta orientada a metas, la planificación y la flexibilidad cognitiva, podría explicar las dificultades compartidas en organización y control conductual. La baja activación del circuito dorsal atencional durante tareas de control cognitivo se asocia a déficits comunes en la atención sostenida, mientras que las alteraciones en el circuito somatomotor se vinculan con problemas de inhibición y procesamiento sensorial. Asimismo, las dificultades en el circuito visual afectan la atención selectiva y la supresión de estímulos irrelevantes, aspectos afectados en ambos trastornos (Proal et al., 2013). Estas evidencias respaldan teorías explicativas que proponen un déficit en las funciones ejecutivas como mecanismo subyacente común en ambos trastornos (Pennington & Ozonoff, 1996). De forma complementaria, se ha constatado que tanto el reconocimiento emocional como la competencia en la Teoría de la Mente se encuentran significativamente comprometidos en TEA y TDAH (Bora & Pantelis, 2016). Finalmente, hallazgos recientes, como el adelgazamiento de la corteza cingulada anterior y las alteraciones en las conexiones de la corteza prefrontal, permiten comprender las dificultades compartidas en atención, inhibición y memoria de trabajo (Cid-Duarte et al., 2023).

4. Implicaciones del TEA Y TDAH en el ámbito familiar y en el desarrollo infantil

4.1. Impacto en el ámbito familiar

La crianza de un hijo con diagnóstico de TEA o TDAH genera una alteración significativa en la estructura y el funcionamiento familiar. Cuando este diagnóstico se acompaña

de comorbilidades con otros trastornos del neurodesarrollo, el impacto sobre la salud mental y emocional de los progenitores se intensifica de manera considerable (Iborra et al., 2015).

La literatura científica ha documentado ampliamente las repercusiones de las manifestaciones del TEA y TDAH en el bienestar familiar. Por ejemplo, Hastings (2002) propuso un modelo explicativo en el que los problemas conductuales y emocionales característicos del TEA se asocian a un incremento en los niveles de estrés parental. Este aumento del estrés dificulta la puesta en práctica de estilos de crianza positivos, los cuales resultan fundamentales para favorecer el desarrollo emocional y la regulación conductual de los hijos. En concordancia con este planteamiento, el metaanálisis realizado por Yorke et al. (2018) evidenció una asociación significativa entre los problemas emocionales y conductuales en niños con TEA y el deterioro de la salud mental de sus padres, reflejado en altos niveles de estrés.

Por su parte, el estudio de Peñuelas-Calvo et al. (2021) analizó el impacto de los síntomas del TDAH en el funcionamiento familiar, la carga percibida por los cuidadores y la calidad de vida de los padres. Los resultados mostraron que la severidad de los síntomas de inatención e hiperactividad-impulsividad se asocia significativamente con un mayor deterioro en la cohesión familiar y un aumento del estrés parental. Asimismo, los padres de niños con TDAH informaron una carga familiar elevada y una peor calidad de vida, especialmente en las dimensiones emocional y social.

Asimismo, la percepción de estigmatización social, la exclusión y el rechazo que experimentan muchas familias agravan la carga emocional de los progenitores, generando sentimientos de culpa y una disminución en la valoración de su rol parental (Papadopoulos et al., 2019). Este estrés puede afectar negativamente la relación conyugal y dificultar la capacidad de los padres para gestionar adecuadamente la educación y el acompañamiento de sus hijos (Lichtlé

et al., 2020). De este modo, se establece un ciclo de retroalimentación negativa en el que la angustia y el malestar parental repercuten directamente en la regulación emocional de los niños con TEA o TDAH.

Estos hallazgos se corresponden con los resultados obtenidos por Hutchison et al. (2016), quienes concluyen que los padres de niños con trastornos del neurodesarrollo experimentan mayores niveles de estrés en comparación con los de niños con desarrollo típico, lo que se asocia al uso más frecuente de estilos de crianza autoritarios y permisivos. Un aspecto relevante señalado por este estudio es la relación bidireccional entre el estrés parental y el comportamiento infantil. Esta dinámica, lejos de ser unidireccional, tiende a intensificar los problemas conductuales de los niños y, en consecuencia, a aumentar el nivel de estrés en los progenitores (Romero et al., 2021).

En conjunto, estas evidencias ponen de manifiesto la necesidad de diseñar e implementar intervenciones que atiendan no solo a las necesidades del niño con TEA y/o TDAH, sino también al bienestar integral de la familia en su totalidad.

4.2. Impacto en el desarrollo del niño/a

Las investigaciones recientes han profundizado en la comprensión de los mecanismos neurocognitivos y sociales compartidos entre el TDAH y TEA. El metaanálisis de Kofler et al. (2024) evidenció que ambos trastornos presentan déficits significativos en las funciones ejecutivas, particularmente en la memoria de trabajo, la inhibición de respuestas y la flexibilidad cognitiva, aunque con perfiles distintos. En el TDAH, los déficits se asocian principalmente con dificultades en el control inhibitorio y la autorregulación conductual, mientras que en el TEA se observan alteraciones más marcadas en la planificación, la monitorización y la flexibilidad

cognitiva. Además, la coexistencia de ambos trastornos se vincula con un mayor deterioro funcional y social, lo que sugiere un patrón de disfunción ejecutiva acumulativa.

Complementariamente, el estudio comparativo de Crisci, Cardillo y Mammarella (2024) analizó el funcionamiento social en niños y adolescentes con TDAH y TEA, mostrando que ambos grupos presentan dificultades significativas en la comprensión y regulación emocional, la reciprocidad social y las habilidades de comunicación pragmática. Sin embargo, los niños con TDAH mostraron una mayor competencia en la interacción social que aquellos con TEA, aunque también manifestaron niveles más altos de impulsividad y rechazo por parte de sus iguales. En conjunto, ambos estudios refuerzan la idea de que las disfunciones ejecutivas y sociales constituyen dimensiones transdiagnósticas críticas en el neurodesarrollo, y destacan la importancia de abordajes integrados que contemplen tanto los procesos cognitivos como los socioemocionales en la evaluación e intervención clínica.

Otros estudios también han puesto de manifiesto las dificultades que presentan los niños/as con TEA y/o TDAH en el funcionamiento social y ejecutivo. De manera que, suelen experimentar más dificultades en comparación con sus iguales con desarrollo típico, como aislamiento social, exclusión, ansiedad y baja autoestima, factores que inciden de manera directa en la aparición de alteraciones del estado de ánimo (Galán, 2017). En cuanto al funcionamiento ejecutivo, se ha documentado que las funciones ejecutivas más frecuentemente alteradas en el TEA y el TDAH incluyen la inhibición de respuestas automáticas, la flexibilidad cognitiva, la memoria de trabajo y la planificación (Bausela-Herreras et al., 2019). De manera específica, en el caso del TDAH, los niños y adolescentes presentan dificultades en el desarrollo emocional, cognitivo y social, lo cual obstaculiza tanto su proceso de aprendizaje en el contexto escolar como su capacidad de adaptación a situaciones nuevas (Chesterfield et al., 2021).

Estas características tienen un impacto directo en el ámbito académico. Tal como señala Cid (2023), los estudiantes con TEA y/o TDAH suelen no alcanzar un rendimiento acorde con su potencial cognitivo, lo que limita sus oportunidades educativas y vocacionales y genera una brecha entre capacidades y logros obtenidos.

A ello se suma la elevada prevalencia de problemas de sueño como una comorbilidad significativa asociada a ambos trastornos. Pin (2019) reporta que hasta un 86% de los individuos con TND presentan alteraciones del sueño, siendo el insomnio de inicio, los despertares nocturnos y la reducción del tiempo total de sueño las manifestaciones más habituales. La alta frecuencia de estas alteraciones, así como su influencia en la evolución clínica y la calidad de vida, subrayan la importancia de considerarlas como un aspecto clave tanto en el diagnóstico como en la planificación terapéutica de los niños con TEA y TDAH.

5. Programas de intervención para padres de niños/as con TEA y TDAH

Los padres de niños con trastornos del neurodesarrollo, como el Trastorno del Espectro Autista (TEA) y/o el Trastorno por Déficit de Atención e Hiperactividad (TDAH), presentan niveles de estrés significativamente más elevados que los padres de niños con desarrollo típico, debido a las demandas derivadas de los síntomas y comportamientos asociados a estos trastornos (Rojas et al., 2020). La gestión de conductas disruptivas, junto con la falta de estrategias eficaces de afrontamiento, puede intensificar el malestar emocional y afectar negativamente la dinámica familiar. En este contexto, resulta fundamental implementar intervenciones que rompan el ciclo de retroalimentación entre el estrés parental y las conductas problemáticas del niño. Dichas intervenciones han mostrado potencial para reducir el estrés de los cuidadores y, de forma recíproca, mejorar el comportamiento infantil, promoviendo un entorno más estable y adaptativo.

Por ello, la capacitación y el apoyo psicoeducativo a las familias de niños con TEA y/o TDAH son componentes esenciales para optimizar los resultados clínicos y familiares.

5.1. Programas de intervención dirigidos a padres con hijos/as con TEA

De acuerdo con la revisión sistemática de Rojas et al. (2020), los programas de intervención conductual dirigidos a padres han mostrado resultados prometedores en la reducción de conductas problemáticas y la mejora del bienestar familiar. Uno de los programas más estudiados es el Parent-Child Interaction Therapy (PCIT), basado en principios conductuales de la terapia breve. Su objetivo principal es disminuir los comportamientos externalizantes de los niños mediante el fortalecimiento de las competencias parentales y el fomento de interacciones positivas entre padres e hijos. Los resultados indican que los niños con TEA que participaron en este programa presentaron mejoras significativas en las habilidades sociales, la adaptabilidad y una reducción de conductas repetitivas y restrictivas (Thomas et al., 2017).

En esta misma línea, el programa C-HOPE constituye una aportación innovadora al ámbito de las intervenciones grupales para familias con niños con TEA. A diferencia de estudios previos, esta intervención abordó simultáneamente tres dimensiones centrales para los progenitores: las conductas problemáticas de los hijos, la percepción de competencia parental y los niveles de estrés. Además, se implementó en formato grupal utilizando tecnología de telesalud, lo que amplía las posibilidades de acceso y difusión de estas estrategias. Los resultados de Kuravackel et al. (2018) respaldan su viabilidad y eficacia, evidenciando reducciones en los comportamientos desafiantes, un incremento en la percepción de eficacia parental y una disminución del estrés familiar, tanto en formato presencial como virtual.

Por su parte, el Programa Básico para Padres de Preescolares de Incredible Years (Webster-Stratton et al., 2018) ha sido adaptado específicamente para padres de niños con TEA y retrasos en el desarrollo del lenguaje. Esta intervención grupal promueve el fortalecimiento del vínculo afectivo entre padres e hijos, la aplicación de estrategias disciplinarias positivas y el desarrollo de habilidades sociales y emocionales en los niños. Asimismo, fomenta la creación de redes de apoyo y la mejora del bienestar psicológico de los cuidadores.

En cuanto a la evidencia empírica, Oosterling et al. (2010) realizaron un ensayo clínico con 75 niños de entre 28 y 42 meses para evaluar un entrenamiento parental centrado en la atención conjunta y el desarrollo del lenguaje. Aunque los resultados no mostraron diferencias significativas frente a la atención habitual, el estudio subraya la relevancia de integrar la intervención parental en los programas de atención temprana. De forma complementaria, otras investigaciones, como la de Ratliff-Black et al. (2020), han encontrado resultados inconsistentes en relación con la reducción del estrés parental, especialmente en ensayos controlados aleatorizados.

En contraste, Bearss et al. (2013) demostraron que un programa de entrenamiento parental de seis meses para niños con TEA y conductas disruptivas obtuvo una alta aceptación (84% de finalización) y reducciones significativas en los niveles de irritabilidad y comportamientos desafiantes. De manera similar, Blackman et al. (2020) compararon tres modalidades de formación parental en análisis aplicado de la conducta (ABA): en línea, presencial y grupo de control en lista de espera. Los resultados mostraron que ambas modalidades activas fueron efectivas y que la capacitación asincrónica en línea podría ser una alternativa rentable y accesible, ya que incluía videos, lecturas y módulos diseñados por profesionales.

Por último, Iadarola et al. (2018) realizaron el ensayo de mayor duración registrado hasta la fecha, comparando un programa de entrenamiento parental con uno de psicoeducación en una muestra de 180 familias durante 24 semanas. Los resultados mostraron mejoras significativas en la reducción de conductas disruptivas, el aumento de la competencia parental y la disminución del estrés y la tensión familiar.

En conjunto, la evidencia disponible respalda la eficacia de los programas de entrenamiento parental en el TEA, destacando su contribución tanto al desarrollo infantil como al bienestar familiar. No obstante, persisten desafíos metodológicos y la necesidad de adaptar las intervenciones a las características y contextos específicos de cada familia, optimizando su accesibilidad y sostenibilidad a largo plazo.

5.2. Programas de intervención dirigidos a padres con hijos/as con TDAH

La psicoeducación familiar constituye un componente esencial en el abordaje del TDAH, ya que ha demostrado producir mejoras significativas en la sintomatología y en los problemas de conducta asociados. Diversas guías clínicas coinciden en que la psicoeducación debe ser la primera línea de tratamiento, seguida por estrategias multimodales que integren intervenciones conductuales y farmacológicas (Dahl et al., 2020).

En esta línea, el estudio de Loren et al. (2015) evaluó un programa grupal de capacitación para padres (BTP) con el objetivo de aumentar la confianza y la percepción de competencia parental en el manejo del comportamiento de sus hijos con TDAH. El programa, de ocho semanas de duración, incluyó a 241 niños y demostró mejoras significativas en todos los dominios evaluados por la escala IRS (Irritability, Regulation and Sleep). Los padres reportaron una disminución del impacto del comportamiento infantil en la vida cotidiana, una relación más

armoniosa con sus hijos y una reducción del estrés familiar, además de sentirse más capacitados para gestionar conductas desafiantes.

Por su parte, la revisión metaanalítica de Doffer et al. (2023), que incluyó 27 estudios y 31 intervenciones aleatorizadas con un total de 217 tamaños del efecto, analizó la eficacia a largo plazo de los programas de entrenamiento conductual para padres de niños con TDAH. Los resultados confirmaron mejoras sostenidas en la reducción de los síntomas del TDAH y de las conductas problemáticas, así como un fortalecimiento de las prácticas de crianza positiva, la competencia parental y la calidad del vínculo padre-hijo. Además, se observó una mejora significativa en la salud mental y en la percepción de autoeficacia de los padres hasta 5,3 meses después de la intervención.

Complementariamente, Heubeck et al. (2024) desarrollaron un ensayo clínico controlado con 237 familias para comparar la eficacia de dos modalidades de capacitación parental cognitivo-conductual (individual y grupal) frente al tratamiento habitual. Los resultados mostraron que ambas modalidades mejoraron el apoyo social y el bienestar parental, aunque el entrenamiento individual produjo mayores beneficios en la reducción del estrés y en la satisfacción parental. En contraste, el formato grupal se destacó por su rentabilidad y viabilidad, aunque los efectos tendieron a disminuir a los seis meses de seguimiento.

Otros estudios han respaldado la eficacia de los programas de psicoeducación parental en el tratamiento del TDAH, tanto para mejorar la adherencia terapéutica como para reducir los síntomas conductuales en los niños. En este contexto, Bai, Wang, Yang y Niu (2015) evaluaron la efectividad de un programa breve y focalizado de psicoeducación dirigido a padres de niños con TDAH. El estudio, desarrollado bajo un diseño experimental, demostró que la intervención mejoró de forma significativa la adherencia al tratamiento farmacológico y la comprensión de los

padres acerca del trastorno, sus causas y su manejo. Asimismo, los resultados evidenciaron una reducción sustancial en los síntomas principales del TDAH —inatención, hiperactividad e impulsividad— tras la intervención, así como una mejora en la cooperación familiar y la relación entre padres e hijos. Estos hallazgos sugieren que las intervenciones breves, cuando están bien estructuradas y centradas en la información esencial, pueden producir beneficios clínicos significativos en un periodo de tiempo reducido.

De forma complementaria, Ferrin et al. (2014) llevaron a cabo un ensayo controlado aleatorizado y ciego para evaluar los efectos inmediatos y a largo plazo de un programa de psicoeducación para padres de niños y adolescentes con TDAH. El estudio incluyó un seguimiento a los seis meses posterior a la intervención, confirmando mejoras sostenidas tanto en el conocimiento de los padres sobre el trastorno como en su capacidad para aplicar estrategias de manejo conductual. Además, se observaron reducciones significativas en los síntomas de TDAH, en las conductas disruptivas y en los niveles de estrés parental, junto con una percepción aumentada de autoeficacia y control sobre la conducta infantil. Los resultados a largo plazo indicaron que los efectos positivos de la psicoeducación se mantenían en el tiempo, lo que refuerza la relevancia de este tipo de programas como complemento indispensable del tratamiento multimodal del TDAH.

Finalmente, a partir de las propuestas de Barkley, Anastopoulos et al. (1993) desarrollaron un programa de capacitación parental de nueve semanas basado en estrategias cognitivo-conductuales. El estudio, con 34 familias participantes, se centró en la psicoeducación sobre el TDAH, el uso del refuerzo positivo, la extinción de conductas inapropiadas, la implementación del tiempo fuera y la colaboración con el entorno escolar. Los resultados mostraron reducciones significativas en los síntomas de inatención y en la severidad general del

TDAH, así como mejoras en la autoestima y una disminución del estrés parental, con efectos mantenidos a los dos meses de seguimiento. Entre el 26% y el 64% de los padres mostraron mejoras clínicamente relevantes en comparación con el grupo control.

En conjunto, la evidencia empírica respalda la eficacia de los programas de intervención parental en el tratamiento del TDAH, tanto en la reducción de los síntomas infantiles como en la mejora del bienestar y la competencia de los padres. Sin embargo, los estudios subrayan la importancia de ajustar el formato, la duración y los componentes de intervención a las necesidades específicas de las familias, con el fin de garantizar una mayor sostenibilidad y generalización de los resultados a largo plazo.

5.3. Propuestas de intervención online para padres de niños con TEA y/o TDAH

El acceso a intervenciones intensivas dirigidas a niños con Trastorno del Espectro Autista (TEA) continúa siendo un desafío significativo para numerosas familias, debido a limitaciones económicas, barreras geográficas, escasez de servicios especializados, largas listas de espera y cobertura insuficiente por parte de los seguros de salud (Buescher et al., 2014; Nevill et al., 2018). Ante esta situación, la investigación reciente ha promovido el desarrollo de intervenciones parentales mediadas por tecnología, que permiten a los cuidadores aplicar estrategias terapéuticas de forma autónoma o con supervisión profesional remota. Estas propuestas no solo amplían la accesibilidad a los servicios, sino que también han demostrado eficacia comparable a los tratamientos presenciales (Pi et al., 2022).

En el ámbito del TEA, los estudios más recientes aportan evidencia robusta sobre la efectividad de las intervenciones telemáticas. El metaanálisis de Pi et al. (2022), que integró ensayos clínicos aleatorizados sobre intervenciones parentales asistidas por tecnología, concluyó

que este tipo de programas mejora de forma significativa la comunicación social, la conducta adaptativa y las habilidades interactivas de los niños. Asimismo, se observó una reducción del estrés parental y un incremento de la autoeficacia de los cuidadores. De manera complementaria, el metaanálisis de Pan, Kuo y Kuo (2023) confirmó que las intervenciones teleasistidas mediadas por padres generan mejoras moderadas a grandes en comunicación, reciprocidad social y comportamiento adaptativo, con efectos comparables a los de las terapias presenciales tradicionales.

En cuanto a los estudios experimentales, Ingersoll et al. (2015) evaluaron el programa mediado ImPACT mediante telemedicina en familias con hijos con TEA, comparando modalidades autodirigida y asistida por terapeuta. Los resultados mostraron altas tasas de participación y satisfacción (85 % en la modalidad asistida y 69 % en la autodirigida), lo que respalda la viabilidad del formato asistido como una alternativa efectiva y accesible. Por su parte, Ibáñez et al. (2018) desarrollaron un ensayo controlado aleatorizado con 104 progenitores de niños con TEA, en el que se aplicó un tutorial web interactivo basado en estrategias de participación diaria. Los resultados mostraron mejoras significativas en el uso de estrategias parentales, la comunicación social infantil, la autoeficacia parental y la reducción del estrés, además de altos niveles de satisfacción con el contenido y la accesibilidad del programa.

En la misma línea, Roberts et al. (2019) compararon la eficacia del entrenamiento parental presencial y en línea en padres de niños con TEA, centrando la intervención en los problemas de sueño. Los resultados evidenciaron mejoras en la calidad de vida familiar, reducción de la fatiga y disminución de los despertares nocturnos, destacando la ventaja del formato en línea al eliminar barreras de desplazamiento y costes asociados. De forma global, la revisión sistemática de Lichtlé et al. (2020) confirmó que las intervenciones de telesalud

dirigidas a padres de niños con TEA presentan resultados equivalentes a las modalidades presenciales en la mayoría de las variables terapéuticas, validando así su eficacia y aplicabilidad clínica.

Por otro lado, en el Trastorno por Déficit de Atención e Hiperactividad (TDAH), también se ha documentado la eficacia de los programas digitales de entrenamiento parental en la mejora del manejo conductual infantil y del bienestar familiar. El estudio de DuPaul et al. (2018) comparó un programa de Behavioral Parent Training (BPT) administrado de forma presencial y en línea a familias de niños en edad preescolar con riesgo de TDAH. Ambos formatos produjeron mejoras significativas en el conocimiento y la aplicación de estrategias conductuales, aunque el formato presencial mostró una aceptación ligeramente mayor. No obstante, la versión en línea se consolidó como una alternativa eficaz y costo-efectiva para familias con limitaciones de tiempo o acceso geográfico.

Asimismo, Paiva et al. (2024) realizaron un ensayo controlado aleatorizado con 57 niños de entre 6 y 12 años con sintomatología de TDAH y trastorno negativista desafiante (TND). Los participantes fueron asignados a tres grupos (tratamiento estándar, tratamiento estándar con entrenamiento parental presencial y tratamiento estándar con entrenamiento parental en línea). Los resultados evidenciaron una reducción significativa de los síntomas de inatención, mejoras en los estilos de crianza y un aumento en la calidad de vida parental, sin diferencias estadísticamente significativas entre los formatos, aunque el entrenamiento en línea mostró un mayor potencial en las dimensiones afectivas y de apoyo familiar.

En un estudio más reciente, Piscitello et al. (2024) implementaron un programa grupal de terapia conductual para padres (BPT) en formato virtual, complementado con el Summer Treatment Program (STP). Los resultados mostraron reducciones notables en los síntomas del

TDAH y en las conductas parentales negativas, junto con un incremento en el conocimiento y la aplicación de estrategias de manejo conductual. Del mismo modo, Fan et al. (2025) evaluaron un programa online de ocho sesiones, comparándolo con la atención clínica rutinaria. Los resultados demostraron mejoras significativas en la inatención, la hiperactividad/impulsividad y los síntomas depresivos de los niños, así como una reducción del estrés parental, destacando la accesibilidad y flexibilidad del formato digital.

En conjunto, la evidencia científica reciente indica que las intervenciones parentales en línea, tanto en el TEA como en el TDAH, constituyen estrategias eficaces y accesibles que favorecen la adquisición de competencias parentales, reducen el estrés familiar y mejoran los resultados clínicos de los niños. Aunque las intervenciones presenciales continúan considerándose el estándar de referencia, los formatos digitales han demostrado ser alternativas válidas, escalables y sostenibles, especialmente útiles en contextos donde las barreras logísticas limitan el acceso a los servicios tradicionales.

SEGUNDA PARTE: TRABAJO EMPÍRICO

6. Objetivos e Hipótesis de trabajo

6.1. Hipótesis de trabajo

En consonancia con la evidencia empírica previa, se hipotetiza que la implementación de un programa de intervención psicosocial controlado, con componentes digitales, dirigido a familias de niños y niñas diagnosticados con Trastorno del Espectro Autista (TEA) sin discapacidad intelectual y Trastorno por Déficit de Atención con Hiperactividad (TDAH), conducirá a una mejora significativa tanto en variables del dominio de los padres (estrés parental, habilidades de afrontamiento, apoyo social), como de los niños/as (Funcionamiento ejecutivo, habilidades sociales/comunicación y desarrollo adaptativo).

6.2. Objetivo general

El objetivo general de esta investigación es analizar de manera integral los niveles de estrés parental, las estrategias de afrontamiento y el apoyo social percibido en familias de niños/as con trastorno del espectro autista (sin discapacidad intelectual) y trastorno por déficit de atención e hiperactividad, así como los perfiles de funcionamiento ejecutivo de los hijos/as, con el fin de diseñar un programa de intervención digital (online), implementado mediante videoconferencia en tiempo real, y examinar su impacto en variables del dominio de los padres (estrés parental, habilidades de afrontamiento, apoyo social), como de los niños/as (Funcionamiento ejecutivo, habilidades sociales/comunicación y desarrollo adaptativo).

6.3. Objetivos específicos

- a) Estudiar las diferencias en el estrés de los padres de niños con TEA sin discapacidad intelectual, TDAH y desarrollo típico. También se evaluará cómo el apoyo social (afectivo y confidencial) y las características del niño afectan al nivel de estrés en los padres (estudio 1).
- b) Explorar los perfiles de habilidades de afrontamiento en madres de niños con TEA y TDAH (estudio 2).
- c) Describir los perfiles de funcionamiento ejecutivo (FE) de niños con TEA y niños con TDAH (estudio 3).
- d) Evaluar la eficacia de un programa psicosocial digital para familias de niños con TEA y TDAH en variables de dominio parental (estrés, habilidades de afrontamiento y apoyo social) y variables del dominio de los niños/as (habilidades sociales, funcionamiento ejecutivo, problemas de sueño, relaciones familiares y conducta de aprendizaje).

Hasta donde se sabe, el presente estudio de investigación constituiría el primero en analizar el impacto de un programa psicosocial multicomponente completamente en línea y sincrónico, diseñado para intervenir de manera simultánea en los dominios parental e infantil en familias de niños con TEA sin discapacidad intelectual y TDAH. El programa combina diferentes técnicas con evidencia empírica consolidada en el abordaje de estos trastornos del neurodesarrollo, integrando estrategias de psicoeducación y manejo del estrés, herramientas propias de la terapia cognitivo-conductual (TCC) y entrenamiento en habilidades sociales y comunicación (Dahl et al., 2020; DuPaul et al., 2018; Tan-MacNeill et al., 2021). Esta

aproximación holística pretende optimizar la comprensión de los trastornos, mejorar la autorregulación emocional y fortalecer la competencia social y comunicativa tanto en padres como en hijos. Asimismo, al implementar un formato digital y sincrónico, la intervención contribuye al desarrollo de programas más integrales, accesibles y sostenibles dirigidos a poblaciones neurodiversas, favoreciendo la equidad en el acceso a los recursos terapéuticos y educativos.

7. Metodología y Resultados

La presente investigación fue aprobada por el Comité de Ética de la Universitat de València (UV-INV_ETICA-1905517). Los padres otorgaron su consentimiento informado por escrito para colaborar con sus hijos/as en el estudio.

El presente estudio forma parte de un proyecto de investigación financiado por el Ministerio de Ciencia e Innovación/AEI/FEDER, UE (PID2021-128044NA-100), cuya IP es la profesora Carmen Berenguer (UV)

7.1. Organización y publicaciones del compendio

Cada uno de los estudios de esta tesis abarca un objetivo específico.

- Estudio 1: tiene como objetivo estudiar las diferencias en el estrés de los padres de niños/as con TEA sin discapacidad intelectual, TDAH y desarrollo típico. También se evaluará cómo el apoyo social (emocional y de confianza) y las características del niño/a afectan el nivel de estrés en los padres.

- Estudio 2: tiene como objetivo explorar los perfiles de habilidades de afrontamiento en madres de niños con TEA y TDAH.

- Estudio 3: tiene como objetivo describir los perfiles de EF de niños con TEA y niños con TDAH.

- Estudio 4: tiene como objetivo evaluar la eficacia de un programa psicosocial digital para familias de niños con TEA y TDAH en variables de dominio parental (estrés, habilidades de afrontamiento y apoyo social) y variables del dominio de los niños/as (habilidades sociales, funcionamiento ejecutivo, problemas de sueño, relaciones familiares y conducta de aprendizaje).

7.2. Resultados de las publicaciones del compendio

A continuación, se muestran los resultados de los cuatro estudios que engloban los objetivos de la presente tesis.

7.2.1. Estudio 1

Pardo-Salamanca, A., Rosa-Martínez, E., Gómez, S., Santamarina-Siurana, C., & Berenguer, C. (2025). Parenting stress in autistic and ADHD children: implications of social support and child characteristics. *Journal of Autism and Developmental Disorders*, 55(7), 2284-2293.

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Este primer estudio investigó el estrés parental en madres de niños con TEA y TDAH, examinando el papel del apoyo social y las características del niño, con el objetivo principal de analizar las diferencias en el estrés parental entre madres de niños con TEA, TDAH y desarrollo típico (DT), así como explorar la implicación del apoyo social (confidencial/afectivo), y de las

características del niño (problemas emocionales, conductuales y de sueño), en el estrés parental de las madres de niños con TEA y madres de niños con TDAH.

La muestra estuvo compuesta por 120 madres, distribuidas en tres grupos: 30 madres de niños con desarrollo típico, 47 de niños con TEA sin discapacidad intelectual y 43 de niños con TDAH, excluyéndose aquellos niños con un CI inferior a 80, déficits motores o sensoriales, o enfermedades mentales o neurológicas. La muestra se reclutó a través de asociaciones de TEA y TDAH de Valencia y Alicante y de las Unidades Específicas de Orientación UEOs de Valencia y Dénia. Los criterios de inclusión incluían niños/as con un diagnóstico formal de TEA o TDAH realizado por profesionales cualificados según el DSM-5 para TDAH según padres y profesores y la Entrevista diagnóstica del autismo-revisada (ADI-R) o la Escala de Observación para el Diagnóstico del Autismo (ADOS) para TEA.

Se emplearon instrumentos validados para medir las variables de interés, incluyendo el Parenting Stress Index – Short Form (PSI-SF) para el estrés parental total, el Strengths and Difficulties Questionnaire (SDQ) para problemas emocionales y conductuales, el Sleep Disturbance Scale for Children (SDSC) para los trastornos del sueño y el Social Functional Support Questionnaire Duke-UNC para el apoyo social confidencial y afectivo.

Se utilizó un análisis MANOVA para examinar diferencias entre los grupos en el conjunto de variables dependientes relacionadas con el estrés parental, el apoyo social y las características del niño, aplicando corrección de Bonferroni ($p < 0.008$) y comparaciones post hoc de Tukey para analizar diferencias por pares. Asimismo, se realizaron correlaciones bivariadas de Pearson para explorar la relación entre el estrés parental y las variables de apoyo social y características del niño.

Los resultados evidenciaron diferencias significativas entre los grupos clínicos y el grupo con desarrollo típico en las variables de estrés parental, apoyo social y características del niño. El análisis de correlación en el grupo con TDAH reveló que el estrés parental se correlacionaba significativamente con el apoyo social y con los problemas conductuales/emocionales de los niños. En el grupo con TEA, el estrés parental también se correlacionó de manera significativa con los problemas de sueño y de conducta de los niños. Además, los análisis de regresión múltiple mostraron que el apoyo social confidencial fue un predictor significativo del estrés parental en ambos grupos clínicos. Estos hallazgos aportan nuevas perspectivas al considerar el apoyo social como un componente fundamental en los tratamientos dirigidos a reducir el estrés parental en madres de niños con TEA y TDAH.



Parenting Stress in Autistic and ADHD Children: Implications of Social Support and Child Characteristics

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Abstract

High levels of parenting stress have been detected in mothers of children with Autism (ASD) and children with attention deficit hyperactivity disorder (ADHD) comparing with mothers of typically developing (TD) children. The current study explored the implications of social support (confidant and affective support) and child characteristics (emotional, behavioral and sleep problems) on parenting stress in ASD and ADHD. Furthermore, the differences between mothers of children with autism, ADHD and TD on the studied variables were examined. A total of 120 mothers of 30 TD children, 47 with ASD without intellectual disability and 43 with ADHD collaborated in the study. Significant differences were found between clinical and TD groups in parenting stress, social support, and child characteristics. Correlation analysis in the group with ADHD revealed that parental stress correlated significantly with social support and with children's emotional problems. In the ASD group, parental stress also correlated significantly with children's sleep and behavioral problems. Moreover, multiple regressions showed that confidant support was a significant predictor of parenting stress in both clinical groups. The findings provide new insights to consider social support as a fundamental part of treatments for parenting stress in mothers of children with ASD and ADHD.

Keywords Parenting stress · ASD · ADHD · Social support · Child characteristics

Parenting is intrinsically rewarding but also presents myriad challenges that can be stressful for many parents (Deater-Deckard, 2004). For parents of children with developmental disorders like Autism Spectrum Disorder (ASD) or Attention Deficit Hyperactivity Disorder (ADHD), these challenges can be intensified. ASD is characterized by social interaction and communication difficulties, as

well as restrictive, repetitive, and stereotypical behaviors (American Psychiatric Association, 2013). In contrast, ADHD involves symptoms of inattention and/or hyperactivity/impulsivity that cause great impairments in different domains of adaptive functioning in daily life (APA 2013). Moreover, both conditions present comorbid problems such as social and behavioral difficulties (Gargaro et al., 2011),

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and daily life dysfunctions, such as sleep problems (Martin et al., 2019), which entails parenting stress, and low social support (Riany & Ihsana, 2021; Robinson & Weiss, 2020).

Parenting stress is a multidimensional concept that arises when parents' perceptions of parenting demands and the availability of resources to address those demands are imbalanced (Deater-Deckard, 2004). From this multidimensional theoretical framework, determinants of parental stress related to the characteristics of the child, parents, family and environment have been identified (Abidin, 1995).

Previous studies have indicated that parents of children with ASD or ADHD often experience higher levels of stress compared to parents of typically developing (TD) children, and that the relationship between parental stress and neurodevelopmental disorders is bidirectional (Berenguer et al., 2021; Hutchison et al., 2016; Iwamoto et al., 2023; Theule et al., 2013). Parenting stress has been associated with increased behavioral problems, internalizing and externalizing symptoms, and adaptive problems such as sleep disturbances in children (Deater-Deckard, 2004; Whelan et al., 2022). Specifically, several studies have demonstrated that children's emotional and behavioral difficulties predict higher levels of parenting stress over time (Baker et al., 2023). Moreover, children's behavioral problems also negatively impact the quality of parent-child interactions (Stephenson et al., 2022). Thus, parents who report higher levels of parenting stress also typically experience less pleasure and increased negative interactions with their children (Abidin, 1995).

In particular, raising a child with ASD raises specific challenges that may contribute to maternal distress, related to the management of the child's symptomatology and behavioral characteristics, which also depends on the characteristics of the parents themselves, including their perception of the child behavior problems and social support (Miranda et al., 2019; Zaidman-Zait et al., 2017; Weinberg et al., 2021). Mothers of children with autism are more likely to experience less social support when compared to mothers of children without autism (Enea & Rusu, 2020). The experience of low social support may also be affected by child characteristics, such as emotional, behavioral, and sleep problems (Iwamoto et al., 2023; Mannion & Leader, 2023). Previous research has found that sleep and behavioral problems in children with autism are related to increased levels of stress and less social support in their mothers (Mannion & Leader, 2023).

Regarding ADHD, it is well established that the frequency of ADHD symptoms in children is associated with significantly greater global parenting stress (Galloway et al., 2019; Theule et al., 2013). Specifically, research has reported that children's emotional, behavioral and sleep problems predict parenting stress (Martin et al., 2019; Flynn

et al., 2021). Unsurprisingly, parenting a child with ADHD is linked to increased stress and conflict within the family, decreased child and parental quality of life (Galloway et al., 2019), and lower levels of perceived social support (Riany & Ihsana, 2021). Overall, ADHD in children places greater demands on parents to manage child behavior, while also requiring greater resources from the parent to address their child's difficulties.

Few studies have examined stress levels between families of children with ASD without intellectual disability and children with ADHD, with inconsistent findings. Schiltz et al. (2022) evidenced that parents of children with autism and ADHD comorbidity reported greater parenting stress compared to parents of children with autism alone, while Hutchison and colleagues (2016) did not detect differences in parenting stress between families of children with autism and children with ADHD. These discrepant findings may be related to potential differences in measurement tools or sample characteristics (Schiltz et al., 2022).

It is essential to improve our understanding of the factors that predict parental stress because of the great impact it has on mothers' health, and because increased levels of stress in mothers of children with ASD and ADHD could affect child developmental outcomes and perceived social support (Cochrane et al., 2023; Craig et al., 2016). Social support is one of the most powerful predictors of psychological adjustment among parents raising children with ASD and other disabilities. Furthermore, social support has been identified as a critical factor that has been linked to improved mental health in mothers of children with autism and mothers of children with ADHD (Schiltz et al., 2022; Theule et al., 2013). In particular, the quality of the informal support, such as that provided by friends and family, has been shown to be effective in reducing stress among mothers of children with autism (Benson, 2012; Drogomyretska et al., 2020).

The parental characteristics used for predicting parenting stress among families of children with autism and children with ADHD in previous studies mainly focused on parents' psychopathology and parental clinical symptoms (Craig et al., 2016; Theule et al., 2013). However, the relationship between social support and parenting stress in children with autism and children with ADHD has been insufficiently studied.

Therefore, this study aimed to explore the implications of social support (confidant support and affective support) and child characteristics (emotional/behavioral and sleep problems) on parenting stress in mothers of children with ASD without intellectual disability and children with ADHD. Furthermore, the differences between autism, ADHD, and TD on parenting stress, social support, and child characteristics were examined.

We predicted that parenting stress in mothers of children with ASD or ADHD would be elevated relative to a TD comparison group. We hypothesized that perceived poor social support and children's emotional/behavioral problems and sleep disturbances, would be associated with high rates of parental stress in mothers of children with ASD without intellectual disability and children with ADHD.

Methods

Participants

The sample of this study was formed by 120 mothers of 30 TD children, 47 with ASD without intellectual disability and 43 with ADHD (matched on age, and IQ) (see Table 1). To reduce variability, only mothers were included in the present study given gender-based differences in parenting stress (Schiltz et al., 2022). A majority of the sample were mothers who were married or living in common-law relationships ($n=92$; 76.6% (ASD group=34, ADHD group=30, TD group=28), with 2 identifying as single (1.6%; 1 in ADHD group and 1 in TD group) and another 26 (21.6%) identifying as separated or divorced (ASD group=13, ADHD

group=12, TD group=1). In relation to maternal employment as indicated in Tables 1, 52 mothers had skilled jobs (jobs that require specialized studies), 41 had unskilled jobs and 27 mothers were unemployed. Considering the number of working hours per week, most mothers were working between 25 and 35 h per week, in all groups.

Children ranged in age from 8 to 12 years ($M=8.40$; $SD=1.62$), while mothers ranged in age from 35 to 55 years ($M=42.64$; $SD=5.00$). There were no significant differences in mothers age across groups, $F(2, 116)=2.61$ $p=.073$.

The children were recruited from specialized psychoeducational centers and clinical health centers in Spain. To be considered eligible, children must have been formally diagnosed with ASD without intellectual disability or ADHD by a qualified psychologist or medical doctor. ADHD children meet the clinical diagnostic criteria with combined presentation based on the Diagnostic and Statistical Manual of Mental Disorders Fifth Edition, DSM-5 (APA, 2013). Parents and teachers filled out the 18 diagnostic criteria from the DSM-5 (APA, 2013), indicating the severity of each item from 0 to 3. The requirements were the presence of at least six inattention symptoms and/or six other hyperactivity/impulsivity symptoms. Table 1 shows the raw score of

Table 1 Sociodemographic characteristics

	ASD ($n=47$)		ADHD ($n=43$)		TD ($n=30$)		Statistics	
	M	SD	M	SD	M	SD	$F_{(2,116)}$	p
<i>Child characteristics</i>								
Age	9.37	1.75	9.29	1.38	8.66	1.32	1.69	0.171
IQ	98.37	10.92	98.94	6.91	100.02	8.21	0.48	0.611
Sex (% boys)	89.3%		90.7%		65.6%			
ASD Symptoms (ADI-R)	28.3	5.7	-	-	-	-		
ASD Symptoms (SCQ)	23.5	7.0	10.8	6.2	-	-		
ADHD Symptoms (DSM-5)	24.6	8.7	41.0	9.1	-	-		
Medication (% yes)	40.4	-	79.0%	-	0.0%	-		
Number of siblings	0.98	0.86	0.85	0.61	1.12	0.72		
<i>Mother characteristics</i>	N	%	N	%	N	%	F/χ^2	p
Maternal education							0.57	0.564
Highschool or Higher Education (%yes)	20	42.6	19	44.2	17	56.6		
Maternal employment (%)							0.93	0.924
Skilled job	20	42.5	18	41.9	14	46.6		
Unskilled job	18	38.3	12	27.9	11	36.6		
Unemployed	9	19.1	13	30.2	5	16.6		
Working hours/week (%)								
Skilled job < 25 h	5	25	2	11.1	2	14.2		
Skilled job 25–35 h	13	65	15	83.3	8	57.1		
Skilled job > 35 h	2	2	1	5.5	4	28.5		
Unskilled job < 25 h	4	22.2	4	33.3	2	18.2		
Unskilled job 25–35	12	66.6	7	58.3	7	63.6		
Unskilled job > 35 h	2	11.1	1	8.3	2	18.2		

DSM-5 parents' version (Diagnostic and Statistical Manual of Mental Disorders- Fifth Edition), SCQ total score (Social Communication Questionnaire), ADI-R total score (Autistic Diagnostic Interview—Revised), h (hours per week)

* $p < .05$

the parents' version DSM-5 questionnaire in both clinical groups ASD and ADHD).

ASD children meet the criteria of Autistic Diagnostic Interview—Revised (ADI-R; Rutter et al. 2006), and/or the Autism Diagnostic Observation Schedule, Generic (ADOS G; Lord et al., 2000). The Diagnostic and Statistical Manual of Mental Disorders- Fifth Edition, DSM-5, (APA 2013) was used to confirm current symptom severity. Additionally, to confirm the ASD diagnosis in both clinical groups, a trained psychologist administered the Social Communication Questionnaire (SCQ; Rutter et al., 2003). None of the participants with autism had been formally diagnosed with ASD + ADHD. For all groups the composite IQ score of ≥ 80 on the Kaufman Brief Intelligence Test, 2nd Edition (KBIT-2; Kaufman & Kaufman, 2004) was required. The prevalence of sleep problems among children was TD ($n=7$, 23.3%), ASD ($n=32$, 68.1%) and ADHD group ($n=33$, 76.7%). Moreover, 34 (79%) children in the ADHD sample were receiving psychostimulant medication and 19 (40.4%) children in the ASD group were receiving antipsychotic medications (mostly risperidone) for behavioral problems. None of the clinical groups were receiving sleep medication at the time of the evaluation. In relation of the number of siblings, 47.5% ($n=57$) children had no siblings (ASD group=22, ADHD group=23, TD group=12), 51.6% ($n=62$) children had from 1 to 3 siblings (ASD group=25, ADHD group=20, TD group=17), and 1 child with TD had 4 siblings. Only four children with ASD had one brother with the same clinical condition, according to information reported by parents.

Children with TD were selected from public primary schools. None of them presented a history of psychopathologies or criteria for ASD or ADHD diagnosis according to DSM-5. The exclusion criteria for all groups were having an IQ of less than 80, motor or sensorial deficits, mental or neurological diseases.

Measures

Parenting Stress Index – Short Form (PSI-SF; Abidin, 1995; adapted to Spanish by Díaz-Herrero et al., 2011). The PSI-SF is a self-report questionnaire of 36 items that measures total parenting stress. The 36 items are distributed in three subscales of 12 items each (parental distress, parent-child dysfunctional interaction, and difficult child) rated on a five-point Likert-type response scale. The scale provides a measure of total stress by adding up the scores on the 36 items, with a total score above 90 being clinically significant. The total score of PSI-SF completed by the mothers was used in this study. The PSI-SF presents good psychometric properties, and it is an effective measure for use with high-risk

families (Barroso et al., 2016). The internal consistency for the total scale was high in our sample (Cronbach's $\alpha=0.92$).

Strengths and Difficulties Questionnaire (SDQ; Goodman, 1997; Spanish adaptation by Rodríguez-Hernández et al., 2012). The SDQ can be filled out by parents or teachers to rate a wide range of psychopathological symptoms and prosocial behavior in children and adolescents between 4 and 16 years old. The questionnaire consists of five subscales (emotional symptoms, hyperactivity/inattention, conduct problems, peer problems and prosocial behaviour). A total difficulties score (SDQ total) comprising the first four subscale scores indicate the overall extent of a child's psychopathological problems. Each of the five scales incorporates 3 response alternatives (not true, somewhat true, very true). Higher scores indicate more difficulties. For this study, mothers reported about the emotional and behavioral difficulties subscales. The SDQ presents adequate psychometric properties with adequate reliability (between 0.73 and 0.76) (Rodríguez-Hernández et al., 2012). The internal consistency (Cronbach's α) of the emotional and behavioral difficulties subscales for our sample was 0.76 and 0.77, respectively (Goodman, 1997).

The Sleep Disturbance Scale for Children (SDSC; Bruni et al., 1996; Spanish adaptation by Pagerols et al., 2023) is a 26-item parent-reported questionnaire that assesses the occurrence of sleep disturbances during the last 6 months in children aged 6–16 years. Mothers rated their children sleep behaviour on a 5-point Likert scale (never to always). This instrument differentiates between conditions such as disorders in initiating and maintaining sleep, respiratory disorders, sleep arousal, sleep-wake transition disorders, excessive sleepiness, restless legs syndrome/periodic limb movement syndrome/growth pains, and sleep hyperhidrosis. The total sleep problems score was obtained by adding all subscale scores and was used in the present study. The internal consistency was $\alpha=0.79$ and test-retest reliability $r=.71$ over a 6-month interval (Bruni 1996).

Social Functional Support Questionnaire Duke-UNC (Broadhead et al., 1988; Spanish adaptation; Bellón et al. 1996). This questionnaire was filled out by mothers and measures the subjects' perception of the availability of help from family and friends in difficult situations, as well as the ease of communication with them. The instrument comprises 11 questions with a Likert-type scale ranging from 1 = "much less than I would like" to 5 = "as much as I would like". The questionnaire assesses two factors: confident support (ability to rely on individuals for communication) and affective support (demonstrations of love, affection, and empathy). Confident support scale has a total of six items and affective social support includes five items. The present study used the direct scores on both scales. Consistent with the results of the Spanish adaptation (Bellón et al. 1996), the

internal consistency (Cronbach's α) of the confidant support and affective scales for our sample was 0.85 and 0.76, respectively.

Procedure

Ethical approval was granted by the Universitat de València Human Research Ethics Committee (UV-INV_ETICA-1,905,517). The parents provided their written informed consent to collaborate in this study. Mothers completed the questionnaires in one session with the research team that had been trained in the administration of the questionnaires used.

Data Analysis

Data were first screened for normality and univariate and multivariate outliers. Missing data at the item level were handled. Also differences between groups on demographic variables and autism symptoms to identify potential covariates. To address the first aim, statistical analysis of data was performed using the SPSS Statistical Software Version 26. Multivariate Analyses of Variance (MANOVA) were conducted to examine group differences (ASD without intellectual disability, ADHD and TD) in parenting stress total index (PSI), confidant support, affective support, SDQ-variables and sleep problems. A p -value significance level cut-off of < 0.008 was used applying Bonferroni correction for multiple comparison, to reject the null hypothesis for the analyses. Moreover, we conducted pairwise comparisons using Tukey's post hoc analyses. To address the second aim, bivariate Pearson correlations were performed to test relationships between parenting stress, social support, behavioral/emotional difficulties, and sleep problems among clinical groups (ASD and ADHD). Following, multiple linear regression analysis was used to whether the children's characteristics and parents perceived social support predicted the criterion parental stress, in ASD and ADHD

groups. Specifically, univariate model was built with the predictors (social support variables, SDQ measures and sleep problems) for each group. Also, demographic variables (age, sex, IQ) were evaluated and subtracted from the outcome variable (parenting stress). The variables associated with significant changes in the univariate analysis ($p < .05$) and the clinically relevant variables were included in a multiple linear regression model. For correlation and multiple linear regression, statistical analyses were conducted in RStudio version 1.3.1073 (RStudio Team, 2020).

Results

Differences Between ASD, ADHD and TD Groups

The first aim of this study was to explore the differences between the groups of mothers of children with ASD, ADHD and TD on parenting stress, perceived social support and child's emotional/behavioral and sleep problems. The MANOVA performed to evaluate the main effect of group on parenting stress, social support, SDQ variables and sleep problems was statistically significant [Wilk's Lambda (Λ) = 0.17, $F(16,220) = 19.02$, $p < .001$, $\eta^2p = 0.58$]. At the univariate level, a significant group effect emerged for all outcome variables with the Bonferroni correction (see Table 2). In terms of parenting stress, Tukey's post hoc tests revealed that the TD group exhibited significantly lower parenting stress than the ASD and ADHD groups ($p < .01$) while the ADHD group did not significantly differ from ASD group ($p > .05$). Regarding social support variables (confidant support and affective support) results evidenced statistically significant differences between clinical groups and TD group without significant differences between clinical groups. A similar pattern emerged in terms of sleep problems, and SDQ variables (emotional and behavioral difficulties) such that Tukey's post hoc tests revealed that the children with ASD and ADHD exhibited significantly more children sleep problems and more emotional/ behavioral

Table 2 Differences between ASD, ADHD and TD groups on variables of the study

	ASD ($n = 47$)		ADHD ($n = 43$)		TD ($n = 30$)		$F_{(2,116)}$	η^2p	Group differences
	M	SD	M	SD	M	SD			
PSI	121.75	20.8	113.21	22.91	64.90	11.9	85.38*	0.59	ASD, ADHD > TD
Support c	15.82	6.32	16.64	7.60	23.59	4.12	16.06*	0.21	ASD, ADHD > TD
Support a	12.44	5.08	14.10	5.72	19.38	3.13	19.56*	0.25	ASD, ADHD > TD
SDQ-E	6.06	2.11	6.05	2.43	1.59	1.01	64.02*	0.52	ASD, ADHD > TD
SDQ-B	4.91	2.18	4.85	1.97	1.35	1.36	39.22*	0.40	ASD, ADHD > TD
Sleep p	58.88	20.31	57.23	20.46	35.68	5.13	18.93*	0.24	ASD, ADHD > TD

PSI (total parenting stress index), Support c (confidant support), Support a (affective support), SDQ-E (SDQ emotional problems), SDQ-B (behavioral problems), Sleep p (total sleep problems)

$p^* < 0.008$ (Bonferroni correction for multiple comparison)

difficulties than children with TD ($p < .01$) while the ADHD group did not significantly differ from ASD group ($p > .05$).

Implication of Social Support and Child Characteristics on Parenting Stress in ASD and ADHD Groups

Bivariate Pearson correlations by groups (ASD and ADHD) were applied to further explore the association of parental stress total index with confident support, affective support, SDQ-emotional problems, SDQ-behavioral problems, and sleep problems. Results showed statistically significant associations in the correlation analysis (Fig. 1).

According to the matrix, parenting stress in ASD group, had a negative correlation with confident and affective support ($p > .001$). On the contrary, a positive significant association was observed between parenting stress and children sleep problems ($p > .001$) and children emotional/behavioral difficulties ($p = .02$). Similarly, in ADHD group,

parenting stress had a negative significant association with confident and affective support ($p > .001$). Besides, parenting stress was positively correlated with emotional difficulties ($r = .33$), with a P value of 0.020. We did not observe any statistically significant correlation between parenting stress and behavioral difficulties ($p = .35$) and between parenting stress and sleep problems ($p = .15$) among ADHD group.

Multiple linear regression analysis was conducted in the group of ASD with the studied variables, resulting as follows: SDQ Emotional problems ($\beta = -0.16$, 95% CI [-0.49, 0.17], $p = .326$), SDQ Behavioral problems ($\beta = 0.17$, 95% CI [-0.14, 0.49], $p = .264$), Confident support ($\beta = -0.78$, 95% CI [-1.17, -0.40], $p < .000$), Affective support ($\beta = 0.01$, 95% CI [-0.39, 0.41], $p = .949$) and Sleep problems ($\beta = 0.23$, 95% CI [-0.11, 0.58], $p = .178$). The percentage of variance explained by the model was 61% (Table 3).

Multiple linear regression analysis was conducted in the group of ADHD, with the studied variables, resulting as follows: SDQ Emotional problems ($\beta = 0.04$, 95% CI [-0.29,

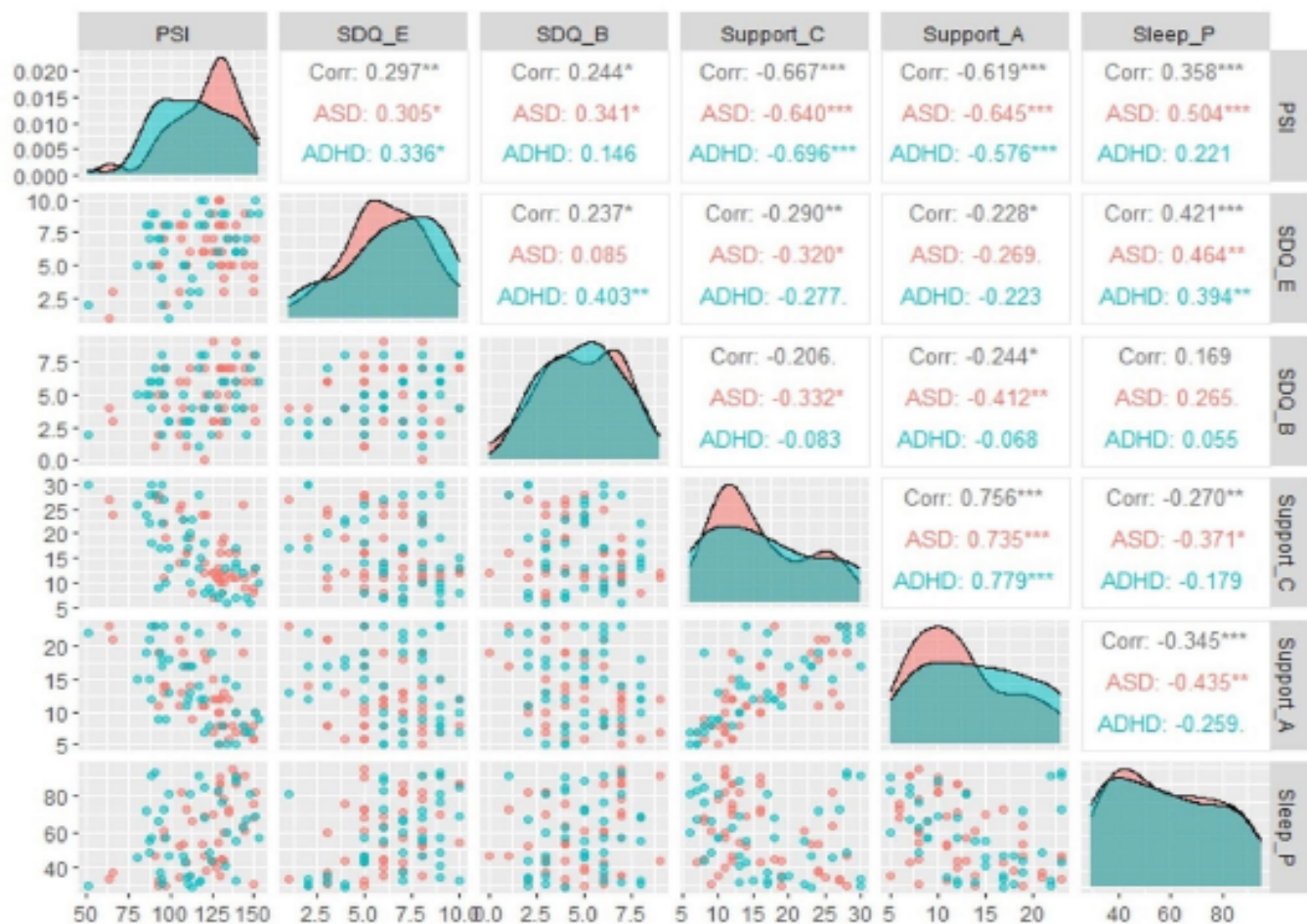


Fig. 1 Correlation matrix among mothers and children variables in ASD and ADHD groups. PSI (total parenting stress index), Support c (confident support), Support a (affective support), SDQ-E (SDQ emotional problems), SDQ-B (behavioral problems), Sleep p (total sleep problems) * $p < .05$

Table 3 Multiple linear regression results using parenting stress as the criterion in ASD group

Predictor	b	B 95% CI [LL, UL]	beta	Beta 95% CI [LL, UL]	sr ²	sr ² 95% CI [LL, UL]	r	Fit
(Intercept)	42.83*	[5.75, 79.92]						
SDQ_E	-1.48	[-4.51, 1.55]	-0.16	[-0.49, 0.17]	0.01	[-0.03, 0.06]	0.30	
SDQ_B	1.46	[-1.16, 4.08]	0.17	[-0.14, 0.49]	0.02	[-0.04, 0.07]	0.42*	
Support c	-2.53**	[-3.77, -1.28]	-0.78	[-1.17, -0.40]	0.22	[0.03, 0.41]	-0.75**	
Support a	0.05	[-1.48, 1.58]	0.01	[-0.39, 0.41]	0.00	[-0.00, 0.00]	-0.67**	
Sleep p	0.22	[-0.10, 0.54]	0.23	[-0.11, 0.58]	0.02	[-0.04, 0.09]	0.49**	
								$R^2 = 0.616^{**}$
								95% CI [0.29, 0.71]

Support c (confidant support), Support a (affective support), SDQ-E (SDQ emotional problems), SDQ-B (behavioral problems), Sleep p (total sleep problems).

* $p < .05$

** $p < .01$

0.37], $p = .793$), Confidant support ($\beta = -0.55$, 95% CI [-1.05, -0.04], $p = .036$), and Affective support ($\beta = -0.32$, 95% CI [-0.82, 0.19], $p = .209$). The percentage of variance explained by the model was 49% (Table 4).

Discussion

The goals of this study were to examine the differences regarding parenting stress, social support, and child characteristics (emotional/behavioral and sleep problems) from the perceptions of mothers of children with autism without intellectual disability, children with ADHD, and typically developing children. Secondly, the current study aimed to elucidate the role of perceived social support by mothers and child characteristics (emotional/behavioral and sleep problems) on parenting stress in the two clinical groups (ASD and ADHD).

Regarding the first hypotheses, the results confirmed that mothers of children with autism without intellectual disability and children with ADHD, compared to mothers of children with TD, present significantly higher levels of parenting stress, lower perception of social support, and perceive more emotional, behavioral, and sleep problems in their children. More specifically, the comparison of parenting stress, perception of social support, and child emotional, behavioral, and sleep problems revealed non-significant differences between the clinical groups. These results are linked with those obtained among parents of children with autism and children with ADHD (Arias-Mera et al., 2023; Craig et al., 2016; Hutchison et al., 2016; Riany & Ihsana, 2021). The above findings may stem from the similarities in the social and behavioral functioning of ASD without disability and ADHD (Gargaro et al., 2011), in addition to a specific pattern of functioning in families of children with ASD and/or ADHD, who face more challenges in parenting than families with TD children (Arias-Mera et al., 2023; Mannion & Leader, 2023).

As for the second hypothesis, it was partially confirmed the association of parenting stress with social support, children's emotional/behavioral, and sleep problems. Consistent with previous studies, perceived social support, in both dimensions, and child emotional difficulties were highly correlated with parental stress among mothers of children with autism and children with ADHD (Linsey & Barry, 2018; Martin et al., 2019; Schiltz et al., 2022; Weinberg et al., 2021). However, only in the ASD group were statistically significant associations found between parenting stress and behavioral difficulties and sleep problems. Thus, the mothers of children with autism without intellectual disabilities, encountering difficult situations related to child behavior and sleep problems, experienced a higher level of stress, as indicated by previous research (Mannion & Leader, 2023). Surprisingly, we did not find a significant association between parenting stress and behavioral and sleep problems in the ADHD group probably due to the small sample size. Since the results of previous studies among mothers of children with ADHD are also mixed in this sense future research should examine this further (Martin et al., 2019; Theule et al., 2013).

Moreover, this study evidenced that social support, specifically confidant support, was the only significant predictor for parenting stress in mothers of children with autism and children with ADHD. Confidant support was characterized in terms of the perceived availability of family members and friends for communication and obtaining emotional support (Benson, 2012). Based on our findings, it seems that the possibility of having friends or family to communicate with enables mothers to face many challenges and demands associated with parenting a child with ASD or ADHD without experiencing high levels of stress. In contrast, a lack of social support, in particular confidant support, may lead to a high level of parenting stress, based on prior research (Craig et al., 2016; Riany & Ihsana, 2021).

These findings are important since it could be a significant element in building effective support programs for

Table 4 Multiple linear regression results using parenting stress as the criterion in ADHD group

Predictor	b	B 95% CI [LL, UL]	beta	Beta 95% CI [LL, UL]	β^2	β^2 95% CI [LL, UL]	r	Fit
(Intercept)	43.98**	[14.99, 72.98]						
SDQ_E	0.39	[-2.59, 3.36]	0.04	[-0.29, 0.37]	0.00	[-0.02, 0.02]	0.22	
Support c	-1.55*	[-2.99, -0.10]	-0.55	[-1.05, -0.04]	0.09	[-0.06, 0.23]	-0.75**	
Support a	-1.20	[-3.12, 0.71]	-0.32	[-0.82, 0.19]	0.03	[-0.05, 0.11]	-0.67**	
offset(Sex + Age + IQ)	NA	[NA, NA]	NA	[NA, NA]	NA	[NA, NA]	-0.46**	
								$R^2 = 0.487^{**}$ 95% CI [0.16, 0.63]

Support c (confidant support), Support a (affective support), SDQ-E (SDQ emotional problems)

* $p < .05$, ** $p < .01$

families of children with ASD without intellectual disabilities and children with ADHD.

The current study adds to the literature by elucidating the differential contributions of social support, behavioral, emotional difficulties, and sleep problems to parenting stress in mothers of children with ASD and children with ADHD. Examining protective factors such as social support with child problems in both neurodevelopmental disorders, rather than exploring each disorder separately, adds value to the current study. First, because both disorders share common characteristics and secondly, this study highlights the importance of social support as a key factor associated with reduced parental stress. To our knowledge, this is the first study that addresses the implication of social support and child emotional, behavioral and sleep problems to parental stress of mothers of children with ASD without intellectual disabilities and children with ADHD.

Finally, it is important to consider some limitations in the present study. First, the sample size is not very large, which affects the generality of the findings. Also, this is a cross-sectional study, examining parenting stress at only one point in time, so it does not consider the potential developmental changes in parenting stress across time. Therefore, longitudinal studies are needed. Additionally, the IQ range of the sample is also limited to those without intellectual disability, and therefore, results may not be representative of children with autism and lower IQ. Moreover, the measures here were limited to mother report, and thus, due to potential bias from shared methods variance, additional information from other informants, such as fathers, and/or third-party observers like teachers, would enrich these findings. Lastly, the clinical groups did not present clinical comorbidities between ASD and ADHD. It would be interesting to examine stress in parents of children with both ASD + ADHD co-occurring conditions compared to parents of children with ASD or ADHD only. Also, our sample was composed mainly by co-parents. Future research could examine the differences in levels of stress in single parents compared to co-parents in children with ASD + ADHD.

Through this study, we hope to enhance our understanding of the multifaceted challenges faced by mothers of children with ASD and ADHD. By spotlighting the critical factors that influence parenting stress, we can pave the way for more effective, tailored interventions that address the needs of mothers of children with ASD and ADHD and strengthen their resilience. Additionally, this study clarifies the effect of social support on parenting stress in mothers of children with autism without intellectual disability and children with ADHD. Future research should continue examining the contribution of protective factors such as social support or coping abilities with child characteristics in more varied and larger samples to further contribute to understanding the

development of parenting stress in families of children with neurodevelopmental disorders. Other studies should analyze the contribution of parental social-demographic factors such as marital status, number of working hours or number of siblings on parenting stress and its effects in children with autism or ADHD.

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Declarations

Competing interests All the authors declare that they have no competing interest.

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7.2.2. Estudio 2

Berenguer, C., **Pardo**, A., Rosa, E., Gómez, S. y Santamarina, C. (2024). Coping strategies in mothers of children with autism and attention deficit hyperactivity disorder: latent profile analysis. *International Journal of Developmental Disabilities* 11–13.

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El segundo estudio tuvo como objetivo identificar perfiles diferenciados de afrontamiento entre madres de niños con trastorno del espectro autista (TEA) y trastorno por déficit de atención e hiperactividad (TDAH), a partir de cuatro indicadores: afrontamiento centrado en el problema, evitación activa, afrontamiento positivo y afrontamiento religioso/negación. Asimismo, se analizó cómo estos perfiles se relacionaban con variables del dominio parental (estrés y apoyo social) y del dominio infantil (problemas sociales, conductuales y del sueño).

La muestra estuvo compuesta por 90 madres de niños con TEA y TDAH. A través de un análisis de perfiles latentes, se identificaron tres patrones de afrontamiento: “afrontamiento adaptativo” (42,22 %), “afrontamiento evitativo” (40 %) y “bajo afrontamiento” (17,77 %).

Los resultados mostraron que el perfil de bajo afrontamiento se asociaba con mayores niveles de disfuncionalidad parental, incluyendo mayor estrés, menor apoyo social y más problemas sociales, conductuales y de sueño en los hijos, en comparación con los otros dos perfiles.

Estos hallazgos subrayan la relevancia de evaluar las estrategias de afrontamiento empleadas por las madres de niños con trastornos del neurodesarrollo y de diseñar intervenciones

específicas para aquellas que utilizan estrategias ineficaces, con el fin de promover un mejor ajuste familiar y bienestar psicológico.

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Coping strategies in mothers of children with autism and attention deficit hyperactivity disorder: latent profile analysis

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ABSTRACT

Objectives: Mothers of children with autism and children with attention deficit hyperactivity disorder employ distinct coping strategies when confronted with stressful situations related to the parenting process. The current study aimed to identify distinct coping profiles among mothers, based on four indicators: problem-focused coping, active avoidance coping, positive coping, and religious/denial coping. The second objective was to examine the differences between the identified profiles in terms of the mother and children's outcomes.

Methods: Participants were 90 mothers of children with autism and attention deficit hyperactivity disorder. Latent profile analysis revealed three coping profiles based on different coping strategies: 'Adaptative coping' (42.22%), 'Avoidance coping' (40%), and 'Low coping' (17.77%).

Results: The 'Low coping' profile showed more dysfunctionality than the others and it evidenced significant differences with the other two profiles on parenting stress, social support and children social, behavioral and sleep problems.

Conclusions: The findings emphasize the importance of exploring coping skills employed by mothers of children with these neurodevelopmental disorders and developing interventions for those who adopt ineffective coping strategies.

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Autism; ADHD; coping strategies; mother and children outcomes; latent profile analyses

Introduction

Autism Spectrum Disorder (ASD) and Attention Deficit Hyperactivity Disorder (ADHD) represent two of the most frequently diagnosed neurodevelopmental disorders in school-aged children, displaying a high global prevalence. Approximately 1 in 100 children are diagnosed with autism spectrum disorder worldwide (Zeidan et al. 2022), and ADHD affects 2–7% of children globally (Sayal et al. 2018). ASD is characterized by deficits in social interaction and communication, coupled with restricted or repetitive behavioral patterns, while ADHD's core symptoms encompass inattention, hyperactivity, and impulsivity (American Psychiatric Association 2013). Both conditions exert substantial adverse effects on social and adaptive domains (Scandurra et al. 2019) and significantly impact family functioning (Theule et al. 2013).

Parents of children with ASD and ADHD encounter the inherent challenges of child-rearing, compounded by the additional stressors associated with caring for children with unique support needs. These disorders introduce added strains to the entire family

unit (Bujnowska et al. 2021). Previous research has highlighted that parents, especially mothers, of children with ASD and ADHD must learn to adapt to their child's distinctive support requirements, necessitating the development of effective coping strategies to address the daily challenges posed by the symptoms of both disorders (Benson 2010; Berenguer, Rosello, and Miranda 2021; Selvakumar and Panicker 2020; Tancred and Greeff 2015).

Coping strategies encompass individuals' cognitive and behavioral efforts to perceive and manage stressful situations (Folkman and Lazarus 1988). In classical coping models, two broad categories of strategies are recognized: problem-focused coping and emotion-focused coping (Hall 2012; Lazarus and Folkman 1984). Problem-focused coping entails proactive attempts to resolve problems or reframe the understanding of stressors in a positive way (positive reframing). This approach enhances parents' sense of self-control and reduces stress. Conversely, emotion-focused or passive coping styles, which may involve substance use, denial, or emotional venting, tend to exacerbate parenting stress. Additionally,

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dysfunctional coping styles serve as significant predictors of adaptive difficulties and are associated with poorer family functioning (Benson 2014). Coping strategies like focusing on emotions, distraction, or denial have been linked to increased distress, impeding successful stress resolution (Durukan et al. 2008; Craig et al. 2020). In contrast, the use of positive reframing is associated with lower stress levels for both mothers and fathers, greater satisfaction in their roles, and fewer disruptive behaviors exhibited by the child (Suen et al. 2021).

In the context of parents of children with neurodevelopmental disorders, more nuanced categorizations of coping responses have emerged, including problem-focused coping (directly addressing the stressor), active avoidance (efforts to deny or distance oneself from the stressor), positive coping (positively altering the perception of the stressor), and religious or denial coping (efforts to divert attention from the stressful situation). Problem-focused and positive coping have been linked to reduced distress and improved parental efficacy over time (Pepperell, Paynter, and Gilmore 2018), while active avoidance and religious/denial coping have been associated with increased stress and reduced parental efficacy (Hastings et al. 2005).

The volume of studies examining the impact of ASD or ADHD on parents has increased over the past two decades, with a consensus emerging that parents of children with ASD or ADHD employ more dysfunctional coping strategies compared to parents of typically developing children (Craig et al. 2020; Predescu and Șipoș 2013; Shepherd et al. 2018; Wang, Liu, and Zhang 2022; Wong and Wong 2021). For instance, in a literature review, Lai and Oei (2014) compared coping strategies between 73 parents of children with ASD and 63 parents of typically developing children in China. They found that parents of children with ASD were more inclined to employ active-avoidance coping strategies than parents of typical children. In the same vein, Vernhet et al.'s review (2019) revealed that parents of children with ASD favored avoidance coping styles and utilized social support-seeking strategies less frequently than parents of typically developing children. Other investigators, such as Pisula and Kossakowska (2010), have reported similar findings suggesting an association between parental stress and coping, whereby increased use of dysfunctional coping strategies was associated with elevated stress levels among parents.

However, other studies conducted in Australia and the United States reported that parents predominantly adopted positive coping strategies, including planning

to manage difficulties, reframing problems positively, and engaging in effective communication within the parenting process (Kiami and Goodgold 2017; Pepperell, Paynter, and Gilmore 2018). Previous research also indicated that parental coping strategies evolved throughout the caregiving process for children with autism and were linked to parental and child characteristics (Lai et al. 2015).

Similarly, parents of children with ADHD were found to employ more dysfunctional coping styles than parents of typically developing children (Borden et al. 2016; Durukan et al. 2008; Gonzalez and Depaula 2023). A recent systematic review of studies exploring the experiences of parents of children with ADHD indicated that they primarily utilized avoidant-focused coping, which involves cognitive and behavioral efforts aimed at denying, minimizing, or avoiding direct confrontation with stressful demands (Craig et al. 2020). Durukan et al. (2008) also reported that mothers of children with ADHD tended to use dysfunctional coping behaviors and denial coping more frequently, compared to mothers of typically developing children. In addition, dysfunctional coping strategies have been found to correlate with depression and anxiety symptoms in mothers of children with ADHD (Theule et al. 2013). It is also noteworthy that factors, such as the child's social difficulties, sleep problems, family quality of life, and other variables (e.g. parental educational level, gender of parents, perceived social support, and level of stress) all contribute to the way parents cope with their children (Craig et al. 2020; Gonzalez and Depaula 2023; Martin et al. 2019; Predescu and Șipoș 2013; Tancred and Greeff 2015).

Collectively, these reviews underscore the negative impact of neurodevelopmental disorders on most parents, leading to coping strategies characterized by avoidance and limited social support. This cycle of self-blame, withdrawal, internalized frustration, and feelings of helplessness increases parental stress and diminishes psychological well-being.

Moreover, the transactional model emphasizes the bidirectional relationship between parent's and children's outcomes. It is a common hypothesis that the way parents cope with stress may lead to, or at least contribute to, a child's behavioral regulation challenges and the problematic child behavior exacerbates parental stress (Crnic, Gaze, and Hoffman 2005). This model suggests that over time, both parent and child mutually influence and alter each other's behaviors (Lecavalier, Leone, and Wiltz 2006). For instance, higher levels of parenting stress may predict higher

levels of self-rated psychiatric distress and depression, all of which can negatively impact their child's well-being. Conversely, a child's limited self-regulation skills may provoke increased stress and subsequent dysfunctional responses in parents. This process of mutual influence perpetuates a series of changes within the child, the parent, and a cyclical pattern of dysfunction (Hutchison et al. 2016)

Despite the increasing interest in understanding the coping strategies used by parents of children with ASD and ADHD, there is a paucity of studies that analyze the profiles of coping strategies among mothers of children with neurodevelopmental disorders that compare these profiles with variables related to both child and maternal characteristics.

The current study aims to address significant gaps in prior research by employing a person-centered analytical approach to investigate the coping strategies of 90 mothers of children aged 7–12 years with ASD and ADHD.

Childhood is a crucial developmental stage characterized by brain plasticity, particularly significant for children with neurodevelopmental disorders. During this phase, environmental factors like parent-child relationships and effective parental coping skills emerge as influential elements capable of shaping children's adaptive development.

The first objective is to use latent profile analysis (LPA) to identify distinct coping profiles among mothers, based on four indicators (Hastings et al. 2005): problem-focused coping, active avoidance coping, positive coping, and religious/denial coping. This approach offers new insights into understanding coping strategies among mothers of children with neurodevelopmental disorders, with implications for identifying which mothers require additional support and which aspects of coping skills may benefit from intervention.

The second objective is to examine the differences between the identified coping strategy profiles in terms of the mothers' outcomes (parenting stress and social support) and children's difficulties (family and social behavior and sleep problems). In alignment with previous profile-based research in neurodevelopmental samples (Mira et al. 2022; Zaidman-Zait et al. 2018), we hypothesize that profiles characterized by lower coping will be linked to more severe parenting stress, reduced social support, and problems in family, social, and sleep domains among children with neurodevelopmental conditions.

The main objective of this study is to highlight the profound impact of parental coping strategies on mother's and children's lives, with the purpose of

enhancing support for families raising children with autism and ADHD and promoting their overall well-being.

Methods

Participants and procedure

The sample of this study was formed by 90 mothers of children with neurodevelopmental disorders; 47 with ASD without intellectual disability and 43 with ADHD (matched on age, and IQ). A majority of the sample were mothers who were married or living in common-law relationships ($n = 74$; 82%), with 1 identifying as single (0.01%) and another 15 identifying as separated or divorced (18%). Regarding the level of education 39 mothers (43.3%) had Highschool or Higher education, 42.2% ($n = 38$) had skilled jobs, 33.3% ($n = 30$) had unskilled jobs and 24.4% ($n = 22$) were unemployed. The children were recruited from clinical health centers in Spain and ranged in age from 7 to 12 years ($M = 9.32$; $SD = 1.59$) (Table 1). To be considered eligible, they must have been formally diagnosed with ASD without intellectual disability or ADHD by a qualified psychologist or medical doctor. ADHD children meet the clinical diagnostic criteria with a combined presentation based on the Diagnostic and Statistical Manual of Mental Disorders-Fourth or Fifth Edition, DSM-IV-TR, DSM-5 (APA, 2000, 2013) for parents and teachers. ASD children meet the criteria of Autistic Diagnostic Interview—Revised (ADI-R; Rutter, Le Couteur, and Lord 2006), and/or the Autism Diagnostic Observation Schedule, Generic (ADOS G; Lord et al. 2000). The Diagnostic and Statistical Manual of Mental Disorders-Fifth Edition, DSM-5 (APA, 2013) was used by neuropsychologists to confirm current symptom severity. For all groups a composite IQ score of ≥ 80 on the Kaufman Brief Intelligence Test, 2nd Edition (KBIT-2; Kaufman and Kaufman 2004) was required.

Table 1. Demographic Information and descriptive characteristics.

	ASD ($n = 47$)		ADHD ($n = 43$)		Statistics	
	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>	$F_{(1,88)}$	<i>p</i>
Mothers age	40.06	4.23	42.18	5.01	0.14	.714
Children age	9.37	1.75	9.29	1.38	0.11	.773
Children IQ	98.37	10.92	98.94	6.91	0.37	.544
ASD symptoms	28.3	5.7	—	—		
ADHD symptoms	24.6	8.7	41.0	9.1		
Sex (% boys)	89.3%		90.7%			
Medication (% yes)	41.7%		79.4%			
Sleep problems (% yes)	68.1%		76.7%			

The study received ethical approval from the Universitat de València Human Research Ethics Committee (UV-INV_ETICA-1905517). Mothers were informed about study procedures and goals, voluntary participation, as well as anonymization of data. Written consent was provided. Participants did not receive any incentives to participate in the present study. Figure 1 describes the process for recruiting participants.

Instruments

Coping strategies

Brief COPE (Carver, Scheier, and Weintraub 1989; Spanish adaptation by Morán, Landero, and González 2010) is a self-reporting, 28-item version of the COPE instrument that measures the usage frequencies of broad-based dysfunctional and adaptive coping strategies. Items are rated on a four-point rating scale ranging from 1 = 'I haven't been doing this at all' to 4 = 'I've been doing this a lot'. The psychometric properties of the Brief COPE have been previously examined, and the instrument has been used in many studies on stress and coping, with clinical or non-clinical samples (Morán, Landero, and González 2010). In this study, the Brief COPE was analyzed using four

sub-domains (Problem-focused coping, Active avoidance coping, Positive coping, and Religious/Denial coping) as derived in Hastings et al. (2005) based on a sample of parents of children diagnosed with autism. Factor 1 (problem-focused) included all of the items from the original Brief COPE scales for planning, active coping, and seeking instrumental social support, and one item from the seeking emotional social support scale. Thus, this factor most clearly represented problem-focused coping strategies. Factor 2 (active avoidance coping) included all of the items from the original Brief COPE subscales for substance use, behavioral disengagement, self-blame, and venting of emotions, and one item from the distraction scale. These coping strategies seemed to reflect active attempts to avoid the stressor or escape from its effects. Factor 3 (positive coping) included the Brief COPE items for the use of humor and positive reframing, and one item each from the acceptance and emotional social support scales. This factor seemed to be best characterized by attempts to adopt positive coping strategies. Factor 4 (religious/denial coping) was a mixed factor that included all the Brief COPE items for religious coping and denial. This approach was adopted to maximize the construct validity of the Brief COPE on the current study sample.

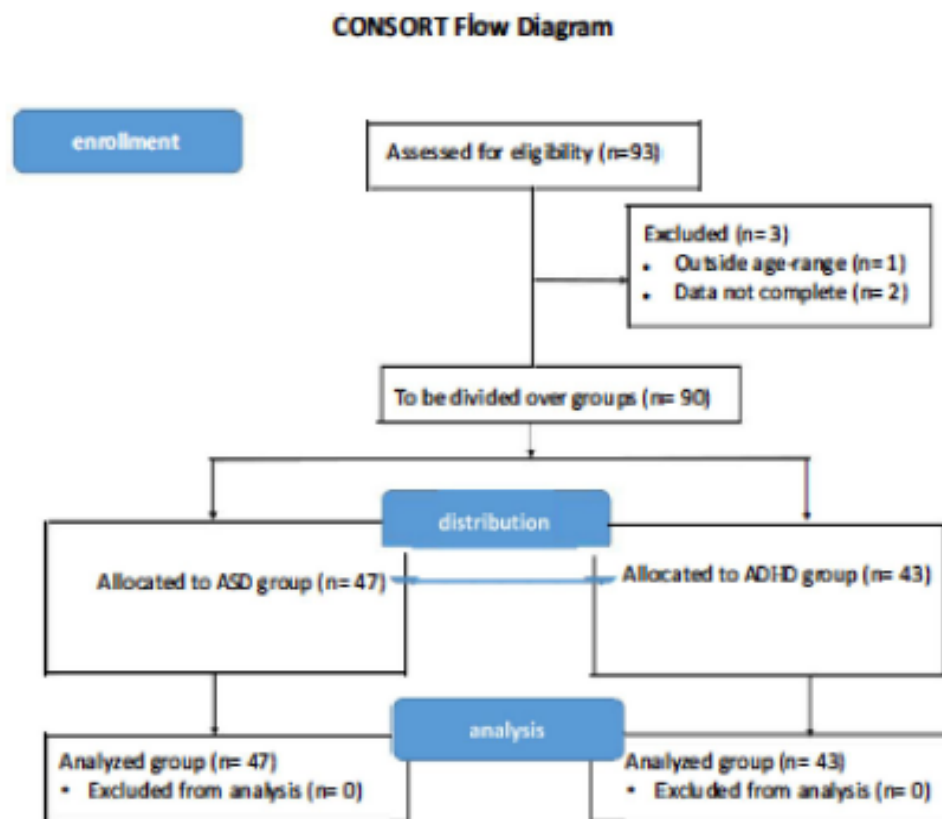


Figure 1. Process for recruiting participants.

Internal consistency evaluations of the Brief COPE total and subscale scores were adequate, with Cronbach's coefficient alphas of 0.92 (Brief COPE total), 0.89 (problem-focused coping), 0.76 (Active Avoidance coping), 0.83 (positive coping), and 0.69 (religious/denial coping).

Social support

The Social Functional Support Questionnaire Duke-UNC (Broadhead et al. 1988; Spanish adaptation Bellón Saameño et al. 1996) was filled out by mothers. This questionnaire measures the participants' perception of the availability of help from family and friends in difficult situations, as well as the ease of communication with them. The instrument comprises 11 questions with a Likert-type scale ranging from 1 = 'much less than I would like' to 5 = 'as much as I would like'. Scores of <32 indicate low perceived social support. The questionnaire assesses two factors: confidant support (ability to rely on individuals for communication) and affective support (demonstrations of love, affection, and empathy). The confidant support scale has a total of six items and affective social support includes five items. The present study used the direct scores on both scales. The internal consistency (Cronbach's α) of the confidant support and affective scales was 0.85 and 0.76, respectively (Bellón Saameño et al. 1996).

Parenting stress

The Parenting Stress Index–Short Form (PSI-SF; Abidin 1995; adapted to Spanish by Díaz-Herrero et al. 2011) is a self-report questionnaire that consists of 36 items based on three subscales of 12 items each (parental distress, parent-child dysfunctional interaction, and difficult child). Parents use a 5-point Likert-type scale to indicate the level to which they agree or disagree with each item.

The parental distress subscale measures the level of distress a parent experiences due to personal factors (e.g. 'I feel trapped by my responsibilities as a parent'). The parent-child dysfunctional interaction subscale provides information on the parent's perception of their child's ability to self-regulate (e.g. 'Sometimes I feel my child doesn't like me and doesn't want to be close to me'). The difficult child subscale measures the parent's level of dissatisfaction with their child's behavior (e.g. 'My child makes more demands on me than most children'). The scale provides a measure of total stress by adding up the scores on the 36 items, with a total score above 90 being clinically significant. The PSI-SF presents good psychometric properties,

and it is an effective measure for use with high-risk families (Cronbach's $\alpha = 0.92$) (Barroso et al. 2016). The total score of PSI-SF completed by mothers was used in this study and the internal consistency (Cronbach's α) was 0.90 for the present study.

Sleep problems

The Sleep Disturbance Scale for Children (SDSC; Bruni et al. 1996; Spanish adaptation by Pagerols et al. 2023) is a 26-item parent-reported questionnaire that assesses the occurrence of sleep disturbances during the last 6 months in children aged 6–16 years. Mothers rated their children sleep behavior on a 5-point Likert scale (never to always). This instrument differentiates between conditions, such as disorders in initiating and maintaining sleep, respiratory disorders, sleep arousal, sleep-wake transition disorders, excessive sleepiness, restless legs syndrome/periodic limb movement syndrome/growth pains, and sleep hyperhidrosis. A total sleep problems score was obtained by adding all subscale scores and was used in the present study. A cut-off point of 39 or above is considered clinically significant. The internal consistency was $\alpha = 0.79$ and the test-retest reliability $r = 0.71$ over a 6-month interval (Bruni et al. 1996), and the internal consistency (Cronbach's α) was 0.78 for the present study.

Children behavioral problems

The Weiss Functional Impairment Rating Scale-Parent Form (WFIRS-P) (Weiss et al. 2007) is a 50-item scale that requires parents to rate the impact of their child's emotional or behavioral problems in the previous month on six separate domains: family, school, and learning; life skills; child's self-concept; social activities; and risky activities. Each item is rated on a four-point scale from 0 ('never or not at all') to 3 ('very often or very much') or as 'not applicable'. The mean of all scored items for each domain was computed. The score of family domain and social activities domain were used in this study to evaluate the mothers' perception of their child's behavior in family and social contexts. The family domain consists of 10 items (e.g. 'Having problems with brothers and sisters', 'Causing problems between parents', 'Isolating the family from friends and social activities', or 'Causing fighting in the family'). The social activities domain consists of 7 items (e.g. 'Problems getting along with other children', 'Problems making new friends', or 'Difficulty with parties, as he is not invited, avoids them or misbehaves'). The scale has been psychometrically validated with an internal

consistency of Cronbach's $\alpha = 0.80$ (Gajria et al. 2015). For the present study, the internal consistency (Cronbach's α) was 0.78.

Data analysis

First, LPA was conducted using Mplus (Version 8.3; Muthén and Muthén 1998–2017) to identify distinct profiles of coping strategies. LPA is a person-centered approach that identifies profiles of individuals that exhibit similar patterns of scores across continuous indicators and estimates the probability of each participant belonging to each class (Nylund, Asparouhov, and Muthén 2007). For this study, we used a three step approach to LPA to classify mothers into conceptually and empirically distinct profiles based on their indicators of coping strategies; active avoidance coping, problem-focused coping, positive coping, and religious/denial coping. Given the documented similarities in parental coping styles among children with neurodevelopmental disorders (Craig et al. 2020; Vernhet et al. 2019), mothers of children with both ASD and ADHD were included in the same Latent Profile Analysis (LPA) examinations. The first step in the LPA was to determine the number of differentiated profiles in the sample by fitting a series of models beginning with the specification of a one class model. The number of classes were then progressively increased until adding classes no longer improved the model. We compared all models using information criteria based on several fit statistics, including sample size-adjusted Bayesian information criterion (ABIC) and the Akaike information criterion (AIC). Lower values indicate a better fit. Second, we examined Entropy values to assess classification accuracy. Entropy is a measure of data-model fit used in person-centered analyses to empirically gauge the separation between membership profiles or classes. Values closer to 1 indicate more accurate results. Next, we used the bootstrapped likelihood ratio test (BLRT) to evaluate whether a model with k classes fitted better than a model with $k-1$ classes. The interpretability of the results was also considered (Lukočienė, Varriale, and Vermunt 2010). Finally, the analysis focused on assessing the sample size of the smallest class to ascertain if it constituted a significant portion of the overall sample. Classes containing fewer than 5% of the sample were deemed potentially spurious unless they were substantiated following previous studies (Bauer and Curran 2004). The three-profile solution was considered the most conceptually sound solution due to the small sample size and the number of variables

included. The best solution was selected based on the good entropy value, the lowest AIC (Akaike Information Criterion) Bayesian Information Criterion (BIC) and adjusted BIC (ABIC) values and significant bootstrapped likelihood ratio tests (BLRT) (Nylund, Asparouhov, and Muthén 2007).

After identifying the optimal number of profiles a one-way multivariate analysis of variance (MANOVA) was carried out to compare them on several dependent variables. Normality quartile plots were calculated for each variable, and homogeneity assumptions were examined. When the homogeneity assumption was not met, robust procedures were applied in both the F tests and the post-hoc comparisons. The proportion of total variance accounted for by the independent variables was calculated using partial eta squared (according to Cohen 1988: eta squared, $0.06 = \text{small}$; $0.06-0.14 = \text{medium}$, $0.14 = \text{large}$). ANOVAs were run in SPSS 26, followed by post-hoc pairwise comparisons using Tukey tests.

Results

Preliminary analyses

Analyses were performed to assess missing data, outliers, and the distribution of all continuous variables. Means, standard deviations, and bivariate correlations for key study variables can be found in Table 2.

Latent profile analysis

The four factors of coping strategies used as indicators of the latent classes were: Problem-focused coping, Active avoidance coping, Positive coping, and Religious/Denial coping. Several exploratory LPAs were run to evaluate the relative fit of 1–3 classes. More classes were not contemplated due to the small sample size and the relatively small number of variables considered. The best solution was chosen based on smaller Information Criteria (AIC, BIC, and ABIC), a good entropy value, and significant bootstrapped likelihood ratio (BLRT) tests, but also considering the interpretability of the results. The statistical criteria and tests are shown in Table 3.

The statistical criteria revealed that most of the information criteria fit best in a three-class model and that there were statistically significant differences in the BLRT in favor of three classes. Entropy was good for 2 and 3 classes (larger than 0.7) indicating good accuracy in membership classification. The BLRT indicated a significant improvement in model fit as each profile was added. Figure 2 helps to interpret the

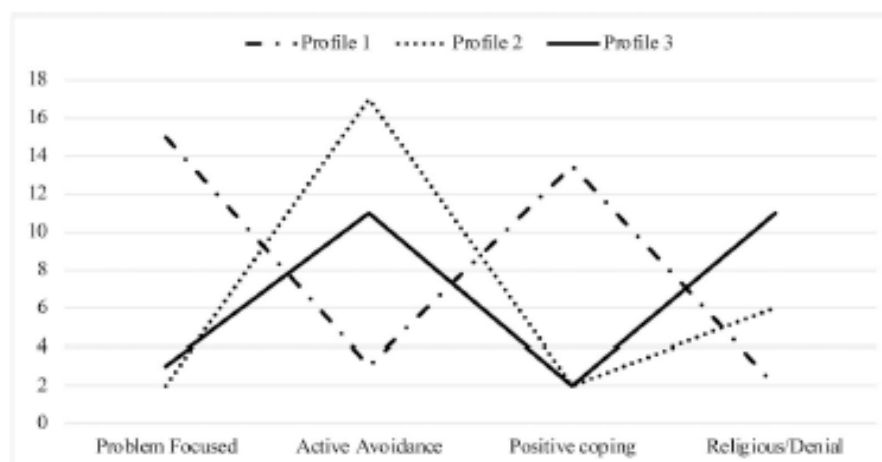
Table 2. Descriptive statistics and correlations for key study variables.

Variables	M	SD	1	2	3	4	5	6	7	8	9
1. Active avoidance	13.5	4.3									
2. Problem-focused	11.2	6.2	−0.44**								
3. Positive coping	8.9	3.4	.52**	−0.28**							
4. Religious/denial	3.2	2.8	−0.21*	.57**	−0.08						
5. Parenting stress	117.4	17.8	.41**	−0.42**	−0.25*	.37**					
6. Confidante support	16.1	6.9	−0.50**	.51**	.36**	−0.45**	−0.66**				
7. Affective support	13.2	5.3	−0.51**	.44**	.39**	−0.37**	−0.61**	.75**			
8. Family problems	14.3	5.8	.28**	.27*	−0.36**	.09	.47**	−0.30**	−0.37**		
9. Social problems	9.5	6.3	.41**	.012	−0.33**	.21*	.41**	−0.35**	−0.36**	.53**	
10. Sleep problems	53.2	10.1	0.08	0.05	−0.23*	.33**	.23*	−0.17	−0.24*	.25*	.43**

* $p < 0.05$, ** $p < 0.01$.**Table 3.** Fit Indices of latent profile analyses.

Classes	AIC	BIC	ABIC	Entropy	BLRT-p	Smallest profile (% of sample)
1	2363.5	2383.5	2358.3	1	NA	NA
2	1925.9	1958.4	1917.4	.98	<.001	39%
3	1830.7	1875.7	1818.9	.96	<.001	16%

AIC: Akaike Information Criterion; BIC: Bayesian Information Criterion; ABIC: adjusted BIC; BLRT: Bootstrapped Loglikelihood Ratio Test; NA: not applicable.

**Figure 2.** Line plot with scores of the three profiles (Profile 1 = 'Adaptive coping', Profile 2 = 'Avoidance coping', Profile 3 = 'Low coping') across the four indicator variables (Problem-focused coping, Active avoidance coping, Positive coping, and Religious/Denial coping) included in the LPA.

three-class solution by showing the estimated means per latent class or profile. Therefore, Profile 1 grouped 42.2% ($n=38$) of the mothers. It was labeled 'Adaptive coping' and included mothers who reported higher scores in problem-focused coping strategies and positive coping and lower in the other two subscales (avoidance coping and religious/denial coping). Profile 2 (40.0%, $n=36$) was characterized by elevated levels of active avoidance coping including mothers who reported avoidance coping strategies, such as substance use, behavioral disengagement, self-blame, or venting of emotions. Consequently, it was labeled 'Avoidance coping'. Finally, Profile 3, representing 17.8% ($n=16$) of the sample, consisted of mothers who used religious or denial coping (efforts to divert attention from the stressful situation). This

profile was characterized by elevated levels of religious/denial coping compared to the other profiles and it was labeled 'Low coping'.

Comparison of coping strategies profiles in terms of mother and children's outcomes

To examine whether different profiles of mothers coping strategies were associated with mothers' outcomes (parenting stress and social support) and behavioral children's difficulties (family, social, and sleep problems), a one-way multivariate analysis of variance (MANOVA) was carried out (see Table 4). The main effect of the group on the different variables was statistically significant [Wilk's Lambda (Λ) = 0.53, $F(12,148) = 4.52$, $p < 0.001$, $\eta^2_p = 0.27$].

Table 4. Comparison of coping strategies profiles in terms of mother and children's outcomes.

	Profile 1 adaptative coping (<i>n</i> = 38)		Profile 2 avoidance coping (<i>n</i> = 36)		Profile 3 low coping (<i>n</i> = 16)		<i>F</i> _(2,88)	η_p^2	Tukey post-hoc
	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>			
Parenting stress	111.2	12.3	116.8	12.7	124.0	13.6	8.39*	.17	1 < 3
Confidante support	18.6	6.6	10.9	3.9	9.8	2.9	18.79**	.32	1 > 2, 3; 2 > 3
Affective support	15.1	5.3	9.8	4.0	8.6	2.7	13.99**	.26	1 > 2, 3; 2 > 3
Family problems	12.5	6.9	15.6	5.6	19.6	5.8	6.93*	.15	1 < 3
Social problems	8.5	5.1	9.2	3.7	14.7	3.4	9.23**	.19	1 < 3; 2 < 3
Sleep problems	51.4	10.1	53.7	11.2	65.9	12.3	4.64*	.11	1 < 3

p* < 0.05, *p* < .001.

The individual ANOVAs revealed significant differences between coping strategies profiles in all the studied variables ($p < 0.05$). Tukey post hoc analysis showed significant differences between Profiles 1 and 3 in Total parenting stress. In addition, confidante and affective support scores showed significant differences between the three profiles. Regarding children's behavior, significant differences were found between profiles one and three in family, social, and sleep problems. Moreover, there was a significant difference between Profile 2 and 3 in social problems.

Discussion

The current study aimed to extend the scant literature on coping skills in mothers of children with neuro developmental disorders by identifying profiles of coping strategies based on four indicators (Problem-focused coping, Active avoidance coping, Positive coping, and Religious/Denial coping). Further, the study was designed to subsequently assess whether these coping profiles differed in terms of mothers' outcomes (parenting stress, confidante, and affective social support) and children behavior difficulties (family and social context, and children sleep problems).

The current findings suggest that mothers perceived their coping abilities as displaying three unique profiles of coping strategies in response to the stress of dealing with children with autism spectrum disorder and attention-deficit/hyperactivity disorder that are differentially associated with mothers and children's outcomes. Several of these profiles were consistent with the definitions of coping strategies in Hastings and colleagues' original research on coping typologies (Hastings et al. 2005). For instance, Profile 1 (adaptative coping) was characterized by high levels of problem-focused (e.g. 'Concentrate on doing something about situation', 'Take action to make situation better') in combination with high levels of positive coping (e.g. 'Look for something good in situation').

This profile involves behaviors consistent with proactive attempts to address problems or reframe the understanding of stressors in a positive manner. Therefore, this approach enhances parents' sense of self-control and reduces stress (Folkman and Lazarus 1988; Suen et al. 2021). The Profile 2 (avoidance coping) was primarily marked by elevated levels of active avoidance coping (e.g. 'Express negative feelings', 'Do something to think about it less') and behaviors of religious/denial coping (e.g. 'Refuse to believe what has happened'). These coping strategies seemed to reflect active attempts to avoid the stressor or escape from its effects (Hastings et al. 2005). Profile 3 (low coping) had similarly low active avoidance coping as Profile 2. However, these mothers exhibited the highest levels of religious/denial coping. Previous research shows a relationship between the characteristics of these two coping Profiles (2 and 3) and different mental health problems in mothers and fathers of children with autism and/or ADHD. Recent studies also suggest that lower social support and more avoidant coping by mothers may be related to the later development of ADHD symptoms (Craig et al. 2020; Vernhet et al. 2019).

The second objective of the study consisted of identifying possible differences between the three profiles of coping strategies used by mothers of children with ASD and ADHD in terms of mother and children's outcomes. Regarding mothers' outcomes, the comparison of stress level showed that the mothers who employed adaptative coping strategies perceived significantly lower level of parenting stress than mothers who used low coping strategies, such as frequent use of religious/denial thoughts or behaviors. Additionally, the Profile 1 showed the highest scores on social support variables (confidante and affective support) compared with the other two profiles. Thus, the use of denial or avoidant coping strategies from the stressful situations was linked to increased levels of stress and lower perceived social support, indicating that this style of coping is not helpful in

caring for children with ASD and ADHD (Pepperell, Paynter, and Gilmore 2018; Shepherd et al. 2018). These results are also consistent with previous studies connecting high levels of coping resources with reductions in parents' psychological distress (Benson 2014). Specifically, the findings suggest that employing avoidant cognitive strategies or religious/denial behaviors when confronted with stressful situations is likely to lead to unfavorable emotional consequences, as outlined in Benson (2014). Within the context of parenting children with neurodevelopmental disorders (ASD and ADHD), it appears that adopting avoidant or denial coping mechanisms is an inefficient long-term approach to managing parental stress and for getting social support. Such avoidance or denial-based strategies may perpetuate a cycle of self-blame, withdrawal, and internalized frustration among mothers, rather than freeing their mental resources for effective problem-solving. This, in turn, could hinder the development of feelings of competence and a heightened sense of control (Durukan et al. 2008; Lai and Oei 2014).

Furthermore, as expected, the profiles characterized by avoidance and especially low coping strategies were linked to more problems in family, social, and sleep domains among children with neurodevelopmental conditions. The children of mothers belonging to Profiles 2 and 3 (which grouped 40 and 17.8% of the sample, respectively) tended to have significantly lower adaptive behavior scores and significantly more behavior problems in social and family contexts, than the Profile 1, as reported by the mothers themselves. In addition, children of mothers in Profile 3 (Low coping) had significantly more sleep problems compared to those in Profile 1 (Adaptive coping). These findings support the link between dysfunctional coping strategies and children's behavioral/social difficulties (Hall 2012; Zaidman-Zait et al. 2018) and sleep problems found in a large number of children with ASD or ADHD (Mannion and Leader 2023).

Limitations and future research

Although this study provides meaningful information about the coping strategies in the context of autism and ADHD, there are several limitations. First, the use of self and parent-report instruments could be affected by social desirability bias. Additionally, coping strategies are measured using highly diverse self-reporting questionnaires in previous research and their diversity complicates the evaluation processes. Here we used the Brief COPE following Hastings'

factorization. Future research should also consider different coping measures to address this issue. Another limitation would be the small sample used which could affect the best profile solution, so it would be desirable to confirm these findings in larger samples. In addition, this study is based on a cross-sectional design. Future research on this topic should use longitudinal designs to draw conclusions about the relationships between variables in the medium and long term. Finally, it is also remarkable that this study did not include a control group of mothers of typically developing children, nor a comorbid group with ASD + ADHD. It would have been interesting to have another group of mothers of autistic children who also have ADHD, considering the high comorbidity among these conditions.

Another relevant question is the impact of the social context on parent stress and coping skills. International differences could lie in different cultural values or differences in health care delivery systems across cultures. Social determinants of health are examples of potential barriers to service access, such as geographic location, ethnicity, or income (Iadarola et al. 2019). For instance, in Indonesian culture, parenting stress can be minimized by religious coping that may contribute positively to perceived coping stress, and religion can make families positively interpret the presence of a child with autism spectrum disorder or ADHD (Almogbel, Goyal, and Sansgiry 2017).

Cross-cultural research is needed because how people attend to and perceive the social world is culturally specific. Examining these differences may be particularly informative in helping to redefine coping stress theories.

Nevertheless, the current study provides evidence for a diverse set of coping strategies in the context of two of the most prevalent neurodevelopmental disorders. Therefore, the results of this research should be considered the starting point for further research on the coping styles of parents of children with neurodevelopmental disorder, and their relationship with different variables related to the parents themselves and the children.

Clinical implications

Despite the above limitations, our findings have significant practical implications for the evaluation process and treatment. On the one hand, these findings shed light on which coping strategies are used by mothers of children with autism and ADHD, as well

as their connection with mother and children's outcomes. On the other hand, this knowledge allows to adjust intervention techniques to dysfunctional coping strategies, thus improving the treatment's efficacy. Research shows that parents of children with neurodevelopmental disorders are under more stress than parents of children with typically development, emphasizing the importance of assessing their overall quality of life and identifying the areas most negatively affected by their child's disorder. The present study highlights the critical role of psychosocial interventions for parents of children with ASD and ADHD. It's essential for clinicians to gauge the stress levels of these parents to customize care effectively, incorporating extensive support from a diverse team at school, including educational psychologists, teachers, and health care services for children with ADHD or ASD and their families.

Parent-based psychosocial interventions, incorporating functional and positive coping strategies, could represent the most effective approach for controlling stress levels and addressing the social and adaptive challenges commonly encountered by children with ASD and ADHD. For instance, recent interventions combine multiple components based on psychoeducation principles, problem-solving strategies, and social support provision to reduce the stress in families of children with ASD and ADHD (Sharma, Govindan, and Kommu 2022). Social support has been recognized as an effective strategy for these parents. Thus, it is important to assist them in finding support from family, associations, or professionals.

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No potential conflict of interest was reported by the authors.

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Data availability statement

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

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7.2.3. Estudio 3

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El tercer estudio de esta tesis examinó los perfiles de funcionamiento ejecutivo (FE) en niños con Trastorno del Espectro Autista (TEA) y Trastorno por Déficit de Atención con Hiperactividad (TDAH) y su relación con variables del dominio parental y de los niños/as, con el objetivo de analizar el FE diario de estos niños en comparación con niños con desarrollo típico (DT), explorar perfiles de FE, y determinar cómo estos perfiles se relacionaban con el estrés parental percibido y las alteraciones funcionales en los niños/as.

En el estudio se incluyeron 120 díadas de madres e hijos distribuidos en tres grupos: 30 con DT, 47 con TEA nivel 1 de severidad y 43 con TDAH, emparejados por edad y CI, con edades entre 8 y 12 años ($M = 8.40$; $DE = 1.62$). Las funciones ejecutivas fueron evaluadas mediante el Behavior Rating Inventory of Executive Function-2 (BRIEF-2) que proporciona índices de regulación conductual, emocional y cognitiva, y el compuesto ejecutivo global, complementado con la escala de función ejecutiva de Conners-3. El estrés parental se evaluó mediante el Parenting Stress Index–Short Form (PSI-SF) y las alteraciones en el funcionamiento social y conductual de los niños con el WFIRS-P y el SDQ. Los resultados evidenciaron diferencias significativas entre los grupos clínicos y el grupo control en todas las variables de FE,

concretamente se detectaron diferencias estadísticamente significativas entre los grupos clínicos en memoria de trabajo y monitorización, donde el grupo de padres de niños/as con TDAH obtuvo mayores puntuaciones t en el BRIEF-2. En cuanto al segundo objetivo se identificaron tres perfiles de FE: Perfil 1 con déficits ejecutivos bajos (n = 32; 35.5%), Perfil 2 con déficits ejecutivos moderados (n = 32; 35.5%) y Perfil 3 con déficits ejecutivos altos (n = 26; 28.9%). El perfil 3 obtuvo puntuaciones significativamente más elevadas en los índices principales del BRIEF-2 y la escala de CONNERS-3 en comparación con los otros perfiles.

Los niños con perfiles de FE más severos presentaron mayor afectación en el funcionamiento diario y sus padres informaron niveles más elevados de estrés percibido.

En conjunto, estos hallazgos confirman la relevancia de las funciones ejecutivas como un componente central del ajuste cognitivo y emocional en los niños con TEA y TDAH, destacando la necesidad de desarrollar intervenciones específicas orientadas a fortalecer las FE, con el fin de reducir el estrés parental y mejorar el funcionamiento adaptativo tanto en el ámbito familiar como en la vida cotidiana.

Article

Executive Functioning Profiles in Neurodevelopmental Disorders: Parent–Child Outcomes

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Abstract: Background/Objectives: Children with autism spectrum disorder (ASD) and/or attention deficit hyperactivity disorder (ADHD) exhibit more executive function (EF) deficits compared to typically developing (TD) peers. EF deficits are linked to various impairments in daily functioning and increased parental stress. The first aim of the present study is to investigate EFs in children with ASD and ADHD compared to their TD peers. The second aim is to explore profiles of executive functions in children with ASD and ADHD and, finally, to determine the differences of EF profiles in relation to parental stress and children's functional impairments. Methods: The sample comprised 30 TD children, 47 children with ASD, and 34 children with ADHD, aged 8 to 12 years. Parents completed questionnaires of parenting stress, and children's social and daily-life functioning. Parents and teachers reported information about children's EF. Results: The results indicated significantly greater impairment of EFs in the clinical groups compared to the TD group. Moreover, three distinct clusters of functioning were identified based on the severity of reported EF difficulties. The significant findings showed that children with more severe EF profiles were associated with greater daily impairment and higher levels of perceived parental stress. Conclusions: Given the impact of EF deficits on the lives of children with ASD and ADHD and their families, it is crucial that studies like this enhance our understanding and inspire future interventions aimed at improving executive functions in children with ASD and ADHD. Such interventions could help reduce parental stress and improve daily functioning.

Keywords: ASD; ADHD; executive function profiles; parental stress; functional impairment



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1. Introduction

1.1. Executive Functioning in Children with ASD and Children with ADHD

Executive functions (EFs) refer to a complex set of cognitive abilities such as short-term memory, impulse control, mental adaptability, strategizing, problem solving, and logical thinking [1]. These cognitive control processes are mainly facilitated by the prefrontal cortex, which oversees lower-level processes like perception and motor responses, thus supporting self-regulation and goal-directed behavior [2].

Executive functions (EFs) are vital for cognitive, social, and psychological growth. Research shows that EFs play a role in daily activities like decision making, risk evaluation, planning, prioritizing, sequencing actions, and handling new situations [3]. Therefore, deficits in these domains can significantly impact daily life, leading to inappropriate behavior and impaired social functioning [4]. Executive dysfunction may play a critical role in the outcomes of neurodevelopmental disorders such as autism spectrum disorder (ASD) and attention deficit hyperactivity disorder (ADHD) [5–7].

ASD is classified as a neurodevelopmental disorder characterized by difficulties in social communication abilities and restricted, repetitive, and stereotyped patterns of behavior [8]. Studies on EFs in individuals with ASD suggest widespread impairments marked by considerable heterogeneity, particularly in cognitive flexibility, planning, organizing, and monitoring [9–12].

ADHD is also a neurodevelopmental condition, characterized by symptoms in two behavioral areas: inattention and/or hyperactivity–impulsivity [8]. Numerous studies have noted EF deficits in ADHD [13]. Kofler and colleagues [14] highlighted that 89% of children with ADHD showed impairments in executive functioning, and Willcutt et al. [15], in their meta-analysis, stated that individuals with ADHD exhibit significantly greater EF deficits than those without ADHD, specifically in strategizing, spatial and working memory, impulse control, and sustained attention. Despite differences in the manifestations of these disorders, recent meta-analyses have found no differences in EF domains between children and adolescents with ADHD and those with ASD [5,16]. Some researchers propose that the presence of common executive function deficits supports the hypothesis that ASD and ADHD might share overlapping mechanisms [16].

However, recent meta-analyses conducted on preschool children with ASD and ADHD from the age of four, compared to TD children, indicated both overlap and specificity in executive function impairments. Shifting was found to be more impaired in ASD compared to ADHD, while inhibition, working memory, and planning were more consistently impaired in ADHD [17].

1.2. Executive Function Deficits in ASD and ADHD and Parenting Stress

Raising a child with a neurodevelopmental disorder such as ASD or ADHD, and executive function deficits can be challenging and is considered a risk factor for parental stress [18]. The negative consequences and functional impairments linked to autism or ADHD do not only affect the child; parents of these children also experience significantly higher levels of parenting stress compared to parents of children without that neurodevelopmental condition [19].

The literature highlights that there is a direct correlation between parental stress and parental reports of EFs in children with ASD or/and ADHD [20,21]. Behavioral problems exhibited by children with ASD are related to parenting stress [22], and parents who report more stress also tend to report that their children have more EF difficulties [20]. Similar results have been found in parents of children with ADHD. For example, the study conducted by McLuckie et al. [21] found that parent-reported executive dysfunctions accounted for 49% of the variance in child-related parenting stress.

In general, parents of children with ASD or ADHD experience higher levels of stress when their children have greater deficits in EFs, characterized by difficulty in behavioral regulation, impulse control, maintaining and changing attention, and problem solving [20,23]. Among the theories proposed to explain the relationship between EF deficits and parental stress, the transactional development theory is the most appropriate. It underscores the two-way relationship between these constructs, showing that parent and child characteristics interact over time, influencing each other reciprocally [22]. According to this approach, a child's poor self-regulatory abilities can lead to a parent's adoption of dysfunctional behaviors and increased stress. At the same time, the parent's maladaptive behaviors can exacerbate problematic behaviors and further dysfunction in the child [23]. Therefore, such bidirectional influences may result in changes in parental behavior, child behavior, and parent–child interactions.

In light of the above, it is not so much the type of disorder (ADHD or ASD), but, rather, the behavioral problems related to the child's EF difficulties that constitute a source of stress for the parents. From the perspective of transactional theory, this stress could, in turn, impact EF weaknesses in the child [20].

1.3. Executive Dysfunctions in ASD and ADHD and Children's Functional Impairments

Deficits in EFs presented by children with ADHD or ASD can lead to functional impairments in different domains of daily life [24–26]. Such deficits negatively affect social competence, involving pathways related to theory of mind and social cognition [27,28]. Specifically, difficulties with EFs presented by children and adolescents with ASD may impair their ability to interact effectively with others [25]. The EF's weaknesses may, therefore, impair ASD children and adolescents' abilities to develop friendships and maintain quality relationships. On the other hand, friendship quality is able to mediate ASD people's social impairment, and having low-quality friendships leads to greater difficulties in adjustment [24]. Furthermore, several authors state that from childhood to adolescence, the real-world impairments, related to weaknesses in EFs in individuals with ASD, tend to increase [29].

The literature also highlights similar findings for ADHD children, who often show several functional impairments related to EFs deficits [15,26]. Impairments in EFs domains are associated with generally disruptive [30], uncooperative, and more severe ADHD symptomatology [31]. Considering the impact of EF's weaknesses on behaviors, they may inevitably also lead to an impairment in the social functioning of children and young people with ADHD. Then, having a good working memory and good higher-order EFs, such as planning, organizing, and strategy making, have been associated with better social skills in young people with ADHD [14,32]. Furthermore, some authors suggest that EF deficits may mediate the link between ADHD and social problems [33]. A recent longitudinal study by Skogli et al. [34] showed the presence of elevated levels of EFs-related daily problems in both ADHD and ASD youth compared to typically developing (TD) youth.

The authors, however, point to significant differences in developmental trajectories, in that, over the two-year period, daily EF improved for ADHD individuals compared to TD, whereas individuals with ASD showed no improvement compared to TD. Skogli and colleagues [34] suggest that the differences in developmental pathways between the ADHD and ASD group compared to the TD group could be attributed to disorder-specific factors (e.g., main symptoms, treatment) playing a crucial role in the development of daily EFs.

Considering the inconsistent findings on executive deficits profiles in neurodevelopmental disorders such as ASD and ADHD, along with the limited research on the connection between EF and parental stress, this study seeks to fill these gaps in the literature. Most previous studies on ADHD or ASD and parental stress have compared children with these disorders to typically developing children separately. This study, however, is part of a smaller subset of studies [20] that have investigated both clinical groups (ASD and ADHD) of children with EF difficulties and different behavioral profiles, comparing them to typically developing children. Furthermore, unlike most prior studies, this research also examines the potential correlations between EF deficits, parental stress, and children's difficulties in daily life.

1.4. Objectives

The main objective of this study is to explore the EF profiles of children with ASD and children with ADHD through the following specific aims:

- (i) To analyze the daily EF of children with ASD, and children with ADHD compared with typically developing (TD) peers.
- (ii) To explore profiles of children with ASD and children with ADHD, according to EF main indexes (behavioral emotional, cognitive regulation, and global executive composite).
- (iii) To determine the differences of EF profiles with perceived parenting stress, and children's functional impairments.

We hypothesize that profiles of EF characterized by high deficits will be related to more parenting stress and more impairments in daily-life functioning in children with neurodevelopmental conditions.

2. Materials and Methods

2.1. Participants

This cross-sectional design study is part of an extensive project on parental stress in children with ASD and ADHD. One-hundred and twenty dyads consisting of mothers and their children participated in this study. The children sample was composed of 30 with TD, 47 with ASD severity level 1, and 43 with ADHD, all matched by age and IQ. Children's ages ranged from 8 to 12 years (mean = 8.40; SD = 1.62) (see Table 1).

Table 1. Sociodemographics.

	TD (n = 30)		ASD (n = 47)		ADHD (n = 43)		F (2,119)	p
	M	SD	M	SD	M	SD		
Age	8.66	1.32	9.37	1.75	9.29	1.38	1.69	0.171
IQ	100.02	8.21	98.37	10.92	98.94	6.91	0.48	0.611
Sex (% male)	65.6%		89.32%		90.72%			
Med (% yes)			40.41%		79.04%			
ASD S.			28.37	5.71				
ADHD S.			24.62	10.73	41.05	9.12		
P. Education level	3.15	0.83	3.05	1.09	1.88	1.40	0.53	0.581

Note. Med (medication), P. Education level (parental education level); parental education level measured as highest level of mother or father (0 = no education, 1 = primary education, 2 = basic secondary education, 3 = advanced secondary education, 4 = university education, ASD S (ASD symptoms (ADI-R)), ADHD S (symptoms; total score DSM-5 parents report); $p < 0.05$.

Children were enrolled from specialized psychoeducational and clinical health centers. Eligibility required formal diagnoses of ASD without intellectual disability or ADHD by qualified professionals. ADHD children met combined presentation criteria per DSM-IV-TR or DSM-5 (APA) [8,35], with parents and teachers documenting severity on a DSM-5 scale from 0 to 3, including at least six symptoms each of inattention and hyperactivity/impulsivity. ASD children met criteria through assessments like the Autistic Diagnostic Interview—Revised (ADI-R) [36] and the Autism Diagnostic Observation Schedule, Generic (ADOS G) [37], with symptom severity confirmed per DSM-5 and additional assessment through the Social Communication Questionnaire (SCQ) [38]. A minimum IQ of 80 on the Kaufman Brief Intelligence Test 2nd Edition (KBIT-2) [39] was required.

Children with TD were chosen from public schools and showed no signs of psychopathologies or meeting ASD or ADHD criteria as per DSM-5. The exclusion criteria for all groups included an IQ under 80, and any motor, sensory, mental, or neurological impairments. The sample is thoroughly described in Pardo-Salamanca et al. [40].

2.2. Measures

2.2.1. Daily Executive Functions

The BRIEF-2 Family Report is a questionnaire that assesses daily executive functions [41]. It contains 63 items that are rated on a frequency scale from “never (1)” to “frequently (3).” The report provides four primary indexes and scores on various executive function-related scales: (a) Behavioral Regulation Index (BRI)—includes inhibition and self-monitoring scales; (b) Emotional Regulation Index (ERI)—includes switching and emotional control scales; (c) Cognitive Regulation Index (CRI)—covers initiative, working memory, planning, organization, and task monitoring scales; (d) Global Executive Composite (GEC)—reflects overall executive functioning. In this study, we utilized the main indexes of the BRIEF-2 Family. Raw scores are converted into age-adjusted T-scores, where a score above 70 indicates clinically significant challenges. The BRIEF-2 Family has demonstrated high internal consistency for the index and composite scores, with Cronbach's alpha ranges from 0.90 to 0.97 in our sample, which is similar to other studies [41]. The BRIEF-2 exhibits good test-retest reliability with correlation coefficients above 0.80 [41]. The BRIEF-2 Family

is an effective tool for identifying executive difficulties in special groups such as the ASD or ADHD populations, demonstrating high internal consistency [42].

The *Conners-3 Teacher Short Form (Conners-3)* [43] was utilized to assess executive functioning. This survey, which is filled out by parents or teachers, assesses behavioral and regulatory disorders in children and teenagers aged 6–18 years. It comprises 39 items categorized into six scales: inattention, learning problems, aggression, family relations, hyperactivity/impulsivity, executive functioning, and peer relations. In this study, particular focus was given to the nine-item Conners-3 Executive Functioning Scale, with good internal consistency ($\alpha = 0.87$) in our sample. This scale is designed to capture teachers' observations related to a child's potential challenges with initiating or finishing projects, tendency to complete tasks at the last minute, and demonstration of inadequate planning, prioritizing, or organizational skills. Teachers assess these aspects using a four-point scale, wherein 0 signifies "never" and 3 signifies "very often". The resulting T-scores fall within the range of 40 to 90, with lower scores indicative of milder impairments. T-scores are categorized as follows: scores below 40 are considered low, scores between 40 and 59 are average, scores from 60 to 69 are elevated, and scores of 70 or above suggest a very high level of impairment. The Conners-3 Teacher Short-form version demonstrates good internal consistency ($\alpha = 0.83$ – 0.91) and test–retest reliability ($r = 0.72$ – 0.96) in ADHD groups [43].

2.2.2. Parenting Stress

The *Parenting Stress Index—Short Form (PSI-SF)* [44] is a self-report questionnaire that consists of 36 items and is designed to assess overall parenting stress. It was adapted to Spanish by Díaz-Herrero et al. [45]. The questionnaire is divided into three subscales: parental distress (PD), parent–child dysfunctional interaction (PCDI), and difficult child (DC). Each subscale consists of 12 items, which are rated on a scale from 1 (strongly disagree) to 5 (strongly agree). The total score is obtained by summing the scores of the three subscales, with scores ranging from 36 to 180. A score of 90 or higher may indicate a clinical level of stress. In this study, the three subscales of the PSI-SF completed by the mothers were used. The PSI-SF has demonstrated good psychometric properties, and it is an effective measure for use with high-risk families [46]. The internal consistency for the total scale was high in our sample (Cronbach's $\alpha = 0.92$).

2.2.3. Children Functional Impairments

The *Weiss Functional Impairment Rating Scale-Parent Form (WFIRS-P)* [47] is a 50-item scale where parents assess their child's daily functioning over the past month across six different domains: family, school and learning, life skills, child's self-concept, social activities, and risky activities. Each item is rated on a four-point scale ranging from 0 ("never or not at all") to 3 ("very often or very much") or marked as "not applicable". The average of the scored items for each domain was calculated. This study utilized the subscales of life skills, social activities, and risky activities. The life skills subscale comprises 10 items (e.g., "Excessive use of TV, computer, or video games", "Keeping clean, brushing teeth, brushing hair, bathing, etc.", or "Problems with eating (picky eater, junk food)"). The social activities subscale includes 7 items (e.g., "Problems participating in after-school activities (sports, music, clubs)", "Being teased or bullied by other children", or "Difficulty with parties (not invited, avoids them, misbehaves)"), and the risky activities subscale consists of 10 items (e.g., "Breaking or damaging things", "Says mean or inappropriate things"). The scale has been psychometrically validated with an internal consistency Cronbach's $\alpha = 0.80$ especially in the population with ADHD [48]. For the present study, the internal consistency (Cronbach's α) was 0.78.

The *Strengths and Difficulties Questionnaire (SDQ)* [49] is a widely used tool for assessing a broad spectrum of psychopathological symptoms and prosocial behaviors in children and adolescents between the ages of 4 and 16. This instrument was adapted to the Spanish population by Rodríguez-Hernández et al. [50]. Additionally, it can be completed by either parents or teachers and comprises five subscales: emotional symptoms,

hyperactivity/inattention, conduct problems, peer problems, and prosocial behavior. The questionnaire generates a total difficulties score (SDQ total) based on the first four subscale scores, serving as an indicator of the overall level of psychopathological issues in a child. Each subscale offers three response options: not true, somewhat true, and very true, with higher scores indicating more significant difficulties. For the purposes of our study, we focused on the total difficulties score. The SDQ has been found to have satisfactory psychometric properties and reliability, with coefficients ranging from 0.73 to 0.76 [50]. The internal consistency (Cronbach's α) of the emotional and behavioral difficulties subscales for our sample was 0.76 and 0.77, respectively, and it is similar to that reported in a population with special needs [49].

2.3. Procedure

This study adheres to the guidelines set forth by the Ethics Committee of the Universitat de València (UV-INV_ETICA-1905517). Parents provided both verbal and written informed consent. The evaluation took place in a room at the Faculty of Psychology. Two trained psychologists administered all the measures to the parents and children.

2.4. Data Analysis

Statistical analyses were performed using the Statistical Package for the Social Sciences (SPSS) software version 26.00 (SPSS Inc., Chicago, IL, USA). The distribution of the variables and their conformity to the normal distribution curve were assessed using Kolmogorov–Smirnov tests. To examine the differences in executive functions among the TD, ASD, and ADHD groups, a multivariate analysis of variance (MANOVA) was performed. Further analyses of variance (ANOVAs) were conducted to verify differences across the entire test. For these additional ANOVAs, the significance level was set at $p < 0.003$ following the Bonferroni correction, and the partial eta squared effect size (η^2_p) was calculated to determine the strength of the association. A model-based cluster analysis was conducted to identify distinct profiles based on children's executive function deficits (BRI, ERI, CRI, and the executive functioning scale of the CONNERS-3). Hierarchical cluster analysis was applied using squared Euclidean distance measures and Ward's minimum variance method to create homogeneous groups, as this approach is more suitable for small sample sizes [51]. Ward's method is a minimum variance approach used in hierarchical cluster analysis that is generally favored over other techniques, like the single-link method. This method is highly sensitive to outliers and tends to identify clusters of similar size [52]. The subsequent step involved employing k-means analysis, which requires specifying the number of clusters beforehand. The variance ratio criterion (VRC) was used to identify the optimal cluster solution for each chosen cluster. The VRC assesses the ratio of "within variance" (variance explained by the typology) to "between variance", adjusted for the number of clusters and responses. A three-cluster solution was determined to be optimal based on hierarchical cluster analysis using Ward's method. This conclusion was also supported by the visual inspection of the dendrogram and the agglomeration coefficients. The clusters were interpreted as representing low, moderate, and high deficits in executive functions. Finally, one-way multivariate analyses of variance (MANOVAs) followed by Tukey post hoc tests were carried out to investigate the effects of varying levels of executive functions among the three clusters on the three subscales of parenting stress and on children's functional impairments. These impairments included life skills, social and risky activities, and the overall level of social difficulties.

The Tukey post hoc test was chosen because it produces smaller standard errors and increases the likelihood of rejecting the null hypothesis.

The proportion of total variance explained by the independent variables was determined using partial eta squared. According to Cohen [53], the interpretation of eta squared is as follows: less than 0.06 indicates a small effect, 0.06 to 0.14 indicates a medium effect, and greater than 0.14 indicates a large effect.

3. Results

3.1. EF between Children with TD, ASD, and ADHD

The MANOVA performed to evaluate the main effect of group on the different variables of executive functions was statistically significant (Wilk's Lambda (Λ) = 0.18, $F(26,214) = 10.84$, $p < 0.001$, $\eta^2_p = 0.57$). The confirmation ANOVAs yielded the following results (see Table 2); significant differences (after applying Bonferroni correction) were found for inhibition, $F(2,119) = 68.66$ $p < 0.001$, $\eta^2_p = 0.54$; shift, $F(2,119) = 49.44$ $p < 0.001$, $\eta^2_p = 0.45$; emotional control, $F(2,119) = 19.61$ $p < 0.001$, $\eta^2_p = 0.25$; initiative, $F(2,119) = 39.41$ $p < 0.001$, $\eta^2_p = 0.40$; working memory, $F(2,119) = 68.13$ $p < 0.001$, $\eta^2_p = 0.53$; planning, $F(2,119) = 78.87$ $p < 0.001$, $\eta^2_p = 0.57$; organization, $F(2,119) = 38.61$ $p < 0.001$, $\eta^2_p = 0.39$; monitoring, $F(2,119) = 61.97$ $p < 0.001$, $\eta^2_p = 0.51$; self-monitoring, $F(2,119) = 77.35$ $p < 0.001$, $\eta^2_p = 0.57$; BRI, $F(2,119) = 84.80$ $p < 0.001$, $\eta^2_p = 0.59$; ERI, $F(2,119) = 70.41$ $p < 0.001$, $\eta^2_p = 0.54$; CRI, $F(2,119) = 90.91$ $p < 0.001$, $\eta^2_p = 0.60$; and GEC, $F(2,119) = 110.60$ $p < 0.001$, $\eta^2_p = 0.65$.

Table 2. Differences between ASD, ADHD, and TD groups in children executive functions.

	TD (n = 30)		ASD (n = 47)		ADHD (n = 43)		F (2,119)	η^2_p	Tukey Post Hoc
	M	SD	M	SD	M	SD			
Inhibition	50.72	6.33	72.94	9.84	73.61	10.59	68.66 *	0.54	ASD,ADHD > TD
Shift	54.84	8.46	81.36	12.66	76.09	13.38	49.44 *	0.45	ASD,ADHD > TD
Emotional c	53.91	6.96	65.21	11.13	70.84	14.62	19.61 *	0.25	ASD,ADHD > TD
Initiative	52.81	9.27	71.47	10.93	70.88	9.62	39.41 *	0.40	ASD,ADHD > TD
WM	51.31	8.87	70.43	7.88	76.00	11.02	68.13 *	0.53	ADHD > ASD > TD
Planning	49.91	7.44	70.72	9.12	71.70	7.78	78.87 *	0.57	ASD,ADHD > TD
Organization	51.69	6.31	72.38	10.28	70.16	13.89	38.61 *	0.39	ASD,ADHD > TD
Monitoring	50.34	7.63	68.57	9.05	71.86	9.19	61.97 *	0.51	ADHD > ASD > TD
Self-monitor	49.63	5.14	71.68	8.95	70.84	9.79	77.35 *	0.57	ASD,ADHD > TD
BRI	51.21	7.19	74.23	7.54	74.63	11.06	84.80 *	0.59	ASD,ADHD > TD
ERI	54.14	6.54	75.36	9.65	78.23	11.58	70.41 *	0.54	ASD,ADHD > TD
CRI	51.56	6.72	74.63	9.11	76.37	10.05	90.91 *	0.60	ASD,ADHD > TD
EF	53.10	6.12	76.47	11.62	78.09	12.16	110.60 *	0.65	ASD,ADHD > TD

Note. Emotional c (emotional control), WM (working memory), BRI (behavior regulation index), ERI (emotion regulation index), CRI (cognitive regulation index), EF (executive functioning subscale CONNERS-3), * $p < 0.003$ (Bonferroni correction for multiple comparison).

Tukey post hoc analyses revealed significant differences between the TD group and the clinical groups on all the EF variables analyzed in this study. In addition, scores on the working memory domain and monitoring revealed significant differences between the ADHD group and the ASD group, with higher scores in ADHD children, as Table 2 shows.

3.2. Profiles of Executive Function in Children with Autism Spectrum Disorder and Children with ADHD

The findings of the hierarchical cluster analysis of the executive functions in children with ASD and children with ADHD are reported in Table 3 and Figure 1. The clusters differentiated executive functioning profiles based on the patterns observed in the scores and were categorized as follows: Profile 1 (n = 32; 35.5%) was categorized as low deficits to reflect low scores on children's daily executive functioning; Profile 2 (n = 32; 35.5%) was categorized as moderate to reflect average scores on all the EF main indexes and the total scale of executive functioning of the Conners-3; Profile 3 (n = 26; 28.9%) was categorized as high deficits to reflect high scores on the executive functioning in children with autism and children with ADHD.

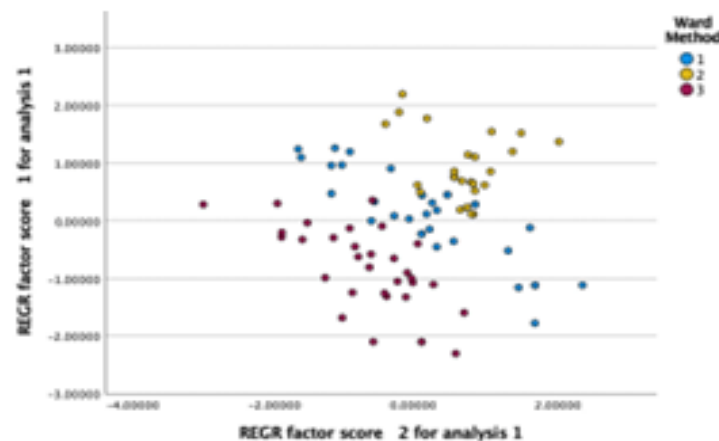


Figure 1. Scatterplot of pairwise comparisons of clusters on executive functioning profiles.

Table 3. Executive function profiles in children with ASD and children with ADHD.

	Profile 1 Low (n = 32)		Profile 2 Moderate (n = 32)		Profile 3 High (n = 26)		F _(2,87)	η_p^2	Tukey Post Hoc
	M	SD	M	SD	M	SD			
BRI	66.84	7.40	76.06	6.39	81.85	7.44	33.57 **	0.43	1 < 2 < 3
ERI	67.97	7.71	78.44	9.60	85.77	5.25	37.74 **	0.46	1 < 2 < 3
CRI	68.19	8.27	75.56	7.03	84.58	4.83	39.55 **	0.47	1 < 2 < 3
EF	68.88	5.68	78.78	3.79	84.12	7.26	63.65 **	0.58	1 < 2 < 3

Note. BRI (Behavior regulation index), ERI (Emotion regulation index), CRI (Cognitive regulation index), EF (Executive functioning subscale CONNERS-3), ** $p < 0.001$.

Analyses of variance (ANOVAs) were conducted to determine the significant differences between the three clusters in the executive function processes.

The results showed statically significant differences between the three profiles. Therefore, the mean global scores for BRI ($F = 33.57$, $p < 0.001$), ERI ($F = 37.74$, $p < 0.001$), CRI ($F = 39.55$, $p < 0.001$), and executive functioning ($F = 68.65$, $p < 0.001$) were statistically different across the clusters. Furthermore, post hoc comparison showed that Profile 3 (high EF deficits) obtained significantly higher scores than Profile 2 (moderate) and Profile 1 (low EF deficits) among the three main indexes of the BRIEF-2 and the scale of executive functioning of Conners-3.

3.3. Differences in Executive Function Profiles with Perceived Parenting Stress, and Children's Functional Impairments

To address the third study objective, that is, to determine the differences in the executive function profiles and TD children, we carried out analysis of variance. The MANOVA performed to evaluate the main effect of group on the different variables of executive functions was statistically significant (Wilk's Lambda (Λ) = 0.18, $F(21,284) = 10.73$ $p < 0.001$, $\eta_p^2 = 0.43$). The confirmation ANOVAs yielded the following results (see Table 4): significant differences (after applying Bonferroni correction) were found for parental distress (PD), $F(3,119) = 26.56$ $p < 0.001$, $\eta_p^2 = 0.43$; parent-child dysfunctional interactions (PCDI), $F(3,119) = 32.69$ $p < 0.001$, $\eta_p^2 = 0.48$; difficult child (DC), $F(3,119) = 80.61$ $p < 0.001$, $\eta_p^2 = 0.69$; life skills (WFIRS-L), $F(3,119) = 15.34$ $p < 0.001$, $\eta_p^2 = 0.30$; social activities (WFIRS-S), $F(3,119) = 4.69$ $p < 0.001$, $\eta_p^2 = 0.12$; risky activities (WFIRS-R), $F(3,119) = 8.44$ $p < 0.001$, $\eta_p^2 = 0.19$; and social difficulties (SDQ-T), $F(3,119) = 49.60$ $p < 0.001$, $\eta_p^2 = 0.58$.

Table 4. Analyses of variance (ANOVAs) of parenting stress scales and children's outcomes among the profiles and TD group.

	TD (n = 30)		Profile 1 Low (n = 32)		Profile 2 Moderate (n = 32)		Profile 3 High (n = 26)		F _(3,119)	η_p^2	Tukey Post Hoc
	M	SD	M	SD	M	SD	M	SD			
PSI-PD	23.67	5.58	37.09	10.38	40.50	7.74	42.12	9.95	26.56 *	0.43	TD < 1,2,3
PSI-PCDI	20.63	4.46	33.59	9.77	39.22	8.00	42.58	21.25	32.69 *	0.48	TD < 1,2,3,1 < 3
PSI-DC	20.97	5.05	38.00	7.88	42.09	6.32	45.73	7.06	80.61 *	0.69	TD < 1,2,3,1 < 2 < 3
WFIRS-L	9.26	4.01	14.00	5.88	14.65	4.50	17.30	4.11	15.31 *	0.30	TD < 1,2,3,1,2 < 3
WFIRS-S	6.93	2.97	7.73	5.26	10.40	4.85	10.86	4.95	4.69 *	0.12	TD < 1,2,3,1 < 2,3
WFIRS-R	2.33	1.32	4.23	3.00	4.90	2.81	6.36	3.79	8.44 *	0.19	TD < 1,2,3, 1 < 3
SDQ-T	8.43	8.15	23.80	6.61	26.88	5.30	32.77	5.12	49.60 *	0.58	TD < 1,2,3,1 < 3

Note. PSI (Parenting Stress Index), PD (parental distress), PCDI (parent-child dysfunctional interaction), DC (difficult child), WFIRS (Weiss Functional Impairment Rating Scale-Parent Form), L (life skills), S (social activities), R (risky activities), SDQ-T (Strengths and Difficulties Questionnaire total score), * $p < 0.007$ (Bonferroni correction for multiple comparison).

Tukey post hoc analyses revealed significant differences between the TD group and the clinical groups on all the variables analyzed in the study; the three scales of parenting stress and children's functional impairments (life skills, social, risky activities, and social difficulties). In addition, scores on parental distress (PD) did not reveal significant differences between the ADHD group and the ASD group. Scores on parent-child dysfunctional interactions (PCDI), risky activities (WFIRS-R), and social difficulties (SDQ-T) revealed significant differences between Profile 1 (low) and 3 (high). Profiles 1 and 2 showed significantly lower scores than Profile 3 on life skills (WFIRS-L). Profiles 2 and 3 showed significantly higher scores than Profile 1 on social activities (WFIRS-L). Finally, post hoc comparison showed that the three profiles revealed significant differences between them for the scale of difficult child (DC).

4. Discussion

The results of this study reveal a significant difference in EF skills between the group of typically developing children and the clinical groups. In fact, the data reveal, for children with ASD and ADHD, deficits in several core domains of EFs, including inhibition, shift, emotional control, planning, organization, monitoring, and working memory skills. In particular, the scores obtained in the working memory and monitoring domains revealed significant differences between the ADHD group and the ASD group, with more severe impairment in ADHD children. These results are in line with previous studies [5,16] that agree that there is greater impairment in EFs in ADHD and ASD children than in TD children.

Moreover, other authors had already highlighted the presence of significant differences between the two clinical groups as well [54,55], but this did not always lead to the same conclusions. For example, in a study by Wang et al. [55], children with ASD reported greater difficulties in visuospatial working memory than ADHD children. On the other hand, however, a study by Happé and colleagues [54] revealed the presence of less severe and persistent EF deficits in ASD than in ADHD; in particular, in planning and monitoring tasks, the ADHD group appeared more impaired than the ASD group. The findings suggest that these differences may be attributable to the different methodologies adopted by the authors to assess these aspects.

On the other hand, the individual differences observed within the clinical groups allowed the classification of the EFs of ASD and ADHD children into three distinct functioning profiles. The clusters made it possible to distinguish the profiles of EFs on the basis of the scores obtained on the questionnaires administered. Profile 1 is characterized by a lower impairment of the children's daily executive functioning. Profile 2, on the other hand, reflects a moderate level of impaired executive functioning. Finally, Profile 3 is character-

ized by more severe deficits in daily executive functioning. Our results show the presence of significant differences between the three clusters in general executive functioning, particularly with regard to the global scores of behavioral, emotional, and cognitive regulation skills, with a greater impairment in Profile 3 than in Profile 2 and Profile 1. Exploring how the different functioning profiles correlated with impairments in other domains of life and parenting stress, this study found significant differences in different domains. Significant differences were recorded between the TD group and the clinical groups for all variables analyzed in the study: the three parental stress scales and the children's functional impairments (life skills, social, risky activities, and social difficulties). Furthermore, no significant differences in parental distress scores were observed between the ADHD group and the ASD group. Raising a child with a neurodevelopmental disorder requires parents to make an extraordinary commitment and exposes them to higher levels of stress than parents of typically developing children [20]. When in a condition also characterized by the presence of EFs malfunction, the risk of parental stress increases [21]. Indeed, the literature shows that impairments in the EFs of ASD and ADHD children correlate with their parents' perceived stress [19,20]. It would appear, therefore, that it is not so much the type of disorder (ASD or ADHD) that has an impact on parental stress, but, rather, the behavioral problems related to children's EFs that foster a condition of parental stress [20].

In particular, the results of this study showed that parents of children with more severe EFs deficits (Profile 3) report higher levels of dysfunctional interactions in the parent-child relationship than those with lesser deficits (Profile 1). Other studies investigating the relationship between EF and parent-child interactions have come to similar conclusions, showing that the quality of perceived interactions between parents and children is significantly associated with performance on executive function tests [56].

Parents of children with low (Profile 1) or moderate (Profile 2) EF impairments attributed better life skills to their children than parents of children with more severe EF impairments (Profile 3). This result is also in line with previous research that recognizes the unique contribution of executive skills in essential aspects of daily life [57]. Impairments in EFs in fact, characterized, for example, by difficulties in inhibition, shift, emotional control, planning, organization, monitoring, and working memory, can impair adaptive behavior and daily living skills [58]. Significant differences were also recorded with regard to social activities, where parents of children with Profile 2 and 3 reported greater impairments than parents with children belonging to cluster 1. Weaknesses in EFs, in fact, can impair the social skills of these children [24], also negatively impacting the quality of relationships [25]. Weaknesses in EFs, in fact, can impair the social skills of these children, also negatively impacting the quality of relationships [25].

Finally, the results of our study also revealed significant differences between the three profiles in relation to parents' perception of their child as "difficult". In general, ASD and ADHD children tend to present high levels of negative affect; this, coupled with the presence of deficits in EFs (e.g., control and shift difficulties) [59], could have an impact on parents' perception of their child's behavior as "more difficult".

These findings fit well into the landscape of research investigating executive functions in children with ASD and ADHD, providing insight into how impairments in EFs in this population may be related to parental stress and impairments of daily living.

Limitations and Further Research

Despite its strengths, this study is not without limitations, such as the moderate sample size, which hinders the ability to draw more generalizable conclusions. Another limitation is the cross-sectional design, which underscores the need for future research involving longitudinal studies. For example, Fossum et al. [60] examined the developmental paths of executive functioning (EF) in individuals with ASD or ADHD, in comparison to typically developing individuals from childhood through young adulthood. The findings revealed that the ASD and ADHD groups generally demonstrated similar levels of maturation on neuropsychological measures and sustained impairments in comparison to the TD

group. This suggests the necessity for support of EF in educational, professional, and social contexts during young adulthood for individuals with ASD and ADHD.

Finally, another limitation is the use of self-report questionnaires to assess children's executive functions. Although these instruments provide valuable information, they may be subject to bias or inaccuracy based on personal perceptions. Future research could include the incorporation of objective measures of EF including, for example, performance-based tasks or neuropsychological assessments to supplement parent/teacher-reported data and provide a more accurate assessment.

Nevertheless, the present study offers interesting insights into the impact that deficits in EFs may have on the daily lives of ASD and ADHD children as well as on parental stress.

Future research could be concerned with exploring potential moderating or mediating variables, such as socioeconomic status, social support, and quality of parenting, which could play a role in the relationship between EFs deficits, daily impairment, and parental stress. This could be useful with a view to structuring interventions aimed at enhancing the EFs of ASD and ADHD children.

5. Conclusions

In conclusion, this study reveals significant differences in EF skills between typically developing children and those with ASD or ADHD, highlighting deficits in inhibition, shift, emotional control, planning, organization, monitoring, and working memory among the clinical groups. ADHD children exhibited more severe impairments in working memory and monitoring compared to ASD children. Variations in EF deficits between ASD and ADHD groups were also noted, possibly due to different assessment methodologies. This study classified children into three EF functioning profiles, with Profile 1 showing lower impairment, Profile 2 moderate impairment, and Profile 3 severe deficits. Significant differences in behavioral, emotional, and cognitive regulation skills were observed across these profiles, with higher impairment correlating with greater parental stress and dysfunctional parent–child interactions. Parents of children with severe EF deficits (Profile 3) reported higher levels of stress and poorer life and social skills in their children compared to parents of children with less severe deficits. This suggests that EF-related behavioral problems, rather than the type of disorder, significantly impact parental stress. This study also found that children with better EF skills had better adaptive behavior and daily living skills, and fewer social difficulties. Limitations include the moderate sample size and cross-sectional design, necessitating longitudinal studies to understand EF developmental trajectories in ASD and ADHD. Future research should incorporate objective EF measures and explore moderating factors like socioeconomic status and social support to better understand EF deficits' impact on daily impairment and parental stress.

The clinical implications of this study can significantly inform educational strategies and caregiving approaches for children with ASD or ADHD, thereby potentially reducing parental stress. By recognizing and addressing the specific EF deficits highlighted—such as inhibition, emotional control, planning, organization, monitoring, and working memory—educators and caregivers can tailor interventions to better support these children. For instance, targeted training and support in areas like working memory and monitoring, particularly for children with ADHD, can help mitigate some of the challenges they face as inattention or hyperactivity/impulsivity. Additionally, understanding the different EF profiles (lower, moderate, and severe impairments) allows for more individualized and effective intervention plans. Educators can implement classroom strategies that cater to each child's unique needs, fostering a more supportive and inclusive learning environment. Caregivers can be provided with resources and strategies to enhance their child's adaptive behavior and daily living skills, thereby reducing the incidence of behavioral problems that contribute to parental stress. Overall, this personalized approach not only supports the child's development but also alleviates parental stress by improving parent–child interactions and reducing the behavioral and social difficulties associated with severe EF deficits.

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Institutional Review Board Statement: The present study follows the statements of the Ethics Committee of the Universitat de València (UV-INV_ETICA-1905517); the approval date was 14 July 2022.

Informed Consent Statement: Informed consent was obtained from all subjects involved in the study. Written informed consent has been obtained from all parents to publish this paper.

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.

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7.2.4. Estudio 4

Pardo Salamanca, A., Gómez, S., Santamarina, C., Pastor, G., Berenguer, C. (2025).

The effectiveness of an online-based psychosocial program for parents of children with neurodevelopmental disorders-a randomized controlled trial. *Child and Adolescent Mental Health. (manuscript accepted)*

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El presente estudio evaluó la eficacia del programa psicosocial en línea INPSYD en familias de niños con TEA y TDAH, con el objetivo de analizar su impacto en el estrés parental, el afrontamiento positivo y el apoyo social, y también explorar los efectos en los niños en áreas como habilidades sociales, funcionamiento ejecutivo, calidad del sueño, dinámica familiar y conductas de aprendizaje, utilizando un diseño de ensayo controlado aleatorizado (RCT). El estudio contó con una muestra final de 82 familias que fueron aleatorizadas y asignadas a dos grupos (42 en el grupo de intervención y 40 en el grupo control activo) cuyos hijos tenían entre 7 y 11 años y contaban con diagnóstico de TEA sin discapacidad intelectual o TDAH (clinicaltrials.gov, NCT06303791).

La intervención se aplicó al grupo experimental a través de 12 sesiones semanales de 90 minutos en formato online sincrónico dirigidas por psicólogos, basadas en modelos de psicoeducación, manejo del estrés, técnicas cognitivo-conductuales y entrenamiento en habilidades sociales y comunicativas.

Todos los participantes fueron evaluados en tres momentos: línea base (T0), post-intervención (T1, 12 semanas) y seguimiento (T2, 6 meses desde la aleatorización), utilizando instrumentos validados como el Parenting Stress Index–Short Form (PSI-SF) para medir estrés

parental, Brief COPE para el afrontamiento positivo, el Duke-UNC Functional Social Support Questionnaire para apoyo social, Strengths and Difficulties Questionnaire (SDQ) para dificultades sociales y conductuales en los niños, BRIEF-2 Family Report para funcionamiento ejecutivo, Sleep Disturbance Scale for Children (SDSC) para problemas de sueño, Weiss Functional Impairment Rating Scale – Parent (WFIRS-P) para funcionamiento familiar y Learning Behaviors Scale (LBS) para evaluar las conductas de aprendizaje.

Los resultados mostraron mejoras estadísticamente significativas en el grupo experimental en comparación con el grupo control en las variables de estrés parental ($p < .01$, $\eta^2_p = 0.29$), habilidades de afrontamiento ($p < .01$, $\eta^2_p = 0.24$) y apoyo social percibido ($p = .025$, $\eta^2_p = 0.10$). Asimismo, se observaron diferencias significativas entre grupos a favor del grupo de intervención en el funcionamiento social infantil, el funcionamiento ejecutivo y en el funcionamiento familiar. No se encontraron diferencias estadísticamente significativas en los problemas de sueño ni en la conducta de aprendizaje. Además, los efectos positivos observados se mantuvieron en la evaluación de seguimiento.

En conjunto, los hallazgos respaldan la eficacia del programa parental INPSYD para mejorar el estrés parental, las estrategias de afrontamiento y los resultados sociales y ejecutivos de los niños, consolidándose como una intervención efectiva para promover el bienestar familiar en contextos de neurodesarrollo.

THE EFFECTIVENESS OF AN ONLINE-BASED PSYCHOSOCIAL PROGRAM FOR
PARENTS OF CHILDREN WITH NEURODEVELOPMENTAL DISORDERS-A
RANDOMIZED CONTROLLED TRIAL

Ana Pardo-Salamanca, Soledad Gómez, Cristina Santamarina, Gemma Pastor, Carmen Berenguer (aceptado 6-10-2025).

ABSTRACT

Background: Neurodevelopmental disorders like autism and ADHD may disrupt family and child functioning. Although well-established psychosocial treatment programs exist, access to these interventions remains limited for many families.

This randomized controlled trial (RCT) primarily evaluates the effectiveness of an online psychosocial program (INPSYD) in improving parental domains (stress, coping, and social support). The secondary aim is to assess its effects on children's domains, including behavior, executive functioning, sleep, and family dynamics.

Methods: This study employed a two-arm, mixed-methods RCT design involving families of children diagnosed with autism or ADHD (mean age 9.28 ± 1.6 ; 81.1% males), (clinicaltrials.gov, NCT06303791). Participants were randomized to either the intervention group or the active control group (a structured, non-therapeutic intervention). Outcomes were collected at baseline (before randomisation), at 12 weeks post-randomisation, and at 6 months follow-up after randomisation.

Results: A total of 82 participants were randomized in February 2024 (42 to the intervention group, 40 to the active control group). At post-intervention, participants in the intervention group scored statistically significantly better than those in the control group on measures of parenting stress ($p < .01$, $\eta^2p = 0.29$), coping skills ($p < .01$, $\eta^2p = 0.24$), and

perceived social support ($p=.025$, $\eta^2p = 0.10$). Between-group comparisons also revealed statistically significant differences favoring the intervention group in child social functioning, executive functioning, and family dynamics. No statistically significant between-group differences were found for sleep problems or learning behavior. These between-group effects were maintained at the follow-up assessment.

Conclusion: The results of this study indicate that the INPSYD parenting program is effective for improved parenting stress, coping skills and children's executive functioning and social-behavioral outcomes in our sample.

Key Practitioner Message:

- Neurodevelopmental disorders like autism and ADHD disrupt family and child functioning. Psychosocial treatments often face limitations.
- This RCT found that the online INPSYD program reduced parenting stress, improved coping skills, and enhanced social support for parents. Children showed better social skills, executive functioning, and family dynamics, with sustained benefits three months after post-intervention.
- Clinicians and policymakers should consider integrating such digital interventions into routine care for families of children with neurodevelopmental disorders, particularly in settings where access to in-person services is limited.

Keywords: Online, Psychosocial intervention; ADHD; ASD; RCT

Introduction

Attention-deficit/hyperactivity disorder (ADHD) and autism spectrum disorder (ASD) are among the most prevalent neurodevelopmental disorders in school-aged children, exerting

significant and long-lasting impacts on affected individuals and their families due to their severity and chronic nature. The diagnostic prevalence of ADHD is estimated to range between 8-11% in children and adolescents aged 5 to 17 years in the United States (Danielson et al., 2018) and reaches 9.92% in Spain within the same age group (Bosch et al., 2022). Conversely, the diagnostic prevalence of ASD has quadrupled over the past decade, with a rate of 1 in 68 children in the United States (U.S. Department of Health and Human Services, 2016). These high prevalence rates underscore the considerable healthcare and educational costs associated with these conditions (Chorozoglou et al., 2015). While ADHD and ASD differ in core symptomatology—ADHD being defined by challenges in attention, hyperactivity, and impulsivity, and ASD by deficits in communication, social interaction, and repetitive behaviors with restricted interests—both disorders share underlying similarities. Neuroscientific research points to genetic predispositions and alterations in brain circuits that affect executive functions, somatic motor functions, dorsal attention, and visual processing, impacting critical processes such as planning, inhibition, decision-making, and working memory (Proal et al., 2013).

Both ASD and ADHD negatively affect various domains of functioning, complicating long-term individual adaptation. In the social and adaptive domains, ADHD is associated with deficits in peer and family interactions, leading to peer rejection due to challenges in sharing, initiating, cooperating, or waiting for turns. These social deficits contribute to long-term emotional difficulties, increased risk behaviors, and impairments in overall functioning (Mrug et al., 2012).

On the other hand, autistic children experience social challenges rooted in limited emotional reciprocity and reduced interest in social interactions (APA, 2013).

Moreover, both disorders are linked to deficits in executive functioning (Barkley, 2011; Pennington & Ozonoff, 1996) and impairments in social cognition processes, such as theory of mind and emotion recognition (Bora & Pantelis, 2016).

Psychosocial interventions based on social learning theory and cognitive-behavioral techniques (CBT) have proven effective in managing symptoms associated with ADHD and ASD, often complementing pharmacological treatments, which tend to show limited efficacy in addressing associated difficulties such as parenting stress or behavioral challenges (Daley et al., 2014). Notably, recent work has emphasized the need to prioritize psychosocial approaches—particularly parent-mediated programs integrating psychoeducation and CBT—as a first-line treatment for school-aged children with neurodevelopmental conditions (Chacko et al., 2024; Young et al., 2020).

Parent training interventions delivered in person have received substantial empirical support from randomized controlled trials (RCTs). However, systematic reviews point to several limitations in this body of literature, including heterogeneity in outcome measures, small and inconsistent sample sizes, and limited long-term follow-up data (Cheng et al., 2023; Conrad et al., 2021; Marquet-Doleac, Biotteau & Chaix, 2024). The effectiveness of these programs is influenced not only by child characteristics (e.g., externalizing behaviors, attention difficulties) but also by parental stress levels and systemic challenges, such as inadequate institutional support (McStay et al., 2014). Furthermore, a growing body of research advocates moving beyond a purely medical model toward a bio-psycho-social framework that recognizes the role of social and contextual factors in shaping outcomes for neurodiverse children and their

families (Hsiao, 2018; Sulla et al., 2023). Despite the availability of evidence-based interventions, many families face significant barriers to access, including geographic distance, scheduling conflicts, and limited availability of services (Danielson et al., 2018; Tan-MacNeill et al., 2021). These limitations have fueled increasing interest in telehealth and online parent-mediated programs.

Recent meta-analyses and reviews demonstrate that digital interventions can be effective, acceptable, and feasible for families of children diagnosed with ASD or ADHD. For instance, Pan, Kuo & Kuo (2023) reported that telehealth-delivered programs improved children's social communication and adaptive behavior. Similarly, Tan-MacNeill et al. (2021) found that internet-based interventions were well-received by families and led to meaningful developmental gains. Florean et al. (2020) confirmed the efficacy of online parenting programs in reducing behavioral problems, and Gonzalez et al. (2023) showed that group-based telehealth training for ADHD was comparable to in-person delivery, with added accessibility benefits.

These findings support the integration of digital delivery formats in parent training programs, particularly as a means to address logistical and structural barriers. However, more high-quality trials are needed to assess their efficacy in diverse populations and over time.

The current study responds to this gap by evaluating a fully online, synchronous psychosocial program specifically designed for families of children diagnosed with ASD and ADHD. While established in-person programs such as *The Incredible Years* (Webster-Stratton, Dababnah & Olson, 2018) have demonstrated effectiveness in early childhood behavioral outcomes, this trial extends the scope by targeting both parental well-being and broader child functioning using a multicomponent, digital format.

The primary aim of this randomized controlled trial (RCT) is to assess the efficacy of the online program—delivered via live video sessions—in improving parental outcomes, specifically stress, coping strategies, and social support. The secondary aim is to explore its impact on child outcomes, including social skills, executive functioning, sleep quality, family relationships, and learning behaviors.

Outcomes are evaluated immediately after the intervention (T1: post-intervention) and at follow-up (T2), conducted six months after randomization, which corresponds to three months post-intervention.

To our knowledge, this is the first study to examine the impact of a fully online, synchronous, multicomponent psychosocial program targeting both parental and child domains in families of autistic children and children diagnosed with ADHD. By integrating psychoeducation, stress management, CBT tools, and social communication training, this study contributes to the development of more comprehensive and accessible interventions for neurodiverse populations.

Methods

Design

This study was a two-arm, single-blinded, parallel RCT design involving families of children diagnosed with autism or ADHD.

The trial was registered at [clinicaltrials.gov](https://clinicaltrials.gov/study/NCT06303791) with the identifier NCT06303791 (<https://clinicaltrials.gov/study/NCT06303791>).

Participants

The present study enrolled 90 families of boys and girls with ASD without intellectual disabilities and ADHD over a 1.5-year period (2021-2023), with an age range between 7 and 11 years (47 autistic children without intellectual disabilities, and 43 children with ADHD). The selected age range reflects the developmental period during which children with autism or ADHD typically begin to face increasing demands in executive functioning, social interaction, and behavioral regulation. This range also aligns with prior research on parent-mediated interventions (Marquet-Doleac et al., 2024). Families and children were recruited through specialized psychoeducational centers in Spain, which distributed information about the study both on-site and via their official websites. This approach enabled interested families to learn about the study and choose to participate voluntarily.

The inclusion criteria were: 1) to have a clinical diagnosis of either autism spectrum disorder (ASD) or attention-deficit/hyperactivity disorder (ADHD). Diagnosis of ASD according to Autism Diagnostic Interview—Revised (ADI-R; Rutter, Le Couteur, & Lord, 2006), and/or the Autism Diagnostic Observation Schedule, Generic (ADOS G; Lord, Rutter, DiLavore, & Risi, 2000) confirmed by child psychologist or ADHD any presentation according to the Diagnostic and Statistical Manual of Mental Disorders, 5th Edition DSM-5; APA, (2013)] for parents and teachers; 2) IQ > 80 according to the K-BIT (Kaufman & Kaufman, 2000); 3) age of children between 7 and 11 years, either sex, 4) informed consent of the parents and the children available; 5) parents' age greater than or equal to 18 years, 6) responsibility and legal capacity in parents and internet access. Exclusion criteria included children with any medical or psychiatric condition, an IQ of less than 80, motor or sensorial deficits, and children whose families had

received any psychosocial treatment before. Eight families were excluded after applying the eligibility criteria.

Intervention

The intervention program and evaluation were conducted by expert psychologists specializing in neurodevelopmental disorders. The program's content was based on three main approaches, each of which had separately demonstrated evidence in the treatment of these neurodevelopmental disorders: psychoeducation and stress management, cognitive-behavioral techniques, and social and communication skills techniques (Dahl et al., 2020; DuPaul et al., 2019; Tan-MacNeill et al., 2021).

Parent intervention sessions were conducted in a synchronous virtual format to maximize program adherence and overcome logistical barriers related to physical distances, work commitments, and childcare. The intervention involved online sessions conducted exclusively with parents. Psychologists instructed them in specific behavioral techniques to be applied at home with their children. Sessions combined guidance and supervision, allowing psychologists to explain strategies, monitor parental understanding, and provide feedback to support effective implementation.

Specifically, the psychosocial intervention group consisted of five successive groups of 8 to 10 families, receiving 12 weekly sessions lasting 90 minutes each. Session integrity was ensured by creating a digital manual explicitly describing all procedures used in the intervention program.

The active control group participated in 12 weekly 90-minute online sessions designed to facilitate open discussion and peer support in a non-directive format. Importantly, this was not

treatment as usual, as no psychotherapy, psychoeducation, or specific psychosocial techniques were provided. The therapist's role was limited to guiding the conversation without delivering any therapeutic content.

The sessions were conducted by the same two individuals from the research team in both groups. Additionally, the integrity of the sessions was ensured through the use of a structured manual that clearly outlined all procedures and content to be delivered during the intervention. All sessions were recorded, and an independent team member reviewed session recordings and therapist adherence logs following a checklist to verify that each group received a consistent and equivalent set of information.

Procedure

Before the first intervention session, parents were provided with a tutorial for the video conferencing platform (Zoom, <www.zoom.us>) to familiarize themselves with the software and minimize potential risks. Participants could access online meetings through a hyperlink or by entering the provided ID and password to join the session. Continuous contact via phone and virtual means was maintained with families to provide immediate assistance.

Each family attended 3 assessment sessions in person in a room of the faculty of Psychology, of approximately 40-45 minutes each. Assessment took place at: (T0) baseline/pre-intervention (immediately before randomisation), (T1) post-intervention at 12 weeks after randomisation, and (T2) follow-up at 6 months after randomization.

Outcomes

Primary Outcomes-Parental domains

The primary outcomes were the effects of the intervention program on three parental domains as parenting stress, positive coping and social support. The parenting stress was measured using the Parenting Stress Index – *Short Form* (PSI-SF; Abidin, 1995; adapted to Spanish by Díaz-Herrero et al., 2011). The PSI-SF is a self-report questionnaire of 36 items that measures total parenting stress. The 36 items are distributed in three subscales of 12 items each (parental distress (e.g, “I feel trapped by my responsibilities as a parent”), parent–child dysfunctional interaction (e.g, “Sometimes I feel my child doesn't like me and doesn't want to be close to me”), and difficult child (e.g.“My child gets upset easily over the smallest thing”)) rated on a five-point Likert-type response scale. The total score of PSI-SF completed by parents was used in this study. The PSI-SF presents good psychometric properties, and it is an effective measure for use with high-risk families (Barroso et al., 2016). The internal consistency for the total scale was high in our sample (Cronbach’s $\alpha = 0.92$).

The positive coping was measured using the *Brief COPE* (Carver, Scheier, & Weintraub, 1989; Spanish adaptation, Landero, & González, 2010), a 28-item parent report instrument that measures the usage frequencies of maladaptive and adaptive coping strategies. Items are rated on a four-point rating scale ranging from ‘I haven’t been doing this at all’ to ‘I’ve been doing this a lot’. In this study, the Brief COPE was analyzed using one domain (Positive coping (e.g. “I’ve been trying to see it in a different light, to make it seem more positive”)) as derived in Hastings et al. (2005). Positive coping included the Brief COPE items for the use of humour and positive reframing, and one item each from the acceptance and emotional social support scales. Internal consistency evaluations of the positive coping domain were adequate, with Cronbach’s coefficient alpha of 0.83 (Morán et al., 2010).

The social support was measured using the *Social Functional Support Questionnaire Duke-UNC* (Broadhead et al., 1988; Spanish adaptation; Bellón & Luna del Castillo, 1996). This questionnaire was filled out by parents and measures the perception of the availability of help from family and friends in difficult situations, as well as the ease of communication with them (e.g. “I receive invitations to go out and do things with other people”). The instrument comprises 11 questions with a Likert-type scale ranging from 1 = “much less than I would like” to 5 = “as much as I would like”. Scores of less than 32 indicate low perceived social support. The present study used the direct total score. The internal consistency was good (Cronbach’s $\alpha = 0.83$) (Bellón et al., 1996).

Secondary Outcomes-Children domains

Secondary outcomes assessed included children’s domains: a) Social and behavioral difficulties as measured by the *Strengths and Difficulties Questionnaire* (SDQ; Goodman, 1997; Spanish adaptation by Rodríguez-Hernández et al., 2012). The SDQ was filled out by parents to rate a wide range of psychopathological symptoms and prosocial behavior in children and adolescents between 4 and 16 years old. The questionnaire consists of five subscales (emotional symptoms, hyperactivity/inattention, conduct problems, peer problems and prosocial behaviour). A total difficulties score (SDQ total (e.g. “Often has temper tantrums or hot tempers”, “Rather solitary, tends to play alone”)) comprising the first four subscale scores indicates the overall extent of a child's psychopathological problems. Each of the five scales incorporates 3 response alternatives (not true, somewhat true, very true). Higher scores indicate more difficulties. The SDQ presents adequate psychometric properties with adequate reliability (between 0.73-0.76) (Goodman, 1997; Rodríguez-Hernández et al., 2012);

b) Effect on executive functioning as measured by *The Behavioral Rating Inventory of Executive Function* (BRIEF-2 Family Report; Gioia, Isquith, Guy & Kenworthy, 2015). The BRIEF is a questionnaire used to assess daily executive functions. It consists of 63 items that are rated on a frequency scale, ranging from "never (1)" to "frequently (3)". For this study, the Global Executive Composite (GEC) representing overall executive functioning was utilized (e.g. "Does not realize that certain actions bother others", "Has trouble getting started on homework or tasks"). Raw scores are converted into age-corrected T-scores, with a score greater than 70 on any of the scales indicating clinically significant difficulties. The BRIEF-2 Family has demonstrated high internal consistency for the Index and Composite scores, with Cronbach's alpha ranging from 0.90 to 0.97 (Gioia et al., 2015); Effect on children's sleep problems, as measured by the Sleep Disturbance Scale for Children (SDSC; Bruni et al., 1996; Spanish adaptation by Pagerols et al., 2023). The SDSC is a 26-item parent-reported questionnaire designed to assess sleep disturbances in children aged 6 to 16 years. Each item is rated on a 5-point scale, ranging from "never" to "always," resulting in a continuous variable between 26 and 130. Higher scores indicate more severe sleep disturbance symptoms. The first two items measure total sleep time and latency to sleep onset, while the remaining items assess the frequency of sleep-related behaviors across six subscales. The total sleep disturbances score is obtained by summing scores across all subscales (e.g. "After waking up in the night, the child has difficulty falling asleep again"). The scale has good internal consistency, with a reliability coefficient of $\alpha = 0.79$ (Bruni et al., 1996); d) Effect on family functioning as measured by *The Weiss Functional Impairment Rating Scale-Parent Form* (WFIRS-P) (Weiss et al., 2007). The WFIRS-P is a 50-item scale that requires parents to rate the impact of their child's emotional or behavioural problems on six separate domains: Family, school and learning, life skills, child's

self-concept, social activities and risky activities. Each item is rated on a four-point scale from 0 ('never or not at all') to 3 ('very often or very much') or rated as 'not applicable'. The mean of all scored items for each domain was computed. The score of the family was used in this study (e.g. "Causing fighting in the family"). The scale has been psychometrically validated with an internal consistency Cronbach's $\alpha = 0.80$ (Gajria et al., 2015) and effects on children's learning behavior as measured by *The Learning Behaviors Scale* (LBS; McDermott, Leigh, & Perry, 2002). The LBS is a teacher-report questionnaire designed to measure student behaviors related to effective and efficient learning. The Learning Behaviors Scale contains 29 items, six items with positive wording and the remaining items with relatively negative wording in order to reduce response sets. Items are rated on a 3-point Likert scale (0 = Does not apply, 1 = Sometimes applies, 2 = Most often applies). High scores indicate good learning behavior, and low scores are interpreted as faulty learning behavior. Based on the manual, 25 of the 29 items were used to produce a Total score and four subscales (e.g. "Adopts a don't-care attitude to success or failure"). Total and subscale raw scores are converted to normalized T scores ($M = 50$, $SD = 10$). The internal consistency coefficient is high for the total score ($\alpha = 0.93$) (Canivez & Beran, 2011; McDermott et al., 2002).

Sample Size

Sample size was calculated using a priori Sample Size Calculator for one-way ANOVA using G*power v. 3.1.9.4 setting the size of Type I error (significance level) of 0.05 (α) and the power of the study at 80 %, anticipating an effect size (Cohen d) of 0.8 (Evans et al., 2018; Tan-MacNeill et al., 2021).

Randomisation

This randomized controlled trial studied the efficacy of an Online-based psychosocial intervention (INPSYD) compared with an active control group for 12 weeks, in parents of children diagnosed with ASD and ADHD. A single-blind procedure was implemented in this study. Although the research team did not disclose group allocation to participants, it was not possible to fully blind them, as the differences between the structured therapeutic sessions and the non-directive support groups were likely recognizable. However, the researchers responsible for data collection and entry were blinded to group assignments to minimize potential bias.

Families/children meeting the inclusion criteria were randomly assigned to the experimental and control groups. Block randomization was applied to each of the diagnostic groups (ASD, ADHD) to ensure that they were of approximately similar size (1:1 ratio) in the treatment and control conditions. After determining the size of each block in the sample (#ASD and #ADHD) the treatment allocation of each participant was done randomly. Participants in the intervention and control condition were instructed to complete the intervention. Although recruitment occurred progressively, randomization was conducted in a single batch once the target sample size was achieved, with eligibility reconfirmed immediately prior to allocation. Finally, 82 families were randomly assigned (42 intervention group and 40 control group) using a computerized program for simple randomization.

Data analysis

Statistical analyses were performed using the Statistical Package for the Social Sciences (SPSS) software, version 26.00 (SPSS Inc., Chicago, IL, USA). The distribution of the variables was analyzed, as well as their fit to the normal distribution curve, by applying Kolmogorov-

Smirnov tests. Both the intervention group and the control group were assessed at baseline and post-intervention. To assess for differences in parents' outcomes (stress level, positive coping and social support) and children's outcomes (SDQ, BRIEF, Sleep problems, WFIRS-Family and LBS) between intervention and control groups from pre- to post-intervention as well as at follow-up, two-way mixed analysis of variances (ANOVAs) were conducted with group (intervention or control) as the between-subjects factor and time (pre- or post-intervention, follow-up) as the within-subjects factor. To control for type I error associated with the analysis of multiple primary outcomes, the Holm–Bonferroni correction was applied. Partial eta squared (η^2_p) was used as a measure of effect size; values of less than 0.06 are considered small, between 0.06 and 0.14 are considered medium, and above 0.14 are considered large. Effect sizes of change were also calculated within each group from baseline/pre-intervention to post-intervention and follow-up periods using Cohen's *d*. As Cohen (1988) suggested, $d = 0.2$ is considered a small effect size, 0.5 a medium effect size, and 0.8 a large effect size. There were no missing data in this study; all participants completed the assessments at baseline/pre-intervention, post-intervention, and follow-up, with no item-level omissions or attrition across time points.

Results

The participant inclusion process is shown in the flowchart (Figure 1) following the CONSORT checklist (Montgomery et al., 2018). A total of 82 participants were randomized in February 2024 (42 to the intervention group, 40 to the active control group). Table 1 provides the sample's sociodemographic baseline characteristics.

-Figure 1-

-Table 1-

The primary aim was to evaluate the efficacy of an online-based psychosocial program in improving parental domains (primary outcomes). Specifically, stress levels, coping skills, and social support among parents of children with neurodevelopmental disorders (ASD and ADHD).

Regarding parent-related primary outcomes, ANOVA results revealed statistically significant between-group differences at post-intervention, with the intervention group reporting statistically significant lower levels of total stress ($F_{(1,80)} = 33.75; p < .01; \eta^2p = 0.29$), and higher levels of positive coping ($F_{(1,80)} = 25.66; p < .01; \eta^2p = 0.24$) and perceived social support ($F_{(1,80)} = 9.63; p = .025; \eta^2p = 0.10$) compared to the control group. At follow-up, these differences were maintained, with the intervention group showing statistically significantly lower stress levels ($F_{(1,80)} = 32.58; p < .01; \eta^2p = 0.29$) and statistically significantly greater positive coping ($F_{(1,80)} = 30.02; p < .01; \eta^2p = 0.27$) and social support ($F_{(1,80)} = 7.06; p = .03; \eta^2p = 0.08$) than the control group (see Table 2).

Although within-group changes were not the primary focus, effect sizes for the intervention group indicated substantial improvements in total stress ($d = 1.49$ at post-intervention; $d = 1.50$ at follow-up), positive coping ($d = -1.52$ at post-intervention; $d = -1.49$ at follow-up), and social support ($d = -0.97$ at post-intervention; $d = -0.84$ at follow-up) (see Table 3). After applying the Holm–Bonferroni adjustment, all reported p-values remained statistically significant, supporting the robustness of the findings.

The secondary aim was to examine changes in child-related domains (secondary outcomes), such as social challenges, executive functioning, sleep quality, family relationships, and learning behaviors.

Statistically significant between-group differences were observed at post-intervention for several child-related secondary outcomes (see Table 2). Specifically, children in the intervention group had statistically significant lower scores on the SDQ total difficulties ($F_{(1,80)} = 10.38$; $p = .025$; $\eta^2p = 0.11$), BRIEF executive function, ($F_{(1,80)} = 43.53$; $p < .01$; $\eta^2p = 0.35$) and WFIRS family impact scales ($F_{(1,80)} = 11.47$; $p = .021$; $\eta^2p = 0.12$) compared to the control group. These between-group differences remained statistically significant at follow-up: the intervention group showed fewer social-behavioral difficulties ($F_{(1,80)} = 10.96$; $p = .021$; $\eta^2p = 0.12$), reduced impairments in executive functioning ($F_{(1,80)} = 39.45$; $p < .01$; $\eta^2p = 0.33$), and statistically significant lower levels of family-related difficulties ($F_{(1,80)} = 10.65$; $p = .025$; $\eta^2p = 0.11$) relative to the control group. These findings suggest that the INPSYD digital-based intervention was associated with greater improvements in these child outcomes over time compared to the control group.

Although within-group effect sizes in the intervention group were large for SDQ total difficulties ($d = 0.90$ at post-intervention, $d = 0.91$ at follow-up), BRIEF executive functions ($d = 2.00$, $d = 1.90$), and WFIRS family impact ($d = 0.97$, $d = 0.80$), the primary focus remains on these observed between-group effects (see Table 3). No statistically significant between-group differences were found for sleep problems or learning behavior (LBS) at either post-intervention or follow-up, and the associated effect sizes were small.

-Table 2-

-Table 3-

Discussion

The aim of this study was to analyze the efficacy of the INPSYD program in families of children with neurodevelopmental disorders (ASD and ADHD). Overall, the intervention program had a positive impact on most of the areas considered in this study.

Regarding parent outcomes, statistically significant improvements were observed in the intervention group compared to the control group. Parents in the intervention group reported a substantial reduction in parenting stress and notable increases in the use of positive coping strategies and perceived social support at post-intervention and follow-up. These improvements demonstrated large effect sizes, particularly for parenting stress and positive coping. These results align with findings from other studies reporting statistically significant benefits of psychosocial interventions. For instance, Yang et al. (2024) found that such interventions effectively help mothers reduce emotional burnout, lower the risk of depression, increase stress awareness, and enhance coping strategies and resources, particularly for chronic conditions like ADHD and autism. Similarly, Marquet-Doleac et al. (2024) highlighted the positive effects of behavioral parent training on parental stress, feelings of efficacy, and reductions in negative educational behaviors. However, their findings regarding overall parental stress revealed mixed outcomes, suggesting variability across studies.

Other research underscores the value of combining behavioral training with problem-solving strategies to alleviate parenting stress. Merriman, Burke, and O'Reilly (2020) emphasized that providing parents with accurate, factual information about ASD statistically

significantly reduced stress and anxiety. Parents often reported that gaining a better understanding of their child's behavior through psychoeducation provided relief and a sense of empowerment.

Conversely, some studies report inconsistent results regarding the impact of psychoeducation alone. For example, Dahl et al. (2020) noted that none of the reviewed studies demonstrated significant effects of psychoeducation on parenting stress. They argued that psychoeducation often delivers diagnosis-specific information, such as details about ADHD, but fails to address broader issues, such as daily functioning or strategies for managing the general stress of parenting a child with attention and behavioral challenges. This narrow focus may account for the inconsistent outcomes associated with psychoeducational interventions. These findings emphasize the necessity of integrating psychoeducation with broader support mechanisms, such as stress management training and problem-solving strategies, to comprehensively address the complex challenges faced by parents of children with neurodevelopmental disorders.

Statistically significant improvements were observed in children's behavioral and executive functioning, as measured by the Strengths and Difficulties Questionnaire (SDQ), Behavior Rating Inventory of Executive Function (BRIEF), and WFIRS family score. The intervention group showed reduced social-behavioral problems, enhanced executive functioning, and fewer family impairments compared to the control group at follow-up. These findings underscore the INPSYD program's effectiveness in addressing child-related outcomes that directly influence family dynamics. However, no statistically significant changes were observed

in children's sleep or learning behavior, suggesting a more targeted impact on specific developmental domains.

These results align with prior studies highlighting the effectiveness of psychosocial interventions in reducing behavioral problems and improving adaptive skills in children with neurodevelopmental disorders (Chacko et al., 2024; Yang et al., 2024). Improvements in executive functioning, a key challenge for children with ADHD and autistic children, are particularly critical, as they impact academic performance, emotional regulation, and family relationships (Chesterfield et al., 2021). The program's outcomes align with similar interventions targeting cognitive and self-regulatory skills (Evans et al., 2018).

Contrarily, the lack of statistically significant improvements in sleep and learning behavior diverges from studies like Corkum et al. (2016), which reported statistically significant sleep improvements through behavioral interventions and psychoeducation. The absence of sleep-focused content in INPSYD likely explains these results. Similarly, modest effects on academic and learning outcomes reported in other studies (DuPaul et al., 2019) reflect the need for individualized and specialized learning interventions that were beyond the scope of this program.

Technology offers a promising mechanism for improving access to evidence-based treatments. Digital and synchronous interventions, particularly those implemented during and after the COVID-19 pandemic, have demonstrated effectiveness in overcoming logistical barriers to care while enabling personalized treatment delivery (Tan-MacNeill et al., 2021). Such approaches could enhance both efficiency and accessibility for families of children with neurodevelopmental disorders.

Given the chronic nature of ASD and ADHD symptoms, treatment strategies must address not only the child but also the broader family, school, and community contexts. Psychosocial programs incorporating psychoeducation, self-regulation strategies, cognitive-behavioral techniques, and social communication skills are essential for promoting socio-adaptive behaviors (Ferrin et al., 2014; Gosling et al., 2022). Moving forward, it is crucial to develop evidence-based methods that optimize treatment access and fidelity while evaluating the cost-effectiveness of psychosocial interventions (Dahl et al., 2020; Sampaio et al., 2024).

Limitations and further research

This study has several limitations that should be addressed in future research. The small, homogenous sample, primarily drawn from similar socioeconomic backgrounds, limits the generalizability of findings. Including larger, more culturally and socioeconomically diverse samples could provide a more comprehensive understanding of the program's effectiveness. A key limitation of this study is the relatively small sample size, which may reduce statistical power and increase the risk of Type II errors. Although our sample size is comparable to other studies (Pan et al., 2023), it nonetheless limits the generalizability of the findings. Future studies should aim to replicate these findings in larger samples.

The reliance on parent-reported measures introduces potential bias or social desirability effects. Incorporating objective assessments, such as teacher reports, observational data, or physiological markers, would enhance the validity of the results. Additionally, the follow-up offered valuable insights into short-term sustainability but did not assess long-term outcomes. Extending follow-up periods could better evaluate the intervention's durability and the need for booster sessions or additional support. A further limitation of the present study is that it did not

evaluate the individual effects of each intervention component—namely, psychoeducation and stress management, cognitive-behavioral techniques, and social and communication skills training. Although examining each component separately, as well as in combination, would offer valuable insight into their specific contributions, this was not the focus of the current research. Future research could adopt designs such as multiple baseline approaches to disentangle the effects of each module and better understand their individual and combined impact.

Lastly, as a digital intervention, the program assumes access to stable internet and technology, which may not be accessible to all families, especially those in underserved areas. Moreover, no formal feasibility study was conducted prior to the trial, underscoring the need for future research to assess the implementation of such interventions in populations with limited technological resources. Also, future research should consider collecting qualitative data on participants' engagement and satisfaction with the intervention. Although not within the scope of the present study, such information would offer valuable insights into implementation and user experience.

Conclusion

The findings from this study demonstrate the efficacy of the online-based INPSYD program in improving outcomes for both parents and children in families affected by neurodevelopmental disorders. Despite some limitations, the large effect sizes and sustained benefits observed at follow-up highlight the potential of such programs to fill critical gaps in the provision of psychosocial interventions. Future research should aim to build on these findings by addressing the identified limitations and expanding the scope of the program to target a broader range of outcomes. By doing so, digital interventions like INPSYD could play a pivotal role in enhancing the well-being of families facing the challenges of neurodevelopmental disorders.

Ethical Consideration

The informed consent was appropriately obtained from parents. The present study was conducted in accordance with the guidelines of the Ethics Committee of the Universitat de València, with approval obtained in 2021 (UV-INV_ETICA-1905517).

Data Availability

The dataset and SPSS analysis syntax have been uploaded to a permanent Zenodo repository Link (<https://zenodo.org/records/15465144>) and will be made publicly available upon acceptance of the manuscript.

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Credit authorship contribution statement

Conceptualization and study design (**CB, AP**). Formal analysis and interpretation of the data (**SG, GP, CB**). Assessment and supervision of data collection (**AP, SG, CB, GP, CS**). All authors contributed to reviewing the analysis and editing the manuscript prior to submission.

Declaration of Conflicting Interests

The author(s) declared no potential conflicts of interest with this article's research, authorship, and/or publication.

Table 1. Demographic Characteristics

	Intervention group (n=42) Mean (SD)/n%	Control group (n=40) Mean (SD)/n%
Mother`s age	42.22 (4.96)	40.03 (4.17)
Parents age	43.15 (4.81)	42.83 (4.22)
Civil status		
Married/Cohabit	36 (85.7%)	33 (82.5%)
Single/Divorced	6 (14.2%)	7 (17.5%)
Education		
Elementary school	24 (57.1%)	20 (50%)
High school	8 (19.0%)	11 (27.5%)
University education	10 (23.8%)	9 (22.5%)
Professional status		
Skilled jobs	14 (33.3%)	12 (30%)
Unskilled jobs	16 (38.1%)	13 (32.5%)
Unemployed	12 (28.5%)	15 (37.5%)
Children` age	9.21(1.53)	9.35 (1.73)
IQ	97.53 (8.05)	100.04 (10.37)
Sex (n% boys)	38 (90.4%)	35 (87.5%)
Medication (n% yes)	31 (73.8%)	22 (55%)
ADHD children	22 (52.3%)	20 (50%)
ASD children	20 (47.6%)	20 (50%)

ADHD (attention deficit hyperactivity disorder), ASD (autism spectrum disorder), SD (Standard deviation)

Table 2. Mix design ANOVA for Outcome Measures

Variables	Intervention group (n=42)						Control group (n=40)						Group Statistics			
	Pre-intervention		Post-intervention		Follow up		Pre-intervention		Post-intervention		Follow up		Pre-post		Pre-follow	
	M	SD	M	SD	M	SD	M	SD	M	SD	M	SD	F _(1,80)	η^2_p	F _(1,80)	η^2_p
Parents																
T Stress	119.95	18.82	94.19	14.07	93.95	14.87	119.03	20.88	118.13	18.13	117.25	17.85	33.75**	.29	32.58**	.29
P Coping	8.67	3.45	13.76	3.90	13.69	3.49	9.85	3.07	10.43	3.05	10.57	3.00	25.66**	.24	30.02**	.27
SSupport	28.93	11.73	39.62	10.15	38.14	10.63	29.03	11.88	28.13	10.52	28.02	10.51	9.63*	.10	7.06*	.08
Children																
SDQ-Tot	26.17	5.69	20.67	6.64	20.62	6.38	25.30	5.88	24.95	5.84	24.97	5.81	10.38*	.11	10.96*	.12
BRIEF-T	76.88	6.40	58.62	10.09	60.07	8.70	75.93	9.32	76.23	9.46	74.95	8.44	43.53**	.35	39.45**	.33
Sleep p	58.02	18.07	58.60	18.30	58.73	18.19	58.13	18.36	54.45	17.56	56.65	17.75	1.02	.01	1.11	.01
Wifirs-F	14.69	6.29	9.43	3.99	10.00	3.96	13.93	5.89	13.70	6.09	13.85	5.56	11.47*	.12	10.65*	.11
LBS	24.60	8.26	25.48	7.28	25.26	6.80	25.35	7.72	25.33	7.85	25.22	7.62	0.17	.00	.13	.00

T Stress (Total Stress), P Coping (Positive coping), SSsupport (Total Social Support), SDQ (Total Strengths and difficulties questionnaire), BRIEF-T (Global Executive Composite index), Sleep p (total sleep problems), Wifirs-F (Wifirs family subscale), LBS (Learning behavior scale)

* $p < .05$; ** $p < .01$

Table 3. Effect Sizes of Change for Outcome Measures

	Intervention group (n= 42)				Control group (n=40)			
	Pre-post		Pre-Follow		Pre-post		Pre-Follow	
Parents	Mean dif. Cohen d [95% CI]							
T Stress	1.49	[0.85,2.12]	1.50	[0.87,2.13]	0.05	[-0.48,0.58]	0.10	[-0.42,0.63]
P Coping	-1.52	[-2.19,-0.85]	-1.49	[-2.11,-0.88]	-0.17	[-0.75,0.40]	-0.21	[-0.72,0.29]
SSupport	-0.97	[-1.73,-0.22]	-0.84	[-1.61,-0.07]	0.08	[-0.65,0.82]	0.09	[-0.67,0.85]
Children								
SDQ-Tot	0.90	[0.31,1.50]	0.91	[0.32,1.51]	0.06	[-0.51,0.63]	0.05	[-0.51,0.61]
BRIEF-T	2.07	[1.23,2.91]	1.90	[1.15,2.66]	0.03	[-0.72,0.65]	0.11	[-0.51,0.73]
Sleep p	-0.03	[-0.52,0.46]	-0.04	[-0.53,0.44]	0.20	[-0.30,0.71]	0.20	[-0.29,0.70]
Wifirs-F	0.97	[0.34,1.61]	0.80	[0.27,1.46]	0.04	[-0.55,0.64]	0.02	[-0.55,0.58]
LBS	-0.11	[-0.73,0.49]	-0.08	[-0.67,0.50]	0.03	[-0.62,0.60]	0.02	[-0.58,0.62]

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8. Discusión y conclusiones

La crianza de un niño o una niña con un trastorno del espectro autista (TEA) o con un trastorno por déficit de atención e hiperactividad (TDAH) constituye una experiencia especialmente demandante, caracterizada por elevados niveles de estrés parental y por la necesidad constante de adaptar estrategias educativas y emocionales ante las exigencias del entorno. Estos desafíos suelen intensificarse por la escasez de recursos materiales y psicológicos con los que cuentan las familias, tales como el tiempo, el dinero o la energía, dificultando su capacidad de respuesta frente a las demandas cotidianas derivadas del trastorno (Myers et al., 2009).

Diversos estudios han mostrado que las madres de niños con TEA o TDAH experimentan niveles significativamente más altos de estrés parental que las madres de niños con desarrollo típico, evidenciando una carga emocional y psicológica superior asociada a la gestión del comportamiento y las necesidades específicas de sus hijos (Arias-Mera et al., 2023; Craig et al., 2016; Gargaro et al., 2011; Hutchison et al., 2016; Mannion & Leader, 2024). Los resultados obtenidos en el primer estudio de esta investigación confirmaron esta tendencia: las madres de niños con autismo sin discapacidad intelectual y de niños con TDAH presentaron niveles de estrés parental más elevados en comparación con las madres del grupo control. Además, las madres de los grupos clínicos percibieron un menor apoyo social y mayores dificultades en las áreas emocionales, conductuales y del sueño de sus hijos, en contraste con las madres de niños con desarrollo típico. No obstante, no se identificaron diferencias estadísticamente significativas entre los grupos clínicos en la percepción del estrés parental, lo que sugiere que, a pesar de las particularidades de cada trastorno, las demandas parentales y emocionales que generan ambos perfiles comparten un grado similar de impacto en la experiencia familiar.

Estos hallazgos se alinean con la literatura previa que señala paralelismos notables entre el funcionamiento social y conductual de los niños con TEA y TDAH, así como con los efectos que estas características tienen en la dinámica parental (Arias-Mera et al., 2023; Craig et al., 2016). La coexistencia de dificultades de regulación emocional, impulsividad y déficits en las habilidades sociales puede generar un contexto cotidiano de alta exigencia, donde los padres deben realizar un esfuerzo constante para manejar la conducta, anticipar reacciones y promover la autonomía de sus hijos (Mannion & Leader, 2024).

Asimismo, los resultados del primer estudio sugirieron que el apoyo social desempeñó un papel mediador fundamental en la relación entre el estrés parental y las dificultades emocionales de los hijos. Las madres que percibieron mayores niveles de apoyo mostraron menores niveles de estrés y una mejor adaptación emocional, lo cual coincide con las conclusiones de investigaciones previas que destacan la función amortiguadora del apoyo social frente al impacto del estrés familiar (Schiltz et al., 2022; Weinberg et al., 2021). Sin embargo, en el grupo de madres de niños con TEA se hallaron asociaciones adicionales entre el estrés parental y las alteraciones conductuales y de sueño de sus hijos, lo que sugiere que la naturaleza de las demandas propias del autismo podría tener un efecto diferencial sobre el bienestar de las madres. Este patrón coincide con lo señalado por Mannion y Leader (2024), quienes apuntaron que los problemas de sueño y comportamiento en los niños con TEA constituyen factores de especial peso en la vivencia del estrés parental.

En contraposición, en el grupo de madres de niños con TDAH no se identificaron correlaciones significativas entre el estrés parental y las variables mencionadas. Este hallazgo podría atribuirse al tamaño limitado de la muestra o a la heterogeneidad observada en los estudios previos sobre este tema (Martín et al., 2019; Theule et al., 2013). Aun así, el conjunto de

la evidencia converge en la relevancia del apoyo confidencial —entendido como la existencia de personas de confianza con quienes compartir preocupaciones y obtener soporte emocional— como predictor más significativo del bienestar parental (Benson, 2012, 2014; Craig et al., 2016; Riany & Ihsana, 2021). En este sentido, contar con una red de apoyo estable y empática constituye un factor protector clave frente a las exigencias de la crianza de niños con TEA o TDAH.

El segundo objetivo de la presente investigación (Estudio 2) se centró en analizar los perfiles de afrontamiento utilizados por las madres de niños con TEA y TDAH, con el fin de identificar patrones diferenciales en sus estrategias de manejo del estrés. Los resultados obtenidos mostraron tres perfiles principales: afrontamiento adaptativo, afrontamiento evitativo y bajo afrontamiento. Estos hallazgos son congruentes con los modelos teóricos clásicos de afrontamiento que diferencian entre estrategias centradas en el problema y estrategias centradas en la emoción (Hall, 2012). En particular, el perfil adaptativo, caracterizado por un uso predominante de estrategias positivas y centradas en la resolución de problemas, se asoció con menores niveles de estrés parental y mayor percepción de apoyo social. Este patrón confirma los resultados de estudios anteriores que han vinculado el afrontamiento positivo con un mayor bienestar psicológico, una mejor percepción de competencia parental y una reducción del malestar (Pepperell et al., 2018; Suen et al., 2021).

Por el contrario, los perfiles de afrontamiento de evitación y bajo afrontamiento —definidos por el uso de estrategias disfuncionales como la negación o el distanciamiento emocional— se relacionaron con un incremento del estrés parental, una percepción reducida del apoyo social y mayores dificultades conductuales y de sueño en los hijos. Estos resultados refuerzan la evidencia previa que vincula las estrategias de afrontamiento disfuncionales con un

aumento del estrés y un deterioro en el funcionamiento familiar (Hastings et al., 2005; Benson, 2014; Craig et al., 2020; Jurek et al., 2024). De acuerdo con estos hallazgos, las madres que adoptan estilos de afrontamiento menos eficaces presentan mayores dificultades emocionales y parentales, y estas estrategias repercuten directamente en el ajuste conductual y adaptativo de los niños (Wang et al., 2022). En consecuencia, los estilos de afrontamiento maternos pueden considerarse un mediador crítico en la relación entre el estrés parental y las dificultades de los hijos, dado que un manejo ineficaz del estrés tiende a intensificar los problemas del niño, generando un ciclo bidireccional de retroalimentación negativa (Hutchison et al., 2016).

En conjunto, los resultados de este segundo estudio subrayan la importancia de promover estrategias de afrontamiento adaptativas en las madres de niños con TEA y TDAH. La evidencia indica que este tipo de estrategias no solo reducen el estrés parental, sino que también contribuyen a mejorar el clima familiar y a favorecer el ajuste emocional y conductual de los hijos, facilitando una dinámica de relación más positiva y resiliente.

El tercer estudio tuvo como objetivo examinar los perfiles de funcionamiento ejecutivo (FE) en niños con TEA y TDAH, y analizar su relación con el estrés parental y el funcionamiento cotidiano. Los resultados mostraron diferencias significativas en el funcionamiento ejecutivo entre los grupos clínicos y el grupo de desarrollo típico. En particular, se observó que la memoria de trabajo presentaba un deterioro más pronunciado en los niños con TDAH, lo que coincide con la literatura previa que ha documentado déficits más marcados en la inhibición de respuestas, la planificación y la flexibilidad cognitiva en esta población (Craig et al., 2016). Asimismo, se identificó que los padres de niños con déficits leves o moderados en FE atribuían mejores habilidades de la vida diaria a sus hijos, hallazgo que refuerza la relación entre la eficiencia ejecutiva y la capacidad de adaptación funcional en la infancia (Rosenberg, 2015).

Por otro lado, se hallaron diferencias significativas en las habilidades sociales: los padres de niños con déficits moderados o graves en FE informaron de mayores dificultades en la interacción social y en la autorregulación emocional. Estos resultados son consistentes con estudios previos que han señalado que las limitaciones en las funciones ejecutivas pueden impactar negativamente en la competencia social y la calidad de las relaciones interpersonales en la infancia (Lieb & Bohnert, 2017). En este sentido, las dificultades en FE podrían actuar como un factor transversal que explica tanto los problemas de conducta como el incremento del estrés parental, reforzando la necesidad de intervenciones específicas orientadas a su mejora.

El cuarto estudio de esta tesis doctoral tuvo como finalidad evaluar la eficacia de un programa psicosocial en línea, aleatorizado y multicomponente, dirigido a padres de niños con trastornos del neurodesarrollo, con especial atención a los diagnósticos de TEA y TDAH. Este programa, denominado INPSYD, se diseñó con el propósito de fortalecer las competencias parentales, reducir el estrés y promover estrategias de afrontamiento eficaces. Los resultados revelaron mejoras estadísticamente significativas en el grupo de intervención en comparación con el grupo control. Los padres participantes reportaron una disminución del estrés parental, una mayor adquisición de estrategias de afrontamiento positivas y un incremento del apoyo social percibido, efectos que se mantuvieron en las evaluaciones de seguimiento.

Estos resultados se encuentran en consonancia con la evidencia previa sobre la eficacia de las intervenciones psicosociales en familias con hijos con TEA y TDAH. Kuravackel et al. (2018) hallaron que la participación en programas de entrenamiento parental se asocia con una mejora en las habilidades parentales y una reducción del estrés. De forma similar, Yang et al. (2024) demostraron que este tipo de intervenciones reducen el agotamiento emocional y fortalecen el afrontamiento, disminuyendo la probabilidad de síntomas depresivos y mejorando

la percepción de autoeficacia. Asimismo, Paiva et al. (2024) informaron de efectos positivos sobre el bienestar psicológico, el afecto y la percepción de apoyo de los padres, junto con una reducción significativa de los síntomas de inatención en los niños.

Los hallazgos del programa INPSYD también coincidieron con los resultados de Piscitello et al. (2024), quienes encontraron que la participación en programas grupales de entrenamiento parental mejora el conocimiento sobre estrategias de crianza y la capacidad para manejar situaciones familiares complejas. En la misma línea, Iadarola et al. (2018) demostraron que los programas de entrenamiento parental contribuyen a disminuir las conductas disruptivas de los niños, reduciendo de forma indirecta el estrés parental. No obstante, la literatura también presenta resultados heterogéneos: por ejemplo, Oosterling et al. (2010) concluyeron que ciertos programas de entrenamiento parental no ofrecían beneficios adicionales respecto a la intervención estándar, mientras que Dahl et al. (2020) observaron que la psicoeducación aislada tenía efectos limitados sobre el estrés parental al centrarse exclusivamente en la transmisión de información diagnóstica.

En términos de variables relacionadas con el funcionamiento social y adaptativo de los niños, el programa INPSYD mostró mejoras significativas en la conducta social, el funcionamiento ejecutivo y el funcionamiento familiar. Estas mejoras son consistentes con estudios previos que documentaron una reducción de la irritabilidad y de las conductas desafiantes en niños con TEA y TDAH tras la participación de los padres en programas de entrenamiento conductual (Bearss et al., 2013; Paiva et al., 2024; Chacko et al., 2024).

De manera general, los resultados de esta tesis doctoral refuerzan la importancia de las intervenciones psicosociales como herramienta eficaz para mejorar tanto el bienestar parental como el ajuste infantil. Además, ponen de manifiesto la necesidad de adaptar los programas a

formatos digitales accesibles y basados en la evidencia, capaces de superar las limitaciones logísticas y económicas que suelen enfrentar las familias (Tan-MacNeill et al., 2021).

En este contexto, el programa INPSYD representa una propuesta pionera, al constituir un ensayo controlado aleatorizado completamente en línea, que integra múltiples competencias esenciales: psicoeducación, estrategias de comunicación efectiva, control del estrés, uso responsable de las tecnologías, modificación de conducta y afrontamiento de los desafíos cotidianos en los entornos familiar y escolar (Gosling et al., 2022). Esta aproximación multidimensional favorece un enfoque integral y holístico de la intervención, centrado en las necesidades reales de las familias con hijos con TEA y TDAH.

Finalmente, los resultados de esta investigación subrayan la importancia de incluir el fortalecimiento del apoyo social —especialmente el apoyo confidencial— como elemento estructural en el diseño de futuras intervenciones. Dicho componente se confirma como un factor protector frente al estrés y como un determinante esencial del bienestar familiar. Asimismo, se plantea la necesidad de incorporar variables sociodemográficas (estado civil, nivel educativo, carga laboral, número de hijos) en los análisis futuros, con el fin de profundizar en la comprensión de los factores que modulan el impacto de la crianza en familias con hijos con trastornos del neurodesarrollo.

En conclusión, los resultados globales de esta tesis aportan evidencia sólida sobre la eficacia de las intervenciones psicosociales, en particular las realizadas en formato digital, para mejorar el bienestar de las familias de niños con TEA y TDAH. El programa INPSYD constituye un avance significativo en la promoción de modelos de atención accesibles, sostenibles y centrados en la familia, y sienta las bases para el desarrollo de futuras líneas de investigación que

integren la dimensión parental como elemento central del abordaje terapéutico de los trastornos del neurodesarrollo.

9. Limitaciones y propuestas de mejora

A pesar de su relevancia y carácter innovador, la presente investigación presenta una serie de limitaciones que deben ser consideradas. En primer lugar, la muestra utilizada es reducida y homogénea, ya que procede de contextos socioeconómicos similares. Aunque esta característica resulta comparable con otros estudios de naturaleza análoga (Pan et al., 2023), limita la posibilidad de generalizar los resultados. La aplicación del programa en muestras más amplias y con mayor diversidad sociocultural y económica podría ofrecer una comprensión más profunda y representativa de su eficacia.

Al tratarse de una intervención de carácter digital, la participación en el programa requiere contar con acceso a una conexión estable a internet y a un ordenador, recursos que no están disponibles en todas las familias. Además, no se realizó un estudio previo de viabilidad, lo que pone de manifiesto la necesidad de que futuras investigaciones evalúen la aplicabilidad de la propuesta en hogares con recursos tecnológicos limitados.

Otro aspecto que considerar es la dependencia de medidas informadas por los padres, lo que introduce la posibilidad de sesgos vinculados a la deseabilidad social. En este sentido, la incorporación de evaluaciones objetivas en investigaciones posteriores permitiría incrementar la validez de los resultados.

Asimismo, el estudio no contempló la recopilación de datos cualitativos acerca de la participación ni del grado de satisfacción de los usuarios. La inclusión de este tipo de

información en futuros trabajos podría aportar perspectivas valiosas sobre la implementación y la experiencia subjetiva de los participantes.

Los resultados informados a través de los estudios presentados han confirmado la asociación bidireccional existente entre las características y la gestión del estrés de los padres y el desarrollo integral de sus hijos.

Además, la mayoría de los niños del grupo experimental y del grupo control eran varones por lo que los resultados no podrían generalizarse a chicas con TEA y TDAH, dado el bajo número de participantes encontradas. Esto podría ser un tema central para futuras investigaciones que impliquen tanto a niños como a niñas con TEA y TDAH. Asimismo, esta limitación también afecta al grupo de madres, ya que el número de padres participantes fue muy escaso, asistiendo únicamente, en la gran mayoría de los casos, la madre a las sesiones de intervención.

Finalmente, la naturaleza transversal del diseño de investigación constituye otra limitación relevante, ya que impide examinar los cambios longitudinales, por ejemplo, en la reducción del estrés parental a lo largo del tiempo.

En resumen, a pesar de las limitaciones, esta investigación constituye el primer programa psicosocial para familias con hijos/a con TEA y TDAH con un formato estructurado, implementado totalmente en línea, y que incluye tanto a familias de niños con TEA como familias de niños con TDAH.

Los hallazgos del programa, tanto en los dominios de padres como de niños, podrían tener implicaciones para la práctica clínica, educativa.

El principal valor añadido de la presente investigación radica en haber respondido a la necesidad de desarrollar programas de intervención psicosocial específicos para familias con hijos/as con trastornos del neurodesarrollo, concretamente con Trastorno del Espectro Autista sin

discapacidad intelectual y Trastorno por Déficit de Atención e Hiperactividad. Este trabajo aporta una propuesta innovadora de intervención multicomponente que aborda simultáneamente los desafíos asociados a la crianza de un niño/a con TEA o TDAH y las manifestaciones nucleares de ambos trastornos, con el objetivo de favorecer el funcionamiento ejecutivo y las competencias adaptativas en la vida cotidiana. Asimismo, el diseño digital del programa, concebido para su implementación en formato online y sincrónico, amplía significativamente las posibilidades de acceso, equidad y continuidad de las familias, superando las limitaciones logísticas que habitualmente restringen la participación en las intervenciones presenciales. En este sentido, el programa INPSYD se configura como una herramienta eficaz y flexible para la promoción del bienestar familiar, al potenciar la competencia parental mediante la formación psicoeducativa en los trastornos, la adquisición de estrategias de afrontamiento efectivas, la reducción del estrés, el fortalecimiento de las habilidades comunicativas y la mejora de la gestión de las demandas cotidianas derivadas de la sintomatología infantil. En conjunto, estos aportes contribuyen a la consolidación de modelos de intervención más accesibles, sostenibles y basados en la evidencia para familias en contextos de neurodesarrollo.

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