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Predictors of leisure activities participation and household chores in children and adolescents with Intellectual disability and autism spectrum disorder: families' perspectives

Preditores de participação em atividades de lazer e tarefas domésticas em crianças e adolescentes com deficiência intelectual e transtorno do espectro autista: perspectivas das famílias

Predictores de participación en actividades de ocio y tareas del hogar en niños y adolescentes con discapacidad intelectual y trastorno del espectro autista: perspectivas familiares

Marcos Fernando Larizzatti
Universidade Paulista, São Paulo, SP, Brasil
marcoslarizzatti@gmail.com

Rayra Santos de Souza
Universidade Presbiteriana Mackenzie, São Paulo, SP, Brasil
rayrassouza07@gmail.com

Patrícia Moraes Cabral
Universidade Presbiteriana Mackenzie, São Paulo, SP, Brasil
mcabralpatricia@gmail.com

Luiz Renato Rodrigues Carreiro
Universidade Presbiteriana Mackenzie, São Paulo, SP, Brasil
renato.carreiro@gmail.com

Maria Cristina Triguero Veloz Teixeira
Universidade Presbiteriana Mackenzie, São Paulo, SP, Brasil
mctvteixeira@gmail.com

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RESUMO

A realização de tarefas domésticas e atividades de lazer em populações com desenvolvimento atípico tem sido associada a diversos benefícios, incluindo melhora em indicadores de funcionamento adaptativo, contudo, a prática destas atividades por pessoas com alguma deficiência apresenta baixa adesão. O objetivo do estudo foi identificar preditores de participação em atividades de lazer e tarefas domésticas em crianças e adolescentes com deficiência intelectual (DI)

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e transtorno do espectro autista (TEA) (grupo clínico, n=62) em comparação com um grupo controle de crianças e adolescentes com neurodesenvolvimento típico (n=62) de acordo os pais. Os pais/cuidadores responderam ao questionário de lazer, Children Helping Out – Responsibilities, Expectations and Supports, Adult Self Report for Ages 18-59, Brief Problem Monitor - Parent Form for Ages 6-18, WHOQOL bref e formulário de classificação socioeconômica familiar. A frequência de participação (p=0,001) e as horas de lazer (p=0,001) foram estatisticamente menores no grupo clínico em comparação com o grupo controle. As crianças e adolescentes do grupo clínico apresentaram significativamente mais problemas emocionais e comportamentais que o grupo controle (atenção: p=0,001; internalização: p=0,025; externalização: p=0,025), assim como seus pais obtiveram menores indicadores de qualidade de vida (físico: p=0,003; psicológico: p=0,001; social: p=0,008). A qualidade das relações pessoais, o apoio social e a sexualidade dos pais estiveram associados ao número de tarefas domésticas realizadas pelos filhos (p=0,054). Tais resultados alertam para a necessidade de que pais e cuidadores de crianças e adolescentes com DI e TEA sejam envolvidos em intervenções que promovam a sua saúde mental e suporte social, visto que eles são fundamentais para promover a autonomia e o funcionamento adaptativo dos seus filhos.

Palavras-chave: Transtorno do Espectro Autista; Deficiência Intelectual; Tarefas domésticas, Lazer.

ABSTRACT

Carrying out domestic tasks and leisure activities in populations with atypical development has been associated with several benefits, including improvement in indicators of adaptive functioning, however, the practice of these activities by people with some disability presents low adherence. The aim of the study was to identify predictors of participation in leisure activities and household chores in children and adolescents with intellectual disability (ID) and autism spectrum disorder (ASD) (clinical group, n=62) compared to a control group of children and adolescents with typical neurodevelopment (n=62) according to parents. Parents/caregivers responded to the leisure questionnaire, Children Helping Out – Responsibilities, Expectations and Supports, Adult Self Report for Ages 18-59, Brief Problem Monitor - Parent Form for Ages 6-18, WHOQOL brief and family socioeconomic classification form. The frequency of participation (p=0.001) and leisure hours (p=0.001) were statistically lower in the clinical group compared to the control group. Children and adolescents in the clinical group had significantly more emotional and behavioral problems than the control group (attention: p=0.001; internalization: p=0.025; externalization: p=0.025), just as their parents had lower quality of life indicators (physical: p=0.003; psychological: p=0.001; social: p=0.008). The quality of personal relationships, social support and parents'

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sexuality were associated with the number of domestic tasks performed by their children (p=0.054). These results highlight the need for parents and caregivers of children and adolescents with ID and ASD to be involved in interventions that promote their mental health and social support, as these are fundamental to promoting the autonomy and adaptive functioning of their children.

Keywords: Autism Spectrum Disorder; Intellectual Disability; Leisure Activities; Household Chores.

RESUMEN

La realización de tareas domésticas y actividades de ocio en poblaciones con desarrollo atípico se ha asociado con varios beneficios, entre ellos la mejora en indicadores de funcionamiento adaptativo, sin embargo, la práctica de estas actividades por parte de personas con alguna discapacidad presenta baja adherencia. El objetivo del estudio fue identificar predictores de participación en actividades de ocio y tareas domésticas en niños y adolescentes con discapacidad intelectual (DI) y trastorno del espectro autista (TEA) (grupo clínico, n=62) en comparación con un grupo de control de niños y Adolescentes con neurodesarrollo típico (n=62) según padres. Los padres/cuidadores respondieron el questionario de ocio, Children Helping Out – Responsibilities, Expectations and Supports, Adult Self Report for Ages 18-59, Brief Problem Monitor - Parent Form for Ages 6-18, WHOQOL bref y formulario de clasificación socioeconómica familiar. La frecuencia de participación (p=0,001) y las horas de ocio (p=0,001) fueron estadísticamente menores en el grupo clínico en comparación con el grupo control. Los niños y adolescentes del grupo clínico tuvieron significativamente más problemas emocionales y conductuales que el grupo control (atención: p=0,001; internalización: p=0,025; externalización: p=0,025), así como sus padres tuvieron menores indicadores de calidad de vida (físico: p=0,003; psicológico: p=0,001; social: p=0,008). La calidad de las relaciones personales, el apoyo social y la sexualidad de los padres se asociaron con el número de tareas domésticas realizadas por sus hijos (p=0,054). Estos resultados resaltan la necesidad de que los padres y cuidadores de niños y adolescentes con DI y TEA participen en intervenciones que promuevan su salud mental y apoyo social, ya que son fundamentales para promover la autonomía y el funcionamiento adaptativo de sus hijos.

Palabras clave: Trastorno del Espectro Autista; Discapacidad intelectual; Actividades de Ocio; Tareas del Hogar.

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Introduction

Intellectual disability (ID) and autism spectrum disorder (ASD) are neurodevelopmental disorders whose signs and symptoms interfere with the practice of daily living activities (National Academies of Sciences, Engineering, and Medicine, 2018), specifically recreation or leisure activities, school activities, family or community activities, and daily routines (Eversole et al., 2016). ID is characterized by impairments in intellectual abilities and social and adaptive functioning, with deficits in intellectual functions such as reasoning, problem-solving, planning, abstract thinking, judgment, and academic learning (American Psychiatric Association [APA], 2023). The global prevalence in the population is approximately 1% (APA, 2023), and the prevalence may vary from 16:1000 to 9:1000 among countries according to age and socioeconomic status (APA, 2023). ASD is a disorder characterized by impairments in social interaction and communication with restricted and repetitive patterns of behavior, interests, or activities with significant impairment in adaptive functioning (APA, 2023). ASD prevalence, according to the Centers for Disease Control and Prevention (CDC) estimate, in 2020, is about 1:36 children (CDC, 2023).

Children and adolescents with ID and ASD reported impairments in adaptive functioning (Vignoli et al., 2010; Dykens, 2014; Fisher, Lense & Dykens, 2016; Cohen & Flory, 2019; Dickson et al., 2021). Adaptive behavior is often assessed using three-factor models that encompass social, conceptual, and practical skills (Price, Morris & Costello, 2018). Deficits in adaptive functioning can affect communication skills, personal care, home life skills, social skills, community involvement, self-regulation, health and safety, functional academic skills, leisure, and work (Tassé, 2009). Particularly concerning ID, the 5th Edition Text Revision of the Diagnostic and Statistical Manual of Mental Disorders (DSM-5-TR) assigned an essential role to assess adaptive functioning as a measure for diagnostic assessment and to evaluate the severity level of the disorder (APA, 2023). A study by Santos and Morato (2016) compared the adaptive behavior of children and adolescents with ID (n=218) with peers with typical development (n=318) and found significant statistical differences in all domains of the

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Portuguese version of the Adaptive Behavior Scale (PABS), with the group of participants with ID presenting greater difficulties.

Many individuals with ASD, even without ID, may have difficulties in adaptive functioning and independence, both in childhood and adulthood due to the characteristics of the disorder (APA, 2023). Tamm, Day and Duncan (2022) compared measures of adaptive functioning in adolescents with autism spectrum disorder without intellectual disability (n= 62) using the Vineland Adaptive Behavior Scales, Third Edition (VABS-3) and Adaptive Behavior Assessment System, Third Edition (ABAS-3). The results of the study showed deficits in adaptive, social and daily living skills verified in the two assessment scales.

The practice of leisure activities has been associated with several benefits in populations with atypical development, such as ID and ASD, including improved adaptive functioning (Amado et al., 2013), and daily living skills (Collins & Staples, 2017; Boonman et al., 2019), socialization (Amado et al., 2013; Kent et al., 2018), family stress reduction (Axelsson, Granlund & Wilder, 2013) and the development of cognitive skills (Alghadir & Gabr, 2020) . However, despite the benefits of the practice of leisure activities, people with neurodevelopmental disability have difficulty adhering to this type of practice (Schreuer, Sachs & Rosenblum, 2014; Dias, Friche & Lemos, 2019). Some factors generally associated with low participation in leisure and recreational activities in people with ID and ASD are the lack of free time of family members to provide leisure due to a significant number of hours per week dedicated to treatments (Luijkx, Van Der Putten & Vlaskamp, 2017; Walton, 2019), health problems of parents and caregivers (Arede et al., 2017), low family income (Lloyd, Foley & Temple, 2014; Ross et al., 2021), emotional and behavioral problems of children (Chien, Rodger & Copley, 2017), and lack of accessibility to leisure facilities (Kapsal et al., 2019).

Household chores encompass a set of behaviors necessary for performing household tasks in the family environment, such as picking up and throwing away trash; putting dirty clothes in the right place; putting things back in the right place after using them; making up the bed, among other tasks (Harrison & Oakland, 2015). Previous studies have shown that people with ID, are more likely than their

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peers to need extra support to carry out day-to-day activities and household chores (Reilly, Murtagh & Senior, 2015). Parents and caregivers of children with severe developmental disorders can make it difficult for them to develop personal independence by taking on the performance of their children's daily living activities themselves (Dunn, Magalhaes & Mancini, 2014). However, this type of activity improves the adaptive functioning of the person with a disability, as well as their quality of family life, providing opportunities for autonomy and independence that can be used to perform recreational activities (Lee, Cascella & Marwaha, 2022).

A systematic review study showed the strongest evidence of the recreational/leisure activities on the physical and mental health of people with ASD, for example, well-being, stress, social skills and social competence (Shahane, Kily & Srinivasan, 2024). During the COVID-19 pandemic, a study conducted with 60 subjects with ASD and ID showed improvement in the mental health of these populations with leisure activities (Jodra & García-Villamisa, 2024).

In children and adolescents with disabilities, their engagement in recreational activities and household activities depends on the involvement of parents to provide them with opportunities in family, social, and community environments (Wright et al., 2019). If these opportunities are not offered, likely, parents will not be able to assess whether a child with a neurodevelopmental disorder does, in fact, have the necessary skills to perform leisure activities of daily living in line with cultural norms (Halfon et al., 2012; Dunn, Magalhaes & Mancini, 2014). It is essential to explore the parents' perception of the factors associated with the participation of children with ID and ASD in leisure activities and household chores. Therefore, this study aims to answer the following question: Can the emotional and behavior problems of the children, mental health problems and quality of life of parents be predictors of participation in household chores and leisure activities of children with ID and ASD? We hypothesized that emotional and behavior problems of the children, mental health problems and the quality of life of parents can be predictors of participation in household chores and leisure practices of children with ID and ASD. The objective of the study was

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to identify predictors of leisure activities participation and household chores, according to the parents, in children and adolescents with intellectual disability and autism spectrum disorder, compared with a control group of children and adolescents with typical neurodevelopment.

Materials and Method

Sample

Between 2015 and 2016, 792 children and adolescents with special educational needs (SEN) participated in the study by Teixeira et al. (2017), whose objectives were to assess the diagnostic status, the sociodemographic and health profiles of students with SEN in a public educational system, and to map their use of educational/social services. Between 2016 and 2017, 410 (51,76% out of 792) parents of students with ID and 28 parents of students with ASD (3,53% out of 792) were invited to participate in the present study. We received acceptance to participate from 62 parents of children and adolescents with ID and ASD. After the confirmation of these 62 parents, we invited parents of children and adolescents from the same educational network and classroom (all matched by sex and age with the children and adolescents with ID and ASD), but without a diagnosis of ID or ASD or another neurodevelopmental disorder. The 62 parents who accepted the invitation (adopting the matching by sex and age) formed the control group. The i**nclusion criteria** for the clinical group were a medical diagnosis of ID or ASD recorded in the student's medical record at school, and the exclusion criteria were having a sensory impairment (visual or hearing), a physical disability, or cerebral palsy. For the control group, the inclusion criteria were not having any SEN recorded in the medical record. The distribution of the 62 participants in the clinical group with ID and ASD was: a**) 48 (77,4%) parents of children and adolescents with ID** (34 of idiopathic cause, 12 with Down syndrome, one with West syndrome, and one with Williams syndrome); b) 14 (22,5%) parents of children and adolescents with ASD. Data collection took place before the Covid-19 pandemic. The study was approved by the Human Research Ethics Committee of X University, Brazil (CAAE: 51324615.8.0000.5512). Table

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1 shows the distribution of the children according to age and familiar socioeconomic level and the comparison based on the quality the of proportions test.

Table 1 – Characterization of the sample according to age group and socioeconomic classification level.

Distribution of the children and adolescents by age						
Sex	Group	7 to 10 years		11 to 14 years		P value
		No	%	No	%	
Boys	Control	24	77,4	7	22,6	1,00
	Clinical	24	77,4	7	22,6	
Girls	Control	21	67,7	10	32,3	1,00
	Clinical	21	67,7	10	32,3	
Distribution of socioeconomic level of families*						
Socioeconomic level	Group	No		%		P value
A	Control	1		1,6		1,00
	Clinical	1		1,6		
B1	Control	17		27,4		**0,005****
	Clinical	5		8,1		
B2	Control	16		25,8		0,675
	Clinical	14		22,6		
C1	Control	16		25,8		1,00
	Clinical	16		25,8		
C2	Control	6		9,7		**0,004****
	Clinical	19		30,6		
D-E	Control	6		9,7		0,76
	Clinical	7		11,3		

***Family socioeconomic classification according to the Brazilian Economic Classification Criteria of the Brazilian Association of Research Companies (2015), in which socioeconomic status ranges from A to D-E, with A representing the highest level and D-E representing the lowest socioeconomic status; ** - statistical significance.*

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Source: prepared by the authors.

Instruments

a) **Leisure questionnaire**: instrument based on parental reports comprising of 36 items used to assess indicators of the use of leisure resources in the community, use of free time (quantity and quality), types of leisure, and barriers to leisure in the previous three months. The leisure domains evaluated were physical, social, cultural, intellectual, virtual, manual, and tourism. For each domain, the parents answered the types of leisure. For example, the physical domain: is participation in physical activities and sports; the social domain: is participation in socialization activities with friends at parties and community groups; the cultural domain: is participation in cultural activities such as theater, cinema, and art expositions; the intellectual domain: is participation in intellectual activities such as board games and libraries; the virtual domain: is participation in virtual leisure activities such as use of computers, tablets, cell phones; the manual domain: is participation in manual leisure activities such as handcrafts, musical instruments, gardening; the tourism domain: is participation in tourist leisure activities such as trips, tours, amusement parks. The questionnaire contains an open question to inquire about parental perception of the main reasons they identified as factors that prevented or made it impossible to engage in leisure practices. The instrument allowed parental assessment of the leisure options in the municipality and the neighborhood. The instrument was designed specifically for the study, and evidence of content validity was tested according to the international guidelines for the construction and validation of tests (International Test Commission [ITC], 2017). The objectivity, clarity, and precision agreement indices between judges were greater than 0,75 (ITC, 2017). After the experts' responses, adaptations and corrections were made to the items that presented a lower index and, then sent to the specialists again for a new evaluation. After reassessment, the questionnaire agreement rates were equal to or greater than 0.93. The instrument's scoring scale used a 7-point Likert-type scale ranging from 0 (never did) to 6 (every day). About the number of hours the

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tasks were performed, the values ranged from 1 to a maximum of 5 hours per week.

b) **Children Helping Out – Responsibilities, Expectations, and Supports (CHORES):** instrument used to assess children's participation in household chores in the family context according to parents (Amaral et al., 2012). The questionnaire consists of 34 items on tasks divided into two subscales: self-care (13 items) and family care (21 items). The instrument was scored adopting 0 if the child does not perform the task or 1 if they perform it, totaling a maximum of 34 points. Validity evidence of CHORES for Brazilian Portuguese showed that the test-retest reliability examined for each CHORES score presented indices greater than 0,90 in a 7-to-14-day interval (Intra-class correlation coefficients= 0,93 to 0,97; p= 0.0001) (Amaral et al., 2012).

c) **Adult Self-Report for Adults aged 18 to 59 (ASR/18-59):** instrument used to evaluate indicators of mental health in adults. This is a form of the Achenbach System of Empirically Based Assessment (ASEBA) that assesses emotional and behavioral problems and functioning adaptation in individuals aged between 18 and 59 years through self-report (Rescorla & Achenbach, 2004). The ASR/18-59 comprises 126 items distributed into six syndrome scales, six DSM-5 oriented scales, internalizing, externalizing, and total problems scales, items that assess patterns of adaptive functioning in education, work, friends, family, and partners. The ASR emotional and behavioral problems scoring scale is 0 if the statement is not true, 1 if it is somewhat true or sometimes true, and 2 if it is very true or often true. Emotional and behavioral functioning profiles were generated using the Assessment Data Manager (ADM) software, version 7.2 (Rescorla & Achenbach, 2004). The generated scores allow the classification of individuals into clinical, borderline, and normal ranges. The main profiles observed are adaptive functions, behavioral problem syndromes, internalization and externalization problems, and DSM-oriented scales. Silvares (2011) developed the Brazilian version of the instrument and Lucena-Santos, Moraes and Oliveira (2014) verified the factorial structure, finding theoretically coherent factors and satisfactory reliability indices.

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d) **Brief Problem Monitoring (BPM-P/6-18**): instrument used to evaluate mental health indicators in children/adolescents in the clinical group and control group. This is a form for parents of children between 6 and 18 years old that assesses emotional and behavioral problems in children and adolescents between 6 and 18 years old, according to the parent report. The BPM-P is the reduced version of the Child Behavior Checklist for ages 6 to 18 years old (CBCL/6-18) (Bordin et al, 2013). The CBCL is structured in the form of an inventory, in which a set of statements concerning different aspects of behavioral and emotional functioning are responded to on a 0 to 2 scale (0, if the statement is not true; 1, if it is somewhat true or sometimes true; and 2, if very true or often true). The items that make up the BPM-P were taken from the CBCL/6-18, so the 19 BPM-P items are grouped into four scales: Internalizing, externalizing, attention problems, and total Problems. The generated scores allow the classification of children/adolescents into the ranges of clinical, borderline, and normal. Emotional and behavioral functioning profiles were generated using the Assessment Data Manager (ADM) software, version 7.2 (Rescorla & Achenbach, 2004). Brazilian evidence of the validity of the internal structure of the BPM-P indicated that it was adequate for the confirmatory factor analysis of the three-factor model (Internalizing, Externalizing, and Attention). The results of the internal consistency analysis using the Alpha and Omega coefficients were 0,70 and 0,86, respectively (Pires, 2021).

e) **WHOQOL-bref:** the instrument was used to evaluate indicators of quality of life of the parents. This instrument was translated and validated by Fleck et al. (2000). It uses a Likert-type scale that assesses the adult's (caregiver's) quality of life in the previous two months, with 26 questions about "how" individuals have been feeling in respect of certain aspects of their life, and "how satisfied" they were with their quality of life, with the questions focused on four domains: physical, psychological, social and environmental. The instrument classifies the quality of life on a scale that ranges from very bad (1) to very good (5).

f) **Brazilian Economic Classification Criteria of the Brazilian Association of Research Companies (2014):** the instrument was used to verify the socioeconomic classification of the families. This is an instrument developed

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based on the *Pesquisa de Orçamento Familiar* (POF) (Family Budget Survey) of the Brazilian Institute of Geography and Statistics (IBGE). It covers data and information to characterize the caregiver in terms of age, education, and socioeconomic level. The questionnaire score varies between 0-100 points, the information collected allowing stratification into classes A, B1, B2, C1, C2, and D-E, with A representing the highest socioeconomic level and D-E representing the lowest socioeconomic level (Pilli et al., 2014).

Data analysis procedures

Data collection with the parents of the clinical group was carried out while the children and adolescents attended specialized care sessions in the municipal education network. The data collection with parents of the control group was made during parent meetings at school. Descriptive analyses of the data, simple frequency tables, and means comparison between both groups using the Mann-Whitney U tests were conducted. A multivariate analysis (logistic regression) was carried out to generate a model investigating associations between the outcomes concerning participation in leisure activities and the performance of household tasks, and the variables group, the indicators of the caregiver's mental health, the caregiver's quality of life and the child's mental health indicators and the emotional and behavior problems of the children. A value of $p \leq 0,05$ was adopted for statistical significance (Dancey & Reidy, 2019).

Results

This study aimed to identify predictors of leisure activities participation and household chores in children and adolescents with intellectual disability and autism spectrum disorder, compared with a control group of children and adolescents with typical neurodevelopment. To establish this association, we described the time spent on leisure activities and household chores for both groups (children and adolescents with intellectual disability and autism spectrum disorder and the control group). Additionally, to identify predictors of leisure activities participation and household chores in children and adolescents we

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explored the emotional and behavior problems of the children and adolescents, mental health problems and the quality of life of the parents.

Table 2 shows the time spent on leisure activities by the children and adolescents of both groups, according to the parents, and the results of the Mann-Whitney U test. It was found that the frequency of participation and the number of hours dedicated to leisure in the clinical group was lower in practically all activities and with statistically significant differences compared to the control group in almost all types of leisure activities. Only the frequency of participation in tourist activities was similar between the groups. The main impediments to the practice of leisure according to the parents of the groups were the following: a) for the clinical group - lack of money (12,9%), lack of free time (8,3%), problems of accessibility (8,3%), fear of the child getting hurt (6,5%), tiredness derived from caring for the child (4,9%) and family illnesses (4,9%), and b) for the control group - overwork (17%), lack of money (14,5%), lack of free time (6,5%), tiredness (4,9%) and family illnesses (1,6%). Seventy-one percent of the parents in the clinical group gave a positive evaluation (excellent to fair) of leisure options in the municipality and the neighborhood, while this was 53,1% for the control group. The most used place for leisure activities, in both groups, was parks (63,4% of the clinical group and 69,4% of the control group) followed by shopping malls (21% of the clinical group and 30,7% of the control group). The high percentage of parents in the clinical group giving a positive evaluation of the local leisure facilities indicates the existence of the minimum conditions to develop leisure activities.

Table 2 – Distribution of children and adolescents of clinical and control groups according to parental reports of time spent on leisure activities.

Leisure	**Group**	**Frequency**				**Hours**			
		Mean	SD	N	P	Mean	SD	N	P value
Physical	Control	11,03	5,13	62	0,031	5,52	2,97	62	**0,001***
	Clinical	9,03	4,86	58		3,64	2,25	58	
Social	Control	12,19	4,37	62	0,019	12,52	4,37	62	**0,001***

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	Clinical	10,14	5,01	57		8,42	4,94	57	
Cultural	Control	4,60	2,26	62	0,026	6,82	3,38	62	**0,001***
	Clinical	3,53	2,72	49		4,18	2,88	49	
Intellectual	Control	8,98	5,92	62	0,038	5,37	7,24	62	0,101
	Clinical	6,73	5,39	51		3,55	3,35	51	
Virtual	Control	18,84	5,90	62	0,001	9,42	5,33	62	**0,001***
	Clinical	13,36	7,02	58		6,34	4,46	58	
Manual	Control	7,25	4,89	55	0,056	3,71	2,54	55	0,046*
	Clinical	5,46	4,60	50		2,74	2,36	50	
Touristic	Control	4,55	2,16	62	0,280	9,44	4,86	62	0,001*
	Clinical	4,10	2,19	50		5,78	4,55	50	
Total	Control	66,74	17,10	61	0,001	52,43	15,57	61	0,001*
	Clinical	46,31	22,39	62		30,18	18,27	62	

* - statistical significance.

Source: prepared by the authors.

Table 3 shows the number of tasks in household chores practiced by the children and adolescents of both groups, according to the parents, and the results of the Mann-Whitney U test showed that the participants of the control group had an average participation in housework of 18,4 per week (standard deviation = 7,5), and those in the clinical group had an average of 10,6 (standard deviation = 8,0). The clinical group showed lower participation rates in all household chores grouping ranges (0 to 10 points, 11 to 17 points, and 18 to 34 points). We identified statistically significant differences comparing the groups in the number task ranges ‘0 to 10 tasks’ and ‘18 to 34 tasks’.

Table 3. Distribution of children and adolescents according to CHORES score ranges between groups

number of tasks	Group	N (%)	p-value
0 to 10 tasks	Control	8 (12,9)	**<0,001***
	Clinical	32 (51,6)	
11 to 17 tasks	Control	22 (35,5)	0,243

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	Clinical	16 (25,8)	
	Control	32 (51,6)	
18 to 34 tasks	Clinical	14(22,6)	**<0,001***

* - statistical significance.

Source: prepared by the authors.

The indicators of quality of life and mental health of parents as well as the emotional and behavioral problems of the children were compared between both groups (Table 4). There were no differences between groups regarding parental mental health indicators (ASR). Regarding the quality of life, parents of children and adolescents in the clinical group showed lower scores in the physical (p=0,003), psychological (p=0,001), and social (p=0,008) domains than the parents of the control group, with statistically significant differences between them (Table 4). Children and adolescents in the clinical group showed greater impairments in all scales of behavior problems of the BPM-P than children and adolescents in the control group.

Table 4 – Indicators of quality of life, parental mental health, and participation in household chores of children and adolescents in the clinical and control groups.

Distribution of groups according to classification in the ASR/18-59					
ASR/18-59 scales	Group	Normal Range	Clinical Range		p-value
		N (%)	N (%)		
Internalizing	Control	48 (77,4)	14 (22,6)		0,310
	Clinical	43 (69,4)	19 (30,6)		
Externalizing	Control	55 (88,7)	7 (11,3)		0,783
	Clinical	54 (87,1)	8 (12,9)		
Total Problems	Control	51 (82,3)	11 (17,7)		0,378
	Clinical	47 (75,8)	15 (24,2)		
Comparative data between groups in domains assessed by WHOQOL-bref					
Domains of WHOQOL-bref	Group	Mean	Standard deviation	N	p-value
Physical	Control	72,0	14,2	62	**0,003***
	Clinical	63,7	16,4	62	

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Psychological	Control	73,1	14,0	62	**0,001***
	Clinical	64,2	15,6	62	
Social	Control	73,9	18,2	62	**0,008***
	Clinical	64,5	20,3	62	
Environmental	Control	59,0	14,0	62	0,187
	Clinical	55,5	15,6	62	

Distribution of groups according to classification by BPM-P/6-18

BPM-P/6-18 scales	Group	Normal Range	Clinical Range	p-value
		N (%)	N (%)	
Attention problems	Control	56 (90,3)	6 (9,7)	**0,001***
	Clinical	30 (48,4)	32 (51,6)	
Internalizing	Control	51 (82,3)	11 (17,7)	**0,025***
	Clinical	40 (64,5)	22 (35,5)	
Externalizing	Control	57 (91,9)	5 (8,1)	**0,025***
	Clinical	48 (77,4)	14 (22,6)	

* - statistical significance.

Source: prepared by the authors.

This study explored the predictors of leisure activities participation and household chores of children and adolescents, according to the parents. Multivariate analyses were carried out separately for the clinical and control groups to identify variables that could potentially predict the participation of children and adolescents in leisure activities in the sample (frequency and the number of hours dedicated to leisure using the leisure questionnaire) and performing household chores (total CHORES score). The independent variables were parental mental health (ASR), children's mental health indicators (BPM-P), and quality of life indicators (WHOQOL-bref) (tables 5 and 6).

Table 5 – Results of the regression model to identify predictors of leisure practice and participation in household chores in children and adolescents in the control group.

Control group	**Leisure Frequency**		**sure Hours**		**CHORES**	
	r	p-value	*R*	p-value	*r*	p-value
Constant	17,61	0,679	34,97	0,377	9,59	0,609

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ASR Friend	0,341	0,266	-0,323	0,255	0,197	0,143
ASR Family	0,805	**0,022***	0,443	0,168	-0,094	0,531
ASR Internalizing	0,918	0,215	-0,007	0,991	0,191	0,556
ASR Externalizing	0,609	0,206	0,398	0,371	0,372	0,082
ASR Total	-1,104	0,238	0,109	0,899	-0,481	0,244
BPM-P Internalizing	-0,236	0,586	-0,111	0,782	0,118	0,536
BPM-P Attention	-0,383	0,463	0,305	0,528	0,184	0,423
BPM-P Externalizing	0,374	0,537	-0,467	0,406	-0,208	0,436
Physical	-0,076	0,740	0,058	0,787	0,142	0,167
Psychological	0,297	0,262	0,065	0,791	-0,123	0,292
Social	-0,287	0,211	-0,084	0,691	-0,065	0,518
Environmental	-0,152	0,471	-0,044	0,823	-0,020	0,825
ANOVA	0,603		,756		0,654	
R^2	17,5%		4,6%		16,3%	

* - statistical significance.

Source: prepared by the authors.

For the control group (Table 5) the analysis identified a statistically significant positive association (p=0,02) only between the family scale of the ASR and frequency of participation in leisure activities by children and adolescents showing a 17,5% increase in leisure time when family relationships are evaluated as positive, both with their siblings and with their children and adolescent. Table 5 shows the results of the same multivariate analysis in the clinical group.

Table 6 – Results of the regression model to identify predictors of leisure practice and participation in household chores of children and adolescents in the clinical group according to the parents.

Clinical group	**Leisure Frequency**		**Leisure hours**		**CHORES**	
	r	p-value	*r*	p-value	*r*	p-value
Constant	13,30	0,750	-25,48	0,438	-2,54	0,864
ASR Friend	0,402	0,208	0,474	0,062	0,040	0,726
ASR Family	0,455	0,092	0,098	0,642	-0,072	0,450
ASR Internalizing	-0,418	0,677	-0,237	0,764	-0,001	0,998
ASR Externalizing	-0,233	0,742	0,525	0,346	-0,035	0,889
ASR Total	0,990	0,421	0,142	0,883	0,144	0,742
BPM-P Internalizing	-0,389	0,395	-0,021	0,954	0,112	0,493
BPM-P Attention	-0,498	0,274	-0,061	0,863	-0,062	0,703

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BPM-P Externalizing	0,148	0,768	-0,191	0,629	-0,180	0,316
Physical WHOQOL-bref Domain	-0,056	0,848	0,011	0,961	0,139	0,183
Psychological WHOQOL-bref	0,164	0,638	0,514	0,065	-0,106	0,396
Social WHOQOL-bref Domain	0,095	0,618	-0,089	0,552	0,133	**0,054***
Environmental WHOQOL-bref	0,173	0,486	-0,032	0,869	0,101	0,255
ANOVA	0,179		0,062		0,152	
$_{R}2$	26,1%		31,4%		27,0%	

*- statistical significance.

Source: prepared by the authors.

The regression model (Table 6) identified one statistically significant association between the number of household chores performed by children and the social domain of the WHOQOL-bref, which assesses the quality of personal relationships, social support, and sexuality (p=0,054). Parents with better scores in the social domain provide opportunities for their children with ID or ASD to become more involved in household chores. The results did not confirm our hypotheses related to emotional and behavioral problems and parental mental problems. These variables did not explain the participation of children in leisure activities and household chores.

Discussion

This study compared the time spent on leisure activities and household chores between children and adolescents with intellectual disability and autism spectrum disorder and children of a control group (matched by gender and age).

The results related to the number of hours devoted to leisure activities revealed statistically significant differences between the groups regarding six leisure activities, except for intellectual leisure (libraries, board games, reading magazines) which neither group spent much time doing. Stimulating participation in leisure activities by children with ID is important, as other family indicators also improve, such as the quality of family life, as shown in previous studies (Jung, 2013; Ihara et al., 2014; Collins & Staples, 2017; Kent et al., 2018; Boonman et al., 2019; Alghadir & Gabr, 2020).

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Previous studies have shown that the participation of people with disabilities in leisure activities is lower (Arede et al., 2017; Mcgarty et al., 2018), and this low participation in leisure activities has been associated with the lack of free time of family members to create recreational activities because of the time dedicated to treatments (Luijkx, Van Der Putten & Vlaskamp, 2017; Walton, 2019). A notable finding of the present study is that the activities performed more frequently in both groups were the virtual type (video games, internet, etc.). There is evidence of the benefits of practicing virtual leisure activities on the cognitive functioning of children with ID and ASD, as they can help to stimulate skills such as working memory, planning, inhibitory control, as well as sensory and motor functions (Wuang et al., 2011; Hickman et al., 2017; Lima et al., 2020). However, other activities are also important to provide opportunities for the acquisition of adaptive behaviors, such as manual leisure (crafts, gardening, playing musical instruments) and physical leisure (cycling, skating, wrestling, swimming), which had very low-frequency averages in the clinical group.

Related the household chores our results revealed higher rates of household chores by children and adolescents in the control group compared to the clinical group, a result similar to those already reported in previous studies (Harr, Dunn, & Price, 2011; Dunn & Gardner, 2013; Amaral et al., 2014). It is known that, depending on the degree of cognitive impairment associated with limitations in adaptive behavior, there will be difficulties in taking on more complex household chores in the family environment (APA, 2023). Although, these children, if not stimulated, may show incapacities in the exercise of self-care in adulthood (Amaral et al., 2014), an important skill that is required when caregivers grow old and can no longer efficiently help with the life of their child (Dunn, Magalhaes & Mancini, 2014).

More than half of the sample (51,6%) classified performing household chores in the score range from 1 to 10 (up to 10 household tasks performed by them), according to the parents' report. However, 14 (22,6%) children in the sample performed between 18 and 34 household tasks which can probably enhance their development of autonomy and independence. The clinical group performed less complex tasks, such as putting their dirty clothes in a specifically

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designated place, storing their toys after playing, organizing their school material, and making their bed. In contrast, in addition to these and/or similar activities, children in the control group performed other more complex tasks, such as taking a phone message, sweeping, or mopping the house, and preparing hot meals for themselves. These differences between the groups are likely due to lower levels of cognitive functioning in the clinical group.

The benefits of performing household chores in childhood are evident in different domains, including those associated with autonomy, improved physical and mental health, socialization, and adaptive functioning, among others (Amaral et al., 2014). The results from a longitudinal study by White, Deboer and Scharf (2019) revealed that the frequency of participation in household chores in early childhood education proved to be a predictor of these indicators of skills and behaviors evaluated three years later, regardless of parental education and income. The low involvement of children and adolescents in the clinical group in these activities is likely to be an indicator of current limitations that in the long term will negatively impact and compromise the independence and adaptive functioning of these children in adulthood. In turn, this factor may further increase the burden of the exercise of parental care, as has been shown in previous studies in which higher levels of stress and mental health problems were identified in caregivers of adults with intellectual disabilities (Harr, Dunn, & Price, 2011; Amaral et al., 2014) autism (Kiquio & Gomes, 2018) and lower levels of autonomy in daily life.

One of our objectives was to verify the mental health problems and quality of life patterns of the parents. Parents of children with ASD could report worse family functioning and lower satisfaction with family life compared to parents of typically developing children (Walton, 2019). Our results showed that the parents of children with ASD and ID had worse quality of life (physical, psychological, and social domains). It is likely that the results are associated with the difficulties that parents of children with ID or ASD face in maintaining healthy routines at home (Yamaoka et al., 2015; Rousseau et al., 2017). Likely, the attention deficits reported by the parents of the clinical group interfere with their participation in

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leisure activities, as shown in previous studies (Gomes et al., 2015; Lucyshyn et al., 2015; Reilly, Murtagh & Senior, 2015; Nascimento et al., 2016).

Families of children with neurotypical development report better indicators of mobility and personal support than families with children who have ID or ASD (Jung, 2013; Ihara et al., 2014). In our study, only in the environment domain of the WHOQOL-bref was there no statistically significant difference between the groups, which is probably because the participants of both groups live in the same city. Despite the benefits of leisure activities on the adaptive functioning of people with ID and ASD, financial factors, the physical and mental health of the child and a lack of personal and social incentives can negatively impact the practice of such activities (Jung, 2013; Schreuer, Sachs & Rosenblum, 2014).

The main objective of the study was to identify predictors associated with the practice of leisure activities and the performance of household chores in children and adolescents with ID and ASD compared with the control group. The results did not show association between emotional and behavioral problems of children or parental mental health problems with the participation of children in leisure activities and household chores. Differently this association included the quality of life of parents. High scores in the psychological domain of the WHOQOL-bref showed the probability of dedicating hours to leisure activities. Probably the good interaction between parents and children contributes to the family spending more time together, this indicates that time spent on leisure activities is an important component of family life, and can provide opportunities for family members to interact, communicate and learn together (Walton, 2019). These results reinforce the need for parents to be involved in interventions aimed at stimulating the performance of daily activities and independence in children and adolescents with neurodevelopmental disorders (Daltro, Moraes & Marsiglia, 2018).

In people with ID and ASD, the dependence on a caregiver is more significant due to the multiple deficits in intellectual skills such as reasoning, problem-solving, and planning, as well as the deficits in adaptive functions, that make the child unable to achieve standards of personal independence and social responsibility that are expected in each culture or society. When the child does

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not reach standards of independence in activities of daily living - such as putting away their toys or tidying their room - it is likely that participation in leisure activities that demand autonomy may also be affected.

Conclusions

The results showed the low involvement of children and adolescents in the clinical group in both household chores and leisure activities, when compared to the control group. The result is probably due to the cognitive and behavioral impairments associated with ID and ASD. Leisure activities for children with ID and ASD can be essential precursors for the development of cognitive functioning, adaptive functioning, and improvements in mental health indicators.

Children and adolescents in the clinical group had more emotional and behavioral problems than the control group, and parents in the clinical group had fewer quality of life indicators. Such results highlight the need to create public policies aimed at including people with disabilities and their families in leisure activities that provide opportunities for the development of adaptive functioning. For example, the school context is an important environment to promote repertoires of personal autonomy and independence, just as interventions with parents can contribute to the adoption of appropriate educational practices for the development of children and adolescents with ID and ASD. In this study, the number of household chores performed by children and adolescents in the clinical group was associated with the social domain of the quality-of-life assessment scale, indicating the importance of parents receiving support to be able to promote adequate care for their children.

The study had limitations, for example, the small size of the sample, the non-adoption of multiple informants, the lack of cognitive measures of the children and adolescents as well as the evaluation of severity specifiers (severity level of adaptive functioning) of children and adolescents with ID and ASD. However, it is possible to conclude that children's involvement in leisure activities and household chores is associated with indicators of parents' quality of life, specifically in the social domain. Parents and caregivers must be involved in

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interventions that promote their mental health, as well as in social support networks so that children with neurodevelopmental disorders can be involved in leisure activities and the performance of household chores in an appropriate manner.

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