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Early Behavioral Risks for Childhood and Adolescent Daytime Urinary Incontinence and Nocturnal Enuresis

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Abstract

Objective—To investigate whether infant temperament and childhood internalizing, externalizing and inattention symptoms increase the likelihood of daytime urinary incontinence or nocturnal enuresis at 10 years and adolescence (11.9 – 17.8 years).

Method—Data were from a longitudinal cohort of 1,119 healthy Chilean children. We assessed behavioral symptoms at infancy, 5 and 10 years and their relationship with subsequent daytime urinary incontinence and nocturnal enuresis.

Results—Daytime urinary incontinence and nocturnal enuresis occurred in, respectively, 3.3% and 11% at 10 years, and 1.1% and 2.7% at adolescence. Difficult infant temperament was associated with increased odds of 10-year daytime urinary incontinence. Inattention at 5 years was associated with increased odds for nocturnal enuresis at 10 years and adolescence. Internalizing and externalizing symptoms at 5 years were associated with increased odds of 10-year daytime urinary incontinence and nocturnal enuresis. Internalizing and externalizing symptoms at 10 years were associated with adolescent nocturnal enuresis.

Conclusion—Temperament and internal/externalizing symptoms may be risk factors for school-age and adolescent urinary incontinence.

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The authors have no conflicts of interest.

The research described in this manuscript was conducted with human subjects and all study procedures were reviewed and approved by the relevant university institutional review boards. All study procedures were carried out in accordance with The Code of Ethics of the World Medical Association. Informed, written consent was obtained from all adult individual participants, and informed assent was obtained from child participants. This study did not involve animals.

Keywords

urinary incontinence; nocturnal enuresis; urinary control; infant temperament; internalizing symptoms; externalizing behaviors; childhood inattention; longitudinal

Introduction

Development of urinary continence, during day and night, is an essential milestone of childhood development. Between the ages of 4 and 7 years, most children achieve daytime and nighttime bladder control.¹ According to the International Children's Continence Society,² daytime urinary incontinence is defined as unintended leakage of urine during waking hours in children old enough to maintain bladder control. Nocturnal enuresis is defined by intermittent urinary incontinence during sleep in children, aged 5 years or older, after organic causes have been ruled out.

Daytime urinary incontinence and nocturnal enuresis are common lower urinary tract symptoms in children and adolescents and can lead to major distress in affected children and their parents.³ Children who have daytime incontinence and/or nocturnal enuresis suffer from low self-esteem as long as they continue to wet their pants and/or beds.⁴ Enuresis and daytime urinary incontinence can also be distressing for parents and is considered one of the most frustrating problems of childrearing.⁵ Parental intolerance of the problem may contribute to the development of psychological problems in children, and when some parents are convinced that their child is wetting on purpose, the risk of physical punishment is increased.⁶

Prevalence varies by age and gender. In studies of 6- to 14-year-old children, 10% were reported to have nocturnal enuresis, and 2.8% were reported to have daytime urinary incontinence.⁷ Daytime urinary incontinence is less prevalent than nocturnal enuresis and is typically resolved earlier in childhood.² Boys are more often affected by nocturnal enuresis, whereas girls are more often affected by daytime urinary incontinence.⁸ The prevalence of nocturnal enuresis tends to decrease with age, supporting the traditional idea of maturational delay in voiding control, even if other mechanisms may be involved.⁸

Associations between psychological factors and lower urinary symptoms have been described in children.⁹ In a large population-based study of 10,000 children between 4 and 9 years old in the U.K., delayed development and difficult temperament were found to be associated with children's daytime urinary incontinence.⁹ A 2011 review similarly found that 20–40% of children and adolescents with daytime urinary incontinence and 20–30% with nocturnal enuresis met criteria for a mental health disorder, such as ADHD, ODD and anxiety.³ ADHD with hyperactivity is associated with lower urinary tract symptoms, particularly nocturnal enuresis, with prevalence rates as high as 30%.¹⁰ In the general population, the overall rate of these behavioral disorders in children and adolescents is substantially lower, between 10% and 15%.¹⁰ Most prior studies are cross-sectional and cannot infer temporal precedence. To date, studies with longitudinal data on psychological factors and lower urinary tract symptoms have produced inconsistent findings. One study concluded that psychological problems are a consequence of nocturnal enuresis due to

distress and loss of self-esteem often reported by those affected.³ Other studies, however, suggest that psychological problems precede nocturnal enuresis.¹¹ Another consideration is the possibility of differential adherence to treatment for lower urinary tract symptoms in children with and without psychological disorders.¹² If psychological issues are not addressed, incontinence treatment may be less successful.¹² Thus, it is important to understand comorbid behaviors and their association with lower urinary tract symptoms to identify at-risk children and identify ways to improve treatment.

The objective of the current study was to investigate whether infant temperament and childhood internalizing, externalizing and inattention symptoms increase the likelihood of daytime urinary incontinence or nocturnal enuresis at 10 years and adolescence. The current study will extend earlier research in several ways. It will identify behavioral risks for both daytime urinary incontinence and nocturnal enuresis for school-age children and adolescents, something very few studies have done. Indeed, most studies focus on risk factors for nocturnal enuresis only. Additionally, with few exceptions,¹³ earlier studies have focused largely on urinary incontinence during childhood, with incontinence in adolescence rarely studied. Because incontinence during adolescence is relatively rare, large samples are needed with adequate follow-up at adolescence. The current study analyzes data from a relatively large cohort of Chilean children followed into adolescence.

The literature is not clear whether specific cultural practices of toilet training are a predictor of urinary incontinence. To our knowledge, there is no other study of daytime or nighttime urinary incontinence conducted in Chile. However, in a longitudinal study of sphincter control conducted in Brazil, another South American country, the authors found that children acquired sphincter control at a younger age than children from other western countries, including the U.S.¹⁴ Early toilet training has been suggested as a cultural preference.¹⁵ The current literature indicates that early toilet training (before 2 years of age) or late toilet training (after 36 months) may be a risk factor for lower urinary tract symptoms later in childhood.¹⁶ The cultural context of the current study should be considered in the interpretation of study findings and will be considered further in the Discussion.

Methods

Participants

Participants were children from low- to middle-income families who were studied at infancy, 5 years, 10 years, and adolescence ($M_{age} = 14.6$ years; 11.9–17.8 years) as part of an iron-deficiency anemia preventive trial and follow-up study in Santiago, Chile.¹⁷ The study originally involved 1,657 infants who were recruited from community clinics in Santiago between 1991 and 1996. All infants were healthy, term (birth weight > 3.0 kg) singletons and had no perinatal complications or acute or chronic illnesses. Detailed description of the study design and findings related to iron supplementation have been published elsewhere.¹⁷ The number of child participants with complete data, including behavior ratings, from each study wave were: 1657 from infancy, 707 from 5 years, 1119 from 10 years, and 816 from adolescence. Table 1 presents descriptive statistics of the study sample and study variables. The infant study and all follow-ups were approved by the relevant university institutional review boards in the U.S. and Chile. Signed informed consent was obtained from parents at

all time points; assent was obtained from children at 10 years and adolescence. All study procedures were carried out in accordance with The Code of Ethics of the World Medical Association.

Measures

At each study time point, Spanish versions of study measures were used. They were extensively pilot-tested with the population under investigation prior to conducting the study and shown to have good reliability and high equivalence to the English versions. The internal consistencies (Cronbach coefficient alpha) of all multi-item scales are shown in Table 1.

Fussy/Difficult Temperament at Infancy—Infant temperament was assessed at 6 months using maternal ratings on the Infant Characteristics Questionnaire,¹⁸ which has a fussy/difficult scale comprised of 6 questions, e.g., “How easy or difficult is it for you to calm or soothe your baby when he/she is upset?”. Response options range from 1 (very easy) to 7 (difficult). The items were summed to yield a possible score range of 6 to 42, with high scores indicating a more persistent difficult temperament.

5-year Internalizing and Externalizing Symptoms, and Inattention—When the children were 5 years, their mothers completed the Children’s Adaptive Behavior Inventory (CABI),¹⁹ a 106-item inventory assessing internalizing and externalizing symptoms. We analyzed only these items on the 5-year CABI that were similar to items available at 10 years on the Child Behavior Checklist (CBCL, described below).²⁰ For example, the CBCL includes the following three scales in its measurement of internalizing symptoms: anxious/depressed, withdrawn/depressed, and somatic complaints. The CABI also assesses children’s anxiety symptoms (“is nervous and tense”; 5 items), depressive symptoms (“is unhappy”; 6 items), and somatization symptoms (“stomach pain”, “headaches”; 5 items). These 16 CABI items were summed and used to index children’s internalizing symptoms at 5 years of age. Response options on the CABI were “never” (coded as 1), “rarely” (2), “repeatedly” (3), and “most of the time” (4), with the possible score range of internalizing symptoms 16 to 64.

Children’s externalizing symptoms and inattention at 5 years were also assessed on the CABI. Externalizing symptoms included 8 items that are also on the externalizing scale of the CBCL: “fights,” “breaks rules,” “cruel to others,” “lies,” “steals/grabs things,” “argues,” “looks for attention,” and “is with other kids who are a bad influence” (possible score range 8 – 32). The CABI inattention scale has 5 items: “problems concentrating,” “easily distracted,” “loses interest in an activity,” “needs constant reminding,” and “immature or acts young for his age” (possible score range: 5 – 20). The CABI scores for internalizing behaviors, externalizing behaviors, and inattention at age 5 correlated significantly with these scores on the CBCL as assessed at age 10 (r s: .49, .50, and .42, respectively, $p < .001$).

10-year Internalizing and Externalizing Symptoms, and Inattention—Mothers completed the CBCL²⁰ at 10 years to assess children’s internalizing, externalizing, and inattentive symptoms. The internalization scale on the CBCL includes items assessing child

anxiety/depression (“is nervous,” “is sad”; 13 items), social withdrawal (“shows little interest,” “is withdrawn”; 7 items), and somatic complaints (“has headaches,” “stomach problems”; 11 items). The externalizing scale includes items assessing children’s aggression (“fights,” “hits others”; 18 items) and rule breaking (“lies/cheats,” “steals from others”; 14 items). The inattention scale consists of 8 items (“can’t concentrate,” “can’t sit still”). Response options were “not true” (coded as 0), “somewhat or sometimes true” (1), and “very true or often true” (2), yielding a possible score range of 0 – 62 for internalizing, 0 – 64 for externalizing, and 0 – 16 for inattention.

Urinary Incontinence at 10 years and in Adolescence—Urinary incontinence (daytime urinary incontinence and nocturnal enuresis) was measured by mothers’ report on the CBCL at 10 years and in adolescence.²⁰ Mothers answered whether their child had “wet self during the day” or “wet bed” during the past 6 months, with response options of “not true,” “somewhat or sometimes true,” and “very true or often true.” Responses were coded as ever (1) if they responded “somewhat or sometimes true” or “very true or often true” or never (0) if they responded “not true”.

Covariates

Children who participated at infancy (1657), 5 years (707), 10 years (1119), and adolescence (816) did not differ in background characteristics as assessed at infancy, except for: 1) those studied at 5 years had lower SES scores than those studied in infancy; and 2) those followed up at adolescence were older than those not followed up. Thus, we included SES and adolescent age as covariates in the relevant analyses. In addition, analyses controlled for child and family background characteristics expected to relate to the study variables. Covariates considered were child age at each study time point, child sex, family SES,²¹ family stress,²² mothers’ IQ,²³ mothers’ depressive symptoms,²⁴ mothers’ highest level of education, and the emotional and material support provided in the child’s home environment.²⁵ Maternal depressive symptoms, years of education, and IQ were not related to any of the study variables and were not considered further. All other covariates considered were included as controls.

Statistical Analysis

Logistic regression was performed to identify risk factors for daytime and nighttime incontinence at age 10 and adolescence. Odds ratios and 95% confidence intervals were used to assess the association between risk factors and daytime and nighttime urinary incontinence.

Results

Descriptive statistics are shown in Table 1. Most mothers had a 9th grade education (9 years of education was compulsory in Chile at the time of the study), and mothers’ IQ was, on average, 84, which is consistent with a 9th-grade education. The children’s home environments were generally supportive, and the number of family stressors was minimal and consistent with families of low- to middle-income. At age 10, 127 (11.4%) children (75 boys and 52 girls) were reported by their mothers as having nocturnal enuresis and 37

(3.3%) as having daytime urinary incontinence (18 boys and 19 girls). At adolescence, nocturnal enuresis was reported in 22 (2.7%) individuals (15 boys and 7 girls) and daytime urinary incontinence in 9 (1.1%) adolescents (5 boys and 4 girls). Prevalence did not differ significantly by sex. Urinary incontinence was stable from 10 years to adolescence: for those with daytime urinary incontinence at 10 years, the odds for continued symptoms at adolescence was 17.0 ($p < 0.001$). Similarly, for those with nocturnal enuresis at 10 years, the odds for nocturnal enuresis at adolescence was 32.4 ($p < 0.001$). If a child had either condition at 10 years, the odds of having either condition at adolescence was 19.8 ($p < 0.001$).

Infancy and Childhood Behavioral Risk Factors for Later Urinary Incontinence

Table 2 presents the odds ratios associated with each behavioral risk factor at infancy or 5 years for 10-year and adolescent daytime urinary incontinence and nocturnal enuresis. Results are expressed as the increase in odds for each outcome per one standard deviation (SD) increase in the risk factor. In all cases, adjusting for covariates (potential confounders) did not attenuate the effects.

Results indicated that difficult temperament at infancy was associated with increased odds of daytime urinary incontinence at 10 years (OR= 1.67; 1.05 – 2.65) but not at adolescence. There was no association between infant temperamental difficulty and nocturnal enuresis at any time point.

Children rated as having internalizing symptoms at 5 years had a higher likelihood of daytime urinary incontinence (OR= 1.90; 1.21 – 3.00) and nocturnal enuresis at 10 years (OR=1.38; 1.07 – 1.78). There was no association between internalizing behaviors at 5 years and daytime urinary incontinence or nocturnal enuresis at adolescence. Externalizing behaviors at 5 years were also associated with both daytime urinary incontinence and nocturnal enuresis at 10 years (OR=1.94; 1.17 – 3.22 and OR=1.40; 1.07 – 1.85, respectively) and with nocturnal enuresis at adolescence (OR=2.01; 1.21 – 3.34).

Inattention at 5 years was associated with an increased likelihood of nocturnal enuresis at both 10 years (OR= 1.30; 1.02 – 1.68) and adolescence (OR= 2.06; 1.28 – 3.32). There was no association between inattention at 5 years and daytime urinary incontinence at either time point.

School-age Risk Factors for Urinary Incontinence

Internalizing, externalizing and inattentive symptoms at 10 years were associated with daytime urinary incontinence and nocturnal enuresis at 10 years (Table 2). When looking at across-time relations, internalizing, externalizing and inattentive symptoms at 10 years were each related to nocturnal enuresis but not daytime urinary incontinence at adolescence.

Discussion

This study sought to determine whether and to what extent infant temperament and childhood internalizing, externalizing and inattention symptoms increase the likelihood of daytime urinary incontinence or nocturnal enuresis at 10 years and adolescence. The present

study found evidence that early childhood internalizing, externalizing and inattentive symptoms were associated with daytime urinary incontinence and nocturnal enuresis at 10 years and nocturnal enuresis at adolescence. In addition, a difficult temperament in infancy was associated with a 67% increased risk of daytime urinary incontinence at 10 years. Temperament, or individual differences in reactivity and self-regulation, is widely believed to have a constitutional basis.²⁶ It is possible that the biologic irregularity associated with high reactivity and poor self-regulation contributes to infant fussing/crying and perhaps to urinary incontinence in later childhood. Another hypothesis is that children with a difficult temperament struggle with toilet training, resulting in associated long-term effects on continence. There is evidence, for example, that children with difficulties in toilet training are less adaptable and show more negative mood than those without toilet training difficulties.²⁷

Second, study findings show that children with inattentive symptoms at 5 years had increased odds of nocturnal enuresis at 10 years and adolescence. Moreover, inattentive symptoms at 10 years were associated with nocturnal enuresis at 10 years and two times the odds of nocturnal enuresis in adolescence. Although the current study did not have a measure of a clinical diagnosis of ADHD, the co-occurrence of ADHD, particularly ADHD-inattentive type, and enuresis has been previously reported.¹⁰ Deficient prepulse inhibition (i.e., inhibition of a reaction to a strong startling stimulus by a weaker “prestimulus”) has been discussed as a possible underlying factor linking enuresis and ADHD, with work by Ornitz and colleagues finding that the brainstem mechanism inhibiting the pontine micturition center was deficient in children with enuresis and even more pronounced in cases of co-morbid enuresis and ADHD.²⁸ Thus, the link we observed between inattentive symptoms and subsequent nocturnal enuresis could be due to a common underlying neurological factor, perhaps reflecting delayed maturation or developmental differences of the central nervous system.²⁹

Third, the current findings indicate that internalizing symptoms (anxiety/depression, social withdrawal, somatization) and externalizing symptoms (aggression, rule-breaking) at 5 years of age were associated with both daytime urinary incontinence and nocturnal enuresis at 10 years. Children with externalizing behaviors at 5 years also had a 2-fold risk of nocturnal enuresis at adolescence. Additionally, internalizing and externalizing symptoms at 10 years were associated with nocturnal enuresis but not daytime urinary incontinence at adolescence. These findings are in line with results from a large epidemiological study in the U.K. that found that emotional difficulties and conduct problems at 4 years were related to risk for nocturnal enuresis between 4 and 9 years.¹¹ Joinson and colleagues hypothesize several potential overlapping causes of incontinence and children’s psychological and behavioral problems, including family stress, poor parenting, and neurobiological deficits.¹¹ Although studied here as a covariate, family stress in the current study was not related to urinary incontinence at either time point but was correlated with behavioral and psychological risk factors at both 10 years and adolescence. Further research is needed, however, to isolate and disentangle the cause and effects of lower urinary tract symptoms, and to uncover the potential shared risk factors of temperament and internalizing and externalizing problems for daytime urinary incontinence and nocturnal enuresis in children and adolescents.

Limitations and Strengths

This study involved secondary analysis of existing data of a cohort study that was not conducted as an in-depth study of childhood incontinence. Urinary incontinence over a 6-month period was assessed solely by mother ratings on two questions on an existing larger questionnaire. Use of validated instruments or corroborating reports of incontinence by teachers or the child would have helped verify mother reports. Additionally, measurement of children's behavioral, internalizing, and inattention problems was by maternal report, and thus there is a potential for shared-method bias. For example, it is not uncommon for parents to resent their children for incontinence,⁶ and such parents may be more likely to rate their child as having behavioral or socioemotional difficulties. Additionally, the small numbers of adolescents with daytime urinary incontinence in the current study likely limited the ability to find associations with risk factors. It is noteworthy that no risk factors were found to be related to daytime urinary incontinence at adolescence, which likely resulted from low power associated with these analyses. As noted in the methods, the instruments used to assess externalizing and internalizing symptoms at 5 and 10 years of age were not identical. Despite our efforts to make the measurement scales comparable, differences in the associations between 5- and 10-year internalizing and externalizing symptoms and children's urinary incontinence might reside in differences in the items used as predictors. Additionally, the assessment at adolescence covered a wide age range (11.9 to 17.8 years), which might have affected the relations found. Finally, cultural practices surrounding toilet training should be considered in interpreting study findings. For example, cultural preferences exist in toilet training practices,¹⁵ with early toilet training a risk for subsequent dysfunctional voiding.¹⁶ The current study did not have information on this sample of Chilean parents' toilet training practices nor how such practices might relate to the prevalence of lower urinary tract symptoms in childhood. These issues should be considered in future studies of childhood incontinence.

Strengths of the current study include its longitudinal design, which was necessary to identify infant and early childhood risk factors for subsequent urinary incontinence at school-age and adolescence. Most previous studies reporting associations between psychological factors and urinary incontinence, were cross-sectional and unable to address temporal precedence. Our findings suggest that some psychological, behavioral, and inattentive problems may be present before the age when urinary control is expected and could be considered as risk factors for incontinence during later school age or adolescence. However, we caution that the current findings show only an association between early symptoms and later urinary incontinence, not necessarily a causal connection. Demonstrating causality would involve different research designs and analyses. For example, research that involves repeated measures of behavior problems and incontinence throughout childhood could more adequately infer causality.

The current findings are based on a large, non-clinical community sample. Previous studies have been largely based on clinical samples, often from tertiary centers with a predominance of refractory cases and referral bias,³⁰ making extrapolation to a primary care setting difficult. In addition, all study children were healthy as newborns, allowing us to discount neonatal health problems as possibly confounding subsequent incontinence issues.

The current findings extend earlier research in several other ways. The results provide evidence of behavioral risks for both daytime urinary incontinence and nocturnal enuresis for school-age children and adolescents, something very few studies have done. Indeed, most studies examine risk factors for nocturnal enuresis, with few studies examining risks for daytime incontinence or urinary incontinence in adolescence.

Conclusions and Clinical Significance

The current study adds further evidence that early-life temperament and behavior relate to subsequent daytime and nighttime incontinence. The study also provides information about lower urinary tract symptoms in a large, community-based sample of children and adolescents. The results suggest new possibilities for research on the early identification of daytime and nighttime incontinence in later childhood and adolescence. In clinical practice, children with behaviors problems are less compliant to treatment of enuresis.²⁷ Thus, if behavioral issues are not addressed, incontinence treatment may be less successful. Additionally, the families of children with incontinence can benefit from anticipatory guidance, especially during the sensitive transition period of toilet training, when the demands for compliance can be challenging for children with a difficult temperament or attention or behavioral problems. The current findings also suggest that it is important for clinicians to be aware that children with daytime incontinence and/or nocturnal enuresis may be affected by co-existing behavior problems so that screening and effective interventions can be implemented.

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Table 1**Descriptive Statistics of the Sample and Study Measures**

	N	% or Mean	(SD)	Score range	Internal reliability
<u>Background characteristics^a</u>					
Child sex (male)	1119	55.3%			
Family socioeconomic status	1111	27.5	(6.4)	13 – 78	0.61
Family stress	1093	4.7	(2.8)	0 – 30	0.91
Mothers' IQ	1111	84.0	(9.6)	45 – 155	
Mothers' depressed mood	1119	16.3	(12.3)	0 – 60	0.85
Mothers' years of education	1113	9.5	(2.7)	1 – 17	
Home supportive environment	1112	30.2	(4.8)	0 – 45	0.80
Child age at 10-year follow-up	1119	10.0	(0.0)	10.0 – 10.1	
Child age at adolescent follow-up	816	14.6	(1.5)	11.9 – 17.8	
<u>Risk factors</u>					
Difficult temperament at infancy	1119	19.4	(5.6)	6 – 42	0.68
Internalizing symptoms – 5 years	707	32.7	(6.4)	16 – 64	0.71
Externalizing symptoms – 5 years	707	16.5	(3.7)	8 – 32	0.65
Inattention – 5 years	707	10.7	(3.4)	5 – 20	0.70
Internalizing symptoms – 10 years	1119	15.6	(8.2)	0 – 62	0.71
Externalizing symptoms – 10 years	1119	15.4	(8.5)	0 – 64	0.75
Inattention – 10 years	1119	6.2	(3.8)	0 – 16	0.73
<u>Urinary incontinence^b</u>					
Daytime urinary incontinence – 10 years	1119	3.3%		0, 1	
Nocturnal enuresis – 10 years	1119	11.4%		0, 1	
Daytime urinary incontinence - adolescence	816	1.1%		0, 1	
Nocturnal enuresis - adolescence	816	2.7%		0, 1	

^a Assessed at infancy unless otherwise noted.^b Coded as present = 1 or absent = 0.

Table 2

Infancy, 5-year and 10-year Behavioral Risk Factors Related to 10-year and Adolescent Urinary Incontinence

	10 years		Adolescence	
	Daytime Urinary incontinence	Nocturnal Enuresis	Daytime Urinary incontinence	Nocturnal enuresis
Infancy				
Difficult temperament	1.67[*] (1.05, 2.65)	1.18 (0.88, 1.60)	2.24 (0.81, 6.20)	0.82 (0.56, 1.77)
Risk factor – 5 years				
Internalizing	1.90^{**} (1.21, 3.00)	1.38[*] (1.07, 1.78)	1.88 (0.95, 3.78)	1.38 (0.86, 2.20)
Externalizing	1.94^{**} (1.17, 3.22)	1.40^{**} (1.07, 1.85)	1.34 (0.62, 2.92)	2.01^{**} (1.21, 3.34)
Inattention	1.25 (0.78, 1.99)	1.30[*] (1.02, 1.68)	1.24 (0.60, 2.60)	2.06^{**} (1.28, 3.32)
Risk factor – 10 years				
Internalizing	2.33^{***} (1.63, 3.38)	1.32^{**} (1.05, 1.64)	1.36 (0.73, 2.54)	1.53[*] (1.02, 2.27)
Externalizing	1.70^{**} (1.16, 2.49)	1.32[*] (1.05, 1.67)	1.32 (0.72, 2.45)	1.78[*] (1.21, 2.58)
Inattention	1.85[*] (1.26, 2.77)	1.34^{**} (1.06, 1.68)	1.59 (0.85, 2.94)	2.35^{***} (1.52, 3.60)

Note. Adjusted for child gender, family socioeconomic status, the home environment, family stress, and age at adolescence. Statistically significant associations are bolded.

^{*}
 $p < .05$.

^{**}
 $p < .01$.

^{***}
 $p < .001$.