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Autism: symptoms versus prevalence

Sebastian Lundström



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RESEARCH



OPEN ACCESS



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Autism phenotype versus registered diagnosis in Swedish children: prevalence trends over 10 years in general population samples

Sebastian Lundström,^{1,2} Abraham Reichenberg,³ Henrik Anckarsäter,² Paul Lichtenstein,⁴
Christopher Gillberg¹



RESEARCH



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Autism phenotype versus registered diagnosis in Swedish children: prevalence trends over 10 years in general population samples

Sebastian Lundström,^{1,2} Abraham Reichenberg,³ Henrik Anckarsäter,² Paul Lichtenstein,⁴ Christopher Gillberg¹

Results: no increase in autism symptomatology but a monotonic increase in registered autism diagnoses



[ladda fler kommentarer \(5 svar\)](#)

↑ [-] [theunderhillaccount](#) 14 poäng 4 månader sen

↓ This has been known--and there have been peer-reviewed publications addressing this issue--for years.

[permalänk](#)

[ladda fler kommentarer \(1 svar\)](#)

↑ [-] [StarkRG](#) 8 poäng 4 månader sen

↓ I'm assuming this new study was published in the Journal of Obvious Conclusions published by Noshit Sherlock.

[permalänk](#)



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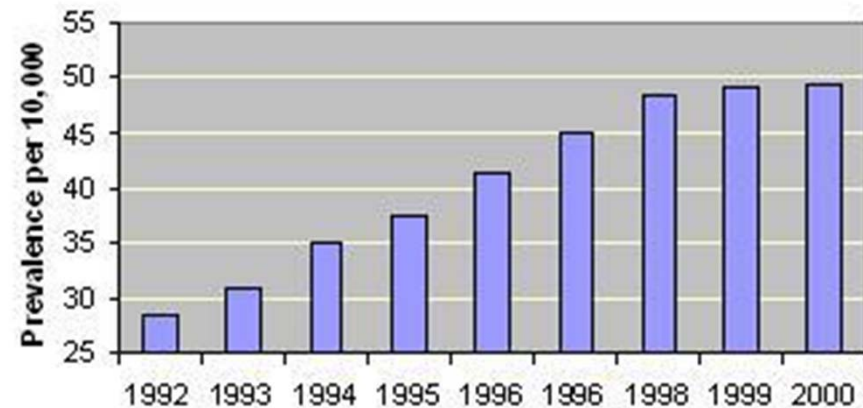
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Background

- 20 fold increase (1966-2011)

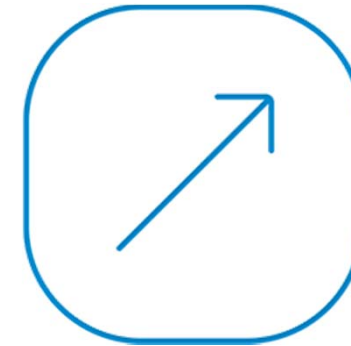
Prevalence of autism by birth cohort



*Lotter 1966; Fombonne 2009; Gillberg 1993; Baird 2006;
Brugha 2011; King & Bearman 2011*



Background



- 20 fold increase (1966-2011)
- **Recent studies report even higher estimates**
 - **South Korea 2.6%**
 - **United States 2.0%**
 - **Stockholm 2.5%**

Kim 2011; Blumberg 2013; Idring 2015.



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Background

Explanation 1:



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Background

Explanation 1: Environmental



Background

Explanation 1: Environmental

- **Premature births**
- **Environmental toxins**
- **Valproate use during pregnancy**
- **Vitamin D deficiency**

Kočovská 2012, *D'Onofrio* 2013, Christensen 2013,
McCanlies 2012; *Volk* 2013; *Jung, Lin & Hwang* 2013; *Deth*
2008



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Background

Explanation 1: Environmental

Explanation 2: **Genetic / biological**



Background

Explanation 1: Environmental

Explanation 2: Genetic / biological

- **Increasing paternal and maternal age**
- **IVF**
- **Genetics**

*Reichenberg 2006; Lundström 2010; Sandin 2012 & 2013;
Idring 2014.*



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Background

Explanation 1: Environmental

Explanation 2: Genetic / biological

Explanation 3: It is not real



Background

- Broadening of the diagnostic criteria



Wing 2002 ; Wasana 2007; Hansen 2014.



Background

- Broadening of the diagnostic criteria
- Increasing awareness → diagnostic substitution



. *Coo 2008; King 2009; Shattuck 2006; Bishop 2008*



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Background

- Broadening of the diagnostic criteria
- Increasing awareness → diagnostic substitution
- Referral patterns and availability of services

. *Shattuck 2009; Blenner 2014; Lavelle 2014*



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Child and Adolescent Twin Study in Sweden (CATSS)

Data from > 27 000 twins

75% answering frequency



www.AUSTRALIANACADEMICPRESS.com.au

ARTICLE AVAILABLE ONLINE
Twin Research and Human Genetics
Volume 14 ■ Number 6 ■ pp. 495–508

The Child and Adolescent Twin Study in Sweden (CATSS)

Henrik Anckarsäter,^{1,2} Sebastian Lundström,^{*2,3} Linnea Kollberg,⁴ Nora Kerekes,^{1,3} Camilla Palm,⁴ Eva Carlström,⁴ Niklas Långström,^{3,4} Patrik K. E. Magnusson,⁴ Linda Halldner,^{4,5} Sven Bölte,^{5,6} Christopher Gillberg,^{7,8} Clara Gumpert,⁹ Maria Råstam,^{7,10} and Paul Lichtenstein⁴

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Autism-Tics, AD/HD and other Comorbidities inventory (A-TAC)

- Parental telephone interview



I. Socialt samspel	För alla frågor gäller om problemet/egenheten varit framträdande någon gång under livet jämfört med jämnåriga.	Ja	Ja, i viss mån	Nej
40	Har han/hon svårt att uttrycka sig med ansiktsuttryck, gester, tonfall eller kroppshållning?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
41	Har han/hon påtagliga svårigheter med kamratkontakter?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
42	Är han/hon ointresserad av att dela glädje, intressen och aktiviteter med andra?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
43	Kan han/hon bara vara med andra på sina egna villkor?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
44	Har han/hon svårt att uppföra sig på det sätt som kamraterna förväntar sig?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
45	Är han/hon lättpåverkad av andra?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

www.childnps.se



- **Well Validated**

- **Sensitivity:**

- The tests ability to identify **positive** results

- **Specificity:**

- The tests ability to identify **negative** results

	Sensitivity	Specificity
ASD Low (4.5)	0.96	0.88
ASD High (8.5)	0.71	0.95



RESEARCH ARTICLE

Open Access

The Autism - Tics, AD/HD and other Comorbidities inventory (A-TAC): further validation of a telephone interview for epidemiological research

Tomas Larson^{1*}, Henrik Anckarsäter^{1,2}, Carina Gillberg², Ola Ståhlberg², Eva Carlström³, Björn Kadesjö², Maria Råstam¹, Paul Lichtenstein¹, Christopher Gillberg²

BRITISH JOURNAL OF PSYCHIATRY (2005), 187, 262-267

Psychiatric telephone interview with parents for screening of childhood autism – tics, attention-deficit hyperactivity disorder and other comorbidities (A-TAC)

Preliminary reliability and validity

SARA LINA HANSSON, ANNIKA SVANSTROM ROJVALL, MARIA RASTAM, CARINA GILLBERG, CHRISTOPHER GILLBERG and HENRIK ANCKARSATER



RESEARCH ARTICLE

Open Access

Predictive properties of the A-TAC inventory when screening for childhood-onset neurodevelopmental problems in a population-based sample

Tomas Larson^{1*}, Sebastian Lundström^{2,3,4}, Thomas Nilsson², Eva Norén Selinus², Maria Råstam¹, Paul Lichtenstein¹, Clara Hellner Gumpert⁵, Henrik Anckarsäter^{1,2} and Nöta Kerekes^{2,3}



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Autism-Tics, AD/HD and other Comorbidities inventory (A-TAC)

- Construction of A-TAC remove biases



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Autism-Tics, AD/HD and other Comorbidities inventory (A-TAC)

- **Construction of A-TAC remove biases**
 - Does not disclose which questions pertain to which disorder



Autism-Tics, AD/HD and other Comorbidities inventory (A-TAC)

- **Construction of A-TAC remove biases**
 - Does not disclose which questions pertain to which disorder
 - Administered by laymen over the phone



Autism-Tics, AD/HD and other Comorbidities inventory (A-TAC)

- **Construction of A-TAC remove biases**
 - Does not disclose which questions pertain to which disorder
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 - Avoid adherence to mutually exclusive DSM criteria



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 - Does not disclose which questions pertain to which disorder
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 - Avoid adherence to mutually exclusive DSM criteria
 - Evaluate life-time presence of symptoms and behaviors



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 - Evaluate life-time presence of symptoms and behaviors
 - Same questions for 10 years



Autism-Tics, AD/HD and other Comorbidities inventory (A-TAC)

- **Construction of A-TAC remove biases**
 - Does not disclose which questions pertain to which disorder
 - Administered by laymen over the phone
 - Avoid adherence to mutually exclusive DSM criteria
 - Evaluate life-time presence of symptoms and behaviors
 - Same questions for 10 years
- **Suitable for identification of real changes**



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Methods

- CATSS >27,000 twins
- **National Patient Register (n = 1,078,975)**



Methods

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- National Patient Register (n = 1,078,975)
 - All ASD diagnoses according to ICD-9 and 10

Idring 2012



Methods

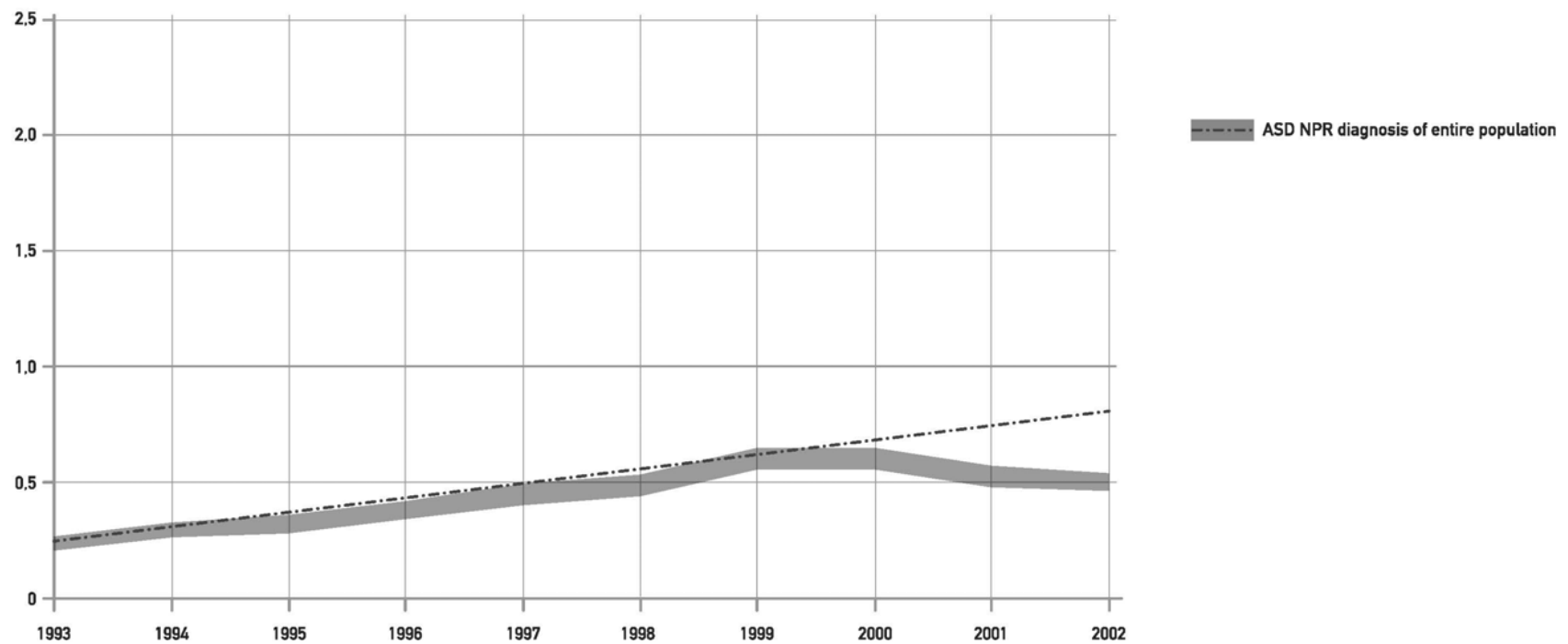
- CATSS >27,000 twins
- **National Patient Register (n = 1,078,975)**
 - All ASD diagnoses according to ICD-9 and 10
 - **Same "exposure" time**



Results

Prevalence per year of birth

(95% confidence intervals, regression lines depicted within confidence intervals)



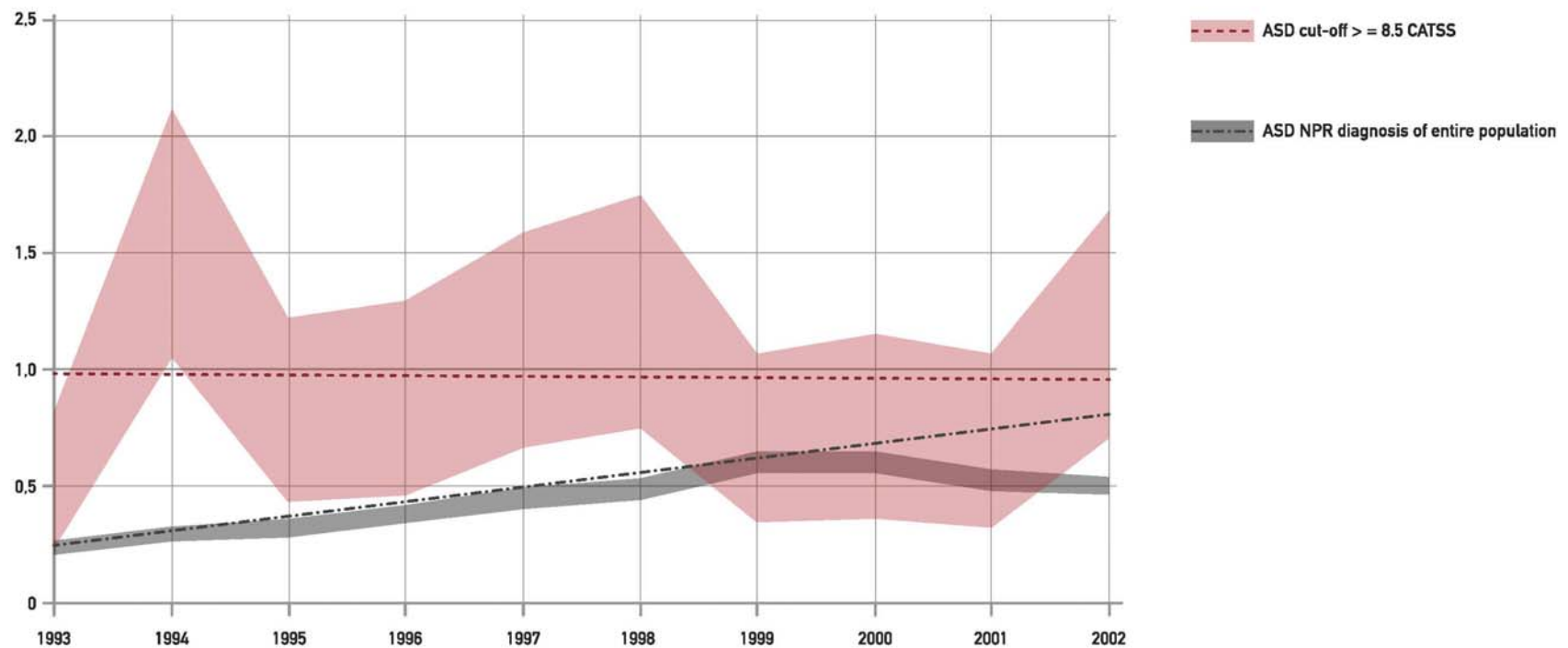
Lundström et al., 2015



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Conclusion

- **Prevalence is probably increasing due to administrative and practical factors**



Conclusion

- Prevalence is probably increasing due to administrative and practical factors
- **Historically underestimated?**

Gillberg 1983; Gillberg 1991



Conclusion

- Prevalence is probably increasing due to administrative and practical factors
- Historically underestimated?
- **Incidence?**

Chakrabati 2001; Chakrabati 2004; Sandin 2014



Conclusion

- Prevalence is probably increasing due to administrative and practical factors
- Historically underestimated?
- Incidence?
- **Too much focus on ASD?**



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Thank you for listening!

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