



# ASD Screening in Primary Care: 10 Years of the M-CHAT Program in Spain

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## Background

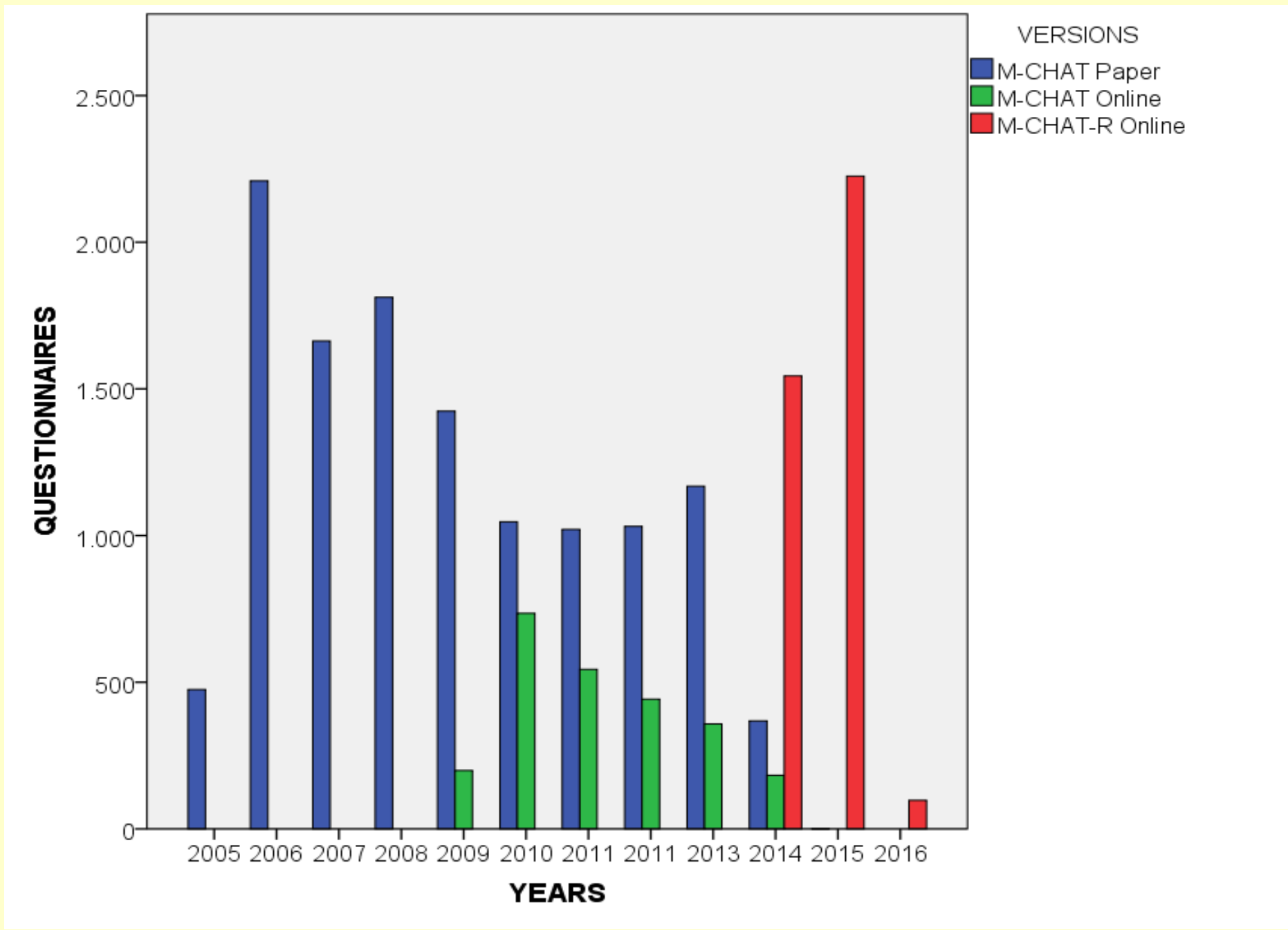
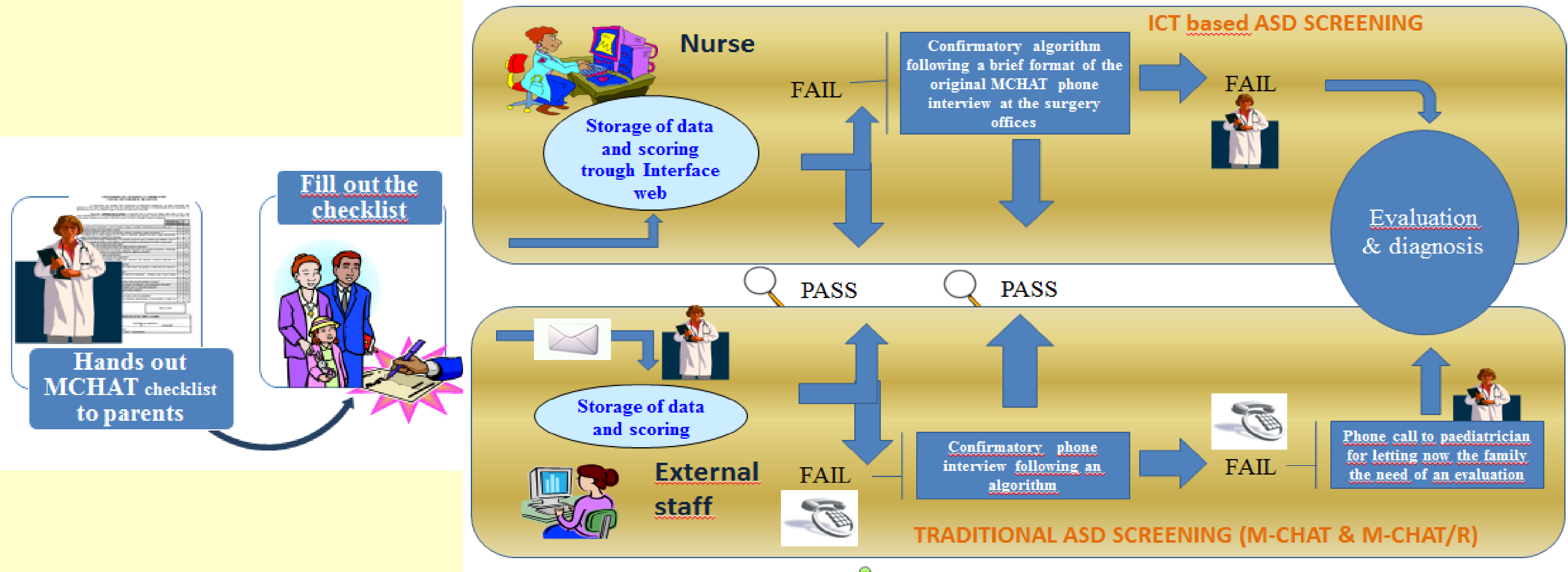
Great efforts have been put into developing methods for early identification of toddlers with autism spectrum disorder (ASD) (Zwaigenbaum et al 2015). Despite the recommendation from the American Academy of Pediatrics (AAP) to do population-based screening (first-level) for ASD (Johnson & Myers, 2007) sifted specifically at least in two occasions to all children before two years of age, it has been traditionally hardly approached from the public health system (PHS) perspective. Therefore there is a need to validate the usage of standardized instruments as a cost-efficient strategy in the PHS.

## Objectives

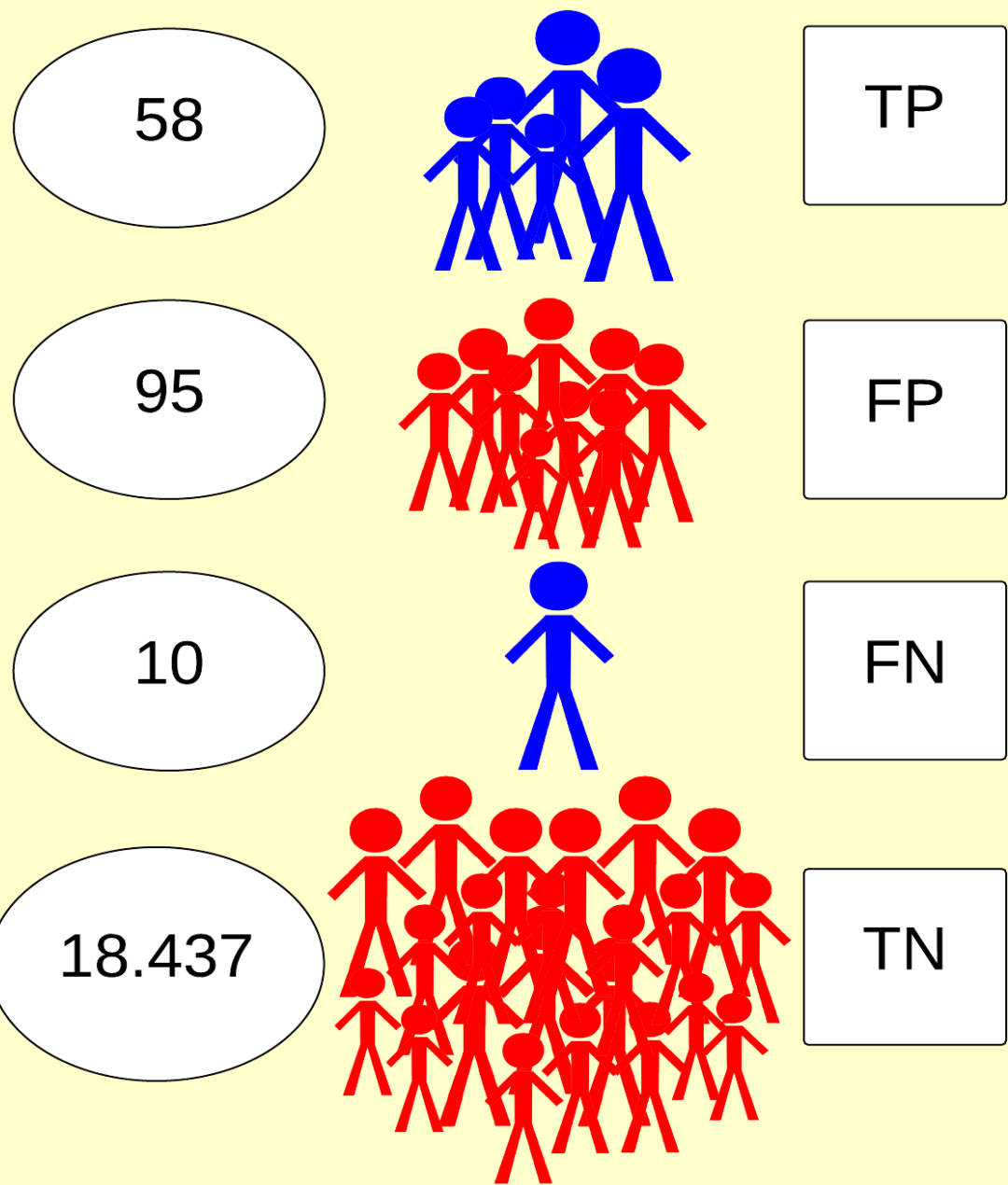
The main goal of this study is to evaluate the “M-CHAT ASD Early Screening Population-based Program”, after 10 years ongoing in two regions of the North of Spain (Salamanca and Zamora), in terms of feasibility, reliability and costs with the purpose of extending the program at regional and national levels.

## Methods

Parents of 18 months and/or 24 months aged children residing the geographical area during the study period (October 2005-October 2015), were asked to fill the Spanish version of the **M-CHAT (updated version M-CHAT/R since April 2014)** at the outpatient health services (compulsory *vaccination programme and well-child check-up programme* respectively) by a professional working at any of the total 54 pediatric teams (nurses and pediatricians) of the PHS that received training and agreed to participate (every team in the area). Scripted phone follow-up was done for positive (failed) screens and, differential diagnosis was made following a standardized protocol, using **Vineland, Merril-P-R and ADOS-G**. A well established coordination with the ASD early intervention centres, and the Hospital diagnosis units of the area served as surveillance for tracking false negatives of both provinces.



## Results



		Estimated Value	95% Confidence Interval	
			Lower Limit	Upper Limit
	Prevalence	0.004	0.003	0.005
	Sensitivity	0.853	0.742	0.923
	Specificity	0.995	0.994	0.996
	Positive Predictive Value	0.379	0.303	0.461
	Negative Predictive Value	0.999	0.999	0.999
	Likelihood Positive Ratio	166.386	133.057	208.065
	Likelihood Negative Ratio	0.148	0.083	0.262

		Results with MCHAT & MCHAT-R				Results after diagnosis evaluation			
		Total	Initial Screening positive	Out of follow-up	Positive after follow-up	True Negatives	True Positives	False Negatives	False Positives
M-CHAT	Salamanca	9.025	917	48	83	8.900	31	3	53
	Zamora	6.280	632	47	55	6.202	18	5	28
	TOTAL	15.305	1.549	95	138	15.102	49	8	81
M-CHAT-R	Salamanca	2.016	56	11	25	1.983	7	2	10
	Zamora	1.360	26	2	9	1.352	2	0	4
	TOTAL	3.376	82	13	34	3.335	9	2	14
BOTH REGIONS (MCHAT + MCHAT-R)		18.681	1.631	108	172	18.437	58	10	95

## Conclusions

This study shows for the first time in Spain, the feasibility of a long lasting population-based ASD screening program within the PHS. The current findings suggest that training on social and communicative development and dissemination of ASD early signs among pediatric teams, besides the use of a standardized tool, is essential for progress in the early detection of these disorders. The feasibility of this program should be considered for future strategies on ASD early detection by Health Policy makers at international level.

