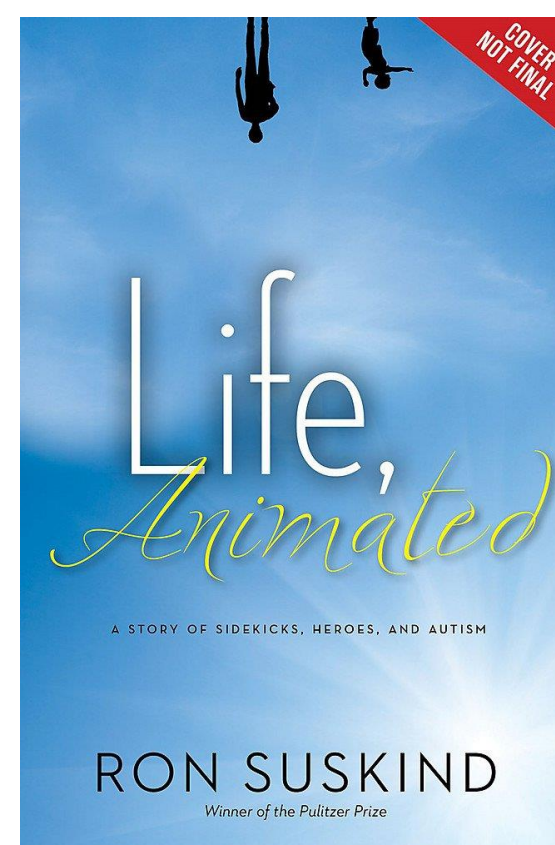


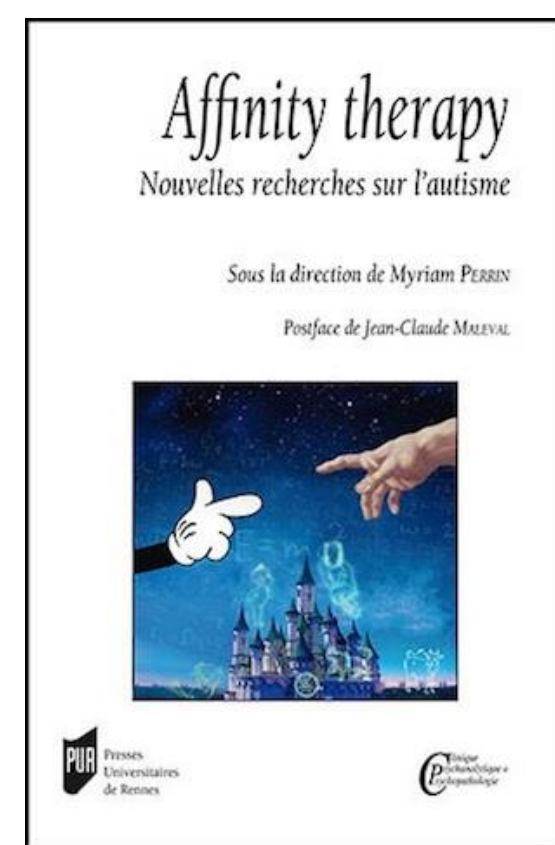
# Assessing and quantifying the behavior of ASD people in presence of their affinity

## What is Affinity Therapy?

Most of people suffering from Autism Spectrum Disorders (ASD) **have a specific and personal interest in a particular thing**, such as a toy, a subject (e.g. traffic, plane...), an interest in cartoons or music to name a very few of them.



Affinity therapy exactly relies on such particular interest from which a **sustained connection between the autism's world and an exterior world can be made**.



This affinity, that used to be denounced as being an "obsession" or some "momentary fad", turns out to be **the main support for a treatment as an opening to the word**, to socialization and to learnings.

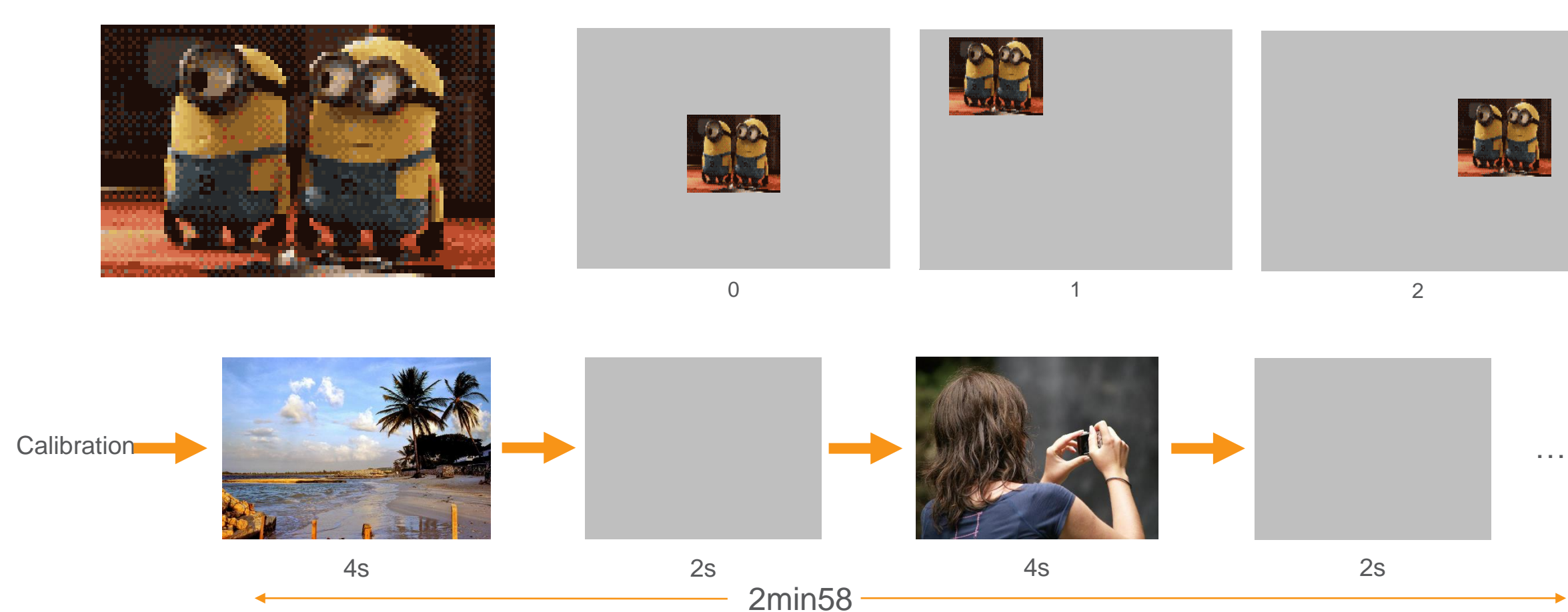
## Research question

*Can we provide evidence that the visual engagement of ASD people increases in presence of their visual affinity?*

## A long road for defining an innovative eye-tracking protocol

For respecting the welfare of the subjects and to place them above all scientific considerations, we proceed in two stages:

- Two weeks of immersion in Medical Educational Institutes (MEI)**, for investigating the pattern of thoughts of each autistic mind which develops from a key that is said "affinity" or also, in psychoanalytic terms, "autistic border":
  - Joining and participating to their daily life
  - Identifying subjects who might be part of that study with their affinities and to collect clinical data necessary to the experiment.
- Eye tracking experiments**, in two steps, calibration and tracking:



25 neutral images + 5 affinity

This protocol has been deployed thanks to the collaboration of 3 MEI, namely **Poligné, Fougères and Nonette**, with whom a relationship built on mutual trust has been created. **More than 30 subjects** have been involved in this action.

MIE	Participants	Age	[σ, ρ]
Poligné	7	19 +/- 2	[5,2]
Fougères	17	16 +/- 2	[13,4]
Nonette	12	29 +/- 7	[9,3]

## WE HAVE TO GO FURTHER!!

Results of the exploratory action support our research hypothesis. The visual engagement increases in presence of affinity. However, we have to go further by considering other modalities such as the voice, the physical engagement... We also need to revisit in-depth the eye-tracking protocol and the calibration procedure.

### Team



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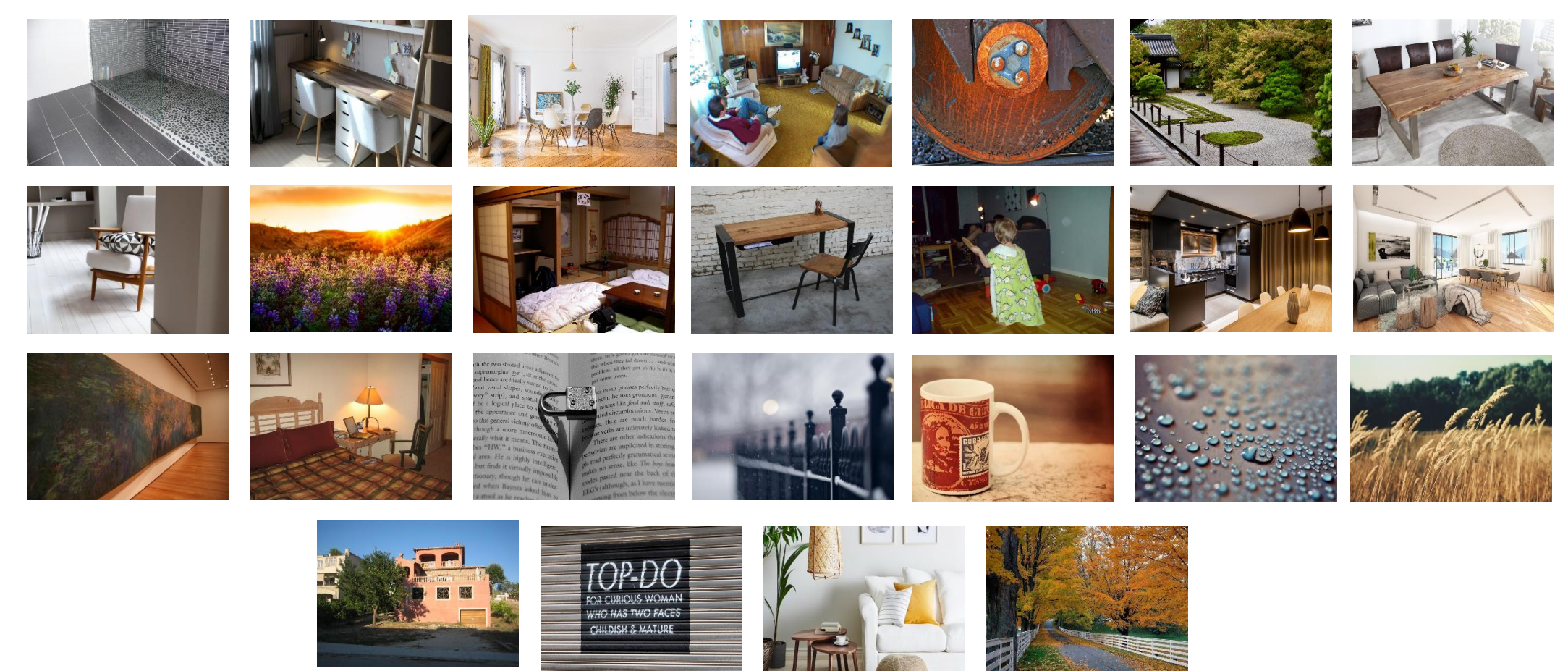


Myriam Chérel : Associate Professor (Section CNU 16 (Psychopathologie clinique et clinique psychanalytique)) at the **University of Rennes 2** (supervises the research group on autism (GRA)). Email: [myriam.cherel@univ-rennes2.fr](mailto:myriam.cherel@univ-rennes2.fr) (EA4050 (MSHB, Human Sciences Institute in Brittany)).

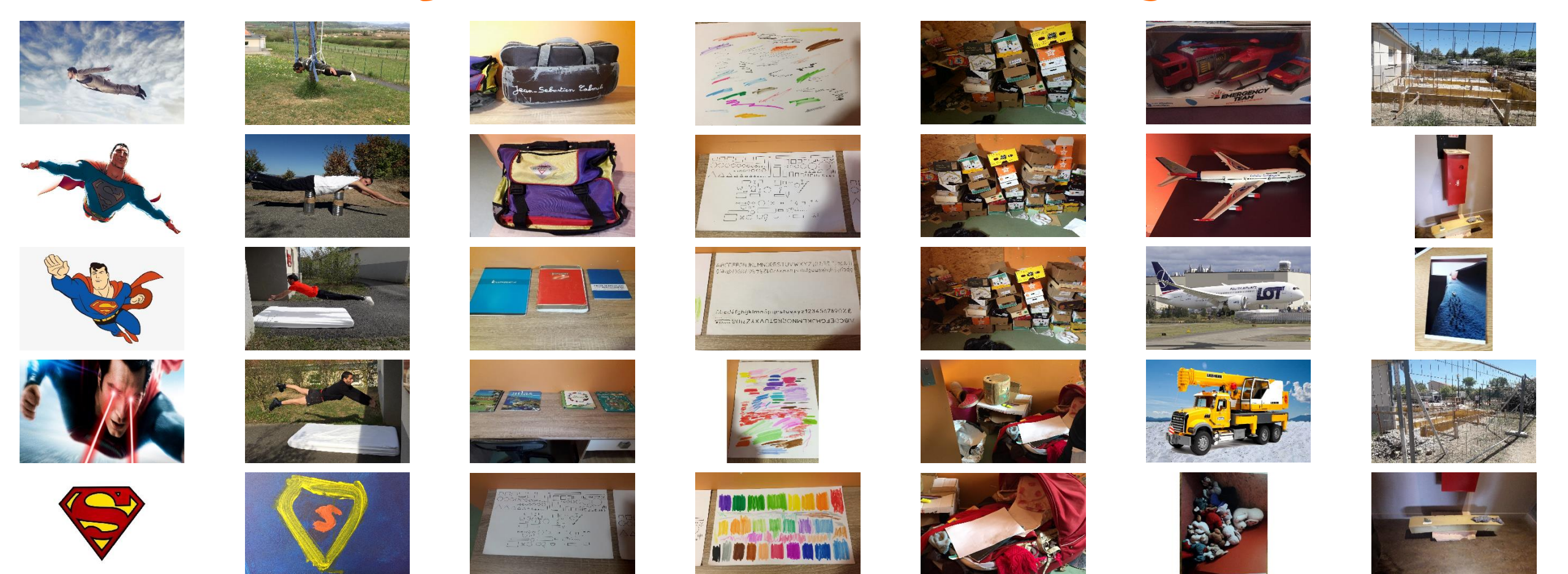
### Research assistants

Alexis Nebout, Isabelle Le Berre, Elise Etchamendy, Julie Fournier

## Neutral stimuli



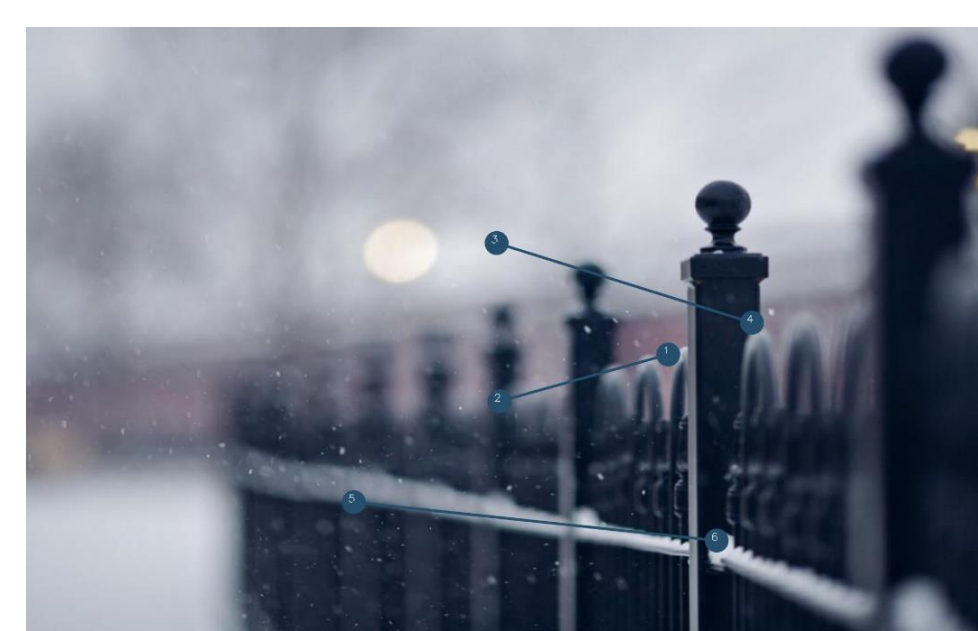
## Affinity for 7 ASD subjects



## Preliminary results

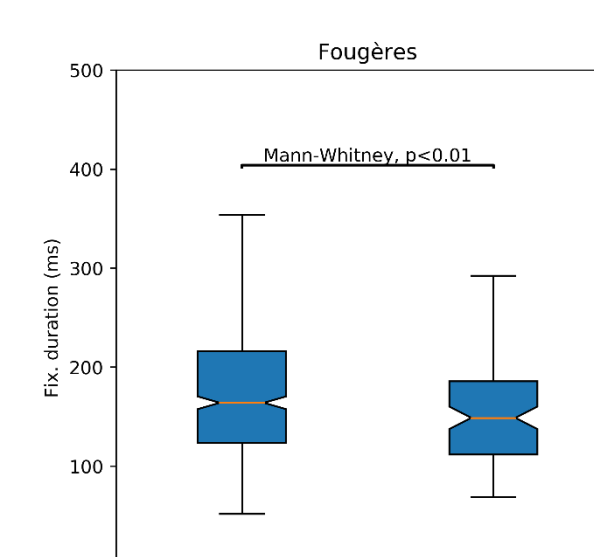
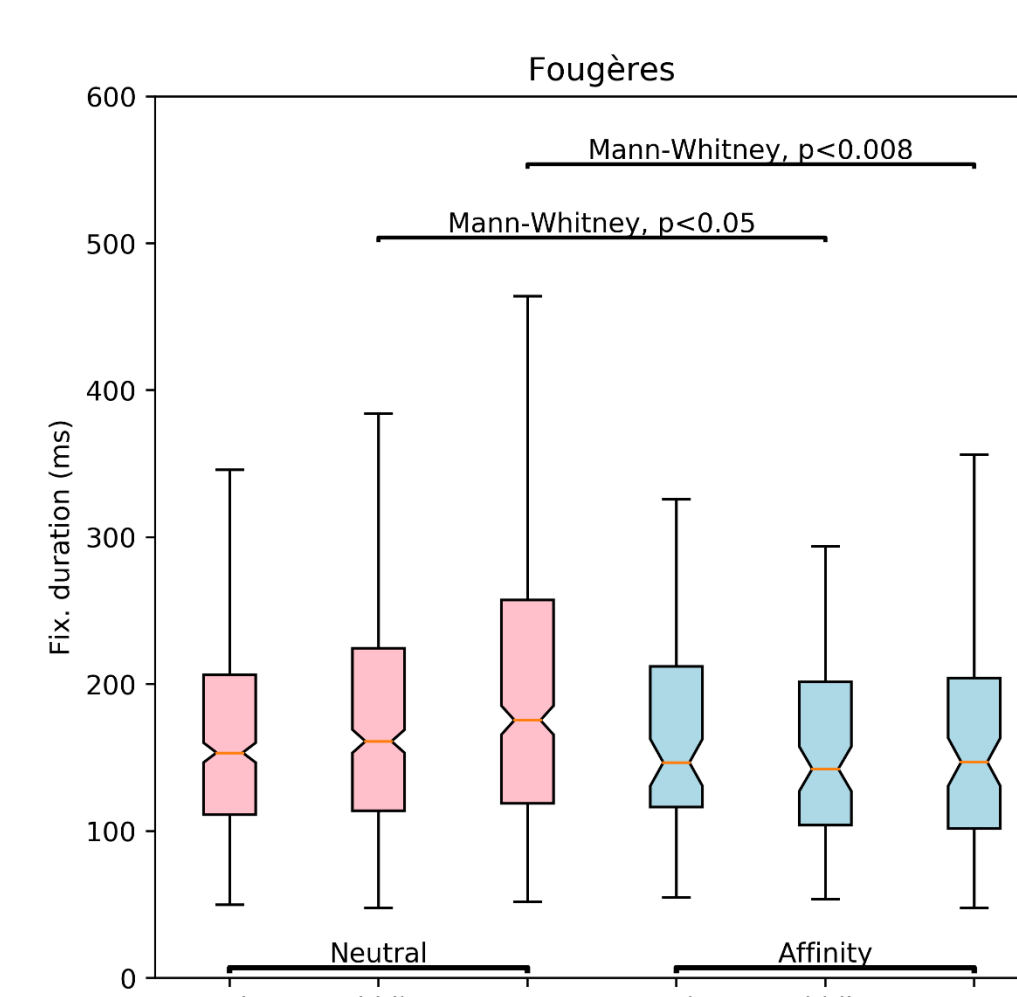
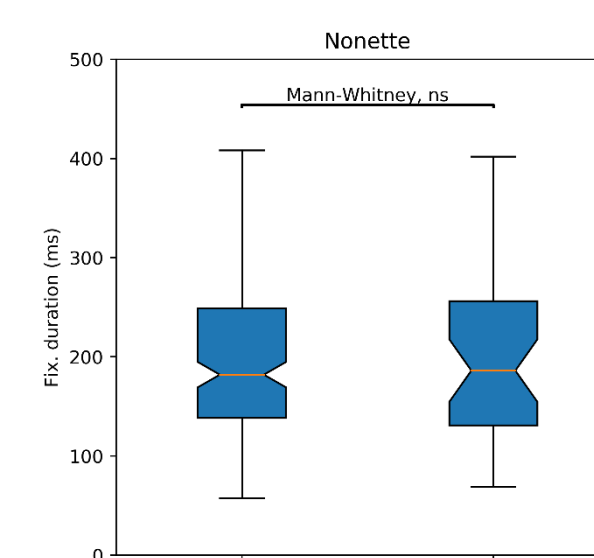
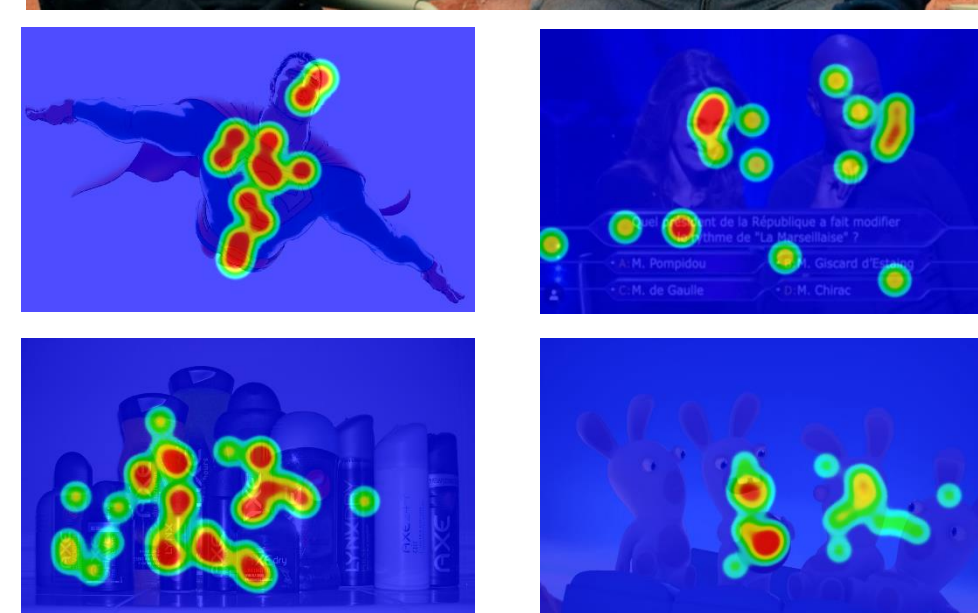
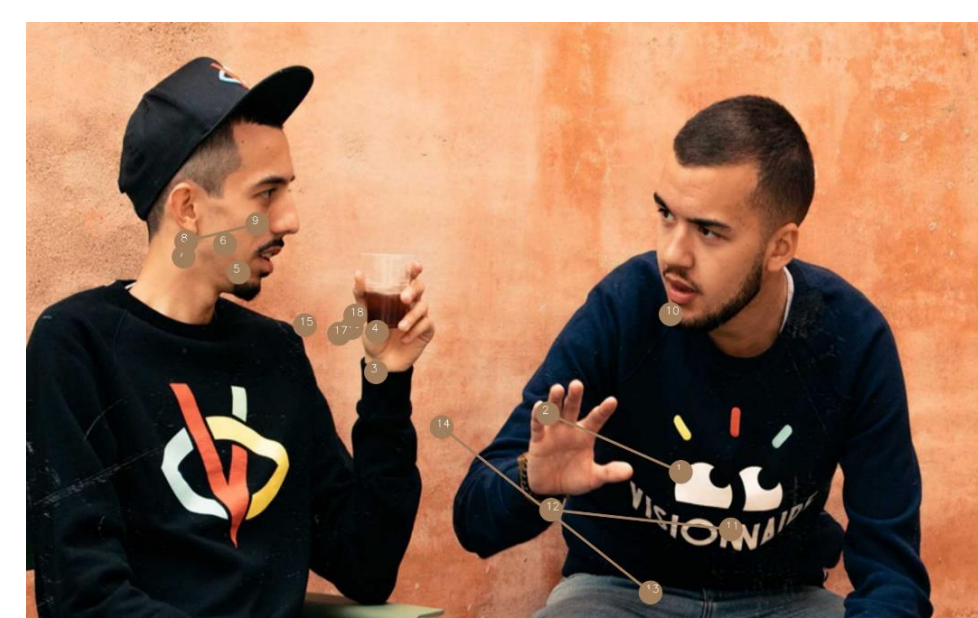
Main clinical findings:

- Visual engagement increases** with affinity
- Observers **verbalize** when the affinity appears onscreen
- Gaze withdrawals** in presence of the affinity
- Higher exploration** on affinity images



Main statistical findings:

- Fixation durations** on affinity images are significantly shorter than fixations on neutral images (for the youngest population)
- The tracking ratio** on affinity images is much higher than tracking ratio on neutral images



Fougères: we observe a significant difference in the fixation duration for the middle and late periods of viewing, i.e. [4/3s;8/3s] and [8/3s;12/3s]