

# Use, Understanding and Learning in Virtual Environments by Adolescents with Autistic Spectrum Disorders

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# Autistic Spectrum Disorders (ASDs)

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- developmental disorder
- autism is a 'spectrum' disorder
- IQ and behaviour vary along the spectrum
- all characterised by impairments in social skills
- profound impact on everyday life
- many research efforts focus on this



# VEs and ASDs

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“Because computers offer a context-free environment in which many people with autism feel comfortable, therapists and teachers are increasingly using virtual reality tools to teach life skills, such as crossing the road, and social skills, such as recognising emotions in other people” (NAS, 2001)

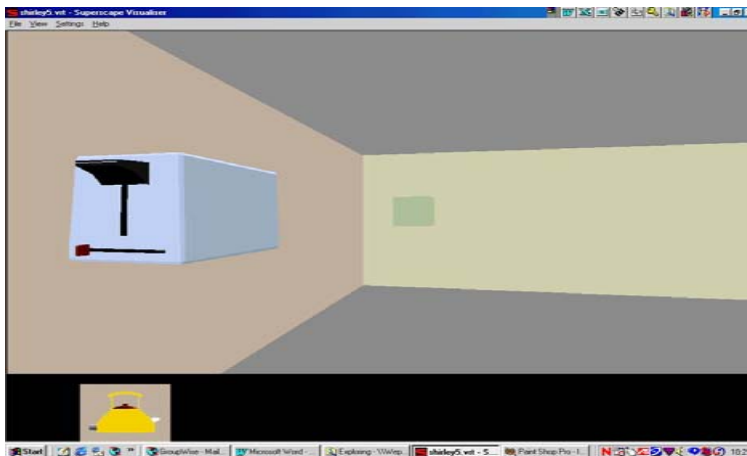
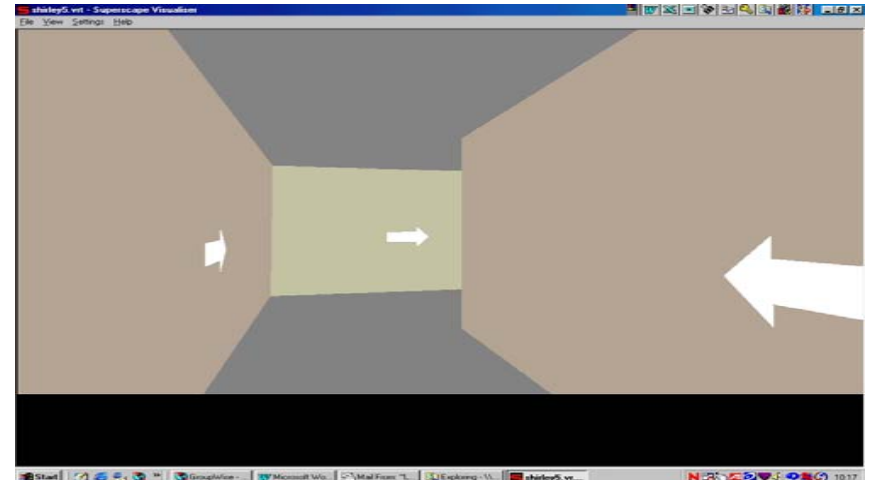


# AS Interactive Project

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- April 2000-2003 (Uni of Nottingham; NAS)
- Little information at the time about topic
- 3 main questions; would adolescents with ASDs be able to:
  - use the VEs appropriately?
  - understand the VEs as representational devices?
  - learn new information from VEs about social skills?

# (1) Using VEs



At end of 'training', ASD group improved significantly and no different to non-verbal IQ match group

Conclusion = no problems using the VEs

## (2) Understanding VEs



ASD group understood basic differences between video and VE (people not real); no different to verbal IQ-match group

ASD group rated as significantly more likely than verbal IQ-match group to walk near or between couple at the bar

Conclusions = understand VEs as basic representations of real world; specific difficulty understanding personal space?

## (2) Understanding VEs



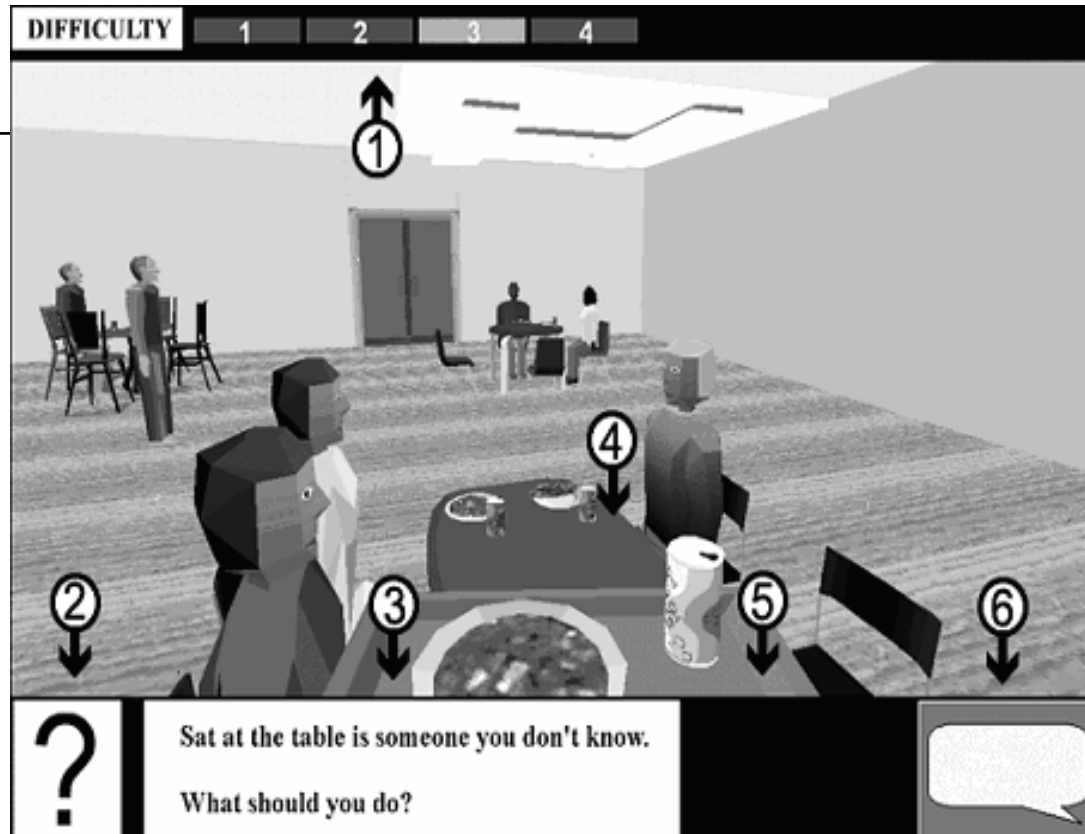
ASD group more likely to walk across flowerbeds than non-verbal IQ match group

Most participants walked between people and objects in cafe

But, ASD group less likely to talk about social implications

Conclusion = ASD group particular difficulty with social conventions

### (3) Learn new information



4 out of 6 adolescents with ASDs learned new social information and improved in social reasoning after using the VE

A facilitator played a crucial role by helping the user to interpret, understand and discuss the social scenes depicted in the VE



### (3) Learn new information

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John: One time when I was on my way back...the train was busy and there was hardly anywhere to sit, and I felt like sitting down so I said 'excuse me sir – is it OK if I sit here with you?'

F: and that was something you remembered from using the VE?

John: Yes

F: ...Can you say in what ways you think the VE was useful for you?

John: Cause it could help me learn what polite and sensible things to do in public places

# Overall conclusions

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- Positive picture for majority
- Use, understanding and learning (to a limited degree) But caveats:
  - Children with lower IQ?
  - Subset of participants found VEs difficult
  - Role of facilitator impossible to separate from role of VE
- Does that matter?

# Facilitator an integral part

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- Learning coincided with VE use
- VE + facilitator = useful
- Focus on participant needs - consider the context in which learning is likely to take place
- VE needs to be *good enough* to promote learning (not *better than*)
- Aim = equip educators/carers with helpful tools
- Make sure research has meaning and relevance for user groups/participants

# References

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