



## **PRESS INFORMATION**

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### **Animation DVD helps children with autism to recognise human emotions**

**Professor Simon Baron-Cohen**, Director of the Autism Research Centre (ARC) at Cambridge University and **David Lammy**, Culture Minister, today launch a novel animation DVD to help young children with autism.

*The Transporters* DVD, commissioned by Culture Online, part of the Department for Culture, Media and Sport, aims to help children with autism to look at the human face and to learn about emotions. The series of 15 five-minute episodes features the adventures of eight lovable toys with human faces, each focusing on a different human emotion. **Stephen Fry** is the narrator.

Behind the fun and colourful world of *The Transporters* lies some of the latest Cambridge research. The Autism Research Centre has been working with Culture Online and Catalyst Pictures to find new ways to help children with autism learn about emotions. Children with autism tend to avoid looking at human faces and find it hard to understand why facial features move in the way that they do. This inability to read emotions on the human face impairs their ability to communicate with other people. Professor Simon Baron-Cohen comments: "Just as a child with dyslexia can be helped significantly by using tailored educational methods to ease them into reading words, so a child with autism can be helped significantly by using tailored educational methods to ease them into reading faces."

Research by Dr Ofer Golan and Professor Simon Baron-Cohen from ARC found that following a four-week period of watching the DVD for 15 minutes a day, children with high-functioning autism caught up with typically developing children of the same age in their performance on emotion recognition tasks. One parent who took part in the clinical trials said of their son with autism: "We have noticed a change in his behaviour, speech and range of emotional expressions since he started watching *The Transporters*. It's a bit like someone's flicked a switch in his head."

Children with autism are often fascinated by rotating wheels, spinning tops, rotating fans, and mechanical, lawful motion. They prefer predictable patterns. For this reason all the toy vehicles featured in the *The Transporters* run on tracks or on lines. The 15 key emotions portrayed in *The Transporters* aimed at 2 to 8-year-olds are: happy, sad, angry, afraid, excited, disgusted, surprised, tired, unfriendly, kind, sorry, proud,



jealous, joking and ashamed. Each episode has an associated interactive quiz to help the child learn about the featured emotion.

**Jane Asher**, President of the National Autistic Society, said: “This is such a wonderful initiative and is going to make a huge difference to the lives of some very vulnerable children. Both the concept and the execution of *The Transporters* are excellent, and I’m very proud and grateful that the NAS is able to distribute 30,000 free copies of the DVDs to the people who need it. Having worked in the field of autism for over 20 years, I know that a sensitive approach like this is exactly what’s needed, and I wish it the success it deserves.”

The DVD will be sent out with a booklet for parents, teachers and carers. Copies can be requested via the website at [www.transporters.tv](http://www.transporters.tv).

**Claire Harcup**, commissioning executive at Culture Online, said: “This is the last of Culture Online's projects to be launched and it exemplifies what Culture Online has been about in many ways: it's fun and engaging but has a serious intent. *The Transporters* uses ground-breaking animation techniques to place human faces on the vehicles.”

**Stephen Fry**, who narrates *The Transporters*, said: “*The Transporters* is a fun yet educational animation series that I am pleased to have been a part of. It is an important and worthwhile creation to help children with autism understand emotions.”

**Notes to editors:**

1. The Autism Research Centre (ARC), directed by Professor Simon Baron-Cohen, is at the forefront internationally in developing new methods of intervention for people with autism, as well as carrying out research into causes of the condition. [www.autismresearchcentre.com](http://www.autismresearchcentre.com)
2. Culture Online was set up by the Department for Culture, Media and Sport in 2002. The Culture Online team work with partner organisations to create highly targeted interactive resources. Culture Online projects are designed to encourage participation in the arts and culture through the innovative use of technology. Culture Online has produced 26 interactive projects which have won 22 major industry awards. [www.cultureonline.gov.uk](http://www.cultureonline.gov.uk)
3. In an open tender, Catalyst Pictures Ltd was selected as the production company to make *The Transporters*. With over 20 years’ experience producing animated films for TV, they have brought considerable expertise to the project.
4. The National Autistic Society (NAS) is the UK’s leading charity for people with autistic spectrum disorders and their families. The NAS provides a range of services to help people with autism and Asperger syndrome live their lives with as much independence as possible. For more information about autism and for help in your area, call the NAS Autism Helpline on: 0845 070 4004 10am-4pm, Monday to Friday, or visit the NAS website [www.autism.org.uk](http://www.autism.org.uk)



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## *The story behind The Transporters*

### **Professor Simon Baron-Cohen, Director, Autism Research Centre, University of Cambridge, talks about the science behind *The Transporters***

Children with autism love watching films about vehicles because, according to one theory, children and adults with autism spectrum conditions are strong ‘systemisers’. They are drawn to predictable, rule-based systems, whether these are repeating mathematical patterns, or repeating electrical patterns (e.g. light switches), or repeating patterns in films. They love lawful repetition. At the core of autism is an ability to deal effortlessly with systems because they do not change and they are the same every time, and a disabling difficulty in dealing with the social world because it is always changing unpredictably and is different every time.

Vehicles whose motion is determined only by physical rules (such as vehicles that can only go back and forth along linear tracks) are much preferred by children with autism over vehicles like planes or cars whose motion can be highly variable, moving at the whim of the human driver operating them. *The Transporters* is based around eight characters who are all vehicles such physical, rule-based motion. Such vehicles grab the attention of both preschoolers with autism and even those with ‘low-functioning’ children with autism with significant learning difficulties. Onto these vehicles we grafted real-life faces of actors showing emotions, and contextualised them in entertaining social interactions between the toy vehicles.

*The Transporters* aims to teach not just some basic emotions (happy, sad, angry, disgust, fear, surprise) but also some more complex ones (ashamed, joking, jealous, proud, tired, sorry, kind, excited, worried, unfriendly, and grumpy). The aim is that through hours of repetitive TV watching, children with autism, instead of turning away from faces as they usually do because they are so unpredictable, thus missing out on crucial experience in learning about emotional expressions, will tune into faces without even realizing they are doing so. If you are a child who has difficulties with ‘empathy’, such that it is puzzling why a person’s facial expression has suddenly changed, the hope is that you could become familiar with how people look when they are surprised or afraid or proud through massive exposure to these patterns.

Our team has conducted an evaluation of *The Transporters* as an intervention. One group of 25 children with autism (aged 4-7 years old) were given copies of the animation series to use over a four-week period, for 15 minutes per day. They were assessed prior to the intervention and at the end of it. A typically developing control group (matched on age, sex, IQ, handedness, language, and parental educational level) were simply assessed at two time-points with the same four-week interval in between. Results indicate that children with high-functioning autism caught up with typically developing children on each task they were given. Notably, they caught up



in their ability to recognise emotional expressions tested using characters' faces that had *not* appeared in the films themselves, thereby showing some degree of generalisation as well. Generalising is something that children with autism typically find difficult. This suggests that even with a relatively short intervention period, gains are possible. This study is under review with a peer reviewed journal and will be made available in full via our website at [www.autismresearchcentre.com](http://www.autismresearchcentre.com). The next stage is to conduct research with children with low-functioning autism.

**Claire Harcup, Commissioning Executive, Culture Online, talks about how *The Transporters* came to be commissioned:**

When Culture Online was set up in 2002, one of our remits was to use our projects to engage the hard-to-reach. Twenty six projects later, we've achieved what we set out to do. In 2004, we thought we might be able to do something interesting and useful for people with autism so we actively pursued this audience. With this in mind, we approached the National Autistic Society, who put us in touch with the Autism Research Centre and Professor Simon Baron-Cohen's team.

It turned out to be a happy meeting. They quickly understood what we were trying to do and put forward the idea of using animated characters with real human faces to help young children with autism learn about facial expressions and emotions. We could, they argued, create a world that was designed specifically to appeal to the autistic brain, an experience so compelling that the children might engage with emotions, something they typically find difficult.

We liked the idea as a novel way of reaching out to an under-served audience. It also allowed us to bring the scientific and animation worlds together in an unusual but potentially very productive partnership. Once Dr Ofer Golan had advised us on what elements would appeal to children with autism, we wrote the brief. After an open tender, we appointed Catalyst Pictures to develop the series.

This was new territory – it was exciting but there were uncertainties. There was, of course, the possibility that the children wouldn't love the world we had so carefully designed for them. What if we sent them screaming from the room? What if they loved the series but didn't engage with the emotions? We decided to commission two pilot episodes and ask ARC to test them with our target audience before we committed ourselves to the full series.

The results were very encouraging. We made a few minor tweaks then commissioned the next thirteen episodes. The preliminary results of the more extensive research on the full series are equally promising and we're delighted to be able to distribute *The Transporters* free to families of children with autism between the ages of two and eight. The story doesn't stop there, however. Over the next few months, ARC will be continuing its research into the potential benefits of the series. We hope that's there's equally good news to come.



## **Nik Lever, Managing Director, Catalyst Pictures, talks about the challenges of putting real faces on animated toy vehicles**

With over 20 years' experience producing animated films for TV, Catalyst Pictures won the open tender to produce *The Transporters*. It was important to create an engaging environment for *The Transporters* and after much deliberation we settled on the idea of an elaborate vehicle play set in a child's bedroom. From the outset the most important - and in production terms the most challenging technically - aspect of the entire series was something else that sets it apart from any other animated series, the use of real live action actors' faces on the animated characters.

So how was it done? *The Transporters* series was produced using 3D computer graphic techniques. Putting the actors' faces onto the *moving* vehicles is unusual and caused the production team some early headaches. The actors were chosen after a casting session to represent a wide cross section of age and ethnicity, and feature male and female characters with an emphasis on male characters that reflects the male-to-female ratio in autism. The actors had to suffer the indignity of having their heads put into what was effectively a vice! This was so that their faces could be filmed using the latest high definition cameras without any motion in the end of the nose.

Although the actors appear to move in the show, their image is effectively projected onto the front of the vehicle and then they move with the vehicle. To achieve this, it was essential that the end of their nose stayed in one place. They could move their eyes and mouth, but they couldn't nod. After selecting the shots that best suited the emotion in the story this was further processed to ensure that the 'end of the nose' stayed absolutely still.

During the course of production the virtual models that were built to create the animations got bigger and bigger, eventually getting up to over 11 million polygons. At a critical stage, the whole scene refused to render - create the final images that are seen on the DVD. This was due to the memory requirement for the shot going over the limit set for a Windows application of 2GB. This caused the production team some anxious moments and was fixed by moving from 32-bit Windows onto 64-bit Windows. It was very fortunate that this was released at just the right time to get the team over this very worrying hurdle. The final memory requirement for a complete load was 8GB.

Having created the films the production team still had the problem of creating the interactive DVD. This uses all the interactive features that are available on a DVD video. The DVD was created using Sonic Scenarist software and uses a remarkable 275 different menu screens.

