

## Video self-modelling: an intervention for children with behaviour difficulties

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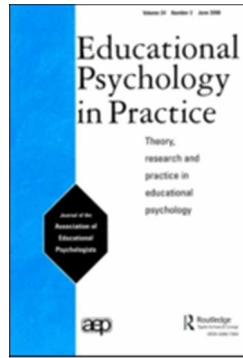
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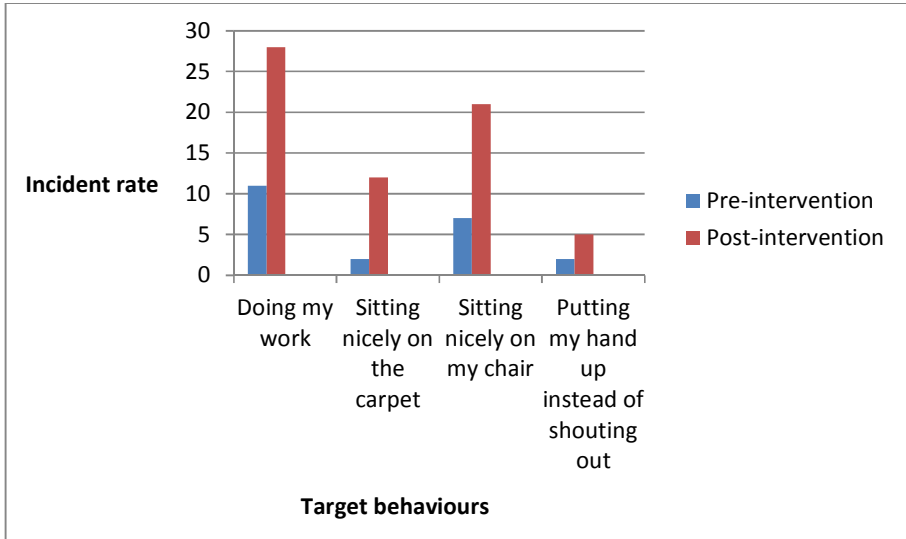
**Video Self-Modelling: an intervention for children with behavioural difficulties**

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Figure 1. The rate of target behavioural incidents before and after the VSM intervention over a 45 minute period



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3 **Video Self-Modelling: an intervention for children with behavioural**  
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## **Video Self-Modelling: an intervention for children with behavioural difficulties**

There has recently been a growth in interest in the use of video technology in the practice of educational psychologists. This research explores the effects of a Video Self-Modelling (VSM) intervention on the behaviours of a child in mainstream education using a single case study design set within a behaviourist paradigm. VSM is a behavioural intervention that requires the participant, in this instance a six year old boy, to view a short video of himself engaging in target behaviours. Baseline and post-intervention data were collected through classroom-based observations by the researcher in order to monitor the frequencies of the target behaviours and to evaluate the effectiveness of the VSM intervention. The participant demonstrated higher frequencies of target behaviours following the intervention. The results suggest that VSM is a promising method for educational psychologists to use as a proactive approach with pupils in educational settings to improve target behaviours.

Keywords: video self-modelling, behaviour, primary, social learning theory, educational psychology

### **Introduction**

There has been an increase in interest within the educational psychology community in recent years in the use of technology and, particularly, video to enhance practice: research suggests that the implementation of video-based interventions can aid children and young people in the acquisition of important functional, emotional, behavioural and academic skills (Dowrick, 1999; Biliias-Lolis, Chafouleas, Kehle & Bray, 2012; Gibson, 2014; Young-Pelton & Bushman, 2014). This is perhaps most clearly demonstrated in the number of practitioners who are undertaking research and training using the techniques developed within Video Interactive Guidance (VIG). There are, however, a range of approaches which make effective use of video within interventions, including those techniques based upon video modelling. While the theoretical roots of the VIG approach are located within attachment theory, particularly the concept of attunement

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3 (Gibson, 2104), the theoretical underpinnings of video modelling are located within  
4 behavioural psychology, specifically Bandura's (1986) Social Learning Theory.  
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8 The instructional technique of video modelling requires an individual to watch a video  
9 of a model (adult or peer) engaging in a target skill or behaviour (Burton, Anderson,  
10 Prater & Dyches, 2013). The individual then performs the same skills as demonstrated  
11 by the model (Cihak, Fahrenkrog, Ayres & Smith, 2010). A specific application of  
12 video modelling is Video Self-Modelling (VSM), a form of observational learning that  
13 differs from the above as it requires the individual to watch themselves as the model  
14 (Dowrick, 1999). Within the video the individual is shown to be accurately and  
15 independently performing the target behaviour (Dowrick, 1999). Individuals view  
16 themselves executing a behaviour, task or skill at a more advanced level than they  
17 typically achieve (Burton et al., 2013; Buggey, Toombs, Gardener & Cervetti, 1999).  
18 VSM has been used successfully to teach and develop a variety of skills and behaviours,  
19 including speech and language (Buggey & Hoomes, 2011) social-communication  
20 (Bellini & Akullian, 2007), social behaviour (Buggey, 2005), motor skills (Zetou,  
21 Kourtesis, Getsiou, Michalopoulou & Kioumourtzoglou, 2008) emotional resilience  
22 (Clark, Beck, Sloane, Jenson, Bowen & Goldsmith, 1993) academic (Schunk & Hanson,  
23 1989), and functional skills (Cihak & Schrader, 2009).  
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### 36 ***Video Self-Modelling: theoretical background***

37 VSM is derived from Social Learning Theory (Bandura, 1986) which suggests that  
38 learning occurs or is reinforced through observing others (models). The observer must  
39 retain the behaviour in memory, attend to the behaviour and be motivated to reproduce  
40 and perform this behaviour (Bandura, 1977). Bandura, Ross and Ross (1961) identified  
41 that children were most likely to repeat the behaviours of a model with whom they  
42 identify and to whom they are similar: for example, a same sex model. Dowrick (1999)  
43 suggested that viewing videos that depict efficacious behaviours not only promotes  
44 skills acquisition, but also increases the individual's self-efficacy. Bandura defined  
45 self-efficacy as an individual's belief in their capability to perform a given behaviour  
46 through performance accomplishments and vicarious experience (Bandura, 1977).  
47 When an individual acts as their own behavioural model there is the potential for an  
48 increase in self-efficacy through the viewing of performance accomplishments (Hart,  
49 2010).  
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VSM ‘further strengthens the probability of the successful reproduction of modelled behaviour by affording maximum model similarity’ (Biliias-Lolis et al., 2012, p.82). Research has also shown that participants who watched self-modelling videos experienced enjoyment, increased physiological arousal and attention (Dowrick, 1999; Hosford, 1981; Buggey, 2005). Thus VSM increases the reinforcing properties of the behaviours shown in the video and makes the individual more likely to repeat what is shown (Axelrod, Bellini & Markoff, 2014). Axelrod et al (2014) suggested that watching compliant behaviours encouraged their participants to view those behaviours as more desirable and served to ‘prime’ the behaviour for future situations.

### *Applications of VSM*

Early research using VSM focused upon developing language and communication, predominantly with individuals with autistic spectrum disorder. For example VSM was used in research conducted by Pigott and Gonzales (1987) to develop language skills with a 9 year old boy who was described as being selectively mute whilst within the school setting. Pigott and Gonzales (1987) reported that the participant was no longer selectively mute post-intervention at school and this was sustained when the researchers gained further data in a six month follow-up observation. The results of this study are congruent with the work of Kehle, Owen and Cressy (1990) and Kehle, Bray, Margiano, Theodore and Zhou (1998). VSM has also been used successfully with children aged four to six years to develop their abilities to make spontaneous requests (Wert, 2002) and has been combined with skills rehearsal to develop communication skills and associated skills of self-assessment and reflection with 11 students attending university (Bolger, 2013).

Research has suggested that the use of VSM as an intervention to develop social skills has been effective, particularly for individuals with Autistic Spectrum Disorder (ASD) (Gelbar, Anderson, McCarthy & Buggey, 2012). Bellini, Akullian and Hopf (2007) explored the use of VSM to promote social initiations between children with ASD and their peers and found that participants showed improvements in the quality and number of their interactions with their peers. Buggey, Hoomes, Williams and Sherberger (2011) found that VSM increased the social skills behaviours of three

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3 children aged four years with ASD and this was maintained over several months. Lantz  
4 (2005) discovered that VSM improved the rates of researcher selected target behaviours  
5 for two students with ASD. The target behaviours included turn-taking, requesting,  
6 commenting, and social questions.  
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11 VSM has also been used to manage problematic classroom behaviours and  
12 increase gains in a number of areas of academic skill acquisition (Biliias-Lolis et al.,  
13 2012). Research has explored the use of VSM to increase on-task behaviour (Clare,  
14 Jenson, Kehle & Bray, 2000), improve classroom participation (Hartley, Bray & Kehle,  
15 1998) and strengthen co-operative classroom behaviour (Lonnecker, Brady, McPherson  
16 & Hawkins, 1994). Clinically, VSM techniques have been shown to support students  
17 who have attention deficit hyperactivity disorder (ADHD) (Woltersdorf, 1992)  
18 emotional disturbance (Musser, Bray & Kehle, 2001), depression (Kehle et al., 1990),  
19 and ASD (Neisworth & Wert, 2002).  
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28 Research by Axelrod et al (2014) explored the use of VSM in a hospital-based  
29 classroom with three participants under the age of nine years who had been diagnosed  
30 with ADHD and / or oppositional defiant disorder (ODD). Each participant had a  
31 history of defiant and aggressive behaviour both within school and at home. The  
32 intervention condition required the participants to view a self-modelling video twice a  
33 day for four days each week for three weeks. The researchers found that all of the  
34 participants displayed higher levels of compliance and fewer instances of aggression  
35 during the intervention and this was then maintained two weeks after the intervention  
36 had concluded (Axelrod et al., 2014). However, there are a number of limitations to this  
37 study. The study used a small participant sample of children who attended a hospital-  
38 based classroom. It is unclear whether the results from this study can be generalised not  
39 only to other participants but also to a mainstream classroom setting. Inter-rater  
40 reliability data were not collected and the researchers questioned the reliability and  
41 accuracy of the observations that contributed to the data collection (Axelrod et al.,  
42 2014).  
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54 Coyle and Cole (2004) used a VSM intervention with students identified as  
55 having ASD to decrease off-task behaviour in the classroom. The researchers defined  
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3 off-task behaviour as any behaviours that were distracting students from completing a  
4 task, for example:

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8 “..looking around at other children, fiddling with a pencil or other objects,  
9 rolling items from the desk, inspecting objects and other students at close  
10 proximity, touching other students, staring blankly, and leaving their seats”  
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12 (Coyle & Cole, 2004, p. 6).  
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16 The researchers reported that the instances of off-task behaviours demonstrated by the  
17 participants were reduced during the intervention. This reduction was also maintained  
18 once the intervention was withdrawn.  
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23 Previous research which measured the efficacy of VSM to modify classroom  
24 behaviour has focused either upon children with a diagnosed autistic spectrum disorder  
25 or has been conducted within specialised settings. The aim of this research was to  
26 measure the impact of VSM in modifying the behaviour of a pupil who was displaying  
27 behaviours that his teachers were finding challenging to manage within a mainstream  
28 classroom. This study aimed to answer the following research question: Can VSM  
29 increase instances of positive target behaviours that have been chosen by the  
30 participant?  
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## 38 **Method**

### 39 ***Participant***

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41 Purposive sampling (Robson, 2011) was used to identify a pupil who would benefit  
42 from the use of VSM as a behaviour intervention. The participant, who shall be known  
43 as Ben, was identified by the school’s SENCo as experiencing social, emotional and  
44 behavioural difficulties whilst attending school. At the time of the study, Ben was aged  
45 six years and was educated within a mixed year Key Stage 1 class in a mainstream  
46 primary school. The SENCo reported that Ben had been having difficulties since  
47 beginning school during the previous academic year. She explained that Ben was being  
48 reprimanded daily for his aggressive behaviours towards staff and peers and regularly  
49 refused to perform academic tasks or respond to the instructions of adults. During the  
50 observations of Ben in the classroom it was apparent that he had difficulty with  
51 accepting criticism, challenge and being told ‘no’. This often resulted in Ben talking  
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3 rudely to staff members or leaving the classroom without permission. Ben appeared, on  
4 occasions, to become unpredictably verbally and / or physically aggressive towards his  
5 peers. Ben was often seen to refuse to undertake tasks set by his teacher. He would  
6 refuse to sit on the carpet with his peers when instructed by his teacher. Rather than sit  
7 at his desk he would wander around the classroom. However, Ben was more likely to be  
8 responsive when the class teaching assistant sat next to him.  
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### 13 ***Design***

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15 The research used a single-case, within-participant design with the aim of assessing the  
16 effects of the VSM intervention and its effectiveness on increasing instances of positive  
17 behaviours by a pupil who was finding conforming to classroom rules challenging. The  
18 selection of a single-case design was steered by the desire to create an intervention that  
19 was individualised and unique to the participant (Hart, 2010).  
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### 25 ***Ethics***

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27 The research followed the ethical guidelines provided by the British Psychological  
28 Society, Code of Ethics and Conduct (BPS, 2009) and the Code of Human Research  
29 Ethics (BPS, 2010). The principal ethical considerations for this research were in  
30 relation to ensuring the anonymity of participant, gaining the informed consent of Ben  
31 and his parent, and the gathering of video clips for the self-modelling video, including  
32 their secure storage and limited access to the video once editing had been completed.  
33 Given Ben's age the technical details of the intervention were not explained to him,  
34 instead the intervention was described to Ben as a "good behaviour video project". As  
35 described in the procedure below Ben was involved at all stages of the process:  
36 identifying the behaviours he wished to change and with the editing of the video.  
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47 Whilst filming took place, it was ensured that no other pupils' faces were  
48 captured. All footage was permanently removed from the tablet computer, which had  
49 been used as a video camera, and was stored on an encrypted memory card, kept in a  
50 locked cabinet within the pupil's school in accordance with the Data Protection Act  
51 (1998). The self-modelling video was stored in a password-protected folder on a  
52 computer only accessible to the school's Special Educational Needs Co-ordinator  
53 (SENCo), the participant's teaching assistant and class teacher.  
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### *Procedure*

Initially, school staff were briefed about the aims and procedure of this study. For the purposes of this intervention, target behaviours were elicited by Ben. During a 1:1 consultation, the researcher discussed with Ben what compliant, or 'good', behaviour looked like from pupils in school. Ben was asked to list these behaviours orally while the researcher wrote them down on a diagram of a pupil. Ben was asked to reflect on the diagram and say which behaviours he thought were the most important. He was then asked to reflect on which of the behaviours he thought he needed to demonstrate more of in the classroom. After a discussion about this, Ben was asked to choose between one to four behaviours that he would like to demonstrate for the video. Ben chose the following behaviours: doing my work, sitting nicely on my chair, sitting nicely on the carpet and putting my hand up instead of shouting out (in reference to communicating with his class teacher).

Having identified the target behaviours for the self-modelling video, the following day Ben was observed in the classroom for 45 minutes during a morning session. Baseline data were collected concerning how often Ben presented his chosen target behaviours during this time. The observational measure for data collection included a 'combination of event-based and momentary time sampling of behaviour' (Biliias-Lolis et al., 2012, p.84). Momentary time sampling was used to sample the occurrences of the target behaviours at the end of each time interval (one minute) within an observational period of 45 minutes.

Over a two-day period, Ben was filmed during morning and afternoon sessions within the classroom. For the purposes of filming, a tablet computer was utilised. This was a piece of technology with which the participant was familiar, and he appeared comfortable during periods of filming. This footage was then edited during an afternoon session on a PC to produce the self-modelling video. Ben was present during the editing process. Collaboratively, clips were chosen to be included in the video that matched the target behaviours. Ben also chose the music and photographs included in the video. The video produced had a running time of three minutes, 45 seconds. Dowrick (1999) suggested that self-modelling videos should be approximately 3 minutes in length for a sufficient change in behaviour to occur.

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3 Previous research in this area has suggested that positive, lasting, observable and  
4 measurable changes in behaviour can be achieved when the self-modelling video is  
5 viewed by the participant for around six sessions over a two or three week period  
6 (Dowrick, 1999). Ben observed his video over six sessions, with support from his  
7 teaching assistant, over a two week period. He was shown his video on alternate days  
8 (Collier-Meek, Fallon, Johnson, Sanetti & Demcampo, 2012), i.e. Monday, Wednesday  
9 and Friday.  
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16 An observation was conducted within the third week of the intervention to  
17 determine whether the frequency of target behaviours had increased. Observational  
18 data were collected on the same day and time as the baseline data had been during week  
19 one.  
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## 24 25 26 **Results**

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28 This research was designed to measure change in the targeted behaviours of a pupil  
29 within a mainstream classroom who was receiving a VSM intervention. Figure 1. shows  
30 the rate of the participant's target behavioural incidents during the pre-intervention and  
31 post-intervention phases. Datum shows frequency of incidents during the pre and post  
32 intervention 45 minute observation schedules.  
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51 Figure 1 illustrates that the participant displayed higher levels of target behaviours after  
52 having completed the VSM intervention, compared with baseline levels. These trends  
53 suggest that VSM intervention was effective in increasing all target behaviours, with the  
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3 most significant changes occurring for the 'doing my work' and 'sitting nicely on my  
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5 chair' behaviours.  
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## 9 **Discussion**

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14 The purpose of this research was to investigate the efficacy of the application of VSM  
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16 as a behaviour intervention for a child experiencing difficulties in conforming to the  
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18 rules within the classroom. A single case study design was implemented with a child  
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20 attending a mainstream school. The VSM intervention involved showing a child a video  
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22 of himself engaging in appropriate, self-selected behaviours in the classroom. The  
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24 participant in this research demonstrated improvements in the frequency of all target  
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26 behaviours during the post intervention observation, compared with baseline levels. The  
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28 results from this study complement the growing body of research that demonstrates  
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30 VSM interventions are effective for children and young people whose behaviour is  
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32 difficult to manage within the school context (Axelrod et al., 2014). This research  
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34 provides some support for the claim that the use of video can aid skills acquisition  
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36 (Dowrick, 1999) and extends previous research by demonstrating that this can occur  
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38 within a mainstream classroom. The use of a video depicting the participant and the  
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40 involvement of Ben in the construction of the video were designed to maximise the  
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42 opportunities to increase his feelings of self-efficacy following Bandura's (1977)  
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44 theory. Although the research was small scale the positive changes in the target  
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46 behaviours suggest that VSM is potentially an effective intervention to support pupils  
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48 who are finding it difficult to conform to the demands of the classroom.  
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There are currently no published research articles of examples of EPs using VSM within their practice. Although this piece of research cannot support broad, generalised conclusions about the efficacy of VSM as a behaviour intervention, it does provide the EP community with an example of how EPs may use VSM within a mainstream educational context. It could be argued that VSM, as a form of evidence-based practice, is a useful addition to the range of interventions EPs can offer and further illustrates the EP's unique contribution to working with individuals, families and educational settings. Hart (2010) suggested that, as scientist-practitioners, EPs are able to develop their knowledge and understanding of VSM implementation further, identifying, for example, who would most benefit from such an intervention.

However, before using VSM there are a number of factors to take into consideration in regards to the intervention's practicality and appropriateness. In regards to logistics and practicality, a VSM intervention requires the EP / researcher to be able to use technology efficiently. Technology used may include a video camera, a tablet computer, appropriate software and hardware for editing (for example, editing software, a FireWire or USB cable) and a video presentation device (a tablet computer, laptop or DVD player). It is essential that the appropriate resources are available to the EP before beginning this type of intervention strategy. It could be suggested that even though the hardware and software required are widely available and quick to access, becoming skilled in their effective use will require time and practice. Before embarking on using VSM, practitioners must consider their competence in using technology. It is also imperative that video recording equipment is checked before its use to ensure good audio and picture quality (Bellini & McConnell, 2010, cited in Collier-Meek et al., 2012). Collier-Meek et al (2012) suggested that, before commencing with filming,

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3 researchers should develop schedules for filming, editing, presenting and data collection  
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5 to diminish invasiveness in the classroom. To reduce any intrusiveness to core learning,  
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7 filming times should be discussed with the class teacher.  
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11 It is important that the researcher is aware that VSM may pose a number of  
12 confidentiality issues (Buggey & Ogle 2012). Researchers must ensure that they comply  
13 with all ethical, data protection and privacy act guidelines, such as adhering to the  
14 correct safe storage of participant data. This includes gaining individual and parental  
15 consent and ensuring that the consent is well informed before proceeding with the  
16 intervention (Buggey & Ogle 2012). It is also imperative that during filming no other  
17 children or young people, who have not given their consent to be a part of the  
18 intervention / video, are identifiable or captured in shot.  
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32 When using VSM as an intervention with children and young people, EPs must  
33 consider its appropriateness and purpose. Collier-Meek et al (2012) argued that even  
34 though VSM has been validated by previous research to be effective for a range of  
35 difficulties and ages, it is necessary for researchers to determine, on an individual basis,  
36 if VSM is appropriate for a particular student and context. Collier-Meek et al (2012)  
37 suggested that student factors, available resources, researcher competence and school  
38 staff, families and other stakeholders must be taken into consideration before VSM is  
39 implemented.  
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### 50 51 **Limitations**

52 Despite the results of this research offering support for the use of VSM as a behavioural  
53 intervention, this study has a number of limitations which severely restrict the  
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3 generalisability of the findings. It is however hoped, given the increased interest in the  
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5 use of video technology by practitioners, that this paper may stimulate interest and  
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7 further research in VSM as a potential intervention for children finding it difficult to  
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9 conform to the expectation within the classroom, in order to begin to provide a more  
10  
11 valid evidence base for this approach. The first limitation is that data were not collected  
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13 to assess for maintenance of the target behaviours and the intervention's long-term  
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15 effectiveness. It is therefore not clear if the target behaviours were maintained beyond  
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17 the intervention phase by the participant and it is important that future research assesses  
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19 the longer term impact of such intervention.  
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25 Secondly there are limitations with the reliability and validity of the data set.  
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27 Target behaviours were gained from the participant by the researcher prior to the  
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29 baseline observation. The same researcher then conducted the pre and post-intervention  
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31 observations. It is possible that neither set of observations comprise an accurate  
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33 reflection of the participant's behaviour in the classroom, due to demand effects. In this  
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35 instance, the participant may have wished to show that he was capable of displaying the  
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37 behaviours that he had discussed with the observer. This extraneous variable could have  
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39 been diminished if the observation data had been collected by a different researcher.  
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45 Also, a key member of staff, having supervised the participant each time he  
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47 watched the video and being aware of the video's content, may have prompted Ben to  
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49 demonstrate the target behaviours in-between video viewing sessions. If this was the  
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51 case, it is then unclear whether increases in target behaviours observed were due to the  
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53 VSM intervention or staff encouragement and reminders.  
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3 Research regarding the efficacy of VSM by Buggey and Ogle (2012) argued that  
4 at present VSM research has been unable to establish whether the intervention's  
5 effectiveness is a result of the participant viewing and learning specific skills, or if gains  
6 are a direct result of improved self-efficacy. The researchers argued that, by viewing  
7 themselves being successful, participants experience an increase in confidence and risk-  
8 taking behaviours (Buggey & Ogle, 2012). They further reflect that it may not be  
9 possible to determine this either way as VSM involves the participant viewing positive  
10 images of themselves and that 'building self-efficacy is embedded in the very nature of  
11 self-modelling' (Buggey and Ogle., 2012, p.65).  
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### 25 **Conclusions**

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27 This study provides tentative evidence for the use and prospective efficacy of VSM as a  
28 behavioural intervention to be used with children. This research has also demonstrated  
29 VSM's potential use as an intervention which could be utilised in the work of EPs and  
30 specialist teachers working in behaviour support services. However, more research  
31 within this area is required in order to ascertain the validity of the approach and to  
32 provide an evidence base for VSM and its applications within EP practice.  
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