Video Self-Modeling (VSM) is an intervention that allows individuals to observe exemplary instances of their own behaviour on video in order to increase the probability of that behaviour occurring again. VSM has been used to teach and strengthen various behaviours, however, little research has been conducted on VSM as an intervention to increase oral reading fluency (ORF). Therefore, the intent of this study was to examine VSM as an intervention to improve ORF for primary school students. Four Year 3 students from the Hawkes Bay area were videoed reading and mistakes were edited out. Each participant viewed him/herself reading fluently for 2 weeks. ORF was regularly assessed before, during, and after the intervention. Results indicated that three out of four participants made gains in ORF. Practical implications are discussed.

**Keywords:** Video Self-Modeling, Reading Fluency, Literacy, Observational Learning

Learning to read fluently is a vital part of the reading process. Research shows a link between simple fluency measures and comprehension (e.g., Barth, Tolar, Fletcher, & Francis, 2014; Bolaños et al., 2013; Fuchs, Fuchs, Hosp, & Jenkins, 2001; Kim, Petscher, Schatschneider, & Foorman, 2010), with comprehension being the ultimate goal of any reading instruction. Reading fluency involves efficient effective decoding skills which allow a reader to comprehend text (Pikulski, 2006). There are a number of interventions that have been shown to improve reading fluency to increase accurate and automatic word recognition, assist with comprehension, and promote the use of prosodic features such as stress, pitch, and suitable phrasing. A key aspect of these approaches is that they provide learners with opportunities to read connected text with support through either adult feedback or modeling (Neddenriep, 2014). Therefore, if modeling is a successful component of fluency instruction, would it be more effective if the individual him/herself was the model?

Video-self modeling (VSM) is a cognitive-behavioural technique that enables participants to see themselves performing a target behaviour (in this case reading fluently) that is outside their usual repertoire. Hitchcock, Prater, and Dowrick (2004) used VSM in combination with tutoring to improve the reading fluency rates and comprehension of three students with special needs. Their results indicated that viewing the self-modeling video was associated with reduced variability in the data and maintenance of increased performance. Dowrick, Kim-Rupnow, and Power (2006) used a combination of VSM and tutoring in an attempt to improve reading fluency for 10 students with special needs. Their results indicated significant improvements in reading fluency for all students and in 9 out of 10 cases the rate of improvement was greatest when VSM was used.

The purpose of this study was to examine whether VSM by itself can improve reading fluency in children who are not classified as special needs, but are simply behind their peers in reading. This group of “delayed readers” (Catts & Kamhi, 2005), tend to eventually gain accurate and fluent word recognition skills, but at a considerably slower pace than their peers. By using VSM with delayed readers the intent of the current study was to improve reading fluency by providing them with the opportunity to view themselves reading fluently, thereby increasing their sense of reading self-efficacy.

**Reading Fluency**

The concept of reading fluency has gained momentum in recent years and has been recognized as a critical component of reading (Samuels, 2006). It is now widely accepted that oral reading fluency in a child’s first years of school is a strong predictor of reading comprehension in later years (Barth et al., 2014; Bolaños et al., 2013; Kim et al., 2010; Reschley, Busch, Betts, Deno, & Long, 2009). There seems to be consensus in the research that there are three main components to reading fluency: accuracy in decoding, automaticity, and prosody (Kuhn & Stahl, 2003; Rayner, Pollatsek, Ashby, & Clifton, 2012; Schaffner, & Schiefele, 2013; Therrien, Kirk, & Woods-Groves, 2012). Accurate decoding means the ability to generate a phonological representation of each printed word on the page (Samuels). There is overwhelming evidence to show that struggling readers make progress if they are given systematic decoding instruction (e.g., Center, Freeman, & Robertson, 2001; Foorman, Francis, Fletcher, Schatschneider, & Mehta, 1998; Hattie, 2009; Greaney, Tunmer, & Chapman, 1997; Ryder, Tunmer, & Greaney, 2008).

The oldest and most commonly
used method for facilitating fluency is the repeated reading technique, based on Samuels (1979) automaticity theory. Readers read a passage of connected text at a level appropriate to their reading level several times until a particular reading rate is attained. The aim is to build a large repertoire of quickly identified words. However, research has shown that although repeated readings can enhance reading speed, comprehension, and expression, these enhancements are not guaranteed and generalization of these effects to new text is not automatic (e.g., Lo, Cooke, & Starling, 2011). This is especially the case where the new text contains few or none of the words practiced (Topping, Samuels, & Paul, 2007). Other methods to improve fluency typically involve some combination of modeling, practice, prompting, shaping/scaffolding, and feedback.

Interventions that simply address the phonological, orthographic, and semantic deficits appear to be insufficient (e.g., Nicholson, 2003). For example, one of the biggest hurdles facing struggling readers is their motivation to read and their engagement with language (Stanovich, 2000). For many children, negative feelings about reading can begin as early as the first year of school which can inhibit their self-confidence (Nicholson). Logan, Medford, and Hughes (2011) found that motivation may explain a significant portion of the variance in reading skill in groups of low ability readers. It is well established that the best thing for learning to read is reading (Chard, Vaughn, & Tyler, 2002; National Institute of Child Health and Human Development, 2000; O’Keeffe, Slocum, Burlingame, Snyder, & Bundock, 2012; Therrien, 2004). Children need to read large amounts of text to encounter words frequently enough to build word-specific orthographic representations (Troia, 2004). As children get better at reading they are exposed to more print and become better readers. Children who find reading difficult tend to avoid reading and therefore are not exposed to the same amount of print. As time passes they fall further below their peers and the gap between them widens. Their self-efficacy is diminished and their motivation reduced (Spear-Swerling & Sternberg, 1996). Allington (2006) discusses the importance of “high-success” reading experiences, which are those characterized by accurate, fluent reading, and good understanding of the text that was read. He argues that children fail to develop fluency because they have limited reading practice, particularly in high-success texts. It seems important, then, to develop interventions to address the above (e.g., motivation) before these children fall further behind age appropriate reading levels. Bandura’s (1989) work on self-efficacy indicated that self-beliefs of efficacy can enhance or impair performance through their effects on cognitive, affective, or motivational processes. Video self-modeling is a cognitive-behavioural technique that specifically addresses self-efficacy by having the child him/herself serve as the model.

Video Self-Modeling

Video Self-Modeling (VSM) is an intervention that allows individuals to observe exemplary instances of their own behaviour on video in order to increase the probability of that behaviour occurring again. The behaviour is seen from the visual perspective of the person who needs to acquire the behaviour. Much of the research in this area stems from Bandura’s (1977) social learning theory with its emphasis on observational learning (modeling) and self-efficacy. According to Bandura, there are four components in the process of modeling: (1) the observer must attend to events that are modeled, (2) material must be retained, (3) the observer must have the ability to perform the behaviour, and (4) there must be sufficient motivation to perform the behaviour. Bandura argues the potency of the model in changing targeted behaviour is related to similarities between the model and the observer. VSM maximizes this similarity by using the individual him/herself as the model.

Bandura also believed that self-efficacy can be a major factor in behaviour change. According to Bandura, self-efficacy is a belief in a person’s own capabilities to organize and execute the courses of action required to reach certain goals (Bandura, 1986). He described self-modeling as providing the essential elements of self-efficacy. When observing a self-image, the observer pays more attention, and if the demonstrated behaviour is valued, it provides an obvious source of self-belief. By contrast, an image of someone else produces less attention and is a weaker source of self-efficacy (Dowrick, 1999).

VSM has been used in a wide range of contexts and across many ages (Buggey, 2007). The majority of research on VSM has been with individuals diagnosed with Autism Spectrum Disorder (ASD) (e.g., Shukla-Mehta, Miller, & Callahan, 2010; Victor, Little, & Akin-Little, 2011). It has only been since the 1990’s, however, that VSM has gained popularity as an intervention technique within an educational context. Hitchcock, Dowrick, and Prater (2003) conducted a thorough review of the literature on VSM in school-based settings. They identified 18 studies that met their criteria and represent a comprehensive selection of research looking at VSM in an educational context. They found the data in all reviewed studies provided clear evidence of positive outcomes relating to the intervention. Sixteen of the studies assessed maintenance of treatment effects and 15 showed successful short- or long-term maintenance. Thirteen of the studies assessed generalization of treatment effects, and 10 showed clear positive evidence of generalization. These data suggest that VSM can be useful for a variety of skills within an educational context, including increasing desired behaviour and performance of academic skills as well as decreasing inappropriate behaviour. Many studies also reported increased motivation and positive reports from teachers and parents. However it is interesting to note that only four studies to date have focused on using VSM as an intervention for acquiring academic skills. Research in the area of VSM has primarily focused on behaviour change.

Summary

Reading fluency, the ability to read efficiently, accurately, and with expression (Neddenriep, 2014) is unlikely to improve in delayed readers.
without some intervention (e.g., Kim et al, 2010). In addition to delayed reading skills, poor readers may also experience deficits in reading self-efficacy which may decrease their motivation to read, reading frequency, and the opportunity to experience success in reading activities. VSM provides an opportunity for poor readers to see him or herself reading and to increase his or her belief that he or she can succeed (Dowrick et al, 2006). While VSM has been used successfully across many settings and behaviours (Buggey, 2007), it has yet to be fully examined for skill acquisition such as reading. Thus, the purpose of the present study was to determine whether VSM as a stand-alone intervention can be used to improve reading fluency for students who are not reading disabled but who are delayed in reading.

Method

Participants and Setting

Three boys and one girl, all in Year 3, at the same school (two classrooms) in the Hawkes Bay area of New Zealand participated in this study. All participants were monolingual (English). They were identified by their teachers as being behind their peers in reading but not being singled out for any specialized group or individualized reading intervention beyond the core reading instruction that was provided to all students. The ages of the participants ranged from 7 years, 3 months to 8 years, 1 month at the beginning of the study. Three of the children had previously been in Reading Recovery and had been discontinued from the program at the end of the previous school year due to a lack of treatment efficacy. None had disciplinary records.

Measures and Equipment

Oral reading fluency was regularly assessed with pairs of 1-min probes selected directly from the curriculum of the school. Passages without illustrations were randomly selected from the PM Benchmark series widely used in New Zealand primary schools. Each passage was two levels above the student’s reading level at the beginning of the study. This was done to ensure the students in the study had never before seen the text they were reading. This ensured a close connection between the materials used for instruction and how student progress was measured (Deno & Marston, 2006). Participants were required to read passages that were of the same difficulty level, but each passage was different. Oral reading fluency, as measured by number of correct words read per minute, was assessed multiple times before, during, and after the video self-modeling intervention.

During baseline, intervention, and follow-up phases each participant was asked to read aloud for 1 minute, if he or she hesitated for more than 3 seconds, he/she was given the word and instructed to continue. If the student said a word wrong, he or she was corrected and instructed to continue. At the end of the minute the number of correct words was added up. To reduce variability of performance, each student was given two passages to read per session and the mean of the two was recorded as a single data point (Dowrick et al., 2006).

Participants were videoed using a Sony Handycam DCR-DVD605E digital video camera recorder. A tripod was used to maintain stability. Video footage was downloaded to an Apple Macintosh computer and edited with i-Movie software. To create the videos each participant was video recorded reading a passage that was slightly more difficult than passages presented during the three phases of the study. The video was edited to show the student reading the passage fluently. Each finished video was between 1 minute, 55 seconds and 2 minutes, 15 seconds long. Buggey (2007) stated that self-modeling videos need not be longer than 2 or 3 minutes to get the desired effects provided the student can attend to the video. The images of each student reading fluently were achieved by capturing the child’s reading and editing out parts where the researcher helped the student with a word. Where the student’s reading was slow or halting, pauses were cut from the edited copy to show the student reading at a fluent pace. The finished DVD had a menu screen that played music and had images of the student reading with their name on it. From the menu the student could access the actual “movie” of them reading.

Procedure

A multiple-baseline-across-subjects design (Cooper, Heron, & Heward, 2007) was used for the study with four participants. Oral reading fluency, as measured by number of correct words per minute, was the dependent variable. Initially each participant was recorded reading above from five to eight sessions (Baseline) according to the procedures described. After baseline, each student was shown the finished DVD before school for 2 weeks. This was done in a room without distractions. No comments were made about the DVD while the student was watching it, although the first author remained in the room with the student to monitor their attention to the video. At the end of the intervention phase the video was removed and each participant returned to baseline conditions. Following a one week intervention, each participant’s oral reading fluency was again recorded for five consecutive days. The same procedures were maintained throughout baseline, intervention, and follow-up phases.

Data were analyzed using visual analysis and percentage of non-overlapping data points (PND), a common metric used in analyzing single subject research (Jenson, Clark, Krister, & Kristjansson, 2007). Scruggs and Mastropieri (2001) suggest that PND scores above 90 represent very effective interventions, 70 to 90 represent effective interventions, scores from 50 to 70 are questionable, and scores below 50 are ineffective. In addition, inter-observer reliability data were collected. For 21% of the 1-minute fluency probes (4 out of 19 sessions for each participant) a teacher aide at the school also listened to the participants reading to provide inter-observer reliability. She timed the session and recorded the number of correct words per minute just as the researcher did. The percentage of agreement for all sessions was 93.75%.

Results

Figure 1 shows the graphic display of the participants correct words read per minute before, during and after the VSM intervention. Words read per minute and PNDs can be found in Tables 1 and 2.
Figure 1: Participants number of correct words per minute before, during and after VSM

* Blake was absent on Day 3 and Sienna was absent Days 2-10.
As can be seen in Figure 1, during baseline Ben read between 30 and 41 words per minute with a mean of 36.8. He had an ascending baseline which you might expect with reading, as the child is expected to make some improvement with regular classroom instruction. During the implementation of VSM his performance initially decreased but then made some improvements. However the PND was 25% (see Table 2) indicating he did not move far from baseline. His mean score during the intervention was 39.4 (range 39.5 – 48). After the intervention his scores were erratic, returning to baseline in some cases. His mean score in this phase was 39.5 (range 32-49.5). From baseline to post-intervention the PND was only 29%, indicating this was not an effective intervention for Ben. Over the 2 month course of the study Ben improved his reading fluency scores by 3.5 words per minute, the smallest effect of any of the participants.

**Matthew**

Figure 1 shows Matthew’s baseline data were relatively stable with a mean score of 27.8 words per minute (range 25-30.5). During VSM implementation his mean score went up to 35.25 words per minute (range 33.5-37.5) an increase of 7.45 words per minute (see Table 1). The PND was 100% (see Table 2). After the intervention his scores were initially higher, with the mean of the first four data points post-intervention increasing by eight words to 43.4 words per minute. However over the next few sessions his scores decreased steadily until they were nearly back at baseline levels. The mean of all of Matthew’s post-intervention scores was 38.5 words per minute, which was an increase of nearly nine words per minute. Visual inspection of the data show a general lessening of the effect as time elapsed from the intervention phase, although the PND from baseline to post-intervention was 91%. The intervention appeared to be successful for Matthew at first but the effects diminished over time and the effects were not maintained.

**Blake**

Baseline data for Blake had some variability at the start but became relatively stable over time (see Figure 1). His mean score during baseline was 44.8 words per minute (range 37.5 – 49). During intervention his scores remained at baseline at first but showed a sharp increase halfway through the intervention. The mean score during the VSM implementation was 50.6 (range 42.5 – 58), an increase of almost six words per minute. Post-intervention

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**Table 1: Mean Words Read Correctly Per Minute before, during and after VSM**

<table>
<thead>
<tr>
<th></th>
<th>Pre-VSM</th>
<th>During VSM</th>
<th>Post-VSM</th>
<th>Total Increase</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ben</td>
<td>36.8</td>
<td>39.4</td>
<td>39.5</td>
<td>2.7</td>
</tr>
<tr>
<td>Matthew</td>
<td>27.8</td>
<td>35.3</td>
<td>38.5</td>
<td>10.7</td>
</tr>
<tr>
<td>Blake</td>
<td>44.8</td>
<td>50.6</td>
<td>53.6</td>
<td>8.8</td>
</tr>
<tr>
<td>Sienna</td>
<td>27.7</td>
<td>39.9</td>
<td>37.4</td>
<td>9.7</td>
</tr>
</tbody>
</table>

**Table 2: Percentage of Non-Overlapping Data Points**

<table>
<thead>
<tr>
<th></th>
<th>Pre-VSM to VSM</th>
<th>Pre-VSM to Post-VSM</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ben</td>
<td>25</td>
<td>29</td>
</tr>
<tr>
<td>Matthew</td>
<td>100</td>
<td>91</td>
</tr>
<tr>
<td>Blake</td>
<td>50</td>
<td>60</td>
</tr>
<tr>
<td>Sienna</td>
<td>100</td>
<td>75</td>
</tr>
</tbody>
</table>
his scores remained higher than baseline for all except two data points, with the overall mean increasing to 53.5 (range 42-65) words per minute. From baseline to intervention the PND is 50% but 60% from baseline to post-intervention. Over the course of the study his mean scores improved by almost nine words per minute. The intervention did seem to have an effect on Blake’s scores, albeit not a strong one.

Sienna

Figure 1 shows Sienna’s baseline data were stable and she showed very little improvement in the 25 days before VSM was implemented. Her mean score during baseline was 27.8 words per minute (range 25-32). During intervention her scores immediately increased to a mean of 39.8 words per minute (range 33.5 – 46). The PND from baseline to intervention was 100%. During the post-intervention phase her scores were a little more variable and her mean decreased to 37.4 words per minute (range 31-46.5). However her mean score still increased by nearly 10 words per minute. The PND from baseline to post-intervention was 75% showing the intervention was successful for Sienna.

Summary

Overall, all participants made gains in their reading fluency with the mean scores increasing between 3.5 and 10 words per minute. Three out of four of the participants’ mean scores increased between 8.5 and 10 words per minute. The PND scores were 29%, 91%, 60%, and 75%, showing the VSM intervention was not successful for one participant, questionable for one participant, successful for one participant, and highly successful for the other participant. The effects are particularly noticeable in Matthew and Sienna’s data where baselines were relatively stable. All participants did not appear to maintain their gains over time and there were some inconsistent performances by Blake and Sienna as they moved away from the intervention. For Matthew and Sienna, who had the highest PND scores, the effects of the intervention appeared to diminish gradually over time.

Discussion

Despite the evidence that VSM can be useful in the area of skill acquisition it has been under-utilized in schools for literacy development. This is due partly to the technological difficulties that have always been associated with producing the DVDs. As put by Dowrick and colleagues (2006) ‘school personnel have made it clear they seldom have the time and inclination to pursue additional technology, even when the empirical evidence is clear that it will help their students in leaps and bounds’ (p. 205). However technology is constantly improving and much of the technology required to edit video recordings is now available on home computers. Hand held video devices are now commonplace which paves the way for “real-time” recording.

While the effects of the VSM intervention are not dramatic in this study, there is enough of a pattern of improvement across three out of four participants to draw some conclusions about the efficacy of VSM as an intervention for children who are slower to learn to read than their peers. Three of four participants made some improvement immediately or soon after VSM was implemented. For two of these participants, the improvement was immediate and significant with 100% PND from baseline to intervention. With the other participant the effect was apparent after one week of intervention. This is significant bearing in mind the lack of improvement these students had shown prior to the study. All three had relatively stable baselines especially in the case of Sienna, who showed almost no improvement in the weeks prior to the VSM intervention.

Although there were short-term immediate gains for most of the participants, the problem seems to be in maintaining these gains over time. In every case as time passed the reading fluency rate gradually decreased. This lack of maintenance is in stark contrast to most of the literature on VSM which shows the gains made by VSM are usually immediate, maintained over time, and often generalized to other settings (Wert & Neisworth, 2003; Bellini & Akullian, 2007; Buggey, 2005, 2007). Both Hitchcock et al. (2004) and Dowrick et al. (2006) used VSM in conjunction with tutoring and found the gains made using VSM and tutoring were greater than the gains made by tutoring alone. In the former, viewing the VSM videos was associated with reduced variability and maintenance of increased gains. Perhaps the reinforcement gained through interaction with the tutor as well as increased learning opportunity contributed to the magnitude and maintenance of their effects.

Despite this evidence, the present study suggests that the gains made by VSM alone may be time-limited. It is possible that the students simply caught up to the level of the recorded passage. However none of the participants had progressed within their class reading groups to PM Benchmark Level 22 (the reading level of the passage) so this is unlikely. It seems that while the participants were actually watching the DVD it had positive effects on their reading fluency and these effects diminished the further away from the intervention they got. Ideally if time permitted, the VSM would have been reinstated to see if this had a further impact on the results.

It is important to remember that these students were in the bottom group in their class and had not made reading gains consistent with their classmates. This suggests that their oral reading fluency scores would be resistant to change with regular classroom instruction. Therefore even though the success in this study was minimal, the fact that there was movement at all indicates that VSM could be an effective intervention for children who are slower learning to read than their peers.

It is interesting to note that the fourth participant, Ben, whose results do not show any improvement as a result of the VSM intervention, was the participant least enthused about watching his DVD. He did not react when first shown the movie and appeared reluctant when called to watch it in the mornings. This was in stark contrast to Sienna, who was visibly excited when she first saw herself reading on the movie. When it was her turn to view the DVD she rushed up to the researcher, wanting to watch the DVD immediately. Her mean scores increased by 12 words per minute during the intervention, which is a startling
change compared to baseline. Matthew was also enthusiastic about his DVD although his reaction was less overt.

Shukla-Mehta et al. (2010) found that video-modeling might be more effective for students with good attending skills. In the present study each participant was functioning in a class environment so presumably the ability to attend was not an issue. However it seems that it is not only the ability but the motivation to attend that is an issue. In Bandura’s (1977) work on observational learning he pointed out that a key element to modeling is that there must be sufficient motivation to actually perform the modeled behaviour. The present study supports this hypothesis, as Ben appeared not to be motivated by seeing himself on DVD but the other participants were. How this motivation translates into increased performance has been explained by Dowrick (1999) in terms of the Bandura’s theory of self-efficacy. That is, an individual watching themselves on video enhances his or her belief that he or she can perform the behaviour and so is more likely to perform it. This model emphasizes the reactive effects of cognitive factors (e.g. awareness) and behavioural factors (e.g.: observable actions, consequences). This is of vital importance when it comes to reading as motivating poor readers to read is difficult as they become trapped in the “swamp” of negativity and reduced motivation surrounding their reading difficulties (Spear-Swerling & Sternberg, 1996). Share and Stanovich (1995) stress the importance of reading volume for poor readers, and note that virtually every study of reading volume indicates that struggling readers engage in far less reading activity than do more successful readers. Therefore VSM could be a vital tool in encouraging these readers to read more, and hopefully catch up to their peers. Allington (2006) emphasized the importance of “high-success” reading experiences characterized by accurate fluent reading with good understanding of the text that was read. He suggested this is in short supply in the reading experiences of struggling readers. If not available in their natural environment, it therefore makes sense to manufacture these successes on DVDs using VSM. The goal of any reading intervention for struggling readers is to catch up to their peers. An intervention such as VSM that motivates a student to read more and provides opportunity for high-success reading experiences may allow this to happen.

The Role of Prosody

Although the present study did not specifically examine the role of prosody in reading fluency, the results could shed some light on its usefulness in an intervention designed to improve reading fluency. When making the DVDs the participants were recorded reading a passage. Slow, hesitant speech was speeded up and any assistance rendered by the researcher was edited out. What was left was the participant reading out loud at the correct rate and speed. What was not able to be altered was the prosody of the participants’ speech. The speech still sounded monotonous and flat, although it was accurate and at an appropriate speed. Prosody as a component of reading fluency has been largely ignored in the classroom and by many researchers; however, (Rasinski, Rilki, & Johnston, 2009) found substantial links between prosodic fluency and silent reading comprehension, and suggest instructions aimed at improving expressive oral reading may have an even greater impact on comprehension than instruction that is aimed at improving reading rate and automatic word decoding.

Results from a study on repeated reading conducted by Lo et al. (2011) suggest that introducing a prosodic element could enhance results. They found that students’ oral reading fluency improved on transfer passages when an adult modeled expressive reading of a passage of text prior to repeated reading of the same or multiple passages. However the difficulty lies in constructing a DVD that includes prosody. It might be possible to encourage the participants to read with expression after many readings of a passage. Rasinski (2006) stated that through repeated readings, even dysfluent readers are more able to capture the prosodic and syntactic essence of the text. Further research needs to be done to determine what effect introducing some prosodic element to VSM would have on the results.

Limitations

As discussed earlier in the section on prosody, a limitation was the quality of the finished DVDs. Through editing it was possible to eliminate the assistance given by the researcher and to speed up slow and halting speech. Although the finished product showed participants reading accurately at an appropriate rate (but without prosody) the editing process meant the picture quality was at times jerky. This was allowed for by having the participants sit at a comfortable chair at a table in a room with a plain background, but not eliminated altogether. The age of the participants meant they moved around in their seat from time to time and when large pauses were edited out this showed as a jump from one position to the next. This may have interfered with the effectiveness of using the self as a model.

Although variability in the reading probes was controlled for by having the participants read two passages and the mean score of the two counted as one data point, there may still have been some variability in the difficulty of the passages. The passages were chosen randomly from books at the same reading level but there was no explicit measure of the difficulty of the text. Logan and Petcher (2010) discussed this in their study and found evidence that there could be significant differences between passages that were presumed to be equivalent based on readability and difficulty estimates. This could lead to incongruent oral reading fluency scores.

Finally, although we were using oral reading fluency as the dependent variable, some researchers argue that in order to determine whether there were benefits from fluent text reading there needs to be an assessment of reading comprehension (Schwanenflugel et al, 2006). Such an assessment may have yielded useful data especially in light of the lack of maintenance of the oral reading fluency gains. Whether or not there were improvements in comprehension as well as short-term gains in oral reading fluency could be the subject of further research.

Future Research

More research needs to be done to
determine what other ways of improving reading fluency work best in conjunction with VSM, and whether combining VSM with other forms of fluency instruction provides maintenance of gains. It would also be interesting to look at the frequency and duration of VSM, and examining whether repeated showings of the same DVD have an effect, or whether showing a different DVD of similar or increasing difficulty has an effect on the results. It would also be helpful to try VSM on students at different ages and reading abilities to determine whether there is an “ideal” age or stage it would be suited. Future research should also address the question of whether introducing a prosodic element to the DVD will improve and maintain the gains made. This is important in light of the growing importance of prosody to reading fluency research. As has also been pointed out previously, further research might also consider incorporating a measure of reading comprehension in order to ascertain whether gains were also made in comprehension and whether or not they were maintained. An important consideration for any future research on VSM and reading fluency is the quality of the DVD. Although it was possible to hear the participants reading fluently, the finished DVD did jump a bit and appear jerky in places. It remains to be seen whether this can be eliminated totally.

Conclusion

All the participants in the study made overall gains in their mean oral reading fluency scores. In examining PND scores, it is possible to conclude that VSM was an effective intervention for at least two out of four participants. The participants were all students who were behind their peers in reading and had shown little improvement in their oral reading fluency scores prior to this intervention. This would suggest their scores were relatively stable and resistant to change. The fact that their scores improved after watching their DVDs shows how an individual watching themselves read fluently on video may enhance his or her belief that he or she can perform the behaviour. The problem is the gains were not maintained over time and the effectiveness of the intervention seemed to diminish as time passed. This has practical implications for the use of VSM within schools. As part of an instructional package VSM could be a valuable tool in both providing the student with opportunities for high-success reading experiences and motivating the student to read more.

References


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