



# The Effectiveness of Using Point of View Video Modelling Intervention Strategy on Improving Self-Care Skills of a Student with Autism

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The purpose of this study was to examine the effectiveness of using a point of view video modelling intervention strategy on improving the self-care skills of a student with autism. The target skills were handwashing and toothbrushing. A single-subject ABA design was used in this study. Data were collected using a mixed-method approach. The intervention lasted for six weeks. The results of this study indicate that point of view video modelling is an effective instructional tool for improving handwashing and toothbrushing skills for a student with autism. Moreover, the participant was able to generalise handwashing and toothbrushing skills in two different settings. Implications of this study include the importance of utilising point of view video modelling in daily classroom practice to teach students with autism self-care skills.

**Key words:** *Autism, Video Modelling, Self-Care Skills, UAE.*

## Introduction

The number of children diagnosed with autism is increasing around the globe. Recently, the reported rates of autism across the world have approached 1 percent of the population (American Psychiatric Association, 2013). The prevalence of autism in the UAE is estimated to be one in 146 births (Hessian, Abbady, & Alaam, 2017). The number of students with autism in care and rehabilitation centres for people of determination across the UAE during the 2017/2018 academic year was 1,531 students, from both genders, based on the statistics of the Ministry of Community Development (Ministry of Community Development, 2019). Indeed,

students with autism represented 30 percent of the total number of students registered among people of determination care and rehabilitation centres across the UAE.

Autism was first identified by Dr. Leo Kanner (1943), an American psychiatrist, who noticed that eleven children were exhibiting relatively similar characteristics, including lack of verbal communication, oversensitivity to external or internal stimuli, and an inability to socialise. In 1944, Hans Asperger published a paper about a group of children who demonstrated similar behaviours to Kanner's patients in Germany (as cited in Hardy, 2016).

Children with autism show a lack of skills beyond social communication, such as self-care skills, motor skills and play skills (American Psychiatric Association, 2013). Moreover, children with autism have difficulty in acquiring adaptive behaviour skills, as they are typically below any child's IQ ability. "Autism spectrum disorder generally has lifelong effects on the child's ability to socialise, to care for him/her self and to participate meaningfully in the community" (Zachor & Merrick, ebrary, 2013, p. 7). Students with autism have difficulties in adaptive behaviour and with self-care skills such as hygiene, washing hands, maintaining health, dressing, caring for clothes, self-entertainment, and following a schedule (Meister & Salls, 2015; Volkmar, Paul & Rogers, 2014). Indeed, children with autism have poor functional independence in self-care skills due to their difficulties in fine motor skills and atypical sensory responses (Jasmin et al., 2009).

Handwashing is a significant skill that everybody should learn (International Self Care Foundation, 2019). Hand hygiene is something that directly affects a person's health. Although handwashing is a critical skill, some children with autism find it difficult.

In addition, students with autism may have difficulty maintaining oral hygiene, and are, therefore, at risk of developing dental decay, due to factors such as "poor hygiene, detrimental oral behaviours, medication-induced xerostomia, concurrent medical diagnoses, low cognitive abilities, poor dietary habits, gastric reflux, a preference for soft or sweet foods, use of sweets for behaviour modification, and a need for help with toothbrushing and other general fine-motor tasks" (Popple et al., 2016, p. 2791). Another concern is the difficulty for some students with autism to receive treatment at the dental clinic, as they may become overly distressed by activities not included in their daily routines. Moreover, children with autism are very sensitive to sensory stimuli such as strong sounds, bright light, sensations and scents (Popple et al., 2016). Therefore, they need to be taught daily living skills as part of their daily routine.

Furthermore, children with autism often depend on their parents or caregivers for self-care tasks. This constant dependence can be challenging for parents. Lacking basic self-care skills makes autistic students dependent on others for care at all times and in all locations.

Children with autism have difficulties with self-care skills such as oral hygiene, handwashing skills, dressing, caring for clothes, self-entertainment, washing their faces, combing their hair,

using the toilet, bathing, eating, and keeping to a schedule (Jasmin et al., 2009; Volkmar et al., 2014). Previous studies report that self-care skills can be taught to students with autism (e.g., Matson, Hattier, & Belva, 2011; Mays & Heflin, 2011; Whitman, 2004). From the literature reviewed above, it has been found that video modelling is an effective instructional tool to teach self-care skills to students with autism (Bereznak, Ayres, Mechling, & Alexander, 2012; Lee, Anderson, & Moore, 2014; Meister & Salls, 2015; Shrestha, Anderson, & Moore, 2013; Smith, Ayres, Mechling, & Smith, 2013; Ohtake, Takahashi, & Watanabe, 2015; Rosenberg, Schwartz, & Davis, 2010; Van Laarhoven, Kraus, Karpman, Nizzi, & Valentino, 2010).

In the Arab world, few studies have examined the impact of using the video modelling strategy to enhance the self-care skills of autistic students (e.g., Alzyoudi, Sartawi, & Almuhi, 2014; Bayomi, 2009;). To date, no study in the UAE has used point of view video modelling to enhance handwashing and toothbrushing skills.

This study aims to examine the impact of using the point of view video modelling technique on improving the handwashing and toothbrushing skills of a student with autism; more specifically, this study will answer the following questions:

1. What is the impact of using point of view video modelling on improving the handwashing skills of a student with autism?
2. What is the impact of using point of view video modelling on improving the toothbrushing skills of a student with autism?
3. To what extent can handwashing and toothbrushing skills, gained through the implementation of point of view video modelling, be generalised to different settings?

## Research Design

A single subject ABA design was used to measure the effectiveness of the intervention on improving the self-care skills of a student with autism. Single subject design is a scientific methodology that is experimental rather than correlational or descriptive (Horner et al., 2005). "In single subject designs each participant serves as his or her own control" (Gay, Mills, & Airasian, 2011, p. 294). The purpose of single subject design is to identify the causal correlation between the dependent and independent variables (Horner et al., 2005). Special education is a field that emphasises active interventions that specifically focus on the individual as a unit, and provides practical procedures that can be used in schools, in the home, or in the community. Horner et al. (2005) state that single subject design has several advantages that make it appropriate for special education, such as its focus on individuals rather than groups, and its detailed analysis of the intervention for both respondents and non-respondents. It also tests the validity of conceptual theories that predict the condition that relates to the change of behaviour. Finally, it is a cost-effective approach that identifies the educational interventions that could

be applied to a large-scale replication. Single subject studies provide additional guidance for policy directives.

The ABA design was used in the current study by collecting data for one participant while the participant performed two tasks (handwashing and toothbrushing). In the ABA, if the participant's performance improved, the intervention was judged to be effective (Gay et al., 2011). This study implemented four phases as explained below: baseline, intervention, maintenance and generalisation.

The dependent variables measured were self-care skills (handwashing and toothbrushing). The independent variable was the intervention, which was the point of view video modelling.

### **Participant**

One male student diagnosed with mild autism participated in this study. The student was enrolled in the Special Education Centre in the Emirate of Abu Dhabi. Yossif (not his real name), from Saudi Arabia, was 8.5 years old. He joined the Centre one month before the intervention program. Yossif lived in the hostel of the Centre. He had been diagnosed with mild autism according to the diagnostic criteria of the DSMVI; the reported result of his Gilliam Autism Rating Scale - Second Edition (GARS-2) was a score of 73. Yossif had been diagnosed with severe disability on the Vineland Adaptive Behaviour Scale, with a score of 31. Results of language tests administered by a speech pathologist indicated that he had a severe delay in both expressive and receptive language. According to the student's IEP, he had never received training on handwashing or toothbrushing; therefore, his IEP goals included both skills.

All assessment and intervention sessions were administered by the student's special education teacher, a 27-year-old Egyptian female pursuing her master's degree in special education. She had eight years of experience working as a special education teacher and psychologist.

Another observer was a psychologist who was responsible for recording the participant's performance in checklists. She was a 25-year-old Egyptian with five years of experience in clinical psychology.

As mentioned earlier, the centre is located in the Emirate of Abu Dhabi, and offers services for many types of disabilities, such as autism, intellectual disabilities and developmental delays, among others. Additional services are available in speech therapy, occupational and physical therapy, early identification and diagnosis services, school nurse services, psychological services and assistive technology. In addition, the centre includes a hostel for people of determination, as most of the students are from outside of the country.

The participant selection process had multiple stages. First, the centre's manager was asked to nominate students that matched the inclusion criteria of the study. Second, two students with

autism were nominated for the study by the centre manager. Third, the researcher checked the files of both students and found that one student was diagnosed with ADHD according to the tests implemented by the centre's psychologist; therefore, this student was excluded from the study. The other student was included in the study because he matched the inclusion criteria as follows: a) he was 8.5 years old; b) he was diagnosed with mild autism; c) he had good attention; d) he could engage in a task for ten minutes; and e) he understood verbal orders. Finally, f) he had difficulties in handwashing and toothbrushing skills. To ensure that the participant lacked handwashing and toothbrushing skills, a pre-test was administered by the researcher. The pre-test was identical to the baseline phase: the student was asked to either wash his hands or brush his teeth, for which the teacher gave him an order for each step of the skill (e.g., "take some soap"). Pre-test findings confirmed the IEP goals; the participant had some difficulties in handwashing and toothbrushing skills.

### **Settings and Materials**

All sessions took place in a bathroom. The materials used were soap and a towel for the handwashing skill; and a toothbrush, toothpaste, cup and towel for the toothbrushing skill. The bathroom was located inside the psychologist's room, where the towel hanger was too high, so a lower plastic towel hanger was set on the wall beside the sink in easy reach of the student. The videos were displayed on an iPad located on the sink rack in front of the student so that he could see it clearly.

### **Videos**

Videos were developed by the researcher according to the task analysis of each skill; each video depicted one step of the skill. Videos were recorded in a bathroom in the centre in order to minimise distraction and keep the participant focused on the action displayed in the videos. As suggested by Nikopoulos and Keenan (2006), the setting appearing in the video was the location where the student demonstrated the targeted behaviour.

The researcher preferred to use a model of the same age and gender of the participant, as it has been found that a high degree of similarity between the model and the participant results in better imitation (Richards, Heathfield, & Jenson, 2010). Therefore, the model that performed in the videos was a typical 10-year-old boy. The model's face did not appear in the videos, and only his hands were shown, following the point of view video modelling technique. An exception was made for the videos of the toothbrushing skill, where the model's mouth was shown in the mirror in some steps.

The researcher used the point of view technique by taking the shots from above the model's shoulder, letting only his hands appear in the videos. In the toothbrushing skill, the model's mouth appeared in some videos in the mirror, but the video shots were performed directly above the model's shoulder. A video prompting strategy was used in this study. More

specifically, each step was presented in a separate video by a performer. The videos were recorded and edited on an iPhone by a professional photographer. Each video was edited, and its speed slightly reduced, to promote visual processing and to allow the student to absorb the content of the video. Each step was then narrated, by a female speaker of the Saudi dialect, the dialect of the participant. The maximum duration of each video was 10 seconds. According to a meta-analysis of 29 studies conducted by Bellini and Akullian (2007), the median duration of a video was three minutes (as cited in Kutty, 2012).

### **Reliability and Validity**

To determine the inter-rater reliability, three special education teachers were asked to check each step of the task analysis, and to determine whether they were related or unrelated to the skills. The inter-rater agreement using the kappa score was 0.85.

In addition, the content validity of the instrument was determined by asking three experts (special education teachers) to review both checklists, and to determine whether all items were related to the skills (handwashing and toothbrushing). The researcher made some modifications in the final copy of the instrument to address the experts' feedback. For the toothbrushing checklist, the modifications included:

- a) Adding a first step that demonstrated going to the sink.
- b) Replacing the steps of brushing the outside, inside and biting surfaces of the teeth with the steps of brushing right and left sides and up and down to make it easier for the student.
- c) Excluding the step of rinsing the sink with water to remove any toothpaste foam.
- d) Excluding the step of discarding the disposable because the student uses a towel not a tissue.

In addition, the handwashing checklist was modified as follows:

- a) Adding a first step that demonstrated going to the sink.
- b) Eliminating the last three steps of drying hands.

In addition, the content validity of videos was determined by the same three special education teachers: they were asked to determine whether the videos were related to the two skills. Videos were modified according to the raters' recommendations on the level of the dialect of the narration. For instance, the sentences used as recommended included little words, and the dialect used was the same dialect used by the participant's community (the first copy of the videos were in a different dialect). Finally, the videos were slowed down to give the participant a longer period of time to absorb them.



### **Baseline Phase:**

The aim of the baseline phase was to measure the participant's abilities in handwashing and toothbrushing skills. The participant was asked to do the steps of the task analysis without watching the videos. A criterion of less than 70 percent of steps in each skill was set as a baseline for the student to be included in the study. Baseline data were collected through three consecutive sessions. Each session started with a verbal order by the teacher for the participant to either wash his hands or brush his teeth. The teacher said, for example, "Wash your hands," and gave the student five seconds to initiate. If the participant did not initiate within five seconds, the teacher gave an order to start the first step according to the task analysis, for example, "Stand in front of the sink," and again gave the student five seconds to initiate the step. If the student did not initiate within five seconds, the teacher started to give an order to start the next step; and so on until the task was completed. If the student failed to perform a step, the teacher interrupted and finished the step and then moved to the next step. This was recorded as a latency error.

### **Intervention Phase**

The intervention phase aimed to train the participant in handwashing and toothbrushing skills using point of view video modelling. This phase lasted for six weeks at a rate of three sessions per week. Each session in the intervention phase started with a verbal order to the student to do the task, for example, "Let's go and brush your teeth." Trials started by placing the student in front of the bathroom door, followed by the instructor displaying the video of the first step on the iPad, waiting five seconds for the student to initiate and ten seconds for him to complete the step. The instructor gave verbal directions if the student did not initiate within five seconds. Videos for each step were displayed a maximum of three times per session before moving on to the next step. In case the participant did not perform the task, or performed it incorrectly after three trials, the teacher interrupted and physically prompted the student to move to the next step. Physical prompting was used in the following way: partial physical prompting was used first; if the student still did not perform the step, the teacher used full physical prompting before moving to the next step. A checklist was used to record whether the student completed the step with partial or full physical prompting, or with only video modelling. At the end of the intervention phase, the total steps that had been completed with video modelling only, and those with both prompting and video modelling, were compared to identify the effectiveness of video modelling.

### **Maintenance Phase:**

This phase was the same as the baseline phase, except the participant was asked to do the steps of the task analysis without watching the videos. The criterion for the intervention phase was set at 100 percent for handwashing and 80 percent for toothbrushing, across three consecutive sessions. Once the criteria were met, it was time to begin the maintenance phase.

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### **Generalisation Phase:**

In this phase, the student was asked to wash his hands and brush his teeth in two different bathrooms (the class bathroom and the cafeteria bathroom) in order to determine whether he could generalise the skills to other settings.

At the end of all of the phases, the teacher was interviewed for her feedback about the instrument used in the study. The interview was semi-structured, with open-ended questions. Semi-structured interviews generally include a set of predetermined open-ended questions, along with other questions that may emerge from the conversation between the interviewer and interviewee(s) (DiCicco-Bloom & Crabtree, 2006). Semi-structured interviews usually “consist of several key questions that help to define the areas to be explored, but also allow[s] the interviewer or interviewee to diverge in order to pursue an idea or response in more detail” (Gill, Stewart, Treasure & Chadwick, 2008, p. 291). Moreover, open-ended questions allow the researcher to obtain detailed information from the participant that they may not have expected (Gay et al., 2011), as they require more than yes or no responses (Gill et al., 2008).

### **Data Analysis**

Descriptive statistics were used to analyse the data as the percentage of steps accomplished independently in each session were calculated. This process was applied in each phase, and the results were displayed in a graph to compare the participant’s performance through the phases. By this graph, the researcher could compare the participant’s performance in all phases, and if his performance improved, the intervention was judged to be effective (Gay et al., 2011).

In the intervention phase, the percentage of the steps the participant accomplished using video modelling only was calculated, as well as the percentage of the steps the participant accomplished using video modelling plus prompting. The results of these data were presented on a separate graph. In single subject designs, data were typically analysed using visual inspections of the results present on the graph (Gay et al., 2011).

### **Results**

Research Question 1: What is the impact of using point of view video modelling on improving the handwashing skills of a student with autism?

The results of this study provide promising evidence that point of view video modelling is an effective approach for teaching students with autism handwashing skills.

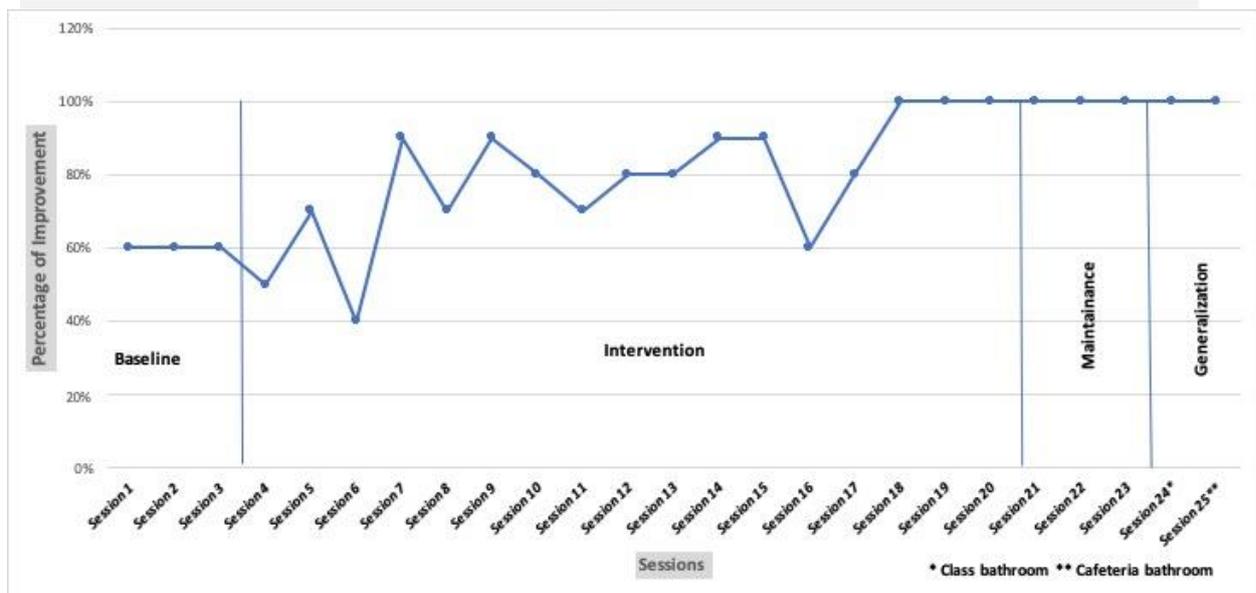


Figure 1. Student’s performance on maintenance and generalisation of handwashing skill

As shown in figure 1, comparing the student’s performance in session 4 with his performance in session 21, we observed that overall the student performed better with the use of the point of view modelling technique. Additionally, the student’s performance in the baseline phase was stable compared to his performance in the intervention phase, where it fluctuated through the first eight sessions. This could be attributed to the fact that, in the first few sessions, the student was a bit confused about the process and procedures. After that, the trend started to increase at session 9, which indicated an overall improvement. In session 18, the student achieved the target of performing all steps of handwashing independently (100%).

If we examine figure 1 more closely, we will find that in session 16, the student’s performance decreased dramatically, from 90 percent to 60 percent. This could be attributed to the fact that the student was tired, as he had a lot of activities in his schedule and was not attentive to the videos. Therefore, the teacher had to physically prompt him, which negatively affected his score. However, after that session, the trend increased again until the performance criterion was reached.

With respect to maintenance, figure 1 illustrates that the student’s performance in the maintenance phase was stable on the achieved criterion, as he maintained his skills at the same performance level after the intervention had ended, in three consecutive sessions (from session 21 to session 23).

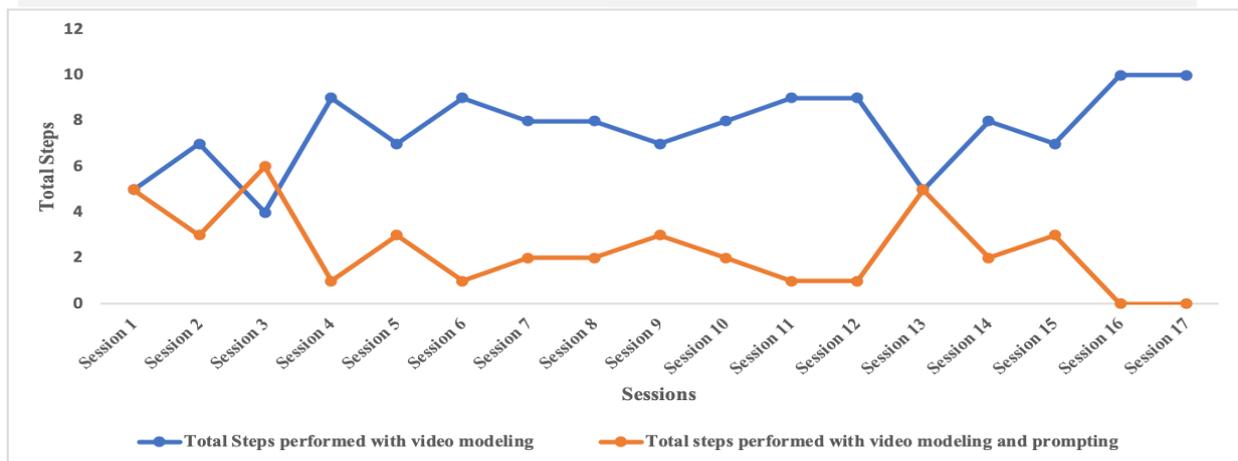


Figure 2. Intervention phase of handwashing skill with video modelling.

If we examine Figure 2 more closely, we will find that the total number of steps performed by the student while using video modelling only increased throughout the intervention phase, whereas the total steps performed using video modelling plus prompting decreased. In 15 out of 17 sessions, prompting was used alongside video modelling. In the last two sessions (16 and 17), the student did not receive any prompting. Based on this finding, it seems that the prompting technique faded gradually throughout the sessions. This could be attributed to the practice factor, as after the first three sessions the student started to make connections between the videos and the physical prompting he received. Therefore, prompting was gradually reduced across the intervention sessions, and by the end, video modelling alone was enough to improve the student's performance in most of the steps. Findings also indicate that prompting was a useful technique when used with video modelling intervention.

Research question 2: What is the impact of using point of view video modelling on improving the toothbrushing skills of a student with autism?

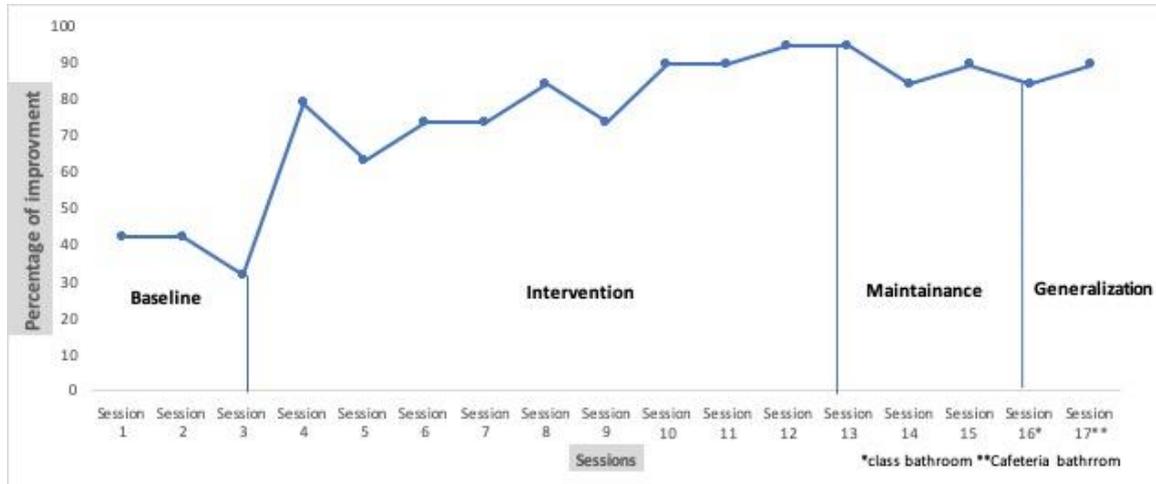


Figure 3. Student's performance on maintenance and generalisation of toothbrushing skill

Figure 3 illustrates the student's performance in toothbrushing skills across all phases. For the baseline phase, the student had a mean baseline rate of 38.6 percent through three successive sessions. As displayed in figure 3, the overall trend of the student's performance in the toothbrushing skill throughout the intervention phase increased over the sessions until the set criterion of 80 percent was reached in session 10. Moreover, the criterion was exceeded in the next two sessions. The intervention was not stopped when the student reached the criterion until his performance remained stable for the last three sessions in the phase. Regarding the maintenance phase, the toothbrushing skill was maintained after the intervention ended, as no additional videos were shown to the student. The figure also shows that the student's performance remained above the target of 80 percent in the maintenance phase across the three sequential sessions.

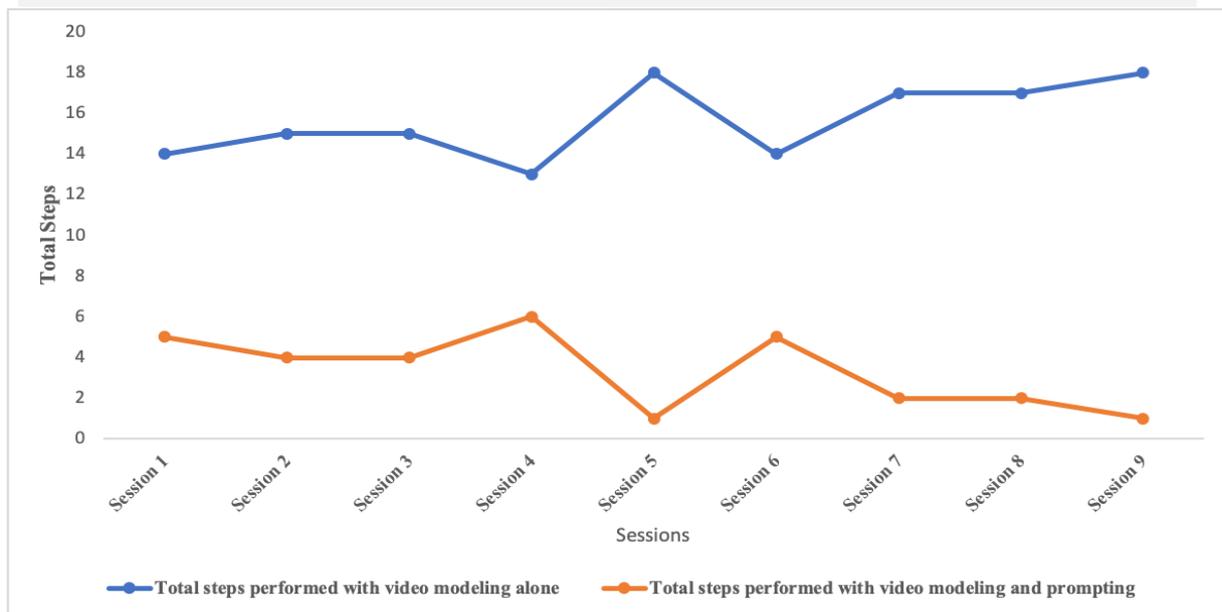


Figure 4. Intervention phase of toothbrushing skill with Video Modelling

Figure 4 indicates the student's performance on the toothbrushing skill through the intervention phase regarding the technique used in sessions, whether it was video modelling only or video modelling plus physical prompting. The top panel of figure 4 represents the total steps performed with video modelling only, and the bottom panel represents the total steps performed using both video modelling and prompting techniques. Figure 4 shows that the overall trend of the top panel increased, which means the total steps performed with video modelling only rose throughout the intervention phase, whereas the bottom panel of the figure declined. It can be interpreted that the total steps accomplished by using video modelling plus physical prompting decreased across the intervention sessions. In other words, the physical prompting faded gradually throughout the sessions, and the student began relying on video modelling alone to perform the skill.

Research question 3: To what extent can handwashing and toothbrushing skills gained through the implementation of point of view video modelling be generalised to different settings?

The findings of this study indicate that the student generalised the handwashing and toothbrushing skills he gained through the point of view video modelling intervention to two different settings. If we examine figure 1 in sessions 24 and 25, we find that the handwashing skill was successfully generalised, on the criterion level, to two different locations: the classroom's bathroom and the cafeteria's bathroom. Moreover, regarding the toothbrushing skill, as displayed in figure 3, the student generalised the skill in sessions 16 and 17 in both locations at the mastery level.

## Discussion

The objectives of this study were threefold: a) to examine the impact of using point of view video modelling technique on improving handwashing skills for a student with autism; b) to examine the impact of using point of view video modelling technique on improving toothbrushing skills for a student with autism; and c) to examine the possibility of generalising both self-care skills (handwashing and toothbrushing) to different settings.

Regarding the first objective, the results of this study reveal that point of view video modelling was an effective strategy for teaching handwashing skills to a student with autism. The student mastered the skill and maintained it when the intervention was stopped. The participant was able to complete all steps of the handwashing skill without watching any videos. This result is consistent with the findings of the study conducted by Campbell, Morgan, Barnett, and Spreat (2015), which aimed to teach handwashing skills to three adolescent students with autism, using video modelling on portable handheld devices. In Campbell et al. (2015) study, all participants showed progress in the acquisition of handwashing skills, which indicated that using video modelling on portable handheld devices was an effective strategy to teach students with autism self-care skills. Moreover, our results also confirm the results of the study conducted by Rosenberg et al. (2010), in which one student mastered the handwashing skill using commercial video modelling, while the other two students showed some acquisition of the skill using custom video modelling.

Concerning the second objective, the results of this study show that point of view video modelling was a successful tool for improving toothbrushing skills for a student with autism. Moreover, the student in this study not only mastered the skills, but maintained them even when no additional videos were shown. This result is consistent with the study carried out by Popple et al. (2016), which utilised video modelling to enhance the oral hygiene of students with autism. Findings of this study indicate that all students showed oral hygiene improvement after intervention. In addition, this result is also consistent with the findings of the study conducted by Charlop-Christy, Le, and Freeman (2000), in which five participants showed quicker improvement in skill acquisition by using video modelling intervention. One of the participants had video modelling training on toothbrushing, and he demonstrated good acquisition of the skill.

Regarding the third objective, the results of the current study show that both handwashing and toothbrushing skills had been generalised to two different settings (the classroom's bathroom and the cafeteria's bathroom). The student generalised each skill at the mastery level to both settings. This result was consistent with the results of the study carried out by Charlop-Christy et al. (2000), where participants generalised the targeted skills (e.g., self-care, independent play, cooperative play, social play, conversational speech, oral comprehension, spontaneous greetings, and expressive labelling of emotions) to different settings, persons and stimuli. In

addition, this finding was consistent with Lee et al. (2014)'s study, which combined video modelling with reinforcement and picture prompting to train a student with autism to use the toilet. The participant acquired the targeted skill and generalised it to another setting.

Generally, the results of this study indicate that point of view video modelling is an effective strategy to enhance self-care skills of a student with autism. These results confirm the results of the pilot study conducted by Meister and Salls (2015), who evaluated the effectiveness of using point of view video modelling in teaching self-care skills to secondary students with autism. Findings of that study indicate that point of view video modelling is effective, as participants showed improvement in the targeted skills. Similar findings emerged from the study of Shrestha et al. (2013), which used point of view video modelling to teach a student with autism functional self-help skills (for example, making a snack) and found that the participant successfully learned and maintained the target skill.

In addition, the results of this study supported video modelling, in general, as an effective intervention to teach students with autism daily living skills (Bereznak et al., 2012; Van Laarhoven et al., 2010), and functional and self-care skills (Bayomi, 2009; Smith et al., 2013).

Furthermore, the findings of this study support the findings of the meta-analysis study conducted by Hong et al. (2017), which investigated the effectiveness of video modelling single case studies in teaching functional living skills to students with autism, as it found that all types of video modelling, including point of view video modelling, were moderately effective in all included studies. In addition, all types of functional living skills were taught effectively through all studies.

Moreover, this study adds to the literature as it demonstrated that video modelling was an effective instructional tool that could be used to teach self-care skills (Bayomi, 2009; Bereznak et al., 2012; Lee et al., 2014; Meister & Salls, 2015; Ohtake, 2015; Ohtake et al., 2015; Rosenberg et al., 2010; Shrestha et al., 2013; Smith et al., 2013; Van Laarhoven et al., 2010). Additionally, this study fills the gap in the literature by evidencing the effectiveness of point of view video modelling to improve handwashing and toothbrushing skills of a student with autism in the UAE.

The results of the present study were also consistent with Albert Bandura's theory (1969), that individuals could learn through observation of others displaying the targeted behaviours or skills. This observational learning comprises two processes: modelling and imitating. Using video modelling in this study promoted the occurrence of both processes, as the participant watched the targeted behaviour displayed in the videos and then imitated it. According to Bandura, there are four conditions that promote successful modelling: attention, retention, motor reproduction and motivation (Ormrod, 2011). In this study, the student paid good attention to the modelled behaviour; this was guaranteed by using video modelling. Additionally, in this study the participant was excited to use the iPad and to watch the videos,

although he did not initiate in the first few sessions until he understood that he should imitate the displayed behaviour. When he did not produce the behaviour, the teacher interfered and physically prompted the student.

The outcomes of this study indicate that point of view video modelling is a successful strategy to improve handwashing and toothbrushing skills in a student with autism. A visual inspection of the participant's observational data shows good progress in skill acquisition of handwashing and toothbrushing. In addition, the student reached the criterion in both skills, and demonstrated the skills without watching the videos in the maintenance phase. Moreover, he generalised the skills to two different places. The number of times the physical prompting technique was used throughout the sessions decreased, and the number of steps performed using only video modelling increased, until the participant was capable of performing most of the steps after watching the videos without prompting.

Another important point worth discussing is the sequence error that took place in some steps of both skills. For example, in the handwashing skill, in some sessions the participant performed step six: "Rub the back of the right hand using the left hand," before step five: "Rub the back of the left hand using the right hand." The same problem occurred in the toothbrushing skill. For example, the participant performed step seven, "Brush the inside surfaces of the teeth of the upper jaw" before step nine, "Brush the inside surfaces of the teeth of the lower jaw." This can be attributed to the difficulty the participant had with orientation (e.g., left/right, up/low). Therefore, special education teachers may need to check the student's ability to distinguish between directions (right/left or up/low) before teaching students with autism handwashing and toothbrushing skills.

The participant was interested in the videos; they grabbed his attention from the first session. The only problem was that since the whole process was new to him, in the first session he was confused about what he should do after watching the videos, even though the teacher had given him instructions prior to displaying them. Later on, he was able to make connections between what was displayed in the videos and the physical prompting he received from the teacher. This indicated that prompting may be necessary for some students during the video modelling intervention.

One interesting observation of the participant's behaviour was that he was distracted by the iPad: he wanted to control the videos that were displayed, since he was able to reach the iPad. Therefore, it would be better if the screen was attached to the wall.

Findings from the teacher's interview reveal that the teacher believed there were advantages and disadvantages of using point of view video modelling intervention strategies. For example, she thought that video modelling was an innovative learning method that utilised technology. In addition, the teacher thought that video modelling could be used for teaching different skills. On the other hand, the teacher faced some challenges during the intervention sessions, as she



needed an assistant to hold the iPad while she was prompting the student. A noteworthy point is that the iPad was set on the rack of the sink, and the student was touching it with wet hands, which was disturbing to the teacher. Therefore, the teacher preferred to display the videos on a big screen attached to the wall. However, this is not usually an option in a bathroom.

### **Recommendation for Future Research**

Future researchers may replicate this study by attaching a stand for the iPad to the wall to avoid potential distractions. Another valuable addition would be using a self-prompting strategy, by giving the student control of the iPad; this might increase the participant's attention to the videos.

Future research may need to determine whether physical prompting is a necessary part of the intervention through a comparison between video modelling with physical prompting and video modelling without any prompting; this might be conducted using two groups (control and experiment). In addition, it would be valuable to assess point of view video modelling of self-care skills with a larger number of autistic students, as currently only a limited amount of research has been carried out examining the effectiveness of point of view video modelling on enhancing self-care skills of students with autism. Additionally, this study could be replicated with other types of disabilities.

### **Implications for Teachers**

Teachers should consider the positive results of this study and similar studies in the literature and utilise point of view video modelling in the daily classroom to teach different skills to autistic students, whether using an iPad, another handheld device, or even a big screen. Also, rehabilitation centres may need to consider preparing videos of different skills that are filmed at the same location as that used by teachers in different interventions for different students, in order to save the teachers' time, be cost effective, and be available for everyone to use.

### **Conflicts of interest statement**

I have nothing to disclose.



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