A Replication of a comparison of Prompting Strategies on the Acquisition of Daily Living Skills

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Abstract

The current study compared two prompting strategies to teach a daily living skills task of folding clothes for two male adolescents with a diagnosis of an autism spectrum disorder. An alternating treatment design, with the two prompting strategies counterbalanced across task, was used. The prompting strategies compared were gestural prompt and teacher model. This study was a replication of Sabielny and Cannella-Marone's 2014 study, but with different prompting strategies. Results showed that although both prompting conditions were successful in teaching the participants to fold clothing, the teacher model prompting was more efficient than the gestural prompt condition.

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Key terms: autism spectrum disorder; prompting; daily living skills

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A primary concern for parents and caregivers of those diagnosed with autism spectrum disorders is that their children lack daily living skills in order to help with household chores; resulting in a burden of care upon the parents (Pierce & Schreibman, 1994). It is also a concern as many problems in the home are frequently reported to be related to children using verbally inappropriate language, bickering amongst themselves and not helping with household chores (Christopherson, Arnold, Hill & Quilitch, 1972). Therefore, increased attention is needed for those diagnosed with autism spectrum disorders with life skills and household chores (such as getting dressed, washing clothes & putting them away) in order to reduce burden on parents and to help increase personal independence. O'Leary and Dubey (1979) discussed how acting independently is typically expected by our culture and, therefore, acquiring independent life skills early on allows a person more potential to thrive in domestic and vocational settings. Young people diagnosed with autism spectrum disorders may require the use of tactics from the science of behaviour, the learn unit and decision protocol in order to develop their life skills and be able to become more independent in completing household tasks.

Greer (2002) states that learn units consist of a three-term contingency for the student and the teacher in which the response of the student occasions a reinforcement or correction operation from a teacher. Learn units occur in scripted, automated, discrete, dispersed, and massed forms (Greer, 2002). Learn unit rates serve, together with criterion referenced objectives, as the basic measure of the teaching process and as the core for analysing instructional variables (Greer, 2002). Typically the mean

number of learn units to criterion are measures of a teachers instructional skills (Greer, 2002). Greer (1994) defines the learn unit as operants of instruction that interlock incorporating both the student and teacher and predict whether particular stimuli or setting events will control student behaviour.

The decision protocol is described by Keohane and Greer (2005) as a scientific method for consistently monitoring progression through curricular programmes. Decision opportunities occur after three consecutive stable or five overall variable data paths (the line connecting data points on a graph). When a trend is tacted as ascending the programme continues and then it is possible for criterion to be reached. Whereas when a no trend or descend is tacted a change in tactic is required. When criterion is reached more targets may be worked on or the programme would come to completion. Many tactics can be used within the learn unit and the decision protocol in order to increase or decrease behaviours.

In order to increase desired social and household chore completion Christophersen, Arnold, Hill and Quilitch (1972) used a token economy within participant's homes. Two sets of parents and a total of 5 children (aged between 5 and 10 years) were taught to use the token economy. Parents were taught to specify desired social and chore behaviours, communicate these goals to the children, record data on the occurrence of these behaviours, and manage a point system that involved exchanges for reinforcers typically found within the home. The token economy proved successful across the two families who claimed the tactic made 'significant changes' and 'improved behaviour.' Results showed that the tactics successfully modified 15 problem behaviours in the first family and 6 behaviours in the second. All of the 21 behaviours targeted were described as having improved after the implementation of the token economy. The research discusses how only a small

amount of professional help is needed to learn to manage problem behaviours in the home using a token economy system.

Pierce and Schreibman (1994) used a different tactic, pictorial self-management, with the aim to teach daily living skills to those diagnosed with autism spectrum disorders. Three male participants all with a diagnosis of an autism spectrum disorder took part in the study. Daily living targets included removing a pyjama top, retrieving a shirt, putting on a shirt, removing pyjama bottoms, retrieving pants, putting on pants, retrieving socks, putting on socks, retrieving shoes and putting them on. The results indicated that young persons with autism spectrum disorders could manage their behaviour using pictures in the absence of a family or staff member. The participants all followed novel picture sequences on completion of the study, indicating that the pictures were controlling the behaviour.

Cronin and Cuvo (1979) evaluated the effectiveness of a task analysis on the more complex daily living skill of mending clothing. Five participants took part in the study all of whom were diagnosed with learning difficulties. A task analysis of three mending skills (sewing hems, buttons and seams) was developed and resulted in all participants being able to successfully take part in and complete the mending tasks. The task analysis was modified so that all of the participants could take part despite their disabilities. The overall effectiveness of the task analysis showed that people with learning difficulties could be taught to mend clothing using a task analysis if it was developed in a way to suit their needs.

Sabielny and Cannella-Malone (2014) conducted a study into the effects of physical only and physical plus vocal prompting strategies on the acquisition of folding clothes tasks in order to determine which prompting strategy was most effective. Two participants with significant intellectual disability took part and an alternating treatments design across the different prompting strategies was used. The

prompting strategies were counterbalanced across folding a shirt and folding a pair of pants. The study found that both strategies were equally effective for one participant, however, for the second participant the physical only prompting was more effective.

The literature discussed the importance of teaching life skills children and to those with additional needs such as an autism spectrum disorder. It also discussed different tactics used to increase independence when completing life skill related activities such as household chores. The tactics utilised in the literature can be related to a number of principles of behaviour such as principles of contingency, operant behaviour and positive reinforcement. The purpose of the current study was to replicate the study by Sabielny and Cannella-Malone (2014) in order to determine which prompting strategies are most effective in the acquisition of folding clothes tasks for participants diagnosed with autism spectrum disorders.

Method

Participants

Two male participants took part in the study; both had a diagnosis of an autism spectrum disorder and were in the Sixth Form class. Participant 1 was 17 years old and had an additional diagnosis of hypoxic ischaemic encephalopathy and left sided hemiparesis. Participant 2 was 18 years old and had an additional diagnosis of epilepsy. Participant 1 was a speaker, listener, emergent writer and emergent reader. He was able to follow simple vocal instructions and mand with autoclitics. Participant 2 was an emergent listener, speaker with PECS (Picture Exchange Communication System) using Proloquo2go® and pre-reader/writer. He was able to follow simple picture schedules, mand and tact with PECS. Both pupils followed an individualised curriculum, focussing on communication and daily living skills as part of the Sixth Form curriculum. Both pupils had Generalised Imitation in repertoire at the time of the study.

Setting

The study took place at a CABAS® day School in England. The school is open for 43 weeks a year Monday to Friday 9.30am to 3.45pm for the pupils; the school follows the CABAS® approach to instruction and has a 1:1 teaching ratio. At the time of the study there were 54 pupils at the school divided into 12 classes based on verbal ability and key stage. Both participants were in a Sixth Form class containing one other pupils with two teachers, a lead teacher and a supervisor. The baseline and intervention sessions were carried out in the sixth form classroom, the sixth form common room and daily living skills room. The classroom consisted of three work stations for pupils, two class computers, stationery cupboards, an interactive whitebeard and a class whiteboard. The common room contained a small kitchen area, an eating area and a free play area consisting of books, music, DVDs

and an air hockey table. The daily living skills room resembled a small studio flat with bedroom, kitchen and living area.

Materials

Materials for the baseline and intervention sessions included a shirt, a pair of trousers and a task analysis. Clothing were appropriate sizing for the participants.

Definition of behaviour

The target behaviour was to fold items of clothing according to a task analysis. A task analysis was developed for both items of clothing (See Appendix A) based on the experimenter completing the tasks prior to developing the task analysis. Folding shirt task analysis included a) place shirt laid out b) fold one side to the middle c) Fold the other side to the middle d) Fold the bottom to the top e) Move hands away to indicate finished. Folding trousers task analysis included a) Place trousers laid out b) Fold one leg to the other leg c) Fold the bottom to the top d) Fold the bottom to the top again e) Move hands away to indicate finished.

The independent variable was a Gestural Prompt (GP) and Teacher Model (TM). For the purpose of the study a Gestural Prompt was defined as the experimenter pointing to the materials to guide the participant to the correct part of the clothing and to carry out the correct folding action. A Teacher Model was defined as the experimenter carrying out the action according to the task analysis so the participant could copy.

Intervention sessions were carried out using the Learn Unit (Greer & McDonough, 1999).

Mastery criterion was 100% independent accuracy across the entire task analysis once.

Data collection

Data were collected as Learn units (Greer & McDonough, 1999) throughout the study. Data were reported as percentage of steps completed on the two task analyses.

Procedure

During Baseline sessions the item of clothing was presented to the pupil and a vocal antecedent was delivered "Fold the shirt/trousers". No reinforcement or corrections were delivered during baseline sessions but vocal encouragement and redirections were delivered throughout for both participants.

During Intervention sessions a vocal antecedent of "Fold the shirt/trousers" was delivered. If the participant responded correctly it was scored as correct on the task analysis. If the pupil did not respond within 5 seconds or responded incorrectly a prompt was delivered and scored as such. For the purpose of the study the shirt condition was prompted with Gestural only (GP) and the trousers were prompted with a teacher model (TM). Each step was scored on the task analysis. Intervention sessions were carried out three times a day, four times a week for each participant.

The order of the intervention sessions were pre-determined before the onset of the intervention to ensure randomisation and put into a schedule format for experimenters to follow (See Appendix B).

Design

The study an Alternating Treatment design, with the two prompting strategies (Teacher Model and Gestural prompt) counterbalanced across tasks.

Interobserver agreement

Interobserver agreement was carried out for 90% of all baseline sessions, scoring 100% agreement and for 20% of all interventions sessions with 100% agreement. Interobserver agreement was carried out by two experimenters independently scoring the data during observations.

Results

Figure 1 shows the percentage of steps completed in the folding clothes tasks during baseline and intervention for Participant 1. Results showed that during baseline conditions the participant scored 20% for all three baseline sessions for folding trousers (Teacher Model condition) and 40%, 20% and 20% for folding shirt/Gestural prompt condition. During intervention the TM condition ranged from 0 to 100%,with a mean of 60% and for the GP condition data ranged from 60% to 100% with a mean average of 68%.

Figure 2 shows the percentage of steps completed in the folding clothes tasks during baseline and intervention for Participant 2. Results showed that during baseline conditions the participant scored an average of 64%, ranging from 40% to 60% for baseline sessions for folding trousers (Teacher Model condition) and 20% for all three baseline conditions for folding shirt/Gestural prompt condition. During intervention the TM condition ranged from 40 to 100%, with a mean of 72% and for the GP condition data ranged from 60% to 100% with a mean average of 70%.

Figure 3 showed the number of Learn Units presented for the participants to achieve criterion during both teacher model and gestural prompting conditions. Participant 1 needed 9 sessions (45Learn Units presented) to achieve mastery of the task during the GP condition and 6 sessions (30 Learn Units Presented) during the TM condition. Participant 2 needed 11 sessions (55 Learn Units presented) for GP conditions and 6 sessions (55 Learn Units presented) for TM condition to achieve mastery of the task.

Discussion

Results showed that although both prompting conditions were successful in teaching the participants to fold clothing, the teacher model prompting was more efficient than the gestural prompt condition. During the study by Sabienly and

Cannella-Malone (2014) they found that both prompting strategies (physical only and physical plus vocal prompting) were equally effective for one participant, however, for the second participant the physical only prompting was more effective. The current study was an adapted replication (due to different prompting strategies being used) and results indicated that both prompting strategies were successful, however, the teacher model prompting was more efficient that the gestural prompt condition. Further research could look into all of the prompting strategies from the original study and this adaptation in order to evaluate the most effective prompting strategy of all four types.

There were, however, limitations to the original study and the current study due to the limited number of participants. Future research could look into increasing the number of participants to further validate findings. Participants could also be more varied across different disabilities as well as neuro-typical children to see if this has any impact on data. Another limitation that would need to be considered is that the tasks set may not have been equivalent in difficulty (although attempts were made to make them the same level of difficulty). All of the tasks involved folding clothes and had the same number of steps in the process, however, the folding of trousers could be considered more challenging to fold than a shirt or vice versa.

Due to the nature of the task analysis being for a similar task and the same number of steps, some of the learning from one task analysis could have carried over to the other, which may have had an impact on the data collected. Therefore, for future studies this could be overcome by selecting tasks of equivalent difficulty but tasks that have a different topography. However, this also has limitations as the tasks would need to be selected carefully to avoid differences in regards to level of difficulty.

Another factor that could have had an effect our study was the knowledge and skill set of the staff working with the participants. The teachers working within the CABAS® classroom had varying lengths of employment within the setting. It would have been beneficial for more intervention sessions to have had IOA in order to further validate our findings.

Future research could look into different prompting strategies and whether they lead to prompt dependency. Too much dependency on prompts could, in the long term, could cause problems for participants living independently. Prompt dependency could also lead to problems generalising and maintaining skills. Therefore, it would also have been interesting to conduct generalisation and maintenance probes after the completion of our study. It would also be interesting to consider which prompts are less intrusive (in order to try and reduce prompt dependency) as well as which strategy the participants preferred.

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Figure 1

Figure 1: Graph to show percentage of steps completed in the folding clothes tasks during baseline and intervention for participant 1.

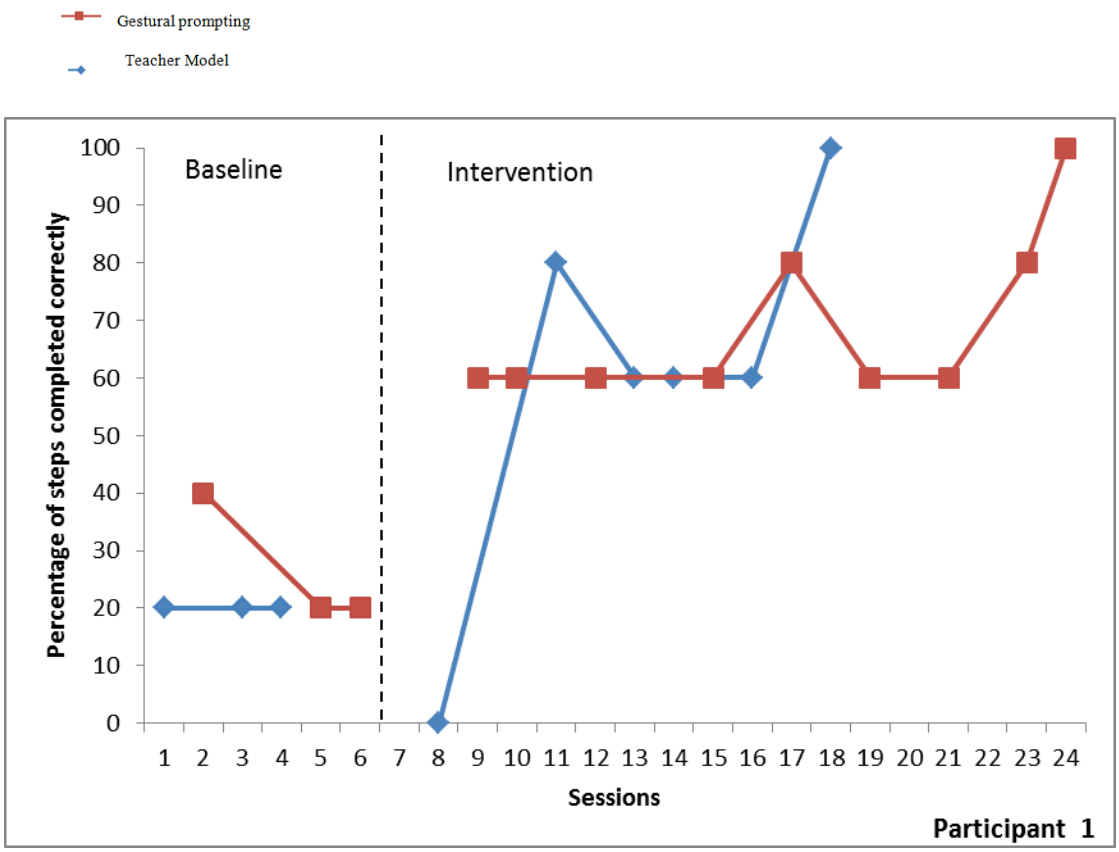


Figure 2

Figure 2: Graph to show percentage of steps completed in the folding clothes tasks during baseline and intervention for participant 2.

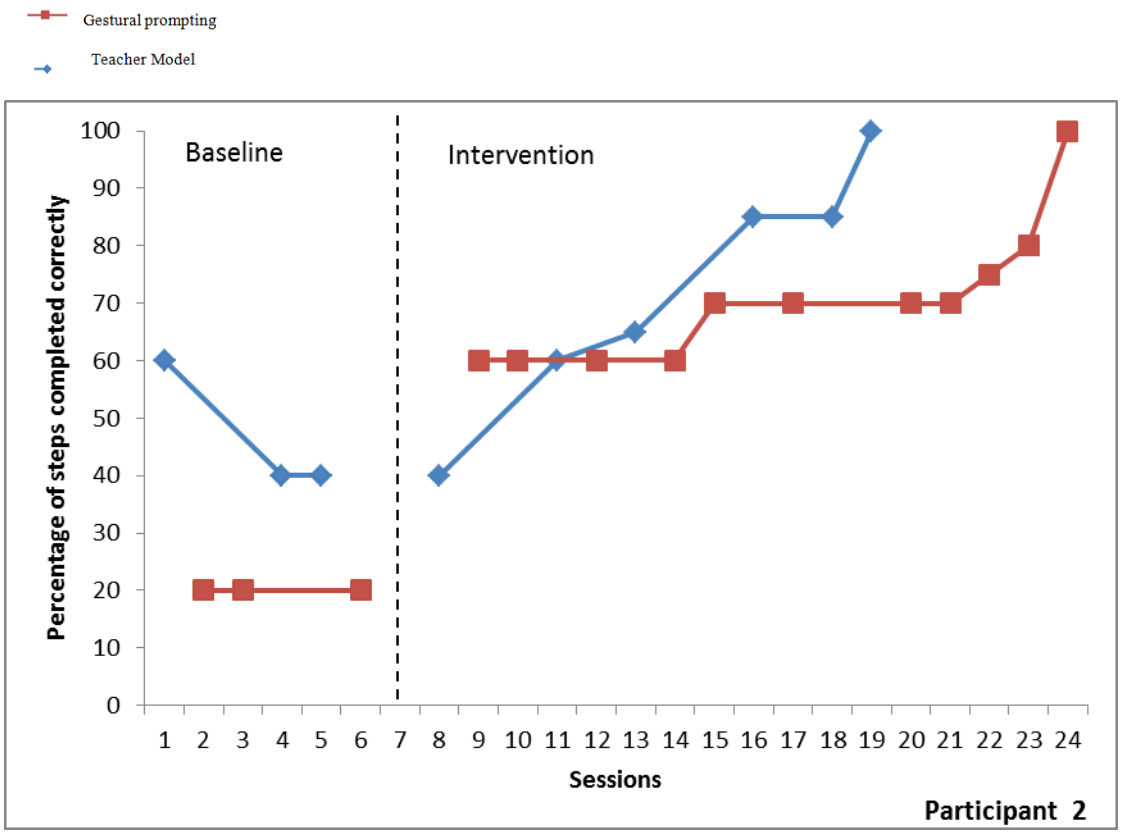
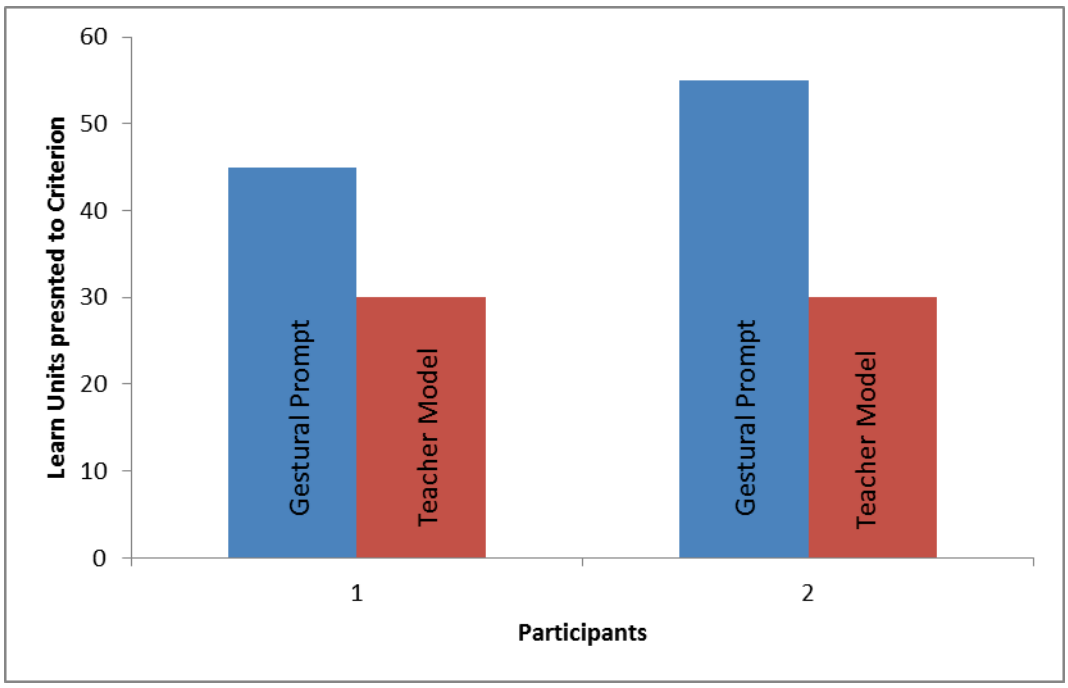


Figure 3: Graph to show Learn Units presented to achieve mastery for Participant 1 and 2.



Appendix A- *Task analyses for folding trousers and shirt*

Place trousers laid out									
Fold one leg to the other leg									
Fold the bottom to the top									
Fold the bottom to the top again									
Move hands away to indicate finished									
Date & Initial									
Graph %									

Place shirt laid out									
Fold one side to the middle									
Fold the other side to the middle									
Fold the bottom to the top									
Move hands away to indicate finished									
Date & Initial									
Graph %									

Appendix B- *schedule of order to run interventions*

Target to run	**Prompt to use in correction**	**Run and graphed?**
Shirt	Gestural only	
Trousers	Teacher model	
Trousers	Teacher model	
Shirt	Gestural only	
Trousers	Teacher model	
Shirt	Gestural only	
Shirt	Gestural only	
Trousers	Teacher model	
Shirt	Gestural only	
Trousers	Teacher model	
Trousers	Teacher model	
Shirt	Gestural only	
Trousers	Teacher model	
Shirt	Gestural only	