

The Effect of Video Prompting on Individuals with Autism Spectrum Disorder: An Extended Meta-analysis

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ABSTRACT Video Prompting (VP) is a type of video-based intervention, which involves presenting a series of short video and allow the learner to model the skill after each clip. There are many meta-analyses as well as systemic reviews performed to understand the effects of video prompting and video modelling on teaching skills to individuals suffering from autism spectrum disorder (ASD) and other developmental disabilities. The researchers conducted this study to particularly include academic theses and dissertations. This meta-analysis extended previous VP reviews by examining the single-case research design effect size of VP on educating individuals with ASD in 10 academic theses/dissertations, including 28 participants. The analysis indicated an overall Tau-U effect size of 0.95 ($SE = 0.04$, 95% CI = [0.87, 1.04]), which supports the positive impact of VP for training and instructing ASD individuals based on research evidence. Limitations, future directions, and importance of study are discussed.

INTRODUCTION

Autism spectrum disorder (ASD) is a developmental defect resulting in the disability, which results in deficiencies in developing appropriate social as well as communication abilities. The ASD results in having behavioural challenges such as repetitive and restricted attitude (American Psychiatric Association 2013). ASD is usually diagnosed in early years of life, though with increase in age the complications and effect of it on life quality increase. It is noteworthy that different patients present with a variety of variations in terms of severity of its symptoms and effects (Salari et al. 2022). Management of ASD involves behaviour modification techniques. These individuals usually suffer from medical comorbidities as well, for which a variety of medical options are used (Aishworiya et al. 2022).

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For management of chronic conditions, it is usually teamwork from various individuals who belong to different fields but collectively input to the life quality improvement for patients. This is known as patient-centred care (Hussain 2021).

Centres for Disease Control and Prevention (2014) presented their report involving sixty-eight children suffering from ASD in the United States. Students with ASD show some learning difficulties, such as stimulus over selectivity, attention and attendance problems, lack of learning motivation, and imitation deficits (Welty 2010). They also face challenges linked to vocational skills and functional living, which may potentially have a negative influence on their management of routine tasks and quality of lives (Carothers and Taylor 2004).

Video-based instruction for teaching an individual with ASD has gained attention as it allows the learner to imitate a model presenting a skill via video clips (Banda et al. 2011). Video modelling (VM) and video prompting are the

main types of video-based instruction. In VP, the person is shown video of the task sequence before imitation. This practice continues until all the steps of the task are accomplished. In contrast, VM requires watching the entire task or skill sequence prior to performing the task (Sigafos et al. 2007).

The usefulness of video prompting for ASD patients has been documented in the relevant literature. Currently, five VP review studies discussing the usefulness of using VP for educating subjects with developmental disabilities have been identified in the relevant literature (Aljehany 2018; Aljehany and Bennett 2019; Banda et al. 2011; Domire and Wolfe 2014; Gardner and Wolfe 2013; Hong et al. 2016). Four studies used a descriptive systematic review methodology (Banda et al. 2011; Domire and Wolfe 2014; Gardner and Wolfe 2013; Hong et al. 2016). Two studies applied a meta-analysis methodology, analysing the effect sizes of VP on individuals with ASD (Aljehany 2018; Aljehany and Bennett 2019; Hong et al. 2016). A summary of existing VP reviews is provided below.

First, Banda et al. (2011) reviewed the effects of VP used for instructing subjects with developmental disabilities across 18 studies with 68 participants. Their results showed the effectiveness of VP as a teaching method for improving vocational, daily routines, and social skills. Video prompting helped participants to generalise what they learned in different environments and maintain these skills for a long time. They also recommended the use of VP over statistical pictures and VM alone, as indicated in several studies. They supported the use of VP with additional teaching strategies as a treatment package, such as VP with least to most prompting and/or error correction. Finally, evaluating the effectiveness of VP on young individuals suffering from developmental disabilities and the social validity of VP based on learners' perspectives need more investigations (Banda et al. 2011).

Second, Domire and Wolfe (2014) evaluated the impact of VP in enhancing the skill learning in persons with ASD across 12 studies that included 38 participants. They examined some variables that may influence participant performances, including attention, retention, reproduction, and motivation. Their results supported the positive impact of VP in teaching independent and daily

living tasks to individuals with ASD. They indicated that VP has better results compared to VM, particularly for teaching daily living tasks to participants (Domire and Wolfe 2014). Also, they recommended the use of VP over VM when individuals with ASD show deficits in long-term attention (Allen and Courchesne 2001; Ames and Fletcher-Watson 2010; Quill 1997).

Third, Gardner and Wolfe (2013) have performed a detailed systematic review to study the outcomes of VM and VP interventions on improving daily living skills for individuals suffering from ASD (38 participants in 13 studies). The results demonstrated that VP intervention was effective for teaching tasks related to daily living to individuals suffering from ASD. Video prompting also showed superiority over VM for instructing daily living skills to participants with ASD in reviewed studies (Gardner and Wolfe 2013). In addition, they assessed the effectiveness of VP using PND (percent of non-overlapping data), which is utilised for comparing the data between baseline and post-intervention phase data (Scruggs et al. 1987). When the data points do not overlap, it indicates the level of the intervention effect size (Parker et al. 2011). They found large effects of VP for each participant with 100 percent PND in 7 included studies. Varying PND results were found across four studies. These studies presented different levels of effectiveness upon participating subjects.

Fourthly, Hong et al. (2016) evaluated the efficacy of both video techniques on routine living skills performances of individuals suffering from ASD and other abnormalities of development. They analysed 23 studies with a total of 66 participants by statistically analysing 119 A-B phase contrasts using the Kruskal-Wallis test and Tau-*U* effect size (Kruskal and Wallis 1952). The overall effect size of VM (including VP) was 0.83 at 95 percent CI [0.79, 0.87]. The result indicated a moderate effect size of VM and VP on teaching daily living skills (DLS) for subjects with ASD and developmental disabilities (Parker et al. 2011). Furthermore, potential moderators, such as dependent variables, independent variables, diagnosis, and age did not show any significant differences.

Finally, Aljehany and Bennett (2019) analysed 17 single-case research design studies with 54 participants with ASD to evaluate the use of

VP for teaching daily living skills using Tau-*U* effect size index. They estimated that the overall Tau-*U* was 0.92 ($SE = 0.03$, 95% CI [0.86, 0.99]), which indicated a moderate to high effect size for VP on improving routine skills of ASD patients. In addition, there was no significant variance among identified possible variables, including VP with additional support, VP without additional support, age groups, and participant diagnosis (Aljehany 2018; Aljehany and Bennett 2019).

This may influence the previous reviews' results (Duval and Tweedie 2000). By including the VP effects on ASD patients reported in academic theses and dissertations will add valuable knowledge to the video-based instruction literature. Additionally, evidence-based practices can be determined by synthesising single-case research design (SCRD) studies to examine functional relations amongst dependent as well as independent variables (Ledford and Gast 2018). Single-case research methods can provide a comprehensive examination of applied interventions used in educational settings (Kraatochwill et al. 2010). Understanding the VP effects on ASD subjects obtained from peer-reviewed studies, as well as academic theses and dissertations, will assist educators to modify the VP practices based on their students' needs. Specifically, this study aimed to observe the Tau-*U* effect size of VP in ASD subjects as well as single-case research design academic theses/dissertations.

Objectives

A common limitation in previous literature and meta-analysis reviews is the exclusion of academic theses and dissertations that evaluate the use of VP in ASD subjects. Not including academic theses and dissertations when analysing the VP effects on ASD subjects may create a publication bias. The researchers have included academic theses/dissertations in the analysis with a focus on following two questions.

1. What are the descriptive data of included academic theses/dissertations?
2. What is the Tau-*U* overall effect size of VP across single-case research theses/dissertations for teaching individuals with ASD?

MATERIAL AND METHODS

Definitions

The main variables of this meta-analysis were defined as follows. Video prompting allows an instructor to divide a task or skill into small steps, develop a short video clip for each step presented by a model, and give the learner opportunities to imitate each video clip immediately after watching it until completing all the tasks (Gardner and Wolfe 2013). In this study, the procedural definition of academic theses and dissertations are defined as a written paper involving original research about a specific topic using a research methodology for earning a college or university degree.

Theses/Dissertation Identification and Reliability

Academic theses/dissertations included in the current meta-analysis were chosen according to following criteria. First, the research inclusion and exclusion criteria were identified as following:

1. The thesis/dissertation was published in identified online databases with the full text available.
2. A thesis/dissertation on VP was excluded if it was published in a peer-reviewed journal.
3. The thesis/dissertation was published in English with no limitations on the publishing date.
4. The thesis/dissertation included at least a participant diagnosed with ASD.
5. Video prompting with and without any forms of response prompting and/or interventions for error correction were used as variables (independent) in the thesis/dissertation and excluded additional forms of video-based instructions like VM or self-video modelling. Additionally, there were no limitations regarding the dependent variables (targeted tasks and skills) and participant ages included in the thesis/dissertation.
6. The methodology used in the thesis/dissertation was a single-case research design (SCRD). Theses/dissertations that used group experimental designs, literature reviews, qualitative research, and

peer-reviewed journal papers on VP were excluded from this meta-analysis.

7. Theses and dissertations that did not present results in SCRD graphic formats were excluded.

Second, the first author searched for positional theses/dissertations meeting the research criteria via five thesis/dissertation online databases, including ProQuest Dissertations and Theses Global, Education Database, ERIC, Open Access Theses and Dissertations (OATD), and EBESCO: Open Dissertations. The terminology used in each online database to select theses/dissertations for further examination included “video-based intervention”, “video prompting”, “video modelling”, and “video-based instruction”. The online database search yielded 1298 documents, including theses/dissertations.

Third, the researchers screened the abstracts and complete titles of the 1298 documents by applying three inclusion criteria, that is, participants with ASD or developmental disabilities, video-based instruction like VP or VM, and academic theses/dissertations written in English. Specifically, any document meeting the previous three criteria was targeted for a full examination. This screening yielded 228 academic theses/dissertations after removing duplications. Finally, authors applied all criteria for inclusion in the 228 theses/dissertations during the full examination, resulting in 13 theses/dissertations. Additionally, the reference lists of the 13 theses/dissertations were reviewed to identify additional theses/dissertations on VP, but no other studies were found.

Item-by-item inter-observer agreement (IOA) was applied to inclusion criteria across theses/dissertations selected for the full examination. The IOA was calculated by adding both agreements and disagreements. Then, the total number of agreements is divided by this number. Finally, it is multiplied by 100 to calculate the percentage (Cooper et al. 1987), resulting in 95 percent (range 75-100%). After calculating the IOA, consensus was reached by reviewing disagreements.

Single-Case Research Designs Evaluation and Reliability

The 13 theses/dissertations included in current analysis were based on the institute of education sciences (IES) standards of What Works Clearinghouse (WWC) (Institute of Education Sci-

ences 2014). For that purpose, the authors adapted the WWC of Single-Case Design Standards Checklist used for the meta-analysis by Aljehany and Bennett (2019).

The authors independently reviewed each single-case design of the 13 theses/dissertations using the Checklist. The studies included were those that met design standards with or without reservations as well as those not meeting the standards (Institute of Education Sciences 2014). Studies that did not meet the design standards were not included in the meta-analysis. The result of this evaluation indicated an exclusion of three theses/dissertations, meaning that 10 theses/dissertations were used in the meta-analysis.

The authors applied independently and randomly item-by-item IOA on 7 theses/dissertations' designs. The IOA was calculated by adding both agreements and disagreements. Then, the total number of agreements is divided by this number. Finally, it is multiplied by 100 to calculate the percentage for each evaluated single-case research design (Cooper et al. 1987). The IOA was 98 percent, and they discussed each disagreement to reach an agreement across all evaluated items.

Descriptive Data Collection and Reliability

Nine descriptive data were independently and systematically extracted by the first and second authors from each thesis/dissertation using a data collection form. Extracted descriptive data included an academic degree of the study (that is, master's degree or doctoral degree), the thesis/dissertation's affiliation (that is, the name of the university/college that published the study), number of participants with ASD included in the study, ages of participants with ASD, settings, targeted tasks, VP intervention type, the applied single-case designs, and follow up phase implementation. Item-by-item IOA was conducted for each thesis/dissertation by the method described above (Cooper et al. 1987). The IOA average across all included theses/dissertations was 100 percent.

Quantitative Data Collection and Reliability

For estimating the effect size of VP, the authors collected adjacent A-B phase data from the represented data graphs of each included thesis/dissertation (Parker and Vannest 2012).

Adjacent A-B phases of participants with ASD were only collected. Focusing on a specific subject, such as individuals with ASD have been reported in other studies as well (Hong et al. 2016; Ninci et al. 2015). Collection of A-B phases was excluded in cases with any reversal contrasts, phases of individuals without ASD, intervention phases, not including the use of VP, and follow up phases (Parker and Vannest 2012).

From all included theses/dissertations, 58 nearby A-B phase disparities were collected and organised in a Microsoft Excel sheet. Each adjusted A-B phase was labelled according to the thesis/dissertation that it was collected from. All data points of the adjusted A-B phase contrasts were transferred to their actual scores as appearing on the graph's Y axis. For example, when a data point was at 20 percent, the data point was given a 20. For reliability, the first and second authors applied independently and randomly point-by-point IOA for 30 percent of collected data points by the method described above (Cooper et al. 1987). The IOA was 97 percent (range 60-100%), and disagreements were resolved to build consensus.

Effect Size Calculation and Analysis

The Tau-*U* nonoverlap index was used to determine the overall effect size of VP when teaching ASD subjects (Parker et al. 2011). A nonparametric Tau-*U* is a statistical measure that counts nonoverlapping data points of A and B phases considering A phase positive trend. One advantage of using Tau-*U* index is its demonstration of strong statistical power and delivery of conservative data analysis by controlling positive baseline trends in A-B phase contrasts (Parker et al. 2011). The Tau-*U*, SETau, and confidence interval (CI) scores of each nearby A-B phase disparity was calculated using the online Tau-*U* calculation software (Vannest et al. 2016). If the A phase indicated an increasing tendency (indicated by 0.1 or more value of Tau-*U*), the phase variation was rectified. This was done to manage this tendency (Camargo et al. 2016). Then, the Tau-*U* and SETau scores of all contrasts were used in WinPEPI (Version 11.6) program for meta-analysis (Abramson 2011) to estimate an overall effect size for the 58 A-B phase contrasts. For determining the overall effect size, a score within the range of 1-0.93 means a large

effect size. A score between 0.92-0.63 means a moderate effect size, and 0.62-0 means a small effect size (Parker et al. 2011).

RESULTS

Descriptive Data

The descriptive data related to the academic degree of the study shows that many of the included studies were doctoral dissertations ($n = 6$). There were four master's degree theses. Half of the included theses/dissertations ($n = 5$) were published by Ohio State University, while other universities published one thesis/dissertation each, including Brigham Young University, University of Georgia, Vanderbilt University, Florida Atlantic University, and University of Pittsburgh. Regarding the participants' demographics, 28 participants with ASD were included in this meta-analysis. Most of the participants were between the age of 11 to 15 years old ($n = 20$). The studies also included participants between the ages of 16 to 20 years old ($n = 7$) and participants over the age of 21 ($n = 1$). Most of the theses/dissertations were conducted at participants' homes and special education classrooms ($n = 6$). Four theses/dissertations were conducted in educational centres/schools and public schools.

Regarding targeted tasks, the daily living skills were targeted the most by researchers ($n = 4$), followed by academic skills ($n = 3$), dance skills ($n = 1$), leisure skills ($n = 1$), and vocational skills ($n = 1$). In addition, most of the theses/dissertations used VP with a type of error correction or prompting ($n = 7$). Three theses/dissertations used VP alone during experiments. In terms of the SCRD used, multiple-probe methods across participants and behaviours were the most used designs ($n = 3$ each). Two theses/dissertations used multiple-baseline designs across participants, one used multiple-baseline across behaviours, and one used multiple-probe across participants with changing criterion designs. Finally, five theses/dissertations implemented maintenance and generalisation phases, four implemented maintenance phases, and only one implemented a generalisation phase.

Quantitative Data

The overall Tau-*U* effect size of VP on enhancing the performances of included partici-

pants with ASD was 0.95 ($SE = 0.04$, 95% CI = [0.87, 1.04]). This finding indicates a significant effect size of video prompting on instructing various skills to ASD. Overall, 86 percent of A-B phase differences were of a large effect size, 9 percent of a moderate effect size, and 5 percent were in the range of small effect size.

DISCUSSION

The purpose of this extended meta-analysis was to measure the effect size of VP interventions for teaching tasks and skills of ASD individuals reported in academic theses/dissertations. The result showed a large effect size, indicating the effectiveness of VP interventions for teaching a variety of skills to individuals with ASD. A majority of analysed theses/dissertations met the WWC design standards with or without reservations. Most of the theses/dissertations focused on participants who were more than 11 years old. The analysis showed a lack of theses/dissertations investigating the impact of VP on young ASD subjects, as well as individuals who are over the age of 21. Similar results are reported by previous studies by Banda et al. (2011), Domire and Wolfe (2014) and Gardner and Wolfe (2013). All included theses/dissertations were conducted in special education settings, schools, and participants' homes. Indeed, examining the effectiveness of VP in community settings and vocational centres supports the generalisation of the use of VP on ASD subjects. Additionally, theses/dissertations need to target new skills to examine the effectiveness of VP on ASD subjects, such as social, independent, vocational, professional development, and play skills. Included theses/dissertations used solely VP or with additional support, including error corrections. Comparing the effectiveness of VP alone to the VP treatment packages may show the learning interactions and preferences of individuals with ASD when using different VP treatment components. In terms of generalisation and maintenance, theses/dissertations rarely explore the impact of VP on learning in subjects with ASD in different settings and environments, as well as whether participants retain the skills after the withdrawal of VP interventions.

The results of this extended meta-analysis that focused on academic theses/dissertations

and the results of the meta-analysis published by Aljehany and Bennett (2019) that focused on peer-reviewed studies have several similarities and differences. First, the majority of research is conducted in schools' settings and participants' homes in both meta-analyses. Second, VP peer-reviewed studies focus on the use of VP alone without additional support, while VP theses/dissertations focus on the use of VP with additional support, such as error corrections. Third, in terms of the use of SCRDs, multiple-probe designs across participants or behaviours were the most used designs in VP theses/dissertations. In addition to the use of multiple-probe designs, peer-reviewed studies on VP implement a variety of comparative SCRDs. Fourth, the overall Tau-*U* effect size of VP on enhancing performances of participants with ASD was 0.95 (Standard error = 0.04, 95% confidence interval = [0.87, 1.04]) in theses/dissertations. This finding indicates a large overall effect size when utilizing VP to educate subjects with ASD a variety of skills. Conversely, the omnibus Tau-*U* effect size of VP was 0.92 ($SE = 0.03$, 95% CI [0.86, 0.99]) in peer-reviewed studies. This indicates a moderate to high omnibus effect size of VP impact on teaching ASD subjects. Fifth, both VP peer-reviewed studies and theses/dissertations lack an examination of the effects of VP on early aged children with ASD. Indeed, absences of essential requirements and abilities, such as attendance and attention when using VP with young children with ASD may prevent their inclusion in VP research. Finally, a lack of maintenance and generalisation of VP examination is noted in both VP peer-reviewed studies and theses/dissertations.

Moreover, the analysis of A-B phase comparisons derived through both meta-analyses show some differences. First, a total of 79.1 percent of A-B phase comparisons were of a large effect size in peer-reviewed studies while 86 percent were of a large effect size in theses/dissertations. Second, 14.8 percent were of a moderate effect size in peer-reviewed studies. However, 9 percent were of moderate effect size in theses/dissertations. Finally, 6.1 percent were small effect size range in peer-reviewed studies compared to 5 percent in theses/dissertations.

The findings of current meta-analysis match with already published systematic reviews as well as meta-analyses on VM and VP (Banda et

al. 2011; Domire and Wolfe 2014; Gardner and Wolfe 2013; Hong et al. 2016) in showing the effectiveness of VM and VP in increasing various skills in developmentally disabled subjects. There are several explanations of VP effectiveness when education ASD subjects. First, VP allows learners to observe and complete the task sequence step-by-step (Cooper et al. 1987). Second, social interactions may increase behavioural disorders as well as anxiety in ASD subjects. This may have a negative impact on their learning. The applications of VP could be alternative teaching practices that minimise emotional disorders and anxiety due to social interactions of this population (Charlop-Christy et al. 2000).

It is critical that educators determine and implement effective teaching practices to improve behavioural, life and social skills of their students with ASD. There are several advantages that result from the use of VP as an instruction-based technology. A recent study in Turkey has reported the impact of pandemics on educational activities and its challenges for ASD. Extra support and efforts are required to fulfil changes in the environment of learning (Bozkus-Genc and Sani-Bozkurt 2022). First, the use of VP is consistent with the visual processing abilities of individuals with ASD (Happé 1994; Lincoln et al. 1988). Second, viewing the tasks via smart tablets and phones may increase the attention of individuals with ASD, which may be reflected positively in their performances (Alsawalem 2019). Third, modelling the skills via VP assists the instructor in controlling the learning environment and predicting student behaviours while giving instruction. Lastly, VP allows students with ASD to watch and perform the skills many times in different situations and places as needed (Gardner and Wolfe 2013).

CONCLUSION

As described above in results, the current study has found certain important limitations and future research targets in previous studies. Secondly, the findings match with previous research results. Thirdly, the importance of including thesis in analysing the data is highlighted. This meta-analysis has two major limitations that should be taken into consideration. First, the examination included only theses/dissertations using SCRDS and excluded those using other research methods, such as experimental group

designs. Indeed, including all the theses/dissertations, regardless of their research methods, may provide a more comprehensive evaluation of the impact of VP on ASD persons. The justification for targeting only SCRDS theses/dissertations is that it is not recommended to synthesise the effect sizes of SCRDS data with the effect sizes of group experimental design data for analysis. Second, the researchers did not evaluate the VP effect size in generalisation and maintenance phases, which may not provide evidence on the influence of VP on persons with ASD after the removal of the intervention. Indeed, generalisation and maintenance conditions were sporadically implemented in the theses/dissertations analysed.

RECOMMENDATIONS

There is a need for future studies, which may add valuable information to the literature on VP interventions and individuals with ASD. First, examining the effects of VP for generalising and maintaining learned skills among individuals with ASD may support the effectiveness of VP in this matter. The implementation of VP in classrooms may help students with ASD become more independent and self-directed learners, which allows for effective classroom and behaviour management. Second, there are some developmental areas that could be taught by implementing VP instruction for individuals with ASD. These areas include social interaction, communication skills, self-determination, sensory inputs, and mental health, which require examining the use of VP in these developmental areas when teaching individuals with ASD. Finally, there is research needed to support the effectiveness of VP to teach a variety of skills to young children with ASD, particularly for those who are less than 6 years of age.

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CONFLICTS OF INTEREST

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REFERENCES

- Abramson JH 2011. WINPEPI updated: Computer programs for epidemiologists, and their teaching potential. *Epidemiologic Perspectives and Innovations*, 8(1): 1-9.
- Aishworiya R, Valica T, Hagerman R, Restrepo B 2022. An update on psychopharmacological treatment of autism spectrum disorder. *Neurotherapeutics*, 19(1): 248-262.
- Aljehany MS 2018. The Effects of Video Prompting on Teaching Daily Living Tasks to Individuals with Autism Spectrum Disorder. FIU Electronic Theses and Dissertations. 3778. From <<https://digitalcommons.fiu.edu/etd/3778>> (Retrieved on 10 December 2022).
- Aljehany MS, Bennett KD 2019. Meta-analysis of video prompting to teach daily living skills to individuals with autism spectrum disorder. *Journal of Special Education Technology*, 34(1): 17-26.
- Allen G, Courchesne E 2001. Attention function and dysfunction in autism. *Frontiers in Bioscience-Landmark*, 6(3): 105-119.
- Alsawalem IMN 2019. *Teachers' Attitudes Towards Use of Information Communication Technology with Students with Intellectual Disability in Saudi Arabian Schools*. PhD Thesis. Callaghan, Australia: University of Newcastle.
- American Psychiatric Association 2013. *Diagnostic and Statistical Manual of Mental Disorders: DSM-5 (Vol. 10)*. Washington, DC: American Psychiatric Association.
- Ames C, Fletcher-Watson S 2010. A review of methods in the study of attention in autism. *Developmental Review*, 30(1): 52-73.
- Banda DR, Dogoe MS, Matuszky RM 2011. Review of video prompting studies with persons with developmental disabilities. *Education and Training in Autism and Developmental Disabilities*, pp. 514-527.
- Bozkus-Genc G, Sani-Bozkurt S 2022. How parents of children with autism spectrum disorder experience the COVID-19 pandemic: Perspectives and insights on the new normal. *Research in Developmental Disabilities*, 124: 104200.
- Camargo SPH, Rispoli M, Ganz J, Hong ER, Davis H, Mason R 2016. Behaviorally based interventions for teaching social interaction skills to children with ASD in inclusive settings: A meta-analysis. *Journal of Behavioral Education*, 25(2): 223-248.
- Carothers DE, Taylor RL 2004. How teachers and parents can work together to teach daily living skills to children with autism. *Focus on Autism and Other Developmental Disabilities*, 19(2): 102-104.
- Charlop-Christy MH, Le L, Freeman KA 2000. A comparison of video modeling with in vivo modeling for teaching children with autism. *Journal of Autism and Developmental Disorders*, 30(6): 537-552.
- Cooper JO, Heron TE, Heward WL 1987. *Applied Behavior Analysis*. Merrill: Prentice Hall.
- Domire SC, Wolfe P 2014. Effects of video prompting techniques on teaching daily living skills to children with autism spectrum disorders: A review. *Research and Practice for Persons with Severe Disabilities*, 39(3): 211-226.
- Duval S, Tweedie R 2000. Trim and fill: A simple funnel plot-based method of testing and adjusting for publication bias in meta analysis. *Biometrics*, 56(2): 455-463.
- Gardner S, Wolfe P 2013. Use of video modeling and video prompting interventions for teaching daily living skills to individuals with autism spectrum disorders: A review. *Research and Practice for Persons with Severe Disabilities*, 38(2): 73-87.
- Happé FG 1994. Wechsler IQ profile and theory of mind in autism: A research note. *Journal of Child Psychology and Psychiatry*, 35(8): 1461-1471.
- Hong ER, Ganz JB, Mason R, Morin K, Davis JL, Ninci J, Neely LC, Boles MB, Gilliland WD 2016. The effects of video modeling in teaching functional living skills to persons with ASD: A meta-analysis of single-case studies. *Research in Developmental Disabilities*, 57: 158-169.
- Hussain MA 2021. Working around a patient, core concept of the patient-centered care with a focus on diabetes mellitus and associated chronic wounds: A review. *Chronic Diseases Journal*, 68-72.
- Kratochwill TR, Hitchcock J, Horner R, Levin JR, Odom S, Rindskopf D, Shadish W 2010. Single-case Designs Technical Documentation. What Works Clearinghouse. From <http://ies.ed.gov/ncee/wwc/pdf/wwc_scd.pdf> (Retrieved on 30 January 2023).
- Kruskal WH, Wallis WA 1952. Use of ranks in one-criterion variance analysis. *Journal of the American Statistical Association*, 47(260): 583-621.
- Ledford JR, Gast DL 2018. *Single Case Research Methodology*. New York: Routledge.
- Lincoln A, Courchesne E, Kilman B, Elmasian R, Allen M 1988. A study of intellectual abilities in high-functioning people with autism. *Journal of Autism and Developmental Disorders*, 18(4): 505-524.
- Ninci J, Neely LC, Hong ER, Boles MB, Gilliland WD, Ganz JB, Davis JL, Vannest KJ 2015. Meta-analysis of single-case research on teaching functional living skills to individuals with ASD. *Journal of Autism and Developmental Disorders*, 2(2): 184-198.
- Official Home Page of Centers for Disease Control and Prevention. From <https://www.cdc.gov/ncbddd/autism/states/comm_report_autism_2014.pdf> (Retrieved on 7 February 2023).
- Official Home Page of Institute of Education Sciences. From <https://ies.ed.gov/ncee/wwc/Docs/referenceresources/wwc_standards_handbook_v4.pdf> (Retrieved on 7 February 2023).
- Parker RI, Vannest KJ 2012. Bottom-up analysis of single-case research designs. *Journal of Behavioral Education*, 21(3): 254-265.
- Parker RI, Vannest KJ, Davis JL 2011. Effect size in single-case research: A review of nine nonoverlap techniques. *Behavior Modification*, 35(4): 303-322.
- Quill KA 1997. Instructional considerations for young children with autism: The rationale for visually cued instruction. *Journal of Autism and Developmental Disorders*, 27(6): 697-714.
- Salari N, Rasoulpoor S, Rasoulpoor S, Shohaimi S, Jafarpour S, Abdoli N, Khaledi-Paveh B, Mohammadi M 2022. The global prevalence of autism spectrum disorder: A comprehensive systematic review and meta-analysis. *Italian Journal of Pediatrics*, 48(1): 1-16.

- Scruggs TE, Mastropieri MA, Casto G 1987. The quantitative synthesis of single-subject research: Methodology and validation. *Remedial and Special Education*, 8(2): 24-33.
- Sigafoos J, O'Reilly M, Cannella H, Edrisinha C, de la Cruz B, Upadhyaya M, Lancioni GE, Hundley A, Andrews A, Garver C, Young D 2007. Evaluation of a video prompting and fading procedure for teaching dish washing skills to adults with developmental disabilities. *Journal of Behavioral Education*, 16(2): 93-109.
- Vannest K, Parker R, Gonen O, Adiguzel T 2016. Single Case Research: Web Based Calculators for SCR Analysis (Version 2.0)[Web-based application]. Texas A and M University. From <singlecaseresearch.org> (Retrieved on 10 December 2022).
- Welty SM 2010. Autism Spectrum Disorders: Foundations, characteristics, and effective strategies. *Childhood Education*, 87(1): 65.

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