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Using Modified TAGteach™ Procedures in Increasing Skill Acquisition of Dance Movements for a Child with Multiple Diagnoses

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Abstract

Objectives Teaching with acoustical guidance (TAG), which involves the use of a brief and consistent sound to provide feedback on a targeted behavior, has demonstrated positive effects on the acquisition of various athletic skills. The majority of the research examining TAG has focused on typically developing learners. The purpose of this study was to evaluate modified TAGteach™ methods (a treatment package involving TAG) on the acquisition of dance movements for a child with multiple diagnoses.

Methods This study used a multiple baseline design across behaviors to examine the effects of TAGteach methods on the acquisition of novel dance movements. The participant was a child with multiple diagnoses (attention deficit hyperactivity disorder, oppositional defiant disorder, among others) who regularly participated in a dance studio program.

Results Results indicated that the use of the modified TAGteach methods resulted in skill acquisition for three different topographies of targeted dance movements: a turn, kick, and leap. While the social validity results were varied between the participant and caregivers, responses for all topographies were higher at the conclusion of the study.

Conclusions The study adds to the growing TAGteach literature for sports skill acquisition and suggests an effective use in a new population. Implications for practice and future research are discussed.

Keywords Acquisition · Attention deficit hyperactivity disorder · Dance · Oppositional defiant disorder · TAGteach

TAGteach™ is a teaching intervention package which utilizes a brief sound as a stimulus to provide consistent feedback to a learner (Ennett et al. 2019). TAGteach follows concepts associated with applied behavior analysis (ABA) involving reinforcement (Ennett et al. 2019), teaching with acoustical guidance, positive phrasing, consistent and immediate feedback delivery, and the use of clearly defined, measurable topographies of behavior. Historically, research available in the behavior analytic literature concerning TAGteach methods has focused on the acquisition of precise behavioral skill sets for athletic performance and motor skills. This literature has also suggested that it can be a useful tool for teaching skills across a variety of topographies and abilities of different learners (Fogel et al. 2010; Harrison and Pyles 2013; Quinn et al. 2015; Smith and Ward 2006; Stokes, Luiselli, & Fleming, Stokes et al. 2010).

With TAGteach, the sound provided (generally provided by a handheld tagger™) may become a conditioned reinforcer (or a stimulus paired with another known reinforcing stimulus), giving the learner in situ feedback on response demonstration (Ennett et al. 2019). Tag points™ are identified within complex behaviors (like the steps of a task analysis involving breaking down multiple step movements); then, an individual receives a tag™ for the correct demonstration of the tag point, as appropriate (Ennett et al. 2019). In a task analysis, steps are defined objectively and precisely so that interobserver agreement data can be accurately recorded. This is similar to tag point creation; however, tag points are created through the concept of WOOF™ in the TAGteach methodology, which is as follows: what you want, one criterion, observable and definable, and five words or less (Orr 2012). When developing these steps, one must make sure that the steps meet each of these requirements in order to follow the TAGteach methods, which encourage simplicity in implementation. For example, instead of providing a step to "Touch the top of the head with open palm," the tag point created through WOOF would be "touch top of head." TAGteach also uses the concept of the focus funnel, which involves taking a large amount of information or instructions,

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then condensing that information into smaller, objective criteria, also referred to as tag points (Orr 2012).

According to the developers and founders of TAGteach International, TAGteach methods could be considered an efficient way to train and to provide feedback on complex motor skill acquisition (even within peer groups) and has been shown to be effective across topographies, as depicted in several studies (Orr 2012), in which complex behaviors have involved multi-step movements (Lokke and Lokke 2008) or component behaviors (Levy et al. 2016). These responses, or behaviors, have been demonstrated as ideal targets for TAGteach methods, which do not interrupt movements to provide feedback.

The studies that have used TAGteach methods to teach athletic skill topographies have depicted several similarities such as the use of auditory feedback as a conditioned stimulus with similar results. Stokes et al. (2010) attempted to increase an accurate response of offensive line-pass blocking (a football topography) using TAGteach methods as part of a treatment package. Even though this study was inconclusive, in another football study, Harrison and Pyles (2013) targeted tackling effectively. This study used tag points to train steps of a task analysis; then, a phase involving increasing speeds was provided to further shape desired responses (Harrison and Pyles 2013). Using megaphone beeps to indicate the correct demonstration of tag points, the football players were able to acquire the tackling skill (Harrison and Pyles 2013). In another sport, Fogel et al. (2010) utilized TAGteach methods, but used a tagger with TAGteach methods of instruction to teach golf swing acquisition. Results for this study determined that four out of five skill areas targeted were acquired and maintained when using a different type of golf club, demonstrating generalization through training with TAGteach (Fogel et al. 2010). In another study by Quinn et al. (2017), modified auditory feedback procedures were used to increase skill acquisition of dance movements with peer coaching. Participants demonstrated increases in targeted skills with the auditory feedback interventions, which also demonstrated that the modified procedures were effective in 12–17-year-old dance students (Quinn et al. 2017). In a dance study conducted by Carrion et al. (2018), an embedded reversal within a multiple baseline design was used across dance movements to demonstrate increasing percentages of task analysis steps with participants diagnosed with disabilities. The independent variable for this study involved the use of a hand clicker (auditory feedback) (Carrion et al. 2018).

Quinn et al. (2015) applied similar strategies as all the aforementioned studies but applied the training to novel dance movements (three different topographies: kick, leap, turn). A multiple baseline across topographies design was used to demonstrate the experimental control of the intervention. Participants were typically developing children aged 6 to 9 who participated in a competitive dance. Results depicted that all of the participants were able to demonstrate the acquisition of the skills tested. One participant in this study, however, required a modified token economy procedure in addition to the TAGteach intervention, to obtain with consistent results to the other three participants (Quinn et al. 2015). Participants reported that the study was socially significant, and they would like to use TAGteach methods in the future to learn new skills (Quinn et al. 2015).

While several studies have demonstrated the generality of TAGteach methods, and while there are several sports studies and other novel topographies mentioned in the literature, there are still areas to consider for the expansion of this intervention. For instance, limited studies have been done examining the effects of TAGteach interventions for individuals with disabilities. In the research that has been done, Persicke et al. (2014) demonstrated that the use of TAGteach methods could be used as an intervention to decrease toe walking with a participant diagnosed with autism. Wertalik and Kubina (2018) used TAGteach in combination with video modeling to teach daily living skills to individuals with autism. Finally, Carrion (Carrion et al. 2018) used auditory feedback, not the full TAGteach procedure, for improving the dance performance of children with disabilities. Although the findings from all of the referenced literature were positive and suggest that TAGteach methods can be beneficial for skill development of individuals with disabilities, research has not yet established if TAGteach is effective for the athletic performance of children with disabilities. Therefore, the purpose of this study was to evaluate the effects of TAGteach on the acquisition of dance movements for a child with multiple diagnoses.

Method

Participant

The participant in this study was a 9-year-old female (given the alias of Alana) diagnosed with attention deficit hyperactivity disorder (ADHD), oppositional defiant disorder (ODD), depression, and a language comprehension disorder. She was enrolled full time in traditional educational services and received specialized services through her school district for her diagnoses. She had been enrolled in dance classes with a dance company where research sessions were conducted for approximately 3 years prior to the beginning of the study. She attended at least two dance classes per week for 1 h each during this time. She was recruited using posted information in the dance company regarding a voluntary research study to target novel dance movements. Informed consent was obtained, along with assent to participate in the study.

Procedure

During this study, all sessions were conducted in an empty studio in the dance company and held before or after regular

class times. This was done to avoid disrupting the typical dance class setting, to conduct training in a non-biased environment (i.e., lack of differential attention delivery), and to avoid confounding variables of peer interaction, untrained instructor interaction, and distractions to the participant. The studio had mirrors and barres along one wall, marley (i.e., vinyl dance flooring) flooring, and a wood-floor stage where the participant often requested to conduct her sessions. Sessions were conducted once per week and ranged from 15 to 30 min per session. Sessions were conducted by the primary researcher, who was a doctorate student in an applied behavior analysis program during the time of the study.

Materials included a pencil, tag point data sheets (described in the following section), laptop for digital data collection, an iPhone to show the participant video models of the dance movements, tagger, and a video recording device (in order to ensure accurate data collection for interobserver agreement). This was placed in an area where the participant could see the camera and where it could record the front of the dancer.

A multiple baseline design across behaviors was utilized in this study, which involves a systematic introduction of the independent variable (Johnston and Pennypacker 2009). With this design, low levels of responding were demonstrated in baseline for the participant across all movements; then, each movement was systematically introduced and trained using the TAGteach intervention.

Orientation An orientation session for the participant was held following consent, during the first training session. This involved showing the student the "tagger," or TAGteach clicker, explaining what it does, and why it is used. Since the participant had been diagnosed with a language comprehension disorder (not further defined through information provided to the primary researcher), the primary researcher would provide instructions, have the participant repeat instructions in her own words for clarity, then would have her demonstrate comprehension and rehearse appropriate responses. This process continued throughout the study as applicable. The participant was then given the opportunity to be tagged by the researcher for behavior targets that the researcher or student selected in order to pair the sound to movement as feedback delivery. The student was also encouraged to "tag" the researcher for targets of her own choosing. Feedback was given to the participant on using the tagger appropriately, and any questions the participant had were addressed. The concept of the tag point was addressed as well, in addition to how the tag points are created (using WOOF), and using the focus funnel.

Baseline During the baseline sessions, the participant was asked to perform each complex movement once. Prior to each movement request, the participant was provided with a video model of the movement once. The video model featured the dance instructor performing each of the targeted movements.

The participant was then told, "show me your (dance move)." During baseline sessions, no feedback was provided on proper execution of movements or any skill deficits except "thank you," or a similar, neutral statement, based on Quinn et al. (2015). Baseline sessions were terminated once the participant had completed all three complex movements, or 15 min had elapsed (the participant demonstrated non-compliance to the directed task at times and sessions could have been longer than anticipated). If the participant requested a break or demonstrated signs of fatigue at any time during the study (e.g., shortness of breath, redness in face) an interval of about 1 to 2 min was provided.

TAGteach During intervention, or TAGteach sessions, the researcher (primary certified through the TAGteach method) provided general instructions (using the TAGteach Focus Funnel concept of instructions, instructions, and tag point) to the participant involving the tagger:

> "This is a tagger. I'm going to tell you to do something, called a tag point, and if it is done well, you will hear this sound" [researcher clicks the tagger]. "If you don't hear a click, it means to try again. If it takes you a few tries, I will show you how to do the skill again. Do you have any questions?"

Pairing correct performance with the sound of the tagger was conducted during the first session. This allowed the participant to learn how the tagger works and paired the sound with engaging in targeted movements (i.e., acknowledging correct responding). During the pairing sessions, the researcher and the participant worked through specific topographies that were already known responses (e.g., first position stance, chin up). When the participant performed the skill correctly, the researcher pressed the tagger.

At the start of each session, the participant was reminded of the TAGteach methods (e.g., tagger purpose, tag points, allowing three tries before attempting another tag point, lack of verbal feedback), she was provided with general instructions regarding the targeted movement (if applicable for the session) and then informed of the tag point. A video (since the primary researcher was not skilled at demonstrating the targeted movements) featuring the targeted movement was shown to the participant one time. Each demonstration video did not exceed 1 min. Following the demonstration video, the training session began. During each training session, the participant attempted to perform the movement and the researcher tagged the correct tag point as it was performed by the student. The movement was performed up to three times successively, unless the participant wanted to move onto a different response before three attempts were made (this happened a few times when she became satiated on the leap movement) or she wanted to continue with that movement. Movements were

rehearsed between 5 and 10 attempts per session. Tag points were selected based on inability to perform specific tag points in the movements, which were isolated for the intervention. As proficiency was demonstrated on the tag points within each session, or if unsuccessful demonstration continued to occur, proficient tag points were introduced to promote success and behavior momentum. If a tag point was continuously missed with no success, the step was broken down further as needed, then reintroduced as the original tag point when able to demonstrate the skill in further instruction. Sessions always ended with a successful attempt, per TAGteach training criteria, which may involve going over a skill that is already mastered in the final few attempts of the session (Orr 2012). Following the session, debriefing was completed, per TAGteach criteria (Orr 2012). Mastery criteria were demonstrated when either an increasing or stable trend was demonstrated for a movement for at least three attempts.

During sessions involving demonstration of the leap movement, the participant required additional prompts or strategies to complete responses. This resulted in modification of the TAGteach procedures with the addition of the following antecedent strategies. These included the using directed choices such as which movement she wanted to work on first, which tag point she wanted to work on, and if she wanted to keep working or take brief breaks. In addition, using positive contingency statements, such as "after you finish this session, we can go have an open dance party" (i.e., improvisational dancing), or providing small items for rewards was motivating to the participant for completing requested responses (such as receiving Skittles in completing a session). It is imperative to note that even though the participant and her parent had vocally expressed wanting to continue with the study, the primary researcher ended the sessions early for both the leap and kick movements (even though the kick was not modified in the study similar to the leap). This was done to avoid an aversive pairing of the movements with dance classes and the environment.

Following the completion of training sessions, the participant could ask any additional questions regarding the movements, execution of the movements, or use of the TAGteach tagger as needed. Feedback was delivered on general performance across each movement, and a brief reminder was given to the participant to not practice the movements outside of the training sessions with the primary researcher. The participant attended her regular dance classes as well, and during those classes, the movements were specifically not taught by the primary dance instructor during the study, a different approach from Quinn et al. (2015).

Measures

Tag Points and Dependent Variable Three novel dance skills for the participant were targeted by the dance instructor, who was the participant's only dance teacher at the time of the study. The dance instructor was skilled in dance instruction and had owned the studio for several years at the time of the study. Responses were measured utilizing tag point forms for each dance movement, isolating the complex movements into smaller, observable, and measurable steps, which also met TAGteach criteria in the intervention phase of the study. Following tag point creation, the primary researcher practiced recording data on step completion to ensure the tag points were objective, served the purpose for data collection in this study, and met WOOF criteria until 100% accuracy was met.

The dependent variable involved the number of tag points completed correctly. All the movements in this study varied in skill form to test for generalization of the procedure: a turn, a kick, and a leap. For this study, a turn was defined as a complete 360° turn with either one or both feet remaining on the ground. This movement was specifically referred to as a "reverse pirouette" by the primary dance instructor. A leap was defined as a movement involving both feet moving in the air simultaneously (legs straight and at least 1 ft apart from each other) and was formally referred to as a "switch leap" by the primary dance instructor. A kick was defined as a movement with one foot remaining on the ground, while the other foot "kicks" upward, remaining in the same place on the dance floor. In this study, the primary dance instructor referred to this movement as a "squiggle kick." See Table 1 for the tag point list (task analysis steps) used in the study. Movements were selected by the primary dance instructor based on previous learning history and prerequisite abilities at the time of the study completion. The dance instructor assisted in creation of the task analysis for each movement selected and verified the final steps prior to beginning the study. In addition, the primary researcher observed incidental opportunities during the regular dance classes to maintain treatment integrity and determine if target movements were isolated from the study.

Social Validity A survey was administered to the participant and her parent following the TAGteach phase and during maintenance probes to determine willingness to utilize TAGteach methods again in the future. These surveys were given in

Table 1 Tag point per topography

Inward pirouette (turn).	Split leap (leap)	"Squiggle" kick (kick)
Arms in "L"	Chasse/run twice	Feet in first
Foot back	Arms in front	Arms in first
Front leg plie	Brush leg upward	Cross bent knee
Toe to knee (passé)	Kick leg back	Knee turns out
Front foot relevé	Arms in air	Leg extends upward
Chin held up	Split in air	Pointed toe
Turn into body	Land other foot	Feet in fifth
Body turns 360°		
Feet on ground		

written format and in person. Items asked if the participant/parent believed the method to be an effective strategy to learn new dance movements, if TAGteach was a preferred method of teaching, and how easy it was to understand and implement the procedure (see Appendices 1 and 2). A Likert scale was also administered, which provided a rating system of 1 (strongly disagree) to 5 (strongly agree) for adults and a rating system of 1 ("no") to 3 ("yes") for the participant. Statement examples included as follows: "My dance skills are better after using TAGteach methods," and "I would like my dance teacher or future teacher to use TAGteach methods to train me again.".

Data Analyses

For this study, the correct demonstration of the movements were calculated by recording individual tag points (steps of the target movements) as correct or incorrect, then converting the correct steps into a percentage per movement attempt. We converted this to a percentage by dividing correct tag points into the total number of possible tag points, creating a percent of correct demonstration per movement. A correct occurrence involved performing the defined tag point meeting all objective criteria outlined (e.g., has toe to knee with leg in turn out). An incorrect occurrence would be an attempt to perform a tag point that does not meet all objective criteria outlined (e.g., has toe to knee, but does not turn out knee). A non-occurrence would involve not implementing or attempting a tag point. Data were then graphed and analyzed using visual inspection methods to assess differences in trend, level, and variability across conditions and target behaviors (Johnston and Pennypacker 2009).

Sessions were recorded on video for data collection purposes for the primary researcher (if movements needed to be viewed slower for accuracy in recording), interobserver agreement (IOA) data, and treatment integrity data. To ensure accurate data collection by the primary researcher, exact agreement interobserver agreement (IOA) data were collected on 38% of opportunities across both baseline and the intervention phases. The number of tag points on which the two observers agreed was divided by the number of tag points to produce a percentage of agreement for the movement. Agreement percentages were 91% in baseline and 88% in intervention sessions (range of 80–91% across movements) with a total agreement percentage of 90%. For each movement, IOA means were 91% for the turn, 80% for the leap, and 91% for the kick.

Treatment integrity data were collected on correct and incorrect implementation of baseline (33% of baseline sessions) and intervention (100% of intervention sessions) procedures by an independent observer, who reviewed recordings of the sessions. If a skill was demonstrated in the session observed by the trained observer, it would be marked as an occurrence on a task analysis sheet. Following the session video, the number of occurrences would be divided into the number of total opportunities to demonstrate the task analysis skills, resulting in a percentage of correct demonstration of the study's procedures. Acceptable implementation of the procedure involved 90–100% implementation of outlined procedures, which involved skills such as reminding the learner to not practice trained skills outside of sessions, only practicing a targeted movement three times, and not speaking while delivering a tag point. These skills are specifically highlighted in Table 2 Appendix 3. Treatment integrity for the entire study ranged from 91 to 100%, with an overall mean of 97% correct demonstration of skills. More specifically, ranges for each phase of the study were 91–100% in baseline (94% mean) and 100% in intervention.

Results

The results from the experiment are depicted in the graph below (Fig. 1). In baseline, the participant could correctly and independently perform a mean of 14% steps for the leap (range of 0–14%), 29% of steps for the kick (range of 14–43%), and 59% (range of 44–67%) of steps for the turn. Following the implementation of TAGteach methods, her accuracy levels rose to higher levels. These included the following: a mean of 38% (range of 29–57%) for the leap, 62% (range of 43–86%) for the kick, and 90% (range of 78–100%) for the turn. As mentioned earlier, an aversion to the leap movement was demonstrated by the participant, and as a result, fewer attempts were obtained for the leap and kick movements and are depicted along the x-axis of Fig. 1, which are further explained in "Discussion."

For the leap and kick movements in baseline, this participant demonstrated stable, lower correct responding. With the turn movement, the participant demonstrated a decreasing trend. Following the implementation of the TAGteach methods, for all three topographies, all the levels were higher; however, the trends were vastly different. For instance, for the leap topography, an increasing trend was demonstrated, but appeared to level out. Had she wanted to continue with the topography, the participant might have continued acquisition of the tag points outlined. For the kick movement, a higher level was demonstrated immediately with variability, but then toward the end of the intervention, acquisition was demonstrated until the participant obtained a higher score. When the intervention was introduced for the turn movement, an immediate score of 100% was demonstrated, with consistent high levels and intermittent 100% scores across attempts with variability.

When surveyed, the parent of the participant and her dance instructor both reported that she had better dance abilities after receiving the intervention ($M = 4$), that TAG helped her to learn more complex dance movements ($M = 4.5$), that she was more confident with her dance moves following the intervention
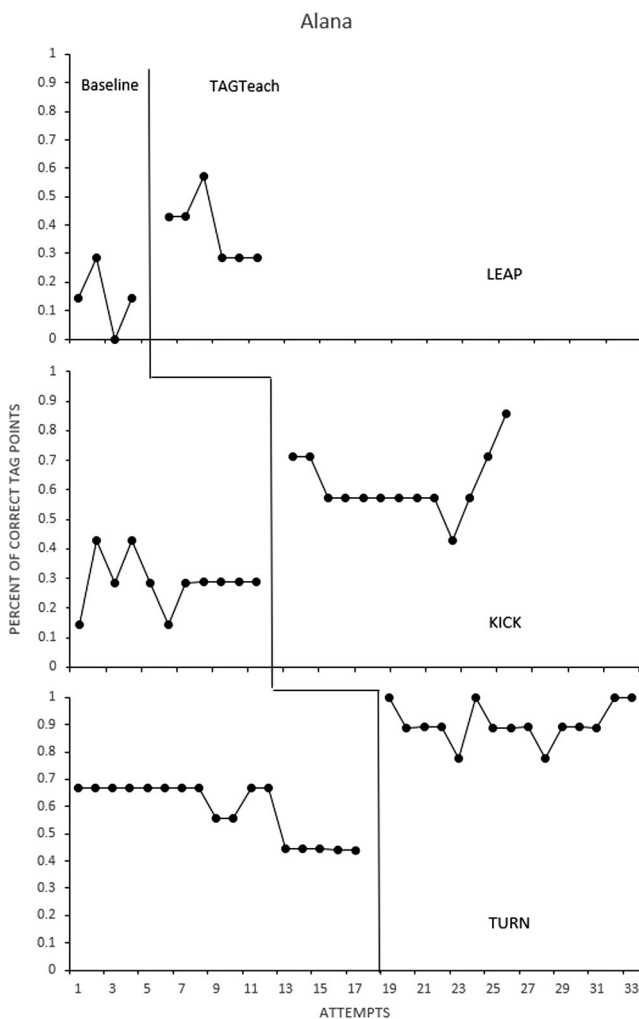
Fig. 1 Percentage of correct tag points for leap (top), kick (middle), and turn (bottom)

Discussion

The findings of this study validate previously discussed research involving the use of TAGteach by Quinn et al. (2015), to demonstrate skill acquisition of dance movements across topographies. These data further strengthen the support for TAGteach as an effective intervention for children with different profiles, as the current study included a participant who was in a different diagnostic classification than previous studies (Quinn et al. 2015; Quinn et al. 2017), which suggests novel applications of the TAGteach intervention. With consideration given to preferences by the participant (given modifications in the leap movement phase of the study), she was successful at using the TAGteach intervention alone to acquire the kick and turn movements.

The participant had lower mean percentage of correct tag points in baseline than in intervention for the targeted skills, which is likely due to the novelty of the skills selected by the dance instructor. As indicated in the baseline section of Fig. 1, scores for each dance movement are low. This was not unexpected, as the baseline sessions did not target the skills with the TAGteach intervention. There was also a slight decrease in the baseline phase for the turn movement prior to intervention, possibly explained by the ongoing demonstration of errors with the movement, as the participant learned originally through observing and demonstrating the movement without appropriate feedback. This ongoing practice of errors could have resulted in decreases in proficiency of the movement.

Target skills were not practiced during regular dance class sessions, as reported through verbal report from the primary dance instructor, which is a different approach from former studies (Quinn et al. 2015; Quinn et al. 2017). For instance, in Quinn et al.'s (2015) study, the targeted skills could be taught during typical class sessions in the standard way feedback and instruction was provided in that setting (i.e., brief modeling and brief social feedback or praise, depending on execution). Even though full experimental control could not be established in a natural setting, this could suggest a stronger functional relationship between the TAGteach intervention and the dependent variable and was done to further separate the intervention. Finally, the findings also suggest that the video model, which was used to demonstrate appropriate movement attempts, was not sufficient alone in teaching Alana how to learn the movements. It was the addition of the TAGteach intervention that assisted with the acquisition of the kick and turn (with antecedent modifications for the leap).

Limitations and Future Research Directions

Even though the findings of the current study were relevant to current TAGteach literature, there are limitations that should be considered. A limitation of this and other studies involving the TAGteach procedure is the lack of a comparison across

($m = 4.5$), that she would be more confident on stage ($M = 3.5$), and that they would like her to be trained with TAG again in the future ($M = 4.5$). These reports were in contrast to those obtained from the participant. She reported that she did not think her skills were better following the intervention, that she could not learn better moves with the clicker, that she did not have more fun performing dance moves now, and that she would not like to use the clicker again. It is unclear why the participant chose the survey responses that she did, although it is interesting to note that vocally, she reported to the researcher that the tagger was fun. This discrepancy may have been because the area used for the research created an echo, which the participant reported as making the clicking sound too loud at times. It may also have been due to the repetitive nature of the TAGteach method. The participant's parent mentioned that while repetitiveness can be good, it was a disadvantage due to satiation of the movements used in the study, while the general findings of the study could conclude that the participant did not find the method socially significant (although her data suggested otherwise), while her mother and dance instructor did.

age groups and developmental levels (Quinn et al. 2015). For this study, only one participant was used, which limits the generalizability of the findings. Since the procedure was modified during the leap condition, this could be considered a limitation for part of the study. Since the kick and turn conditions were not modified and the participant demonstrated acquisition with the outlined procedure, the effectiveness of the TAGteach intervention can still be observed.

Another limitation included lower but acceptable interobserver agreement score for the experiment. One of the reasons for this could involve the complexity of movements selected for the study. The dancer in this study was not a competitive dancer, as those defined in other studies (Quinn et al. 2015), and only danced casually. The topographies selected by her instructor were advanced at her dancing abilities and level at the time of the study, but appropriate for intervention as they were novel skills. The movements selected could have simply been non-preferred by the participant as opposed to other movements she may have enjoyed more.

Another limitation involved the number of steps in the task analyses, which were shorter in length compared with those in other studies of this nature (Quinn et al. 2015; Quinn et al. 2017). This could create ambiguity for observers in recording data and difficulty with reliability training in data collection. Fewer steps were used in this study for brevity purposes and for minimizing repetition for the participant, which could have compromised the agreement scores. Part of this was due to the ability of the participant to attend to the steps of the task analysis appropriately and to use the focus funnel concept outlined in the TAGteach methods. Because there were fewer steps for this study compared with the original study replicated, this raises a concern regarding interpretation of the previously discussed results. Since the movements could have involved more discrete, or complex movements within the steps defined, this could be considered a limitation of the research.

A challenge of the current study involved the participant's preferences to specific movement topographies selected for the study. She had openly expressed disliking the leap movement selected by her dance instructor (as mentioned previously) through vocal dialogue and by electing to demonstrate other movements when given the choice between the leap and the jump or kick. As previously mentioned, additional antecedent and reinforcement-based procedures were applied in order to obtain additional trials. At the completion of enough trials to establish consistent responding with the leap movement, this movement was discontinued in order to avoid a future aversive pairing for the participant, as she planned to continue with dance classes in the future. The limited number of trials demonstrated could be considered another limitation.

Quinn et al. (2015) highlighted a limitation of a TAGteach research concerning the lack of comparison of TAGteach methods to standard, brief social praise. This is not considered in TAGteach methodology, as the training specifically mentions that speaking with the tagger is not utilized. This discrepancy between the TAGteach training and the social validity survey feedback provided by the dance instructor (who had reported she would have liked more social feedback during training) was very evident. Additionally, a mentioned strength of the study was the isolation of the intervention anecdotally to further isolate the independent variable of the TAGteach intervention; however, a limitation of this study could have been the lack of more objective data to determine the effectiveness of this component. Additional areas where data were not collected involved maintenance responding and generalization across implementers or settings, which could have further strengthened the findings.

Since TAGteach instructional methods have been demonstrated effectively in different limited populations and with limited skill sets, there are some implications for further research studies. First, an area of consideration could be analyzing the comparison between utilizing TAGteach methods to other methods of instruction (such as general vocal instruction and precision teaching) with learners with any diagnoses, especially those with language impairments, as the research on TAGteach methods with individuals with disabilities is limited. Since social validity measurements reported that the parent would have preferred more social interaction for the intervention portion of the sessions, this might be a preferred way to implement an acquisition program with specific individuals. In particular, this could benefit a younger population and those who are working on language development.

TAGteach research should also be conducted with additional ages and populations not previously considered. Not only should this method of instruction be used in dance research for future studies, but it should be expanded to other areas of ABA, such as different types of sports not previously studied, other types of acquisition skills (e.g., academics, daily living skills), behavior reduction procedures, and even differential reinforcement procedures (such as using a tag point as an alternative reinforcement procedure). Applying research specific to generalizing acquired skills for all skills and skill sets utilizing TAGteach methods would also be advised.

Compliance with Ethical Standards

Appendix 1

TAG Participant Post-Study Survey

1. Was using TAG more difficult for you than regular dance class?
2. Was using TAG more fun than regular dance class?

3. Would you recommend using TAG to your classmates?
4. What did you like most about the TAG training?
5. What if anything, did you dislike about the TAG training or what would you change?

	Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree
My dance skills are better after using TAG.					
Learning these skills with TAG will help me move on to more complex dance movements.					
I am more confident in performing these dance movements than I was at the beginning of the study.					
I would be comfortable performing these dance movements on stage.					
I would like my dance instructor or a future dance instructor to train me using TAG again.					

Appendix 2

Parent Survey

TAG Parent Post-Study Survey

1. Was using TAG more difficult for your child than regular dance class?

2. Was using TAG more fun for your child than regular dance class?
3. Would you recommend using TAG to other parents?
4. What did you like most about the TAG training?
5. What if anything, did you dislike about the TAG training or what would you change?

	Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree
My child's dance skills are better after using TAG.					
Learning these skills with TAG will help my child move on to more complex dance movements.					
My child is more confident in performing these dance movements than he/she was at the beginning of the study.					
My child would be comfortable performing these dance movements on stage.					
I would like my child's dance instructor or a future dance instructor to train my child using TAG again.					

Appendix 3

Table 2 Treatment integrity checklist

Session conducted in area that was distraction free?

Informed participants of tagger prior to session?

Demonstrated use of tagger if necessary?

At the start of the session, researcher advised TAG point per skill set?

Only performed movement 3 times, unless participant wanted to keep practicing same movement?

Showed demonstration video, unless participant did not want to view?

If participant wanted to move to different TAG point or response, researcher followed request?

Ended training session with a successful trial, regardless of amount of trials per TAG point?

Instruction provided, "show me _____"? -BASELINE ONLY

Feedback provided, "thank you"? -BASELINE ONLY

Brief instructions provided with tag point-INTERVENTION ONLY

Tag point clicked with no vocal praise until move completed-INTERVENTION ONLY

Reminder provided at end of session to not practice movements outside of training sessions?

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