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A Personal Narrative Intervention for Adults with Autism and Intellectual Disability
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Abstract

The world is a social venue and requires the ability to make personal connections through sharing personal narratives with others both personally and professionally. Due to the unique social cognitive profiles of individuals with autism spectrum disorder (ASD) with and without Intellectual disability (ID) sharing coherent and complex personal narratives can be significantly challenging. To address these challenges research has primarily focused on teaching macrostructure components using visual supports and repeated opportunities to practice. Despite the documented success experienced by young children with ASD and ID, the application of this instruction for adults with ASD with and without ID is still largely unknown. An ABAB single case withdrawal design was used to determine the effects of a personal narrative intervention using visual supports, corrective feedback, and opportunities to practice to teach macrostructure within participant-generated personal narratives to four adults with ASD with and without ID. Results indicate all participants demonstrated more coherent and complex personal narratives with the introduction of the intervention. The results and their implications for practice are discussed.

Keywords: personal narrative, intervention, adults, autism spectrum disorder, intellectual disability

A Personal Narrative Intervention for Adults with Autism and Intellectual Disability

Being able to engage in narrative discourse is an essential aspect of being successful in the daily interactions we all experience (McCabe et al., 2008) and perhaps more importantly the foundation upon which we build meaningful relationships with others (Favot, et al., 2018a). Personal narratives allow us to "function in natural contexts" (Westby & Culatta, 2016, p. 260) with high levels of independence and success, and therefore, is vital for success not only in school, but at home, work, and in the community (Cheatham & Jimenez-Silva, 2011).

Narratives include oral stories, fictional stories, the retelling of someone else's stories, or recalling previous experiences (e.g., personal narratives; Westby & Culatta, 2016) and are told in a progressive order (Favot et al., 2018a; Westby & Culatta, 2016). Narratives require a significant amount of social understanding, cognition, and adequate linguistic understanding and ability (Losh & Capps, 2003). Narratives also require problem-solving, understanding and using story grammar, knowledge of syntax, vocabulary used within the appropriate context, identifying and using causal explanatory frameworks, understanding thoughts and feelings of others (Petersen et al., 2014), and understanding others motivations and actions. Furthermore, narratives require cognitive skills that are inseparable from social communication (Goldman, 2008).

Narrative Structure and Analysis

Narrative structure includes a setting, initiating event, internal response, plan, attempt consequence, and resolution (Peterson & McCabe, 1983). At a more basic level narrative structure is composed of who, what, where, when and emotional responses (Nathanson et al., 2007). A complete episode includes an initiating event, at least one attempt for solving a conflict, and a consequence. Together, story grammar and a complete episode produce a macrostructurally complex narrative (Petersen et al., 2010).

Narrative analysis can occur at the microstructural (i.e., the production of a narrative at the word level) and macrostructural (i.e., the organization and structure of a narrative) levels (Heilmann et al., 2010; Justice et al., 2006) and are evaluated on the effective combination. When analyzing at the macrostructure level, the story grammar model (Stein & Glenn, 1979) serves as a framework for analyzing organization and structure (e.g., Gillam et al., 2015; Petersen et al., 2014; Swanson et al., 2005).

ASD and Narrative Skills

Autism Spectrum Disorder (ASD) is a developmental disorder characterized by differences in social communication, social interactions, and restricted patterns of interests, behaviors, and activities (American Psychiatric Association [APA], 2013). In addition to having ASD, approximately 38% (The Center for Disease Control and Prevention [CDC], 2014) to 50% (Bertrand et al., 2001; Charman et al., 2011; Chakrabarti & Fombonne, 2005) of individuals with ASD have co-occurring Intellectual Disability (ID). Individuals with ASD and ID often experience even more complex social communication differences than individuals with ASD or ID alone. As a result, their ability to generate and share personal narratives is significantly impacted by their social cognitive challenges.

McCabe and colleagues (2013) examined the personal narratives of adults with ASD without ID. The stories these individuals produced often included too few details, irrelevant information, and a clear resolution. This suggests the participants had difficulty understanding the perspectives of others and identifying details that would be useful to the listener. Furthermore, participants also had difficulties interpreting their own emotional experiences due to their lack of emotional knowledge (Losh & Capps, 2003). The combined effect of interpreting

important details, sharing a story's resolution, and identifying and sharing emotions is diminished in the social interactions they have with others.

Rollins (2014) compared narratives and personal narratives of adults with ASD without ID and found that these individuals produced better quality retells of story book narratives than personal narrative generations. Specifically, the individuals with ASD had more difficulties with including the macrostructural aspects (i.e., story grammar) of personal narratives than when retelling a story book narrative. In addition, describing feelings in terms of an event and providing a conclusion were also of greater difficulty. Thus, for many individuals with ASD, it appears that fictional narrative abilities are of adequate quality whereas the macrostructural aspects of personal narratives need improvement.

Despite the relative strength of fictional narratives, adults with ASD tend to demonstrate differences in their organization and quality of details when sharing both types of narratives (Petersen et al., 2014). Specifically, these individuals have difficulties generating ideas, recognizing emotional responses, including relevant information, and summarizing the gist within personal narratives. This is not surprising, considering the key markers of the disorder (e.g., social challenges and specific, often highly detailed interests).

Narrative Interventions and ASD

Narrative interventions can improve language in individuals with communication differences (Petersen et al., 2014). Petersen (2011) identified nine interventions utilizing story retells or story generations with individuals between the ages of 3–21 who had either language disorders or learning disabilities. Most interventions incorporated approaches such as vertical structuring or eliciting pieces of information to provide a model for an entire utterance (Schwartz et al., 1985; Scollon, 1976). Other studies have utilized interventions such as repeated retellings

and story generation, as well as wordless pictures books, sequenced pictures, cue cards, role-playing, and pictography.

Two more recent studies utilized intervention packages to support narrative retelling for children with ASD (Favot et al., 2018b; Gillam et al., 2015). Intervention packages included macrostructure icons, picture stimulus, modeling, corrective feedback, scaffolded support, explicit instruction, and repeated opportunities to retell. Two other studies investigated personal narrative interventions to support macrostructure for children with ASD and severe language disorders (Favot et al., 2018a; Petersen et al., 2014). These studies incorporated intervention components similar to those used in the narrative retell interventions and also included verbal prompts and systematic prompt fading. Participants in all studies made significant gains in sharing more coherent and complex personal narratives. The results of these studies indicate that a targeted, systematic narrative intervention could potentially support language growth. This is especially important given the work by Favot and colleagues (2018a) who targeted children with ASD and severe language impairments.

Preliminary research suggests narrative interventions can improve social communication skills (Petersen et al., 2014) and oral narrative skills (Favot et al., 2018a). While a significant amount of attention has been given to teaching individuals without disabilities narrative skills as early as preschool (e.g., Brown et al., 2014; Spencer & Slocum, 2010), little is known about the effects of systematic interventions on personal narratives generated by adults with ASD without and without ID. Thus, the purpose of this study was to examine the effects of an intervention package to increase the personal narrative skills of adults with ASD with and without ID. The following questions guided this study: a) How does a personal narrative intervention package affect the macrostructure of personal narratives produced by adults with ASD with and without

ID, b) do improvements in the macrostructure of personal narratives maintain after the

intervention has been withdrawn; and c) do improvements in macrostructure of personal

narratives generalize across people and settings?

Methods

Participants

Four young adults with ASD with and without ID participated in the study. All

participants attended the same transition program located on a large urban university campus.

Participants were selected according to the following criteria: (a) a documented diagnosis of

ASD or ASD with ID (b) ability to verbally communicate in English; and (c) below average

expressive and receptive language skills.

Prior to the study participants were given the *Primary Test of Nonverbal Intelligence*

(PTONI; Ehrler & McGhee, 2008), *Peabody Picture Vocabulary Test, Fourth Edition* (Dunn &

Dunn, 2007), and the *Clinical Evaluation of Language Fundamentals-5* (CELF-5; Wiig et al.,

2013), or the Clinical Evaluation of Language Fundamentals Preschool-2 (CELF- P2; Semel et

al., 2004) to gather information about general language abilities. The CELF- P2 was given as an

alternative because of the significant verbal language differences of the participants. Stated

differently, the CELF-5 was initially administered to all participants, but the participants did not

respond to most items. For the CELF-5, four subtests (receptive language, expressive language,

language content index, and language memory index) were used informed the core language

score and percentile rank. For the CELF-P2, the receptive language, expressive language,

language content index, and language structure informed the core language score and percentile

rank. Finally, the second author observed participants during lunch activities, collecting

language samples to determine the mean length of utterance (MLU) for each participant. See Table 1.

Peter

Peter was a 22-year-old, White male, identified as having a clinical diagnosis of ASD and anxiety disorder. All participants in the transition program are required to have an Individualized Service Plan (ISP) that includes specific, personal goals. Peter's goals included exploring, practicing, and increasing career opportunities while focusing on his social communication, work skills, and the number of activities he participates in outside of his home, so he can integrate into social situations and engage in more activities that he enjoys.

David

David was a 24-year-old, White male participant, identified as having a clinical diagnosis of ASD, intermittent explosive disorder, moderate ID, and oppositional defiant disorder. David's ISP goals included utilizing visual supports and verbal communication to communicate his feelings safely, as well as increasing the number of activities he participates in at home and in the community so that he can engage in more activities that he enjoys.

Fisher

Fisher was a 22-year-old, White male participant. Fisher has a clinical diagnosis of ASD, ID, and Celiac Disease. Fisher's ISP goals were to increase his social skills so he can adapt to various environments independently; manage his anxiety so he can interact with others; and work on his ability to safely communicate and express his wants and needs.

Mike

Mike was a 20-year-old, African American male participant. He has a clinical diagnosis of ASD, ID, congestive heart failure, developmental speech or language disorder, and epilepsy.

Mike's ISP goals were to maintain an internship so he can stay focused on tasks and develop skills needed for securing a job, as well as exploring places outside of his home so he can meet new people and produce more personal and environmental safety skills.

Setting

The intervention took place over a five-month period, five days per week and was implemented by the first author. The study took place in a one-on-one setting in a small cubical located within the transition program's office. The study was conducted during participants designated individualized social skills instructional time. Generalization probes for all 4 phases (baseline, intervention, withdrawal, maintenance) of the study were conducted in various locations throughout campus. For example, a generalization probe was conducted by one of the program staff while walking with the participant around the track at the campus recreational center.

Design

The effect of the intervention was evaluated through the implementation of an ABAB single case withdrawal design (Ledford & Gast, 2018). To ensure experimental control, and in accordance with the standards established by the What Works Clearinghouse (WWC 2020), a minimum of four phases (conditions) were implemented, with no fewer than five data points per phase, and evidence of effect at three different points in time (i.e., changes in data trends within each condition change). Probe sessions were conducted for evaluating the generalization of the intervention across people and settings on a schedule similar to Tyler and Sandoval (1994) and Petersen et al. (2010) for all phases (i.e., baseline, intervention, withdrawal, maintenance). Generalization probes occurred during the last two sessions of each phase, provided there was a

stable level and trend. Additionally, there were two segments included in the study—narrative

retell and generated personal narratives, similar to Petersen et al. (2014).

Materials

The intervention package included visual supports (i.e., graphic organizer, macrostructure

icons, photo prompts, miniature note card), and a personal narrative information sheet (i.e., what

a personal narrative is, why personal narratives are important, and each of the needed

components of a complex and coherent personal narrative). The package consisted of 47

thematically related model personal narratives to elicit participant generated personal narratives.

Visual Supports

The primary instructional material used during intervention was a large laminated graphic

organizer divided into three sections labeled beginning, middle, and end. Macrostructure icons

representing "who," "when," "where," "what," "why," "feeling," "end," and "ending feeling"

were used as visual supports to aid in the structure and organization of participant generated

personal narratives. Generalization sessions used a smaller version of the graphic organizer and

icons.

Each intervention session included three photographs of the participant engaging in an

activity that depicted *who* was there, *where* they were during the activity, *what* they were doing,

and *what happened* at the end. Program staff received one hour of training by the first author on

what and how to take photos of participants engaged in an activity and how to use the

generalization miniature graphic organizer and icons. A personal narrative information sheet was

used to provide explicit instruction on personal narratives. The information sheet contained the

definition of a personal narrative, icons depicting beginning, middle, and end, each

macrostructure component, and a rationale.

Model Stories

Researchers were aware of activities participants engaged in, and the first author created model personal narratives thematically related to the participants. Activities included topics such as, lunch on campus with a friend, exploring campus, and going to the park. Model stories were composed using a template similar to Spencer and Slocum (2010) to ensure consistent structural features and complexity throughout the study. The template included setting, problem/initiating event, emotional state, action, consequence, and ending emotion. The setting included who (i.e., "I"), a reference to time, and a general location. Although the intervention target was not linguistic complexity, the authors included two temporal markers (e.g., then, next), two causal markers (e.g., because, but), one instance of dialogue, one adjective, and one adverb in order to model a more complex personal narrative. All model stories had a readability between first and third grade, and pictures representing the beginning, middle, and end of an activity.

Procedures

Baseline and Withdrawal Procedures.

Baseline and withdrawal sessions lasted approximately ten minutes. The researcher began each session by reviewing a visual schedule. A personal narrative was elicited by casually modeling a realistic fiction personal narrative that participants were known to have experienced. Conversational elicitation procedures included a model personal narrative that was rehearsed so the personal narrative could be shared in the natural context of a conversation (McCabe & Rollins, 1994). After the model was shared, participants were asked "Has anything like this ever happened to you?" If the participant said yes, a follow-up question was asked, "Can you tell me about it?" If the participant said they had not had a similar experience, sub-prompts were given until the participant was able to share a personal narrative. During all phases (i.e., baseline,

intervention, withdrawal, maintenance, generalization) of the study only neutral comments such as "uh huh" were provided during participant personal narrative generations.

Intervention

Each intervention session lasted 20-30 minutes five days per week. Sessions were split into two segments—narrative retell and personal narrative generation, similar to procedures outlined in Petersen et al. (2014). The retell segment consisted of seven steps (see Table 2). Step one of the narrative retell segment was direct instruction on personal narratives. Participants imitated or stated information from the information sheet. Step two, the researcher placed the graphic organizer on the table and asked participants to state the components. If the participant made an error, gesture cues combined with verbal modeling were used. Each icon was reviewed in sequential order starting with the beginning, middle, and end. Step three, the researcher modeled a personal narrative using three corresponding photos. The researcher began by saying, "I'm going to share a story with you, listen closely so you can tell me what my story was about" (Green & Klecan-Aker, 2012; Spencer & Slocum, 2010). While telling the story, the researcher placed the pictures on the graphic organizer in sequential order. All icons and pictures remained in place. Step four, the researcher asked the participant: "Can you tell me what my story was about?" Using the visual supports the participants retold the story. Step five, corrective feedback was provided for missing macrostructure elements by pointing to the icon and asking the participant to answer the question. If the participant provided an incorrect response, the researcher prompted and modeled the correct response similar to procedures outlined in Favot et al. (2018a). For example, if the participant left out who the story was about, the researcher pointed to the "who" icon and asked, "Who was the story about?" If incorrect, the researcher modeled the correct response, and the participant imitated the correct response. Step six, the

participant was asked to retell the entire model story with partial support (e.g., the researcher

pointed to the icons, modeled, provided prompts). Based on individual needs participants were

given additional opportunities, since narrative retell was not the dependent measure. Step seven,

participants were asked to retell the entire story with picture supports only. Similar to Petersen et

al. (2014) segment two consisted of five steps with fading of supports (see Table 3). Step one, the

researcher prompted the participant to generate a personal narrative. The participant was told to

place the three pictures on the graphic organizer in the correct sequence (i.e., beginning, middle,

and end). Step two, participants were provided with corrective feedback for missing elements by

the researcher pointing to the icon and asking the participant to answer the question Step three,

participants were given an opportunity to retell their personal narrative with support, if there

were errors or missing elements the researcher provided corrective feedback using verbal

support, modeling, and prompting. Step four, the participant was asked to retell their entire

narrative with partial supports (i.e., visual supports and verbal scaffolding). As the participant

retold the story, the researcher pointed to the icons. Step five, participants were given the

opportunity to retell the entire narrative using only visual supports (i.e., pictures and icons), no

other supports were provided. The personal narrative generated using only visual supports was

the outcome measure.

Maintenance Booster Sessions

To promote maintenance, booster sessions utilizing the same procedures outlined in the

intervention were provided three weeks post intervention. According to Whisman (1990) after an

intervention, participants are often believed to have learned skills that could be reapplied outside

of the natural setting and performed independently. However, continued practice of these skills is

sometimes necessary to expand upon skills and certify that participants will continue to utilize

skills proficiently. Given the cognitive differences of the participants in this study providing

booster sessions was warranted to aid in promoting future use of the newly acquired skill.

Generalization Procedures

Generalization probes were conducted similar to baseline procedures and occurred in

various locations around campus with a naïve listener. A naïve listener was used so that the

participants could not assume that there was shared knowledge between their communication

partner and themselves (Hayward & Schneider, 2000), thereby requiring them to include all

relevant details a listener would need to know to comprehend the story. To support working

memory (Hill, 2004), miniature note cards were used as a visual support during all generalization

probes. Program staff served as the naïve listener for all phases of the study and received two

hours of training. An observational checklist was used to assess implementation fidelity during

all generalization sessions throughout each phase of the study.

Measures

Dependent Variable

The primary dependent measure was the personal narratives generated by participants at

the end of each session. Each generated personal narrative was transcribed and scored by the first

author using a modified version of the Test of Personal Generation (TPG) scoring guide,

informed by Petersen et al. (2008). The original TPG scoring guide addresses story grammar

elements (setting, problem/initiating event, emotional state, action, consequence, ending

emotion, and complete episode) and linguistic complexity. Since the focus of the study was on

story grammar elements scoring for linguistic complexity was not included. All story grammar

elements except for the complete episode could receive a score between 0–3, with a score of

three indicating greater complexity (Peterson et al., 2014) for a total of 21 points. A complete

episode could only receive a score of zero or three. To earn a score of three, which demonstrates

a more complex narrative, the personal narrative must have included a problem that earned a

score of three, an action that earned either a score of two or three, and a consequence that earned

a score of three. Since individuals with ASD often have limited language abilities causing them

to produce less complex and cohesive personal narratives (Banney et al., 2015; Petersen et al.,

2008, the inclusion of a complete episode was removed from the scoring guide. In the modified

version of the TPG scoring guide used in this study, each story grammar component was given a

score of 0-3 for a total of 18 points (See Figure 1). All utterances were analyzed, and similar to

Favot et al. (2018a), elements did not have to be grammatically connected nor in any particular

sequence.

Interobserver Agreement (IOA)

IOA was calculated using mean word-to word agreement (Petersen et al., 2014). A

research assistant transcribed all recorded sessions verbatim and was directed to include fillers

(e.g., umm) as well as time stampings of all periods of unintelligible audio. The research

assistant was trained until there was 80% word to word agreement. The first author randomly

selected, and cross checked 20% (Kratochwill et al., 2010) of all transcripts for each participant

throughout each phase. All words except for fillers were counted. Any discrepancies were

recorded and discussed until agreement was reached. Transcript reliability was 92.5%.

Using the TPG, the first author scored 100% of participant generated personal narratives.

Additionally, a research assistant blind to the purpose of the study independently used the TPG to

score 100% of participant generated personal narratives across each phase (i.e., baseline,

intervention, withdrawal, maintenance, generalization) of the study to cross check for mean

point-to-point agreement. Overall mean point-to-point agreement and range across all sessions

for each participant were: Peter (M = 93.7%; range 0 – 2 points), David (M = 90.6%; range 0 – 3

points), Fisher (M = 98.6%; range 0 – 1), and Mike (M = 93.7%; range 0 – 2 points).

Fidelity

Data were collected for intervention fidelity on 20% (Kratochwill et al., 2010) of all

sessions using a fidelity checklist throughout each phase. Steps completed accurately were

scored using a plus sign (+), and incorrect steps were scored using a minus sign (-). The observer

documented what occurred during each step. The mean treatment fidelity scores and ranges

across all sessions for each participant were: Peter (M = 97.1%; range 0 – 2 incorrect steps),

David (M = 95.6%; range 0 – 3 incorrect steps), Fisher (M = 92.7%; range 0 – 5 incorrect steps),

and Mike (M = 95.6%; range 0 – 3 incorrect steps).

Social Validity

Social validity was measured for all participants (except for Fisher due to a family

vacation) using a survey that assessed the participants perception of the personal narrative

intervention package. The survey was given two weeks post maintenance and consisted of a five-

point Likert scale with a rating of *strongly agree* to *strongly disagree* followed by two open

ended questions asking participants what they liked about the intervention and what they would

change about the intervention.

Analysis

Visual analysis and statistical analysis were implemented to assess the magnitude of

change that occurred in the personal narratives generated by participants. For visual analysis,

graphical displays of data were examined for changes in the level, trend, variability, and

immediacy of effect of the intervention package (Kratochwill et al., 2010). Tau-U, an effect size

commonly used in single-case research designs (Parker & Vannest, 2012), was calculated to

provide a quantified measure of the change that occurred between baseline and intervention phases. Tau is calculated by comparing each data point in the baseline phase to each data point in the intervention phase to obtain the proportion of all pairs that do not overlap (Parker, Vannest, & Davis, 2011). Tau was calculated across all baseline and intervention phases for each participant. Tau effect sizes from 0 to .49 are interpreted as minimal to no effect whereas Tau measures of .5–.69 are interpreted as moderate and those from .7 to 1 are interpreted as a large effect (See Table 3; Parker et al., 2011).

Results

Research question one focused on whether the intervention package would affect the macrostructure of personal narratives generated by adults with ASD and ID. Results indicate that there was a low baseline presentation for all participants, with an increase only occurring and remaining when the intervention was implemented for each participant. Macrostructure scores were based on an adapted Test of Personal Generation School-age (TPG) scoring guide, where the complete episode was excluded from the possible points and linguistic complexity was not scored nor targeted for this intervention. All macrostructure elements were scored on a scale of 0–3. Table 4 shows the mean total scores and the percentage of change from baseline phases to intervention phases. The gain was computed by calculating the difference between the intervention mean and baseline mean scores. Tau-U was calculated by a baseline and intervention contrast for each participant using a Tau calculator found at www.singlecaseresearch.org. Results indicate that there was a large effect size for each participant, which suggests that there was an effect on the macrostructure of personal narratives generated by participants. Research question two asked if improvements in the macrostructure of personal narratives produced by adults with ASD and ID would maintain after the intervention

had been withdrawn. Based on the visual analysis, all four participants did maintain the effects of

the intervention. The third research question addressed generalization of improvements in

macrostructure across people and settings to determine if the results of the intervention would

continue under different conditions (i.e., naïve listeners and settings). During each phase of the

study, two generalization probes were conducted with a naïve listener in a new environment.

Generalization probes were administered on the same day as the last two data points prior to

phase change if there was a stable level and trend for each participant. Generalization probes

occurred either before or after the intervention sessions. Based on visual analysis, the

intervention did not generalize across naïve listeners and settings for any of the participants (see

Figure 1).

TPG Scores

Peter

During the initial baseline, there was a moderate degree of variability, with a mean TPG

score of ($M = 5.2$) and a moderate downward trend (see Figure 1). Following introduction to the

intervention, there was an immediate increase in level ($M = 17.8$) with a steady trend, little

variability, and no overlap with the previous baseline. Withdrawal of the intervention coincided

with a reversal to the initial baseline levels of performance ($M = 5.4$). Reintroducing the

intervention increased the TPG scores of Peter's personal narratives ($M = 16.2$), and after several

sessions he returned to levels similar to the initial introduction of the intervention. Peter made a

gain of 12.6 points in TPG score between the first baseline and the initial introduction of the

intervention, a gain of 10.8 between withdrawal and reintroduction to the intervention, and a

large effect size (Tau-U = 1.0). During maintenance, Peter's mean TPG score ($M = 17.6$)

remained high, demonstrating the effects of the intervention were maintained after removal and

then reintroduction. In terms of generalization, Peter scored between one and seven during initial

baseline, five and 10 when the intervention was introduced, zero and four when the intervention

was withdrawn, zero and 14 when the intervention was reintroduced, and between one and six

during maintenance. Although there was a large degree of variability within each phase of the

study, during both the initial introduction and reintroduction of the intervention, Peter scored the

highest when allowed to use the miniature macrostructure card.

David

During the initial baseline, there was moderate variability in TPG score ($M = 6$) and a

downward trend. Following the introduction of the intervention, there was an immediate increase

in level ($M = 15$) with a slight upward trend, little variability, and no overlap with the previous

baseline. Withdrawal of the intervention coincided with a reversal to initial baseline levels of

performance ($M = 6.4$). Following reintroduction of the intervention, there was an increase in

TPG score ($M = 14.4$), which after several sessions returned to levels similar to the initial

introduction of the intervention. David made a gain of 9.0 points during the first intervention

phase and a gain of 8.0 during the second intervention phase, resulting in a large effect size (Tau-

U $= 0.96$). During maintenance, David's mean TPG score remained high ($M = 14.3$). In terms of

generalization, David's TPG scores were between zero and one during the initial baseline, zero

and 10 during introduction of the intervention, between five and 11 when the intervention was

withdrawn, between nine and eight when the intervention was reintroduced, and between one

and six during maintenance.

Fisher

During the initial baseline, there was a moderate degree of variability in TPG score ($M =$

7) and a moderate downward trend. Following the introduction of the intervention, there was an

immediate increase in the level (M = 14.4) with a modest upward trend and no overlap with the

previous baseline. Withdrawal of the intervention coincided with a reversal to the initial baseline

levels of performance (M = 5). Reintroducing the intervention increased TPG scores (M = 13.2),

and after several sessions returned to levels similar to the initial introduction of the intervention.

Fisher made a gain of 7.4 between the initial baseline and introduction of the intervention, a gain

of 8.2 points between withdrawal and reintroduction of the intervention, and a large effect size

(Tau-U = 0.9317). Fisher's results indicated that there was a slight decrease in TPG score level

and trend with moderate variability during maintenance (M = 11.6). In terms of generalization

his TPG scores during generalization probes were significantly lower than his scores during all

other phases of the study. Thus, there was no clear indication that intervention generalized to new

topics for Fisher.

Mike

        During the initial baseline, there was a low to moderate degree of variability in TPG

score (M = 5). Upon introduction of the intervention, there was an immediate increase in level

(M = 14.6) with a fairly stable trend and no overlap with the previous baseline. Withdrawal of

intervention coincided with a reversal to the initial baseline levels of performance (M = 5).

Reintroduction of the intervention increased TPG scores (M = 13.2), which after several sessions

returned to levels similar to the initial introduction of the intervention. Mike made a gain of 9.6

points in TPG score between the initial baseline and introduction of the intervention, a gain of

6.6 points between withdrawal and reintroduction of the intervention, and a large effect size

(Tau-U = 1.0). During maintenance his scores remained high. In terms of generalization, Mike

scored between zero and four during baseline, 10 and 11 during introduction to the intervention,

zero and seven when the intervention was reintroduced, and zero to seven during maintenance.

Mike's data had a high degree of variability throughout all phases of the study. It should be noted that due to illness and changes in schedule, generalization probes were not conducted during the withdrawal phase.

Social Validity

Two out of three participants agreed or strongly agreed the intervention taught them important skills, three out of three agreed or strongly agreed that the intervention helped them understand what a personal narrative is. When asked if the intervention helped in sharing personal stories about themselves with others two of the participants were neutral and one participant strongly agreed that the intervention was helpful. When asked if the intervention helped in better understanding the information needed to share a personal story so that the listener can understand, all three participants either agreed or strongly agreed. Finally, when asked the open-ended question what they liked about the intervention, participants said things like "It helped me learn about personal narratives", "I like talking about all the different things and stories." And "Telling stories is good for me." When asked if they would change anything participants said things such as "No, I love all of it." And "No, I liked all of it."

Discussion

Despite evidence on the importance of narrative discourse in everyday life (McCabe et al., 2008) there is a paucity of research on the personal narratives of adults with ASD and/or ASD and ID. The purpose of this study was to expand research on teaching macrostructure in order to improve the personal narratives of adults with ASD and/or ASD and ID through explicit instruction. Results indicate a functional relation between macrostructure instruction and improved, participant-generated personal narratives. Visual and Tau-U analysis suggested a large effect size. This study extends previous research by demonstrating that the strategies used in

previous studies with young children (Favot et al., 2018a; 2018b; Gillam et al., 2015; Petersen et al., 2014; Spencer & Slocum, 2010; Spencer, et al., 2013) were also effective for adults with ASD and/or ASD and ID.

The intervention improved participants' oral personal narratives. Prior to the intervention, Peter had difficulties initiating an event/problem, action (i.e., attempting to solve a problem), describing an internal response (i.e., emotions) or recalling an event that he was known to experience. Even when Peter was able to recall an event, he did not express emotion or provide information about why things happened. David and Fisher had difficulties describing the setting, initiating event/problem, action, and internal responses. For example, they often did not provide information about where and when an event occurred, what and why something happened, or information about their emotional states. Mike struggled to initiate event/problem, actions, consequences (external response), and internal response. For example, he had difficulties providing enough information to understand what the initiating event was, what happened, why it happened, and how he felt at the end. However, after the intervention, all participants' ability to include macrostructure elements significantly increased across both intervention and maintenance phases.

Despite immediate improvements in personal narratives and a large effect size, there was a moderate degree of variability in some phases of the study. One explanation could be participants level of intellectual functioning and language challenges (see Table 1). However, other factors could have contributed as well. For example, two participants, David and Fisher, have significant behavioral challenges that impacted their ability to participate on several occasions. In these instances, sessions were rescheduled and therefore, interrupted their daily

routines. Another explanation for the variability could be extenuating circumstances such as when Mike was hospitalized for two days due to a heart condition.

The present study built upon Favot et al. (2018a) procedures by incorporating a naïve listener as recommended by Hayward and Schneider (2000). Unfortunately, generalization across naïve listeners and settings was generally unsuccessful. However, there were instances of generalization among some participants. For example, Peter scored a 15 during intervention phase II. It could be that the model story aligned with a topic of interest or closely aligned with a recent experience. Additionally, Peter the only participant that did not have ID, and had higher scores on the TPG scoring guide than the other participants with ASD and ID. This was not surprising considering his higher expressive and receptive language skills. It should be noted however, that despite Peter receiving higher scores on the TPG scoring guide, he like the other participants with ASD and ID still struggled to generalize the newly learned skill. This was not surprising, as the ability to generalize skills that are social in nature (e.g., personal narratives) have been identified as being extremely challenging for individuals with ASD (Barry et al., 2003).

Limitations

Petersen et al. (2014) questioned the necessity of picture prompts to support personal narratives of individuals with ASD. The picture prompts in the current study (i.e., photographs, macrostructure icons) were meant to remind individuals to include the beginning, middle, and end of the story, and the macrostructure elements. However, the role the pictures played in intervention effectiveness is unknown and was outside the scope of this study. At times, it seemed the pictures, icons, and a graphic organizer were overwhelming to the participants. Manipulating the pictures may have been distracting, making it difficult for participants to focus

on the task at hand. Therefore, investigating the role of the pictures in intervention effectiveness would be valuable. Similarly, a single photo depicting all of the macrostructure elements (i.e., one photo of the participant that shows who was there, where they were, what they were doing, and their expressions during the activity as used in Favot et al. (2018a) merits further consideration.

Similar to Favot et al. (2018a), the participants in this study had cognitive differences that made it difficult to generate high point narratives, therefore, focusing on the basic story grammar element was necessary. However, because the scoring guide in Favot and colleagues (2018a) has not been tested for reliability it was not used in the current study. Instead, using a modified version of the TPG-School Age scoring guide similar to Petersen et al. (2014), was used because it has been deemed a reliable measure. Finally, external validity is always a concern in single case designs due to the small pool of participants. Therefore, this study requires replication in order to determine whether the results are effective for other populations of individuals and in different settings as well as for identifying evidence-based practices.

Future Research

Future research should consider providing richer quality experiences to individuals with ASD and/or ASD and ID so that their personal narratives are more socially meaningful. Generalization is an important component of any intervention and should be planned for (Stokes & Baer, 1977). It might be valuable to implement the intervention in a way that more efficiently promotes generalization. For example, incorporating naïve listeners and implementing the intervention in multiple settings. Additionally, future research should include a component analysis so only necessary components of the intervention are implemented.

Implications for Practice

There are several implications for practice. First, although the intervention was implemented one on one, it could be feasible to implement in a small group. Other researchers have successfully provided narrative interventions in small group classroom settings (Spencer & Slocum, 2010). Second, it would also be beneficial for instruction to begin early in the school years and continue to develop over time. Third, there is evidence of the effectiveness of personal narrative interventions for young children (e.g., Petersen et al, 2014; Favot et al., 2018a) with ASD and language impairment. However, adults with ASD and/or ASD and ID still struggle with generating personal narratives. Therefore, it is important that those working with adolescents and/or adults should provide access to intervention that will improve these individuals' narrative abilities. Fourth, it may be more feasible to create visual supports in other ways. For example, if teaching in a small group, have the class engage in an activity collectively and take photos or capture individual photos that are easily accessible in group settings. Last, to increase the likelihood of generalization, practitioners should consider increasing the duration of the intervention to allow more time for acquisition, fluency, and maintenance to fully develop (Wolery, 2000).

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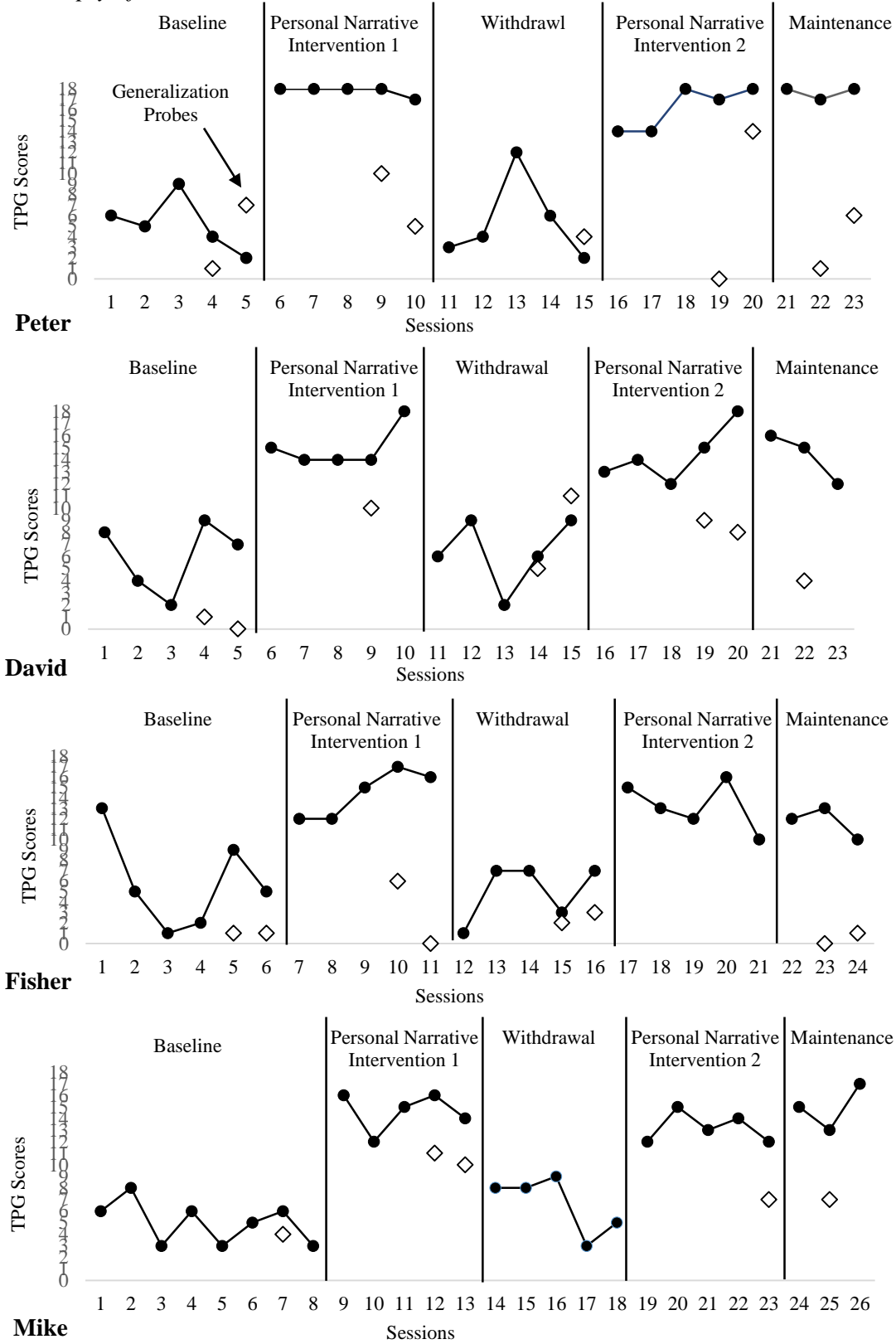Figure 1
Graphic Disaply of Results

Peter

David

Fisher

Mike

Table 1

Participant Cognitive Functioning and Language Scores

Participant	PTONI Percentile	CELF Core Language Score	CELF Percentile	PPVT Age Equivalent	MLU
Peter	60th	70	2nd	12.0	4-5
David	25th	114	3rd	4.3	1-2
Fisher	18th	NR	NR	5.1	1
Mike	2nd	108	5th	4.1	3-4

Note: Primary Test of Nonverbal Intelligence = PTONI; Clinical Evaluation of Language Fundamentals- 5 = CELF-5; Clinical Evaluation of Language Fundamentals Preschool-2 = CELF-P2; Peabody Picture Vocabulary Test, Fourth Edition = PPVT; NR= Not Reported. All participants were given the CELF-Preschool-2 except for Peter who was given the CELF-5.

Table 2

Steps of Phase I Retelling the Model Personal Narrative

Step	Researcher	Participant
1. Review of personal narratives [a]	Reviews parts of a story and macrostructure elements.	States or reads information on the personal narrative sheet.
2. Review macrostructure components with graphic organizer	Asks participants to state each macrostructure component	States each of the macrostructure components
3. Model with visual supports	Pictures and icons are placed on graphic organizer as they appear in the story.	Listens attentively.
4. Retells with visual supports	Pictures are left on the table	Retells the story with visual supports as needed.
5. Corrective feedback	Provides corrective feedback and verbal scaffolding.	Imitates or corrects the retell
6. Opportunities to practice with partial support	Provides opportunities to practice with partial support.	Practices retelling the entire model story with partial support.
7. Independent retell with visual supports only	Participant is asked to retell the model story with visual supports only.	Retells with visual supports only.

[a] Review began after the personal narrative information sheet, graphic organizer, and macrostructure icons were introduced on the first day of intervention.

Table 3

Steps of Phase II Participant Generated Personal Narratives

Step	Researcher	Participant
1. Generation of personal narrative with visual supports	Macrostructure elements are placed on the graphic organizer as they appear in the story, missing elements placed to the side.	Sequences the pictures and generates a personal narrative.
2. Corrective feedback	Reviews missing elements	Makes corrections and repeats the missing elements.
3. Opportunity to practice with supports.	Visual supports are left in place, verbal support, modeling, and prompting are provided.	Retells personal narrative using visual supports, verbal scaffolding and corrective feedback.
4. Opportunity to practice with partial support	Visual supports are left in place and verbal scaffolding are provided.	Retells personal narrative with visual supports and verbal scaffolding.
5. Retell personal narrative with visual supports only.	Participants are asked to retell their personal narrative with visual supports.	Uses visual supports to retell their entire personal narrative

Table 4

Effects for Macrostructure: Phase Means, % Change, and Tau

Participant	A_1	B_1	% Change	A_2	B_2	% Change	Tau Effect Size
Peter	5.2	.8	71%	5.4	16.2	67%	1.0 = Large
David	6	15	60%	6.4	14.4	56%	0.96 = Large
Fisher	7	14.4	51%	5	13.2	62%	0.9317 = Large
Mike	5	14.6	66%	6.6	13.2	50%	1.0 = Large

Note. A_1 = Baseline, B_1 = Personal Narrative Intervention; A_2 = Withdrawal; B_2 = Personal Narrative Intervention; Tau-U = an effect size of .50 is minimal change, between .50 and .70 is moderate change; and greater than .70 is a large change; % change = the difference between the mean scores from baseline and withdrawal phases and intervention phases.