Effects of the STOP & LIST Strategy on the Writing Performance of a Sixth Grader With Learning Disabilities

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Poor writers generally spend little time developing an outline and otherwise planning written assignments before composing them. Far too many students in elementary and secondary education fall behind in their planning and composition skills because they do not receive appropriate instruction. In this single-case study, we tested the effects of an easy-to-implement strategy (STOP & LIST) designed to help learners identify the purpose of a writing assignment, set appropriate goals, list ideas for the assignment as they come to mind, and sequence the ideas before beginning composition. The participant, a 12-year-old boy with learning disabilities (LD), completed repeated measurements during a baseline period (first Phase A, five days), an intervention period (Phase B, five days) and a post-intervention period (second Phase A, five days). While receiving instruction in using the STOP & LIST strategy, he performed at a significantly higher level than on days with no treatment. The implications and limitations of the findings are discussed.

Keywords: **Learning Disabilities, Composition Writing Skills, Text Planning Skills, Single-Case Design.**

INTRODUCTION

Writing is the principal means of expression in assessments in school. All students need to acquire grade level text composition skills in order to meet the curricular requirements in every content area subject (Ciullo, & Mason, 2017; Graham, & Hebert, 2011; MacArthur, Graham, & Fitzgerald, 2006). Planning plays a central role in this process. The amount of time spent to think of ideas, to set goals, and to organize information highly correlates with text quality (Graham, 2006). Poor writers, first and foremost, distinguish themselves from their typically performing peers by the unusually short amount of time they invest into generating and organizing thoughts before composing (Gillespie Rouse & Graham, 2016; Hauth, Mastropieri, Scruggs, & Regan, 2013; Rodríguez, Grünke, González-Castro, García, & Álvarez-García, 2015).

Most instructional models for writing emphasize the substantial role of

planning (Becker, 2006; Troia, Graham, & Harris, 1999). For example, Scardamalia and Bereiter's (1983) fundamental and pervasive CDO (compare, diagnose, and operate) model assumes that two kinds of mental representations are built up and stored in long-term memory: (a) representations of the text as put on paper (or typed into a keyboard) up to now, and (b) representations of the text as intended. Hence, writers constantly compare the initial plans with the current text.

Students with learning disabilities (LD) experience especially great difficulties with contemplating the purpose of the writing task, brainstorming ideas, and sequencing thoughts (Graham, Harris, & McKeown, 2013). According to MacArthur and Graham (1987), they generally invest less than one minute planning before composing. As a result, they usually submit remarkably short, incomplete, and badly organized texts (Englert & Raphael, 1988; MacArthur & Graham, 1987).

Because the ability to "think on paper" plays such a large part in everyday culture (Fayol, Alamargot. & Berninger, 2012), teachers should go to great length to make sure that children with LD acquire adequate planning skills as part of instruction in writing composition during the end of their elementary and the beginning of their secondary education (Grünke & Leonard Zabel, 2015). Sadly, many students do not receive the level of explicit instruction necessary for skill acquisition, partly because, as Troia and Graham (2003) pointed out, "Teachers … frequently comment that they lack the knowledge, skills, and strategies they believe would be helpful to them in facilitating children's emerging competence as writers" (p. 75). Failure to explicitly teach text composition skills to students with LD may further contribute to the severe delay in their capability to produce a text.

Fortunately, a number of strategies have been found to be effective at enhancing composition planning skills in struggling writers and help them to catch up with their classmates (e.g., semantic webbing, story mapping, goal setting; Troia & Graham, 2002). Most of these operations and procedures rely on direct instruction. That is, students are taught explicitly, by first modeling the strategy and being scaffolded in their efforts to use them independently (Cook & Bennett, 2014; Datchuk & Kubina, 2012; Gillespie & Graham, 2014; Rogers & Graham, 2008).

One of these strategies is the rather unknown prewriting technique STOP & LIST. Its name serves as a mnemonic reminder of the various actions that need to be performed in order to generate a serviceable draft of a text: "Stop, Think Of Purpose, List Ideas, and Sequence Them" (Graham & Harris, 2005). Students learn the strategy through explicit instruction employing Harris and Graham's (1996) evidence-based self-regulated strategy development (SRSD) model.

Specifically, using the SRSD framework, teachers provide instruction in STOP & LIST in the following steps: (a) activate background knowledge in the minds of the students, (b) discuss the strategy, (c) model its use, (d) let the students memorize the procedure, (e) provide opportunities of collaborative practice, and (f) facilitate independent application of the strategy in everyday life settings. The teacher initially assesses which behaviors the students execute when planning to produce a meaningful text. Next, she or he introduces the acronym for STOP & LIST, explains the purpose of the strategy, and highlights the potential benefits of using it. Subsequently, the teacher models the procedure using concrete examples while "thinking out loud." In the next step, she or he provides close guidance and continuous feedback as students try to apply the strategy. Teacher guidance is faded out over time until the students achieve mastery in planning texts of a specific genre and level of complexity (Prater, 2018).

To date, two published studies have examined the effects of STOP & LIST on the written expression of children with LD (Graham, Harris, & Troia, 1998; Troia & Graham, 2002). In both experiments, the intervention improved students' written expression in multiple domains (i.e., strategy use, quality and length of written product, advance planning time). However, several limitations of these studies warrant consideration, despite their promising results. First, both experiments are rather dated and, therefore, do not contain up to date information. In addition, they were conducted by teams of scholars that had been significantly involved in developing the intervention. Treatments evaluated by the program developers often report effect sizes considerably larger than trials conducted by independent research groups (Eisner, 2009). Thus, independent replications are warranted.

The purpose of the present study was to extend the very limited body of existing research on the benefits of STOP & LIST on the story writing performance (quantity and quality) of a 12-year-old boy with LD. We hypothesized that a short treatment (five sessions) would result in noteworthy improvements, but would not lead to maintenance of improvements in text production skills.

Method

Participant and Setting

The participant, a 12-year-old boy in sixth grade identified with LD by a multi-disciplinary team, attended a special school in Northrhine-Westfalia (Germany). He was born to German parents from a socially disadvantaged context. His school offered specialized instruction for children and youth with deficiencies in their ability to listen, speak, read, write, spell, and do mathematics.

The student's records revealed that he knew his math concepts and operations, and that his reading and spelling abilities were in the lower average range. However, his expressive writing skills fell far below normal for his age

group. His classroom teacher reported that he usually submitted particularly brief texts, just one or two sentences, when asked to write an essay. In addition, he frequently demonstrated behavioral problems, such as noncompliance and tantrums, when presented with writing tasks.

Measurement

The study used two measures to assess the participant's written expression: the number of correct word sequences (CWS) and a writing rubric. The number of CWS, defined as two adjacent, correctly spelled words used in a grammatically acceptable manner in the context of the phrase (Fewster & MacMillan, 2002), provides a quantitative indicator of writing performance. Frequency of CWS typically shows strong correlations with several criterion measures (including holistic ratings). In addition, this measure is sensitive to change in student performance over time (Espin, De La Paz, Scierka, & Roelofs, 2005). A research assistant counted the CWS in each story twice, with 90% reliability between the counts. If different totals, were reached, the count was conducted a third time.

To evaluate the quality of the written texts, a writing rubric developed by Dunn and Miller (2016) was used. Scale scores range from 0 (no text) to 7 (a clear introduction, main event, and conclusion with use of paragraphs and voice and almost completely correct use of grammar and syntax). Six graduate university students of special education, who had recently completed a course on writing instruction for students with LD, performed the scorings. All of them were blind to the purpose of the study. They discussed each text in random order until they agreed on a score.

Experimental Design and Procedure

The study employed a variation of a single-case withdrawal design, ABA, as follows. During the baseline condition (A1), no treatment is provided. Next, the participant receives the intervention (B). Finally, the intervention is withdrawn, returning to the baseline condition (A2). This type of design addresses maturation and history threats to internal validity, allowing for the identification of potential functional, rather than correlational, relationships between the intervention and the change in the dependent variable (Gast & Hammond, 2009).

During all phases, a graduate student in special education collected daily writing probes from the participant by asking him to compose a story using pen and paper in response to a prompt. The probes took place in a quiet corner of the classroom, while the rest of the children were engaged in independent reading or math activities. The prompts, taken from a list posted on a website for teachers (https://squareheadteachers.com/2013/06/25/60-narrative-writing-prompts-for-kids/), were randomly assigned.

In the Phase B, the graduate student served as the interventionist and taught the participant how to apply the STOP & LIST strategy during daily

30-minute lessons (total of five). The treatment followed the basic direct instruction pattern of "I do it," "We do it," and "You do it" (Archer & Hughes, 2010).

In the first lesson, the interventionist modeled the proper way to perform the steps of the strategy, including sitting down quietly, restating the purpose of the task and thinking about the story prompt, taking notes on what she could write about in response to the given headline, and sequencing her ideas. During the following three lessons, the interventionist scaffolded the participant's attempts to imitate her actions by providing assistance and feedback, as necessary. During the final session, the participant was asked to use the strategy independently and, therefore, only received help when he asked for it or if he got sidetracked. Throughout the instructional process, the interventionist encouraged the participant to use notepaper and apply the strategy whenever assigned to write an essay at school.

Prior to the start of the study, the interventionist completed four hours of training by the first author divided equally over two sessions. Every step of the treatment was demonstrated using video clips showing the first author teaching the STOP & LIST strategy to a small group of fifth graders with LD. In addition, she received a detailed script to follow. To further enhance intervention fidelity, the interventionist and the first author stayed in daily contact via email or phone during the Phase B to clarify procedures and to make sure that the treatment was carried out as intended.

Analyses

The effects of the STOP & LIST intervention on CWS and text quality were assessed using visual inspection and statistical analysis. Visual inspection involves the mapping of data to appropriate visual representations and the interpretation of these graphs. It constitutes the most commonly used data-analysis strategy used in single-case studies (Gast & Spriggs, 2006).

Given the nature of the intervention, it is important to consider not just the improvement in means between the two phases but also the trend of the data; therefore, Tau-U was chosen over other non-overlap statistics. Tau-U, a non-parametric effect size ranging from -1 and 1, is interpreted as the percent of non-overlapping data showing improvement between phases. Post hoc Tau-U effect sizes were calculated to supplement the visual analysis and to describe the magnitude of the effect of STOP & LIST on the participant's written expression. Specifically, Tau-U effect sizes were calculated to compare Phase A1 to Phase B and the Phase B to Phase A2.

RESULTS

As mentioned, the data were analyzed visually and statistically. Figures 1 and 2 depict the number of CWS and the quality ratings. The data were analyzed within each phase and between phases.

Figure 1. Number of CWS across all three phases.
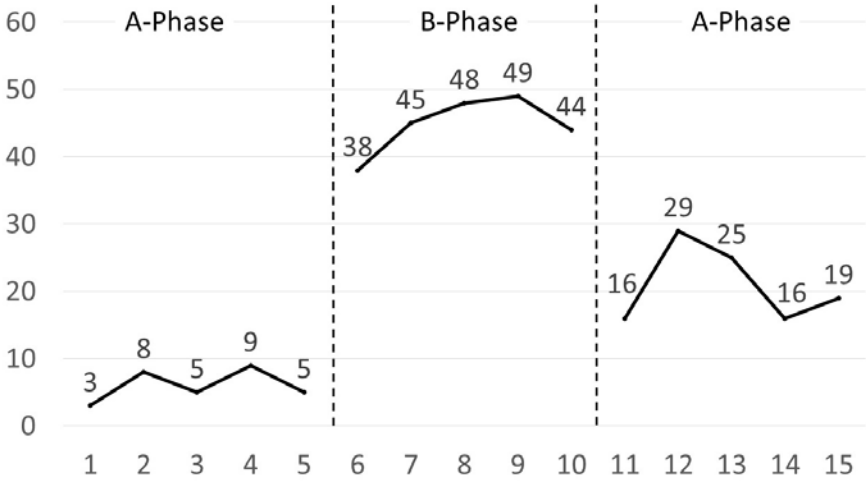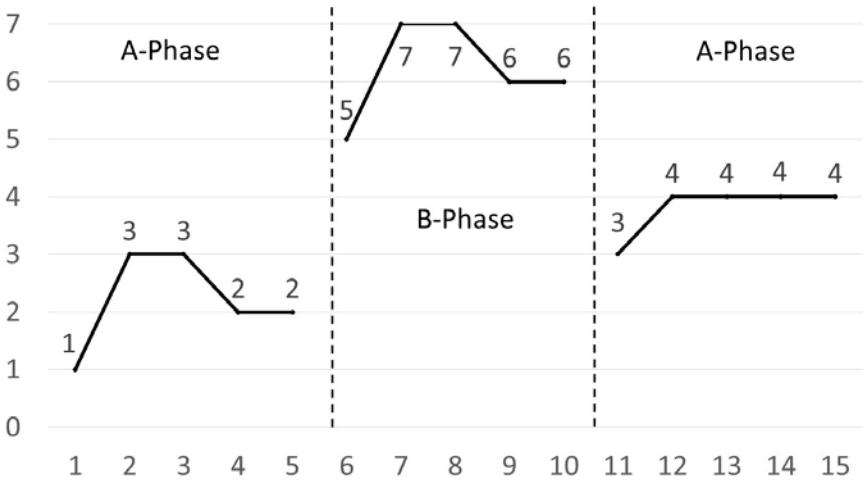

Figure 2. Values of the quality ratings across all three phases.

Visual analysis indicated that during the first baseline phase the mean number of CWS was low (*M* = 6.00, *SD* = 2.45). Performance was relatively stable with a slight increasing trend. With the introduction of the intervention, the number of CWS increased from 5 to 38, and the mean number of CWS during the intervention phase was substantially higher (*M* = 44.80, *SD* = 4.32), showing a generally increasing trend. When the intervention was removed, the number of CWS dropped from 45 to 16. During the second baseline phase, the mean number of CWS decreased compared to the intervention phase but was higher than the first baseline phase (*M* = 21.00, *SD* = 5.78), showing a decreasing trend with more variability compared to the previous phases.

When calculating Tau-U effect sizes for CWS, no corrections were made for baseline trend. Contrasting the first baseline phase with the intervention phase resulted in a Tau-U effect size of 1.00 (*p* < .01). Contrasting the intervention phase with the second baseline phase resulted in a Tau-U effect size of -1.00 (*p* < .01). After correcting for directionality, the effect sizes were aggregated for an overall intervention effect of 1.00 (*p* < .01). Finally, contrasting the first baseline phase with the second baseline phase resulted in a Tau-U effect size of 1.00 (*p* < .01).

Visual analysis of the data representing the quality of the texts indicated that during the first baseline phase the mean rating for the written passages was low (*M* = 2.20, *SD* = 0.83), and the data were relatively stable with a slight downward trend over the last three data points. But with the introduction of the intervention, the ratings increased from 2 to 5. The mean rating during the intervention phase was substantially higher (*M* = 6.20, *SD* = 0.83), and the data set was the same shape as during the first baseline phase. When the intervention was removed, the rating dropped from 6 to 3. The mean rating during the second baseline phase decreased compared to the intervention phase but was higher than the first baseline phase (*M* = 3.80, *SD* = 0.44). The data in the second baseline phase showed a predominantly flat trend.

When calculating Tau-U effect sizes for the ratings, no corrections were made for baseline trend. Contrasting the first baseline phase with the intervention phase resulted in a Tau-U effect size of 1.00 (*p* < .01). Contrasting the intervention phase with the second baseline phase resulted in a Tau-U effect size of -1.00 (*p* < .01). After correcting for directionality, the effect sizes were integrated for an overall intervention effect of 1.00 (*p* < .01). Additionally, contrasting the first baseline phase with the second baseline phase resulted in a Tau-U effect size of 0.92 (*p* < .05).

DISCUSSION

Main Findings

The purpose of this study was to determine the effects of brief instruction in the STOP & LIST strategy on the writing performance of a student with

LD. For both CWS and quality of written text, instruction in the strategy led to immediate statistically and practically significant improvements, and the effects of the intervention continued as long as the student received instructional support. However, after withdrawal of instructional support, the effects of the intervention maintained at a lower level of practical significance.

Based on previous research, we hypothesized providing instruction in the STOP & LIST strategy would result in immediate improvements in text length (CWS) and text quality while the student received instructional support (Troia et al., 1999). The results of this study confirm this hypothesis, even though the participant received fewer sessions or minutes of instruction than in the experiments by Graham et al. (1998) as well as by Troia and Graham (2002).

Previous studies of the effects of STOP & LIST on the maintenance of improvement in text length (CWS) and text quality found inconsistent results. In the current study, we hypothesized that the improvements would not maintain after removal of instructional support. However, despite a drop in text length and text quality during the second baseline phase, improvement was maintained, and remained statistically significantly higher than the first baseline phase.

Neither of the previous studies of STOP & LIST (Graham et al., 1998; Troia & Graham, 2002) included a discrete measure of technical accuracy. The inclusion of this measure in the current investigation may explain the consistent alignment between the outcomes for text length and text quality ($r = .95$; $p < .001$, one-tailed), as opposed to the variable findings in previous trials.

Limitations

While this study contributes to the body of evidence supporting the effectiveness of the STOP & LIST instructional strategy for struggling writers, the following limitations must be considered. First, the ABA design does not contain enough phase contrasts to arrive at a definitive functional relationship between the intervention and the outcomes. Second, the inclusion of a single participant limits the external validity of the findings (Horner et al., 2005). The validity could have been increased if we had incorporated randomization. Neither the on- and off-set of the treatment nor the number of probes in each phase was determined by chance. However, if we had lengthened the duration of the experiment (e.g., to six weeks) and started each phase randomly (given the restriction that each phase would include at least five daily measurements), conclusions about the causal effects of the intervention on the dependent variables would have been more compelling.

In addition to limitations stemming from the design, there is currently no consensus in the research community on how to measure improvement in writing performance (Dockrell, Connelly, Walter, & Critten, 2015; Hampton & Lembke, 2016; McMaster & Espin, 2007). In the current study, for example,

besides the number of CWS, we could have identified the number of (a) total words written (TWW), (b) words spelled correctly (WSC), or (c) correct minus incorrect word sequences (CIWS) (Hosp, Hosp, & Howell, 2016).

What applies to the quantitative aspect of the assessment is also true for the qualitative aspect—the use of a writing rubric. In the studies included in meta-analyses by Cook and Bennett (2014), Gillespie and Graham (2014), as well as Rogers and Graham (2008), specifically created writing rubrics were the most common means of measuring the level of excellence of a text. However, these tools cannot be considered objective. But regardless of any possible criticism of our way of operationalizing the dependent variable, our decision to select the number of CWS and the writing rubric by Dunn and Miller (2016) is supported and corroborated by the fact that both measurements were highly correlated.

Conclusion

The results of this study provide further support for the STOP & LIST strategy as a practical intervention in terms of effectiveness, time, and effort. In particular, the study suggests that implementation is manageable for classroom teachers. As demonstrated, instructional support to implement STOP & LIST resulted in immediate improvements in text length and quality, which may have the added benefit of positively impacting the motivation of students with LD with a history of failure in the area of writing. Moreover, although the full gains were not maintained when instructional support was removed, the data trends suggest that additional instruction would support maintenance and generalization of the effects.

Further research is necessary to establish the STOP & LIST strategy as an evidence-based practice. In particular, future studies should focus on replicating our findings. (Graham et al., 1998; Troia & Graham, 2002). Additionally, researchers should examine the effects of the strategy on writing tasks in other genres and for learners with varying instructional needs. Moreover, to determine best practice for providing instruction in the STOP & LIST strategy, future studies should focus on identifying the amount of instructional support necessary for students to maintain improvements once instructional support ends. Finally, determining the most appropriate measures for assessing written expression is still in need of research attention.

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