Katie Age 8-2 2nd Grade

Executive Function Involvement with Academic Tasks

Katie's performance with specific academic skill measures tended to produce results toward the lower end of the average range. Although it appears that Katie is progressing at an at least average rate in all academic areas, a number of executive function difficulties related to academic skill performance were evident, as described in the sections below.

Executive Function Direction and Integration of Written Expression Skills

Katie demonstrated well-developed graphomotor skills and a high level of automaticity for retrieval of the letters of the alphabet when required to write the alphabet and copy sentences. Executive function direction of these skills was erratic however. At times, Katie's printing was much larger than needed in proportion to the guidelines and spaces provided and the spacing between her words varied greatly. These difficulties were much more pronounced when Katie had to multi-task and coordinate the cognitive capacities needed to generate and hold her own thoughts with her graphomotor production. In these cases, letter formation was not as good and letter size control and word spacing were very poor. At times, Katie perseverated somewhat on "drawing" periods at the end of sentences, depriving her of valuable time for generating additional sentences during a timed writing task.

The tasks that Katie performed well (alphabet writing and sentence copying) did not require her to generate her own thoughts, represent them as language, and then transcribe them onto the paper. When Katie was required to engage executive function control to direct these stages of the independent writing process, she performed very poorly. Despite her demonstrated superior capacity for generating words from semantic categories (21 animals names in 60 seconds, 13 food names in 60 seconds; NEPSY-II Word Generation-Semantic 95th percentile), Katie was unable to direct and coordinate this capacity with her graphomotor skills, producing only 3 names of things that are round, with all three of the names coming from a single subcategory, i.e., the names of fruits (WIAT-II Word Fluency 1st – 25th percentile range).

Katie's difficulties with direction and coordination of the writing process were also evident in her performance on the WJ-III Writing Fluency Subtest. Katie was able to generate 4 sentences very quickly on her own, but this efficient production was interspersed between periods of inertia during which Katie complained to the psychologist "I can't think of a sentence to write." Despite encouragement, Katie persisted in her insistence that she could not generate a sentence for certain three word combinations. With additional encouragement, Katie would skip these items and attempt another item. At

least half of the 7 minutes allotted for this task was devoted to statements indicating an inability to perform the task. After testing was completed, the psychologist led Katie through the task for each item she claimed she could not do. With simply stated organizational prompts (ones that Katie could have self-administered during the task, e.g., try starting your sentence with "The"; OK, now "The" what?), Katie was able to generate and write a sentence for each of these items.

Likewise, Katie struggled greatly with the WIAT-II Sentence Combining items, unable to flexibly consider the task of restating two separate sentences into a single sentence that said the same thing as the two separate sentences. Instead, Katie tried to rely on her well-developed graphomotor skills and simply copied the two sentences. After several examples and demonstrations, despite her well-developed reasoning abilities, Katie was still unable to flexibly shift her mindset about writing to grasp the concept of rewriting sentences by paraphrasing and combining thoughts represented in the separate sentences.

As in the case of reading skills, Katie was able to earn scores at the lower end of the average range on writing skills tasks due to her ability to power through these tasks using her well-developed graphomotor skills to quickly write the alphabet or write the few sentences that she did generate, thereby masking the negative effects of her executive function difficulties on her written production. It is important to note that in addition to executive function difficulties with coordinating the writing process, Katie's self-generated writing is likely being impacted by working memory capacity limitations. If Katie is having a hard time holding and manipulating her thoughts, there is little for the executive function capacities to direct in the way of written production. Katie performed unevenly on tasks involving working memory capacities, so it is difficult to know the extent to which working memory difficulties are impacting her written expression. Katie did perform better with contextually meaningful working memory tasks, so it is likely that writing tasks that are related to her personal experiences will be easier for her than writing tasks that emphasize less familiar topics or newly learned academic material.

In order for Katie to apply her graphomotor skills in a coordinated manner with her adequately-developed language and reasoning abilities to write about her thoughts, Katie will need to learn how to cue herself to generate and hold thoughts while she writes out those thoughts onto paper. At this point in time, Katie's relatively weak executive functions related to directing and integrating written production are not at the level needed to enable her to be a consistently effective writer. Time and increased practice in integrating writing skills are

needed in order for Katie to realize greater levels of productivity from her writing efforts.