

# The Children's Kitchen Task Assessment (CKTA): Exploring the correlation between executive functions and the sensory system

Lauren Rhodes, OTS & Julia Wilbarger, Ph.D., OTR  
Occupational Therapy Program, Department of Kinesiology ~ University of Wisconsin-Madison

## INTRODUCTION

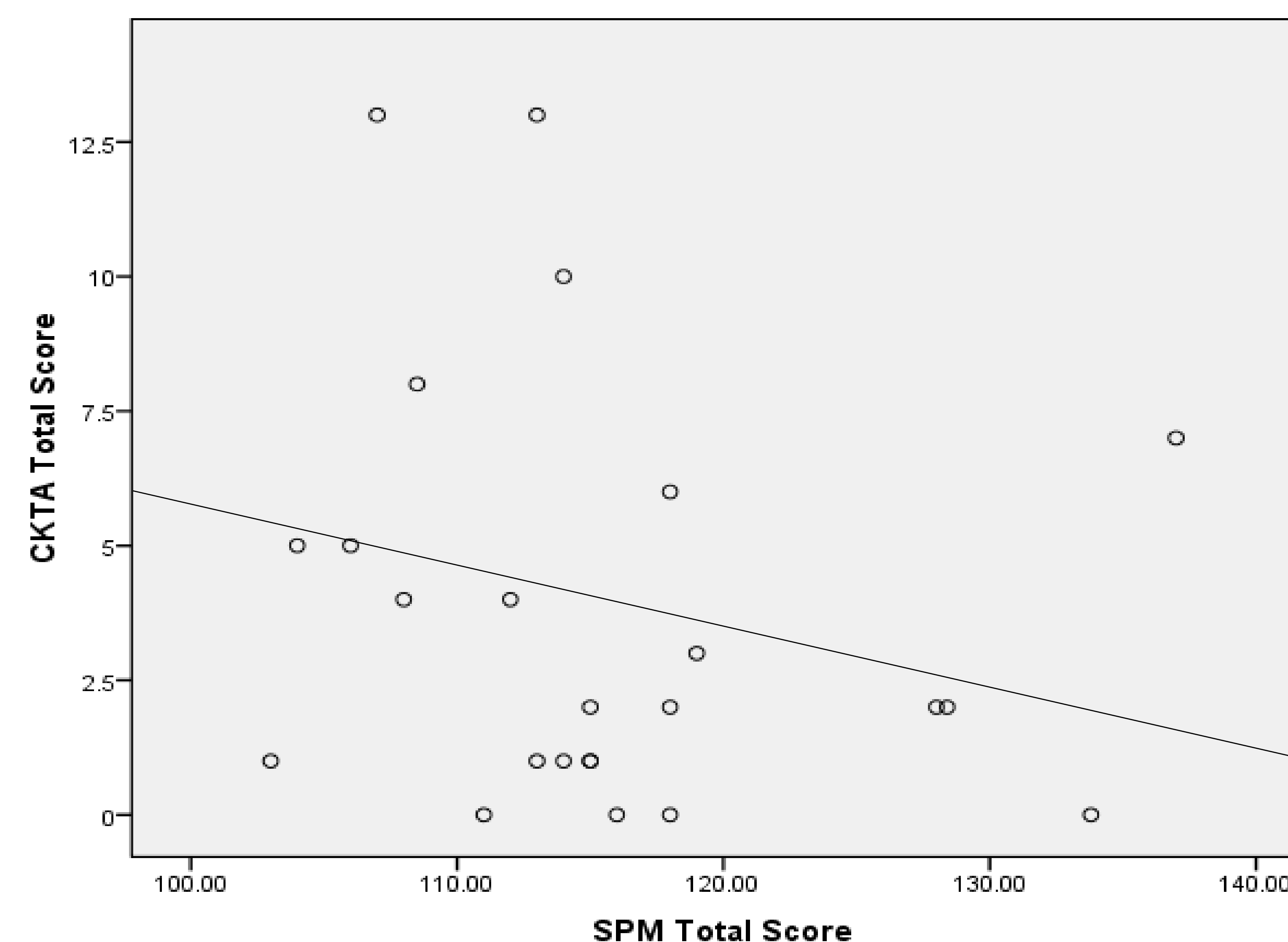
- There are few reliable and valid standardized performance-based assessments that measure executive function and sensory processing in pediatric occupational therapy.
- Executive function skills are a set of cognitive regulatory processes that underlie adaptive, goal-directed responses to novel or challenging situations (Bierman, Nix, Greenberg, Blair, & Domitrovich, 2008).
- Children and adolescents with executive function deficits often experience difficulties with participation in everyday, meaningful activities (Biederman et al., 2004). These same difficulties are also seen in children with sensory processing disorders.
- The purpose of this study was to examine the relationship between sensory processing components and features of executive function using the Children's Kitchen Task Assessment (CKTA) and the Sensory Processing Measure (SPM) Home Form with children ages 7 to 11.
- The CKTA, which evaluates a child's executive functioning during a real-life activity, was created to meet the need for a reliable and ecologically valid performance-based assessment. The CKTA is an adaptation of the Kitchen Task Assessment (KTA), a valid and well established performance assessment of adult performance during a simple cooking task of making stovetop oatmeal. The CKTA uses the components of executive function defined in the KTA, which include initiation, organization, planning and sequencing, judgment and safety, and completion (Rocke, Hays, Edwards, & Berg, 2008).
- Using a standardized assessment tool that has already established reliability and validity, such as the Sensory Processing Measure (SPM), may help examine whether there is an association between sensory and motor processing capabilities and executive functions in children. The SPM is anchored in sensory integration theory which proposes that processing and integration of sensory inputs are a critical neurobehavioral process that strongly effects development (Parham & Ecker, 2007).
- The hypothesis was that total scores on the Children's Kitchen Task Assessment would correlate with total scores on the Sensory Processing Measure Home Form.

## RESEARCH DESIGN & METHODS

- This study used an exploratory research design to systematically investigate the relationship between the Children's Kitchen Task Assessment and the Sensory Processing Measure.
  - Participants in this study included 24 children ranging from 7 to 11 years of age and their parents. CKTA participants included 9 boys and 15 girls recruited from the Dane County and South-Central Wisconsin area. All children who agree to participate in the study were included, regardless of race, gender, socioeconomic status, or involvement in special education.
  - All testing was conducted by graduate students in the University of Wisconsin-Madison Occupational Therapy Program trained in administering the assessments.
- Validation Measures:
- *Children's Kitchen Task Assessment (CKTA; Rocke et al., 2008)*  
The CKTA evaluates certain aspects of executive function by using a safe and age-appropriate activity for children, requiring them to follow the steps of a recipe for making play dough. The participant's score is based on the number and type of cues needed to complete the activity. Each step of the activity is scored on a scale of 0 to 5 with 0=no cues, 1=general verbal guidance, 2=gesture guidance, 3=direct verbal assistance, 4=physical assistance, and 5=completing the task for the participant.
  - *The Sensory Processing Measure (SPM; Home Form; Parham & Ecker, 2007)*  
The SPM Home Form consists of 75 items and is completed by the child's parent or home-based care provider. There are eight norm-referenced standard scores: Social Participation, Vision, Hearing, Touch, Body Awareness, Balance and Motion, Planning and Ideas, and Total Sensory Systems. The standard score for each scale enables classification of the child's functioning into three interpretive ranges: Typical, Some Problems, or Definite Dysfunction.

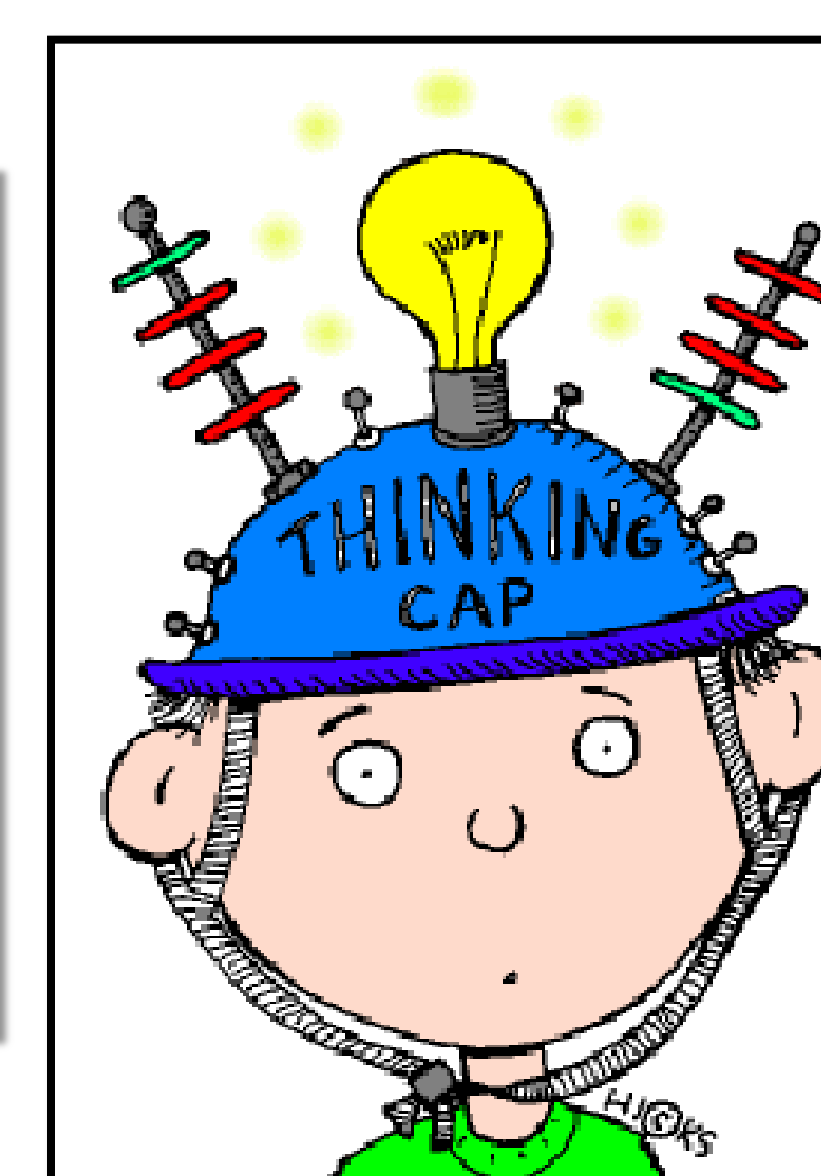
## RESULTS

CKTA and SPM scores



Correlations between the CKTA and SPM (N=24)

	CKTA total score	CKTA organization score	SPM total score	SPM planning & ideas score
CKTA total score	1			
CKTA organization score	0.18	1		
SPM total score	-0.203	-0.306	1	
SPM planning & ideas score	0.005	0.017	0.588	1



## SUMMARY & CONCLUSIONS

- There was a modest negative correlation between CKTA total score and SPM total score ( $r = -0.203$ ). Greater significance may be found between these assessments with a larger sample size.
- There was a modest negative correlation between CKTA organizational score and SPM total score ( $r = -0.306$ ) as well.
- No correlation was found between the SPM planning and ideas score and the CKTA organizational score. This result shows that the type of planning the SPM measures may not relate to the type of planning required to complete the CKTA.
- Participants in this study were Caucasian and from parents with advanced college educations. Testing of a larger and more representative sample should be completed, as well as studying the CKTA performance of children with a variety of disabilities.
- Further research is needed to establish the relationship between executive function as measured by the CKTA and sensory processing as measured by the SPM.

## IMPLICATIONS FOR PRACTICE

- While administering the CKTA, student researchers were able to observe additional behaviors contributing to performance on the CKTA. Aspects of tactile response, asking task and non-task related questions, as well as participating in self-talk during the activity were noted for each child participant.
- The CKTA showed to be a valuable observation tool in identifying abnormal behaviors in both cognitive and motor performance abilities. Many of the abnormal behaviors observed by researchers involved sensory processing deficits, especially tactile defensiveness and dyspraxia.
- Incorporating sensory processing into an executive function tool which observes real-life functional performance would better examine areas of organization, logical motor planning, sensory responsiveness, and other sensory processing factors that may be related to executive functioning.
- Adding additional scoring criteria to the CKTA addressing sensory processing may lead to a better understanding of overall function in children assessed.

## REFERENCES

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