

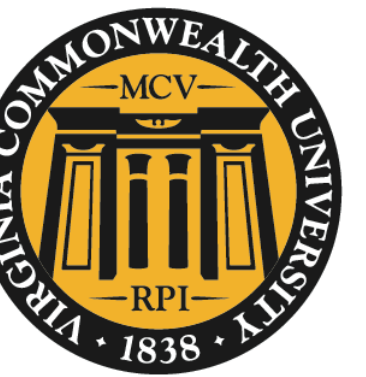


# VCU

## Identifying an overactive bladder phenotype with audio visual intervention in an oral hydration study

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### INTRODUCTION

- Audio-visual (A/V) stimuli can trigger urinary urgency in some individuals with overactive bladder (OAB)
- There are limited studies investigating the effect of A/V stimuli on the sensation of bladder fullness.
- The purpose of this study was to quantify changes in sensation due to an A/V intervention in individuals with normal and overactive bladders during a non-invasive oral hydration study

### METHODS

- Participants were divided into healthy & OAB groups based on ICIq-OAB survey question ( $5a \leq 1a$  or  $\geq 2$ )
- Participants completed a 6-question survey rating their responses to potential triggers of urgency (A/V running water, stress and cold weather) and expected non-triggers (warm weather, internet surfing and relaxing) on a 0=never to 4=always scale (**Table 1**)
- Trigger survey responses were summed for the 3 questions about expected triggers and for the 3 questions about expected non-triggers (**Table 1**)
- Participants completed a 3-fill hydration protocol (**Fig 1**)
- Participants drank 2L Gatorade G2 during fill 1 and water during fills 2 and 3
- Participants utilized a tablet-based meter to record bladder sensation from 0-100% (**Fig 1**)
- After reaching 50% sensation during fills 1 and 3, participants watched a 3-minute video showing scenes of running water, flushing toilets, waterfalls, etc. (**Fig 2**)
- The change in %sensation from the beginning to the end of the video was calculated for each group (**Table 2**).
- Near Infrared Spectroscopy (NIRS) of the bladder and brain and effects of distractors were analyzed as separate studies

### PROTOCOL

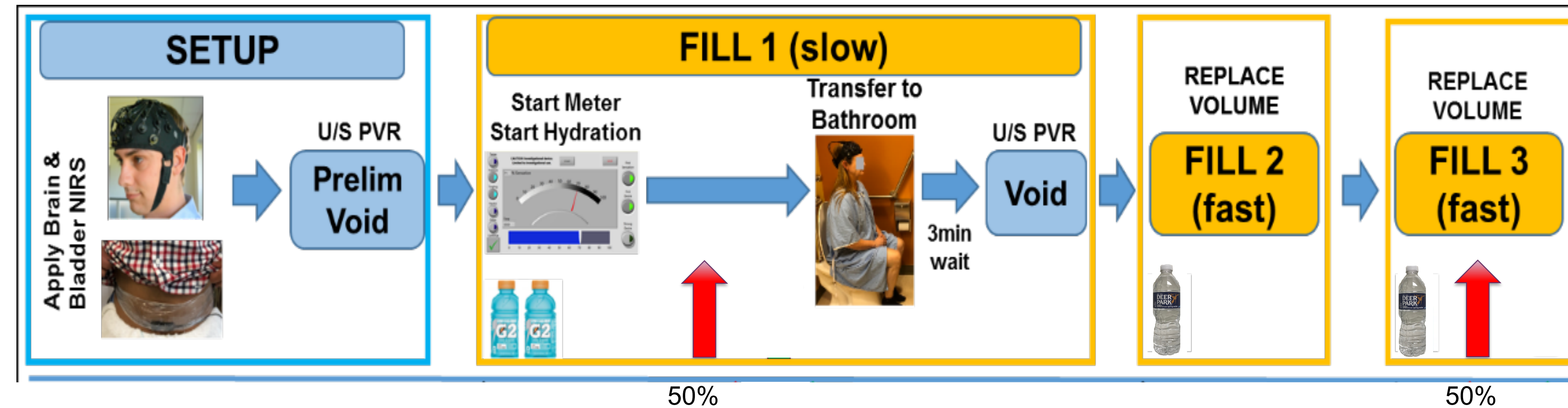


Fig 1. Three-fill hydration protocol with collection of real time sensation data with a Sensation Meter. Trigger video played at 50% sensation (red arrow) and distractor applied at 75% sensation (green arrow) in fills 1 and 3.



Fig 2. 3-minute trigger video with scenes and sounds of waterfalls, flushing toilets, running water, etc.

### RESULTS

Table 1. Trigger Survey Results

Sight or Sound of Running Water			
Response	Healthy	OAB	p value
$\geq 2$	0	10	0.0001
$< 2$	12	1	

Expected Triggers (water, cold, stress)			
Sum of 3 Responses	Healthy	OAB	p value
$\geq 5$	0	7	0.0013
$< 5$	12	4	

Expected Non-Triggers (internet, warm, relaxing)			
Sum of 3 Responses	Healthy	OAB	p value
$\geq 5$	0	0	1.0
$< 5$	12	11	

- Survey scores for expected triggers were significantly associated with OAB (Fisher's exact test)

Table 2. Change in Sensation during Trigger Video

Fill 1 (slower fill)			
Change in %Sensation	Healthy	OAB	p value
$\geq 30\%$	0	2	0.1883
$< 30\%$	14	9	

Fill 3 (faster fill)			
Change in %Sensation	Healthy	OAB	p value
$\geq 30\%$	0	4	0.0261
$< 30\%$	14	7	

- Fill 1 was slower than Fill 3 (10.4 vs 17.3 ml/min in healthy & 5.7 vs 14.1ml/min in OAB)
- In Fill 3, a sensation increase of  $\geq 30\%$  during the trigger video was significantly associated with OAB

Table 3. Correlation of Experimental Trigger and Survey Results

Sight or Sound of Running Water			
Change in % Sensation in Fill 3			
Survey Response	$\geq 30\%$	$< 30\%$	p value
$\geq 2$	4	6	0.0237
$< 2$	0	13	

Expected Triggers (water, cold, stress)			
Change in % Sensation in Fill 3			
Sum of 3 Responses	$\geq 30\%$	$< 30\%$	p value
$\geq 5$	3	4	0.0672
$< 5$	1	15	

- In Fill 3, a sensation increase of  $\geq 30\%$  during the trigger video was significantly associated with greater survey scores for running water

### CONCLUSIONS

- Results suggest that some OAB participants may have heightened sensation due to A/V stimuli compared to healthy individuals
- Responses to the video of running water correlated with trigger survey results
- Results indicate that a non-invasive hydration protocol may help identify an environmental-trigger-specific OAB phenotype
- Further research is needed to understand the effects of environmental triggers on bladder sensation in OAB

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