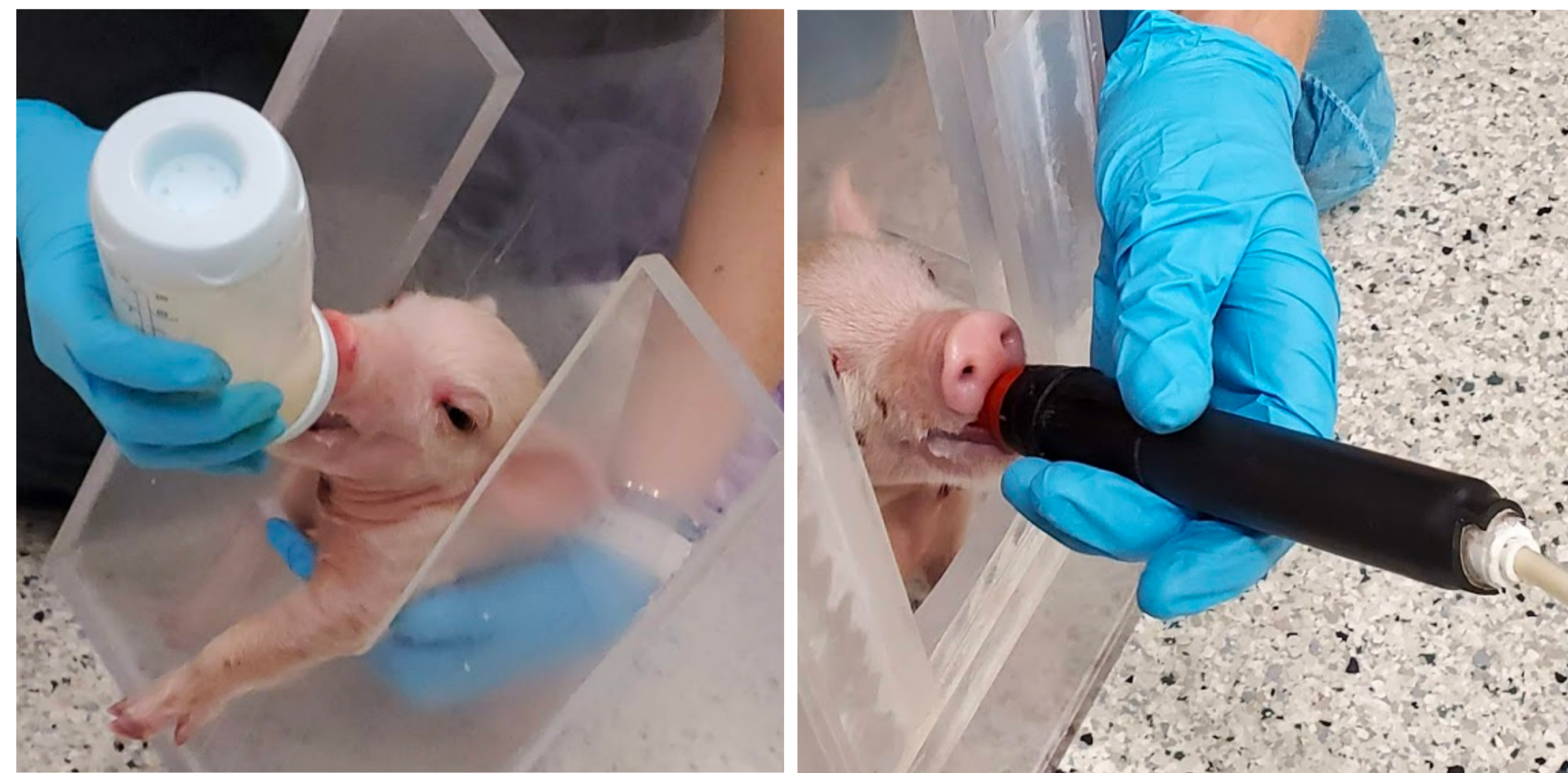


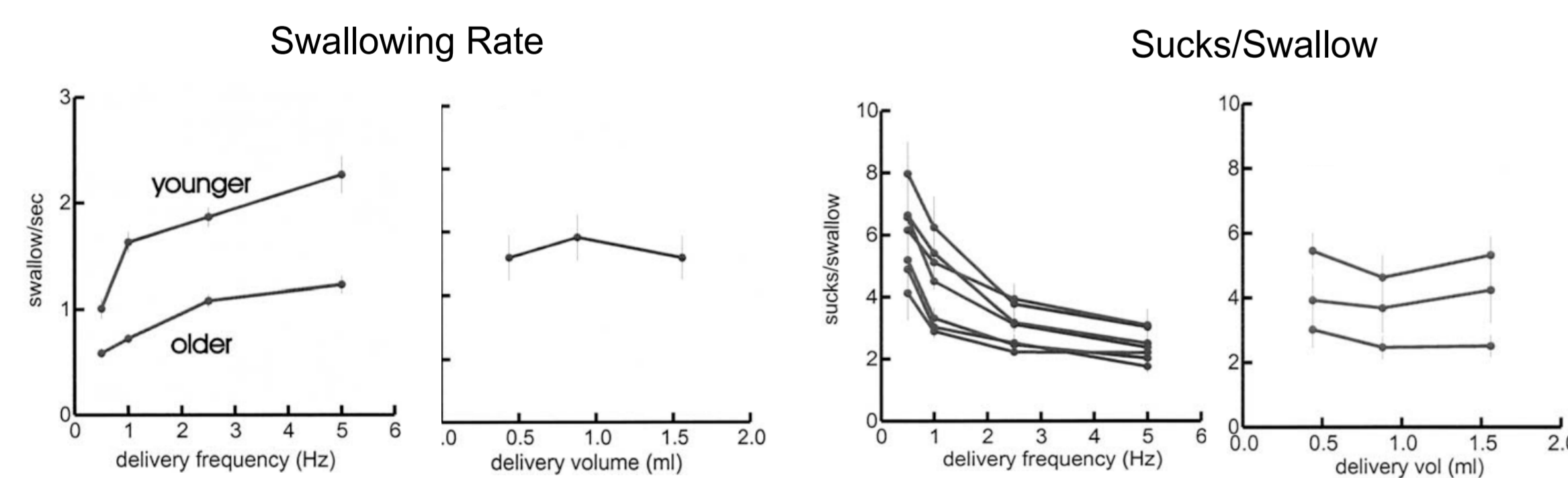
Khaled Adjerid¹, Christopher J. Mayerl¹, Francois D.H. Gould², Chloe E. Edmonds¹, Kendall E. Steer¹, Laura E. Bond¹, Rebecca Z. German¹
1. Northeast Ohio Medical University 2. Rowan University School of Osteopathic Medicine

Introduction

Infant feeding requires coordination of rhythmic sucking, milk transport, and swallowing, while preventing aspiration. Sensorimotor information travels to and from 20 paired muscles through seven cranial and cervical spinal nerves.



Sensory stimulation from automated feeding affected feeding behaviors in exploratory studies using a validated infant pig model [1,2]. Infant pigs were also found to have a preferred rate at which they sucked (~4 Hz).



References:

1. German RZ, Crompton AW, Hertweck DW, Thexton AJ.; Journal of Experimental Zoology 1997
2. German RZ, Crompton AW, Owerkowicz T, Thexton AJ.; Dysphagia. 2004

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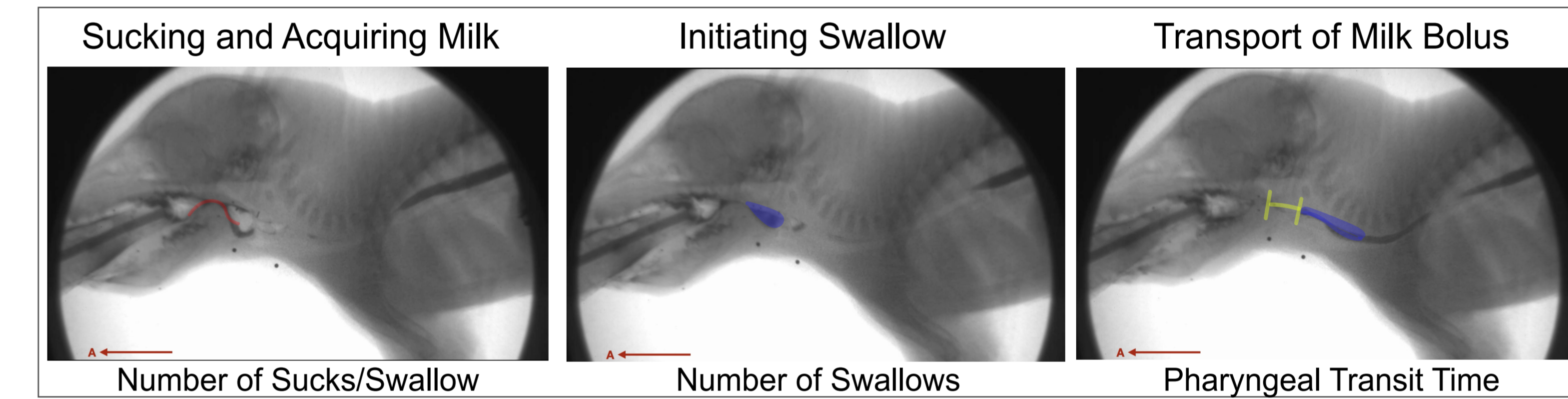
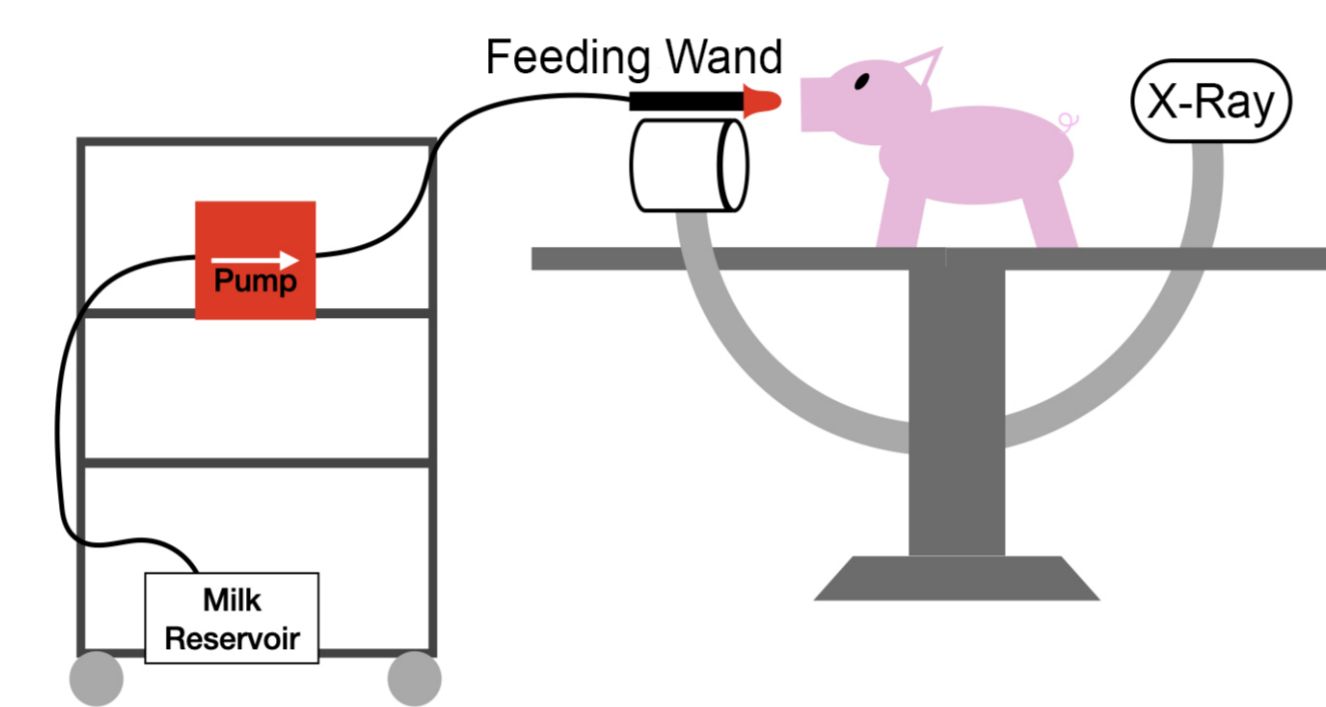
Questions

How do milk delivery frequency, volume, and overall flow rate affect swallowing behaviors?

How do swallowing behaviors differ between automated and bottle feeding?

Methods

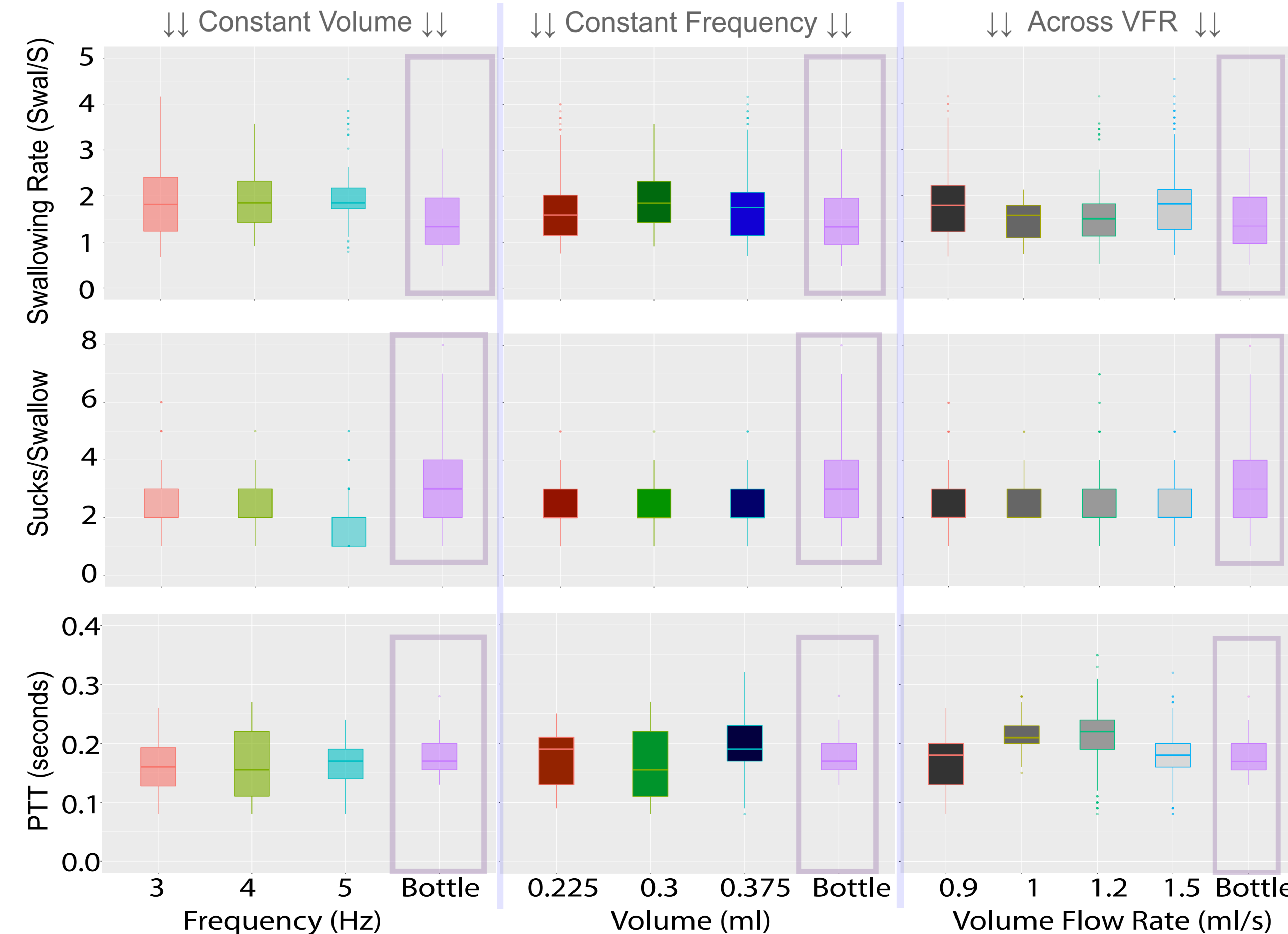
We measured suckling using (i.e. sucking and swallowing) Video Fluoroscopic Study (VFSS) by bottle or milk delivery across frequencies (fixed vol.), volumes (fixed freq.), and at various volume flow rates (combinations of vol. & fre.). We measured swallowing rate, the number of sucks per swallow, and the milk's pharyngeal transit time.



Differences between feeding modes & parameters were tested with a Type III ANOVA using individual & sequence within individual as random factors.

Results

Milk delivery parameters had no effect on feeding behaviors



Automated feeding was significantly different from bottle feeding.

Conclusions

Feeding behavior is robust to changes in automated feeding paradigms

Changes in the overall flow rate, including multiple delivery parameter combinations with identical volume flow rates, did not result in behavior changes.

Mode of milk acquisition is a factor in determining feeding behavior in infants

Differences in behavior may be linked to sensory and motor information present in bottle feeding infants that is absent while on automated feeding.

Knowledge of sensory effect on feeding has potential to inform treatment deci-

Understanding the effect of sensory information on swallowing behaviors can help to improve treatment of dysphagia and other aerodigestive disorders.