AIMS-trained Residents Exhibit Specific Communication Skills in a Standardized Patient Model of Vaccine Hesitancy

Shanna Barton[1,2]; Aaron Calhoun[1,2]; Carrie Bohnert[2]; Sara Multerer[1,2]; Victoria Statler[1,2]; Kris Bryant[1,2]; Gary Marshall[1,2]
[1]Norton Children's and [2]University of Louisville School of Medicine
Louisville, Kentucky

571 S Floyd St Ste 321
Louisville, KY 40202
smpopi01@Louisville.edu

ABSTRACT

Note: Abstract updated with final analysis. Changes from original submission shown in **bold italics**.

Background
Vaccine hesitancy (VH) is one of the top 10 threats to global public health. While VH is common among parents, there are no accepted best practices for counseling, and training in this area is not required in residency. Strategies are needed to help providers address VH in practice.

Method
The AIMS (Announce, Inquire, Mirror, Secure) Method for Healthy Conversations is a structured communication strategy that attempts to build trust between provider and patient (or parent), inviting receptivity to healthcare recommendations. To assess whether relatively inexperienced providers exhibit AIMS behaviors after training, blinded pediatric residents were pseudo-randomized to receive either AIMS or control training. Subjects underwent pre- and post-training clinical encounters with blinded standardized patients (SPs) portraying vaccine-hesitant parents; encounters were video-recorded and assessed by 3 blinded raters using the Vaccine Hesitancy Communication Assessment (VHCA) tool, which was developed by an iterative process and validated in pilot testing. Subject confidence was assessed pre- and post-training.

Result
Overall VHCA intraclass correlation was *0.442* for pre and *0.625* for post encounters (2-way mixed averages); reliability varied with AIMS phases. Fifty-eight subjects completed the protocol, and VHCA ratings for *53* subjects were available for this analysis. AIMS behaviors were more commonly detected among AIMS-trained subjects than control (median change in score [scale 0–30]=*4.0* versus *-0.5* for control) (*poster* Figure 1). Confidence improved in both groups (*poster* Figure 2). SPs perceived no differences between groups, nor between pre and post within groups, in aspects of subject performance such as respect, empathy, and promotion of trust (*P*=0.936 [ANCOVA]; partial eta-squared 0.0).

Conclusions
Pediatric residents can be trained in AIMS behaviors, and an SP model of VH can be used to assess performance. AIMS training results in similar gains in self-confidence compared to control training. SP perceptions may be colored by their script, which in this case was to exhibit adamant vaccine refusal. Testing of AIMS training in longitudinal experimental scenarios and in real-world settings is warranted.

BACKGROUND

— Vaccine hesitancy is one of the top 10 threats to global public health[1]
— No accepted best practices for communicating with vaccine-hesitant parents
— Structured communication strategies could help providers address vaccine hesitancy in practice
— Vaccine hesitancy communication training is not required in residency
— Standardized patients have established roles as instructors and test models, and could be used to evaluate vaccine hesitancy communication strategies

PURPOSE

— Evaluate effect of AIMS (Figure 1) training on communication between providers and vaccine-hesitant parents
— Develop a standardized patient model of vaccine hesitancy that can be used in further communication research
— Generate validity and reliability data for a novel tool to assess AIMS behaviors in simulated patient encounters
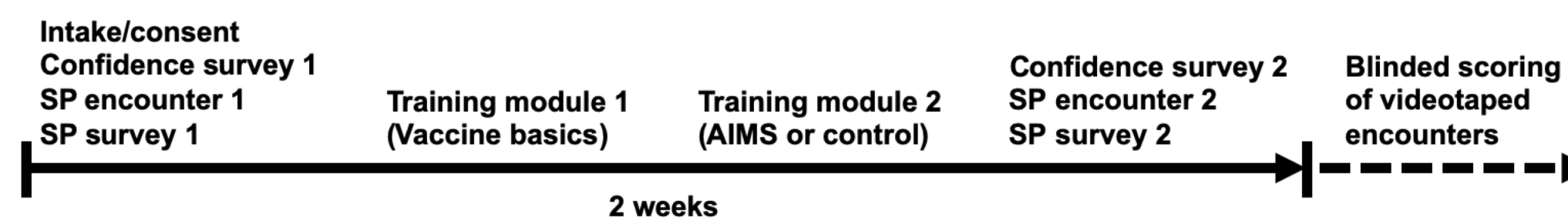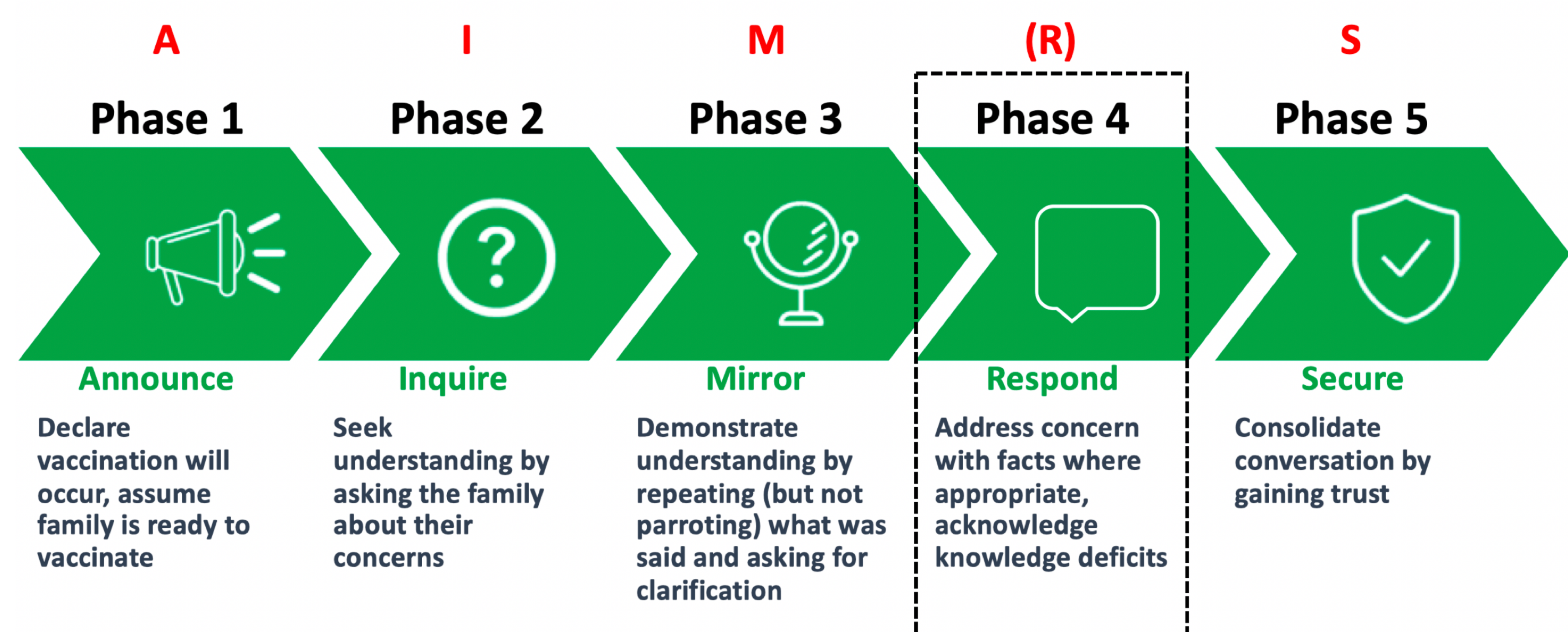
Figure 2: Study Design

Intake/consent
Confidence survey 1
SP encounter 1
SP survey 1
→ Training module 1 (Vaccine basics) → Training module 2 (AIMS or control) → Confidence survey 2
SP encounter 2
SP survey 2 → Blinded scoring of videotaped encounters

2 weeks

METHODS

— See Figure 2
— Pediatric residents participated as subjects
— Standardized patients (SPs) trained to portray vaccine-hesitant parents
— Residents pseudo-randomized to AIMS or control (standard) training
— Encounters with vaccine-hesitant SPs before and after training, videotaped and assessed by 3 independent raters
— Residents, SPs, control trainer, and video raters blinded to study design and resident training allocation
— Institutional Review Board-approved with unsigned consent

Figure 1: The AIMS Method for Healthy Conversations[2,3]

A — Phase 1 — **Announce**: Declare vaccination will occur, assume family is ready to vaccinate

I — Phase 2 — **Inquire**: Seek understanding by asking the family about their concerns

M — Phase 3 — **Mirror**: Demonstrate understanding by repeating (but not parroting) what was said and asking for clarification

(R) — Phase 4 — **Respond**: Address concern with facts where appropriate, acknowledge knowledge deficits

S — Phase 5 — **Secure**: Consolidate conversation by gaining trust

RESULTS

— Baseline characteristics of AIMS- and control-trained residents were similar (Table 1).
— Cronbach's alpha (an assessment of internal consistency) for the 3 raters ranged from 0.309–0.657.
— VHCA demonstrated moderate global intraclass correlation (an assessment of inter-rater reliability) that was higher for post-training encounters and varied by AIMS phase (Table 2).
— AIMS behaviors were detected more commonly in AIMS-trained residents (Figure 3). The effect size (partial eta-squared) was medium.
— Confidence increased in both AIMS- and control-trained residents (Figure 4).
— There were no differences in SP global perceptions of the encounters with AIMS- or control-trained residents (assessment included knowledge; confidence; respect; empathy; and trust) (Figure 5).

Table 1: Baseline Characteristics

Characteristic	AIMS Value	AIMS N	Control Value	Control N
Age	28 [27, 29][1]	29	28 [27, 29][1]	29
Year of graduation	2018 [2017, 2019][1]	29	2018 [2017, 2019][1]	29
Post-graduate year				
PGY1		8		10
PGY2		14		8
PGY3		7		11
Assessment of vaccine education during residency (1=strongly disagree; 5=strongly agree)				
Informal	4 [4, 4.25][1]	28	4 [4, 4]	29
Formal	3.5 [3, 4]	28	4 [3, 4]	29
Hesitancy	3 [3, 4]	28	3 [3, 4]	29
Total	11 [9.25, 12]	28	11 [9, 12]	29

[1]Median [interquartile range]

Table 2: Vaccine Hesitancy Communication Assessment (VHCA) Reliability

	Phase 1 (Announce)		Phase 2 (Inquire)		Phase 3 (Mirror)		Phase 4 (Respond)		Phase 5 (Secure)		Global VHCA	
	Pre	Post	Pre	Post	Pre	Post	Pre	Post	Pre	Post	Pre	Post
ICC	0.717	0.713	0.328	0.534	0.255	0.686	0.52	0.508	0.364	0.451	0.442	0.625

ICC: Intra-class coefficient

Figure 3: Detection of AIMS Behaviors

P=0.000 (ANCOVA); partial eta-squared=0.247

Vaccine Hesitancy Communication Assessment Score — Pre Post AIMS (N=27), Pre Post Control (N=26)
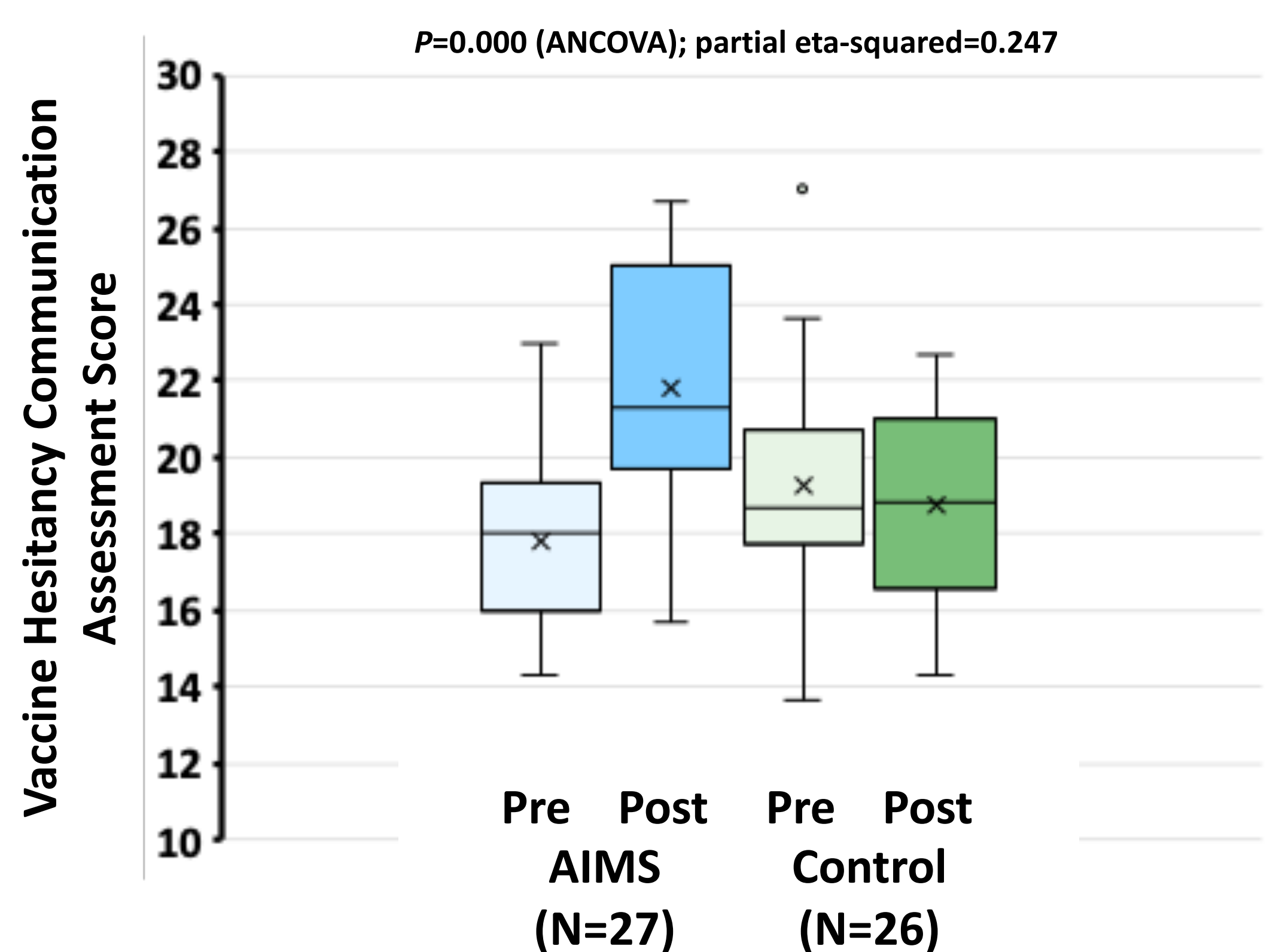
Figure 4: Resident Self-Confidence

P=0.711 (ANCOVA); partial eta-squared=0.003

Confidence Score — Pre Post AIMS (N=29), Pre Post Control (N=28)

Figure 5: SP Survey

P=0.936 (ANCOVA); partial eta-squared=0.0

Standardized Patient Evaluation Score — Pre Post AIMS (N=29), Pre Post Control (N=28)

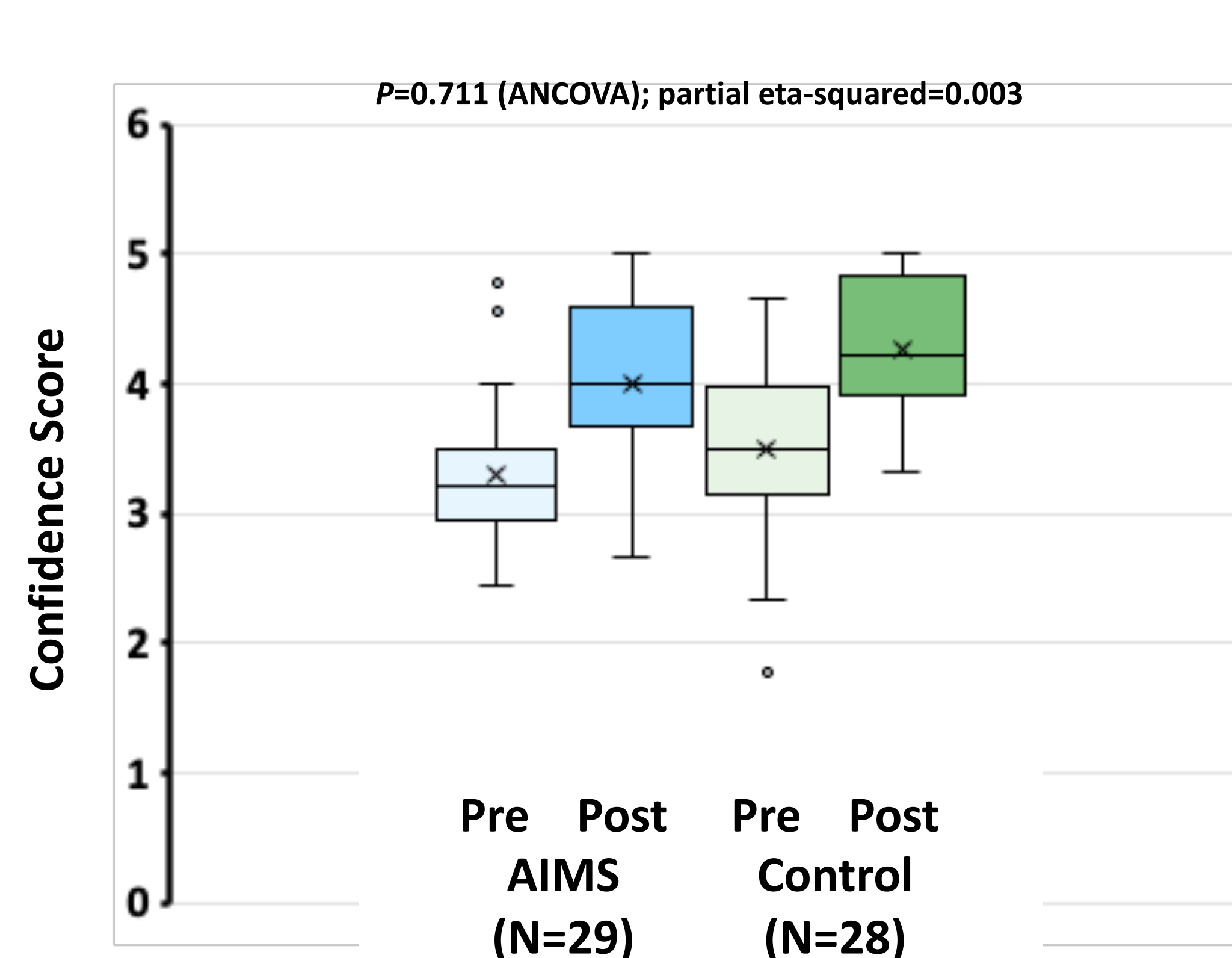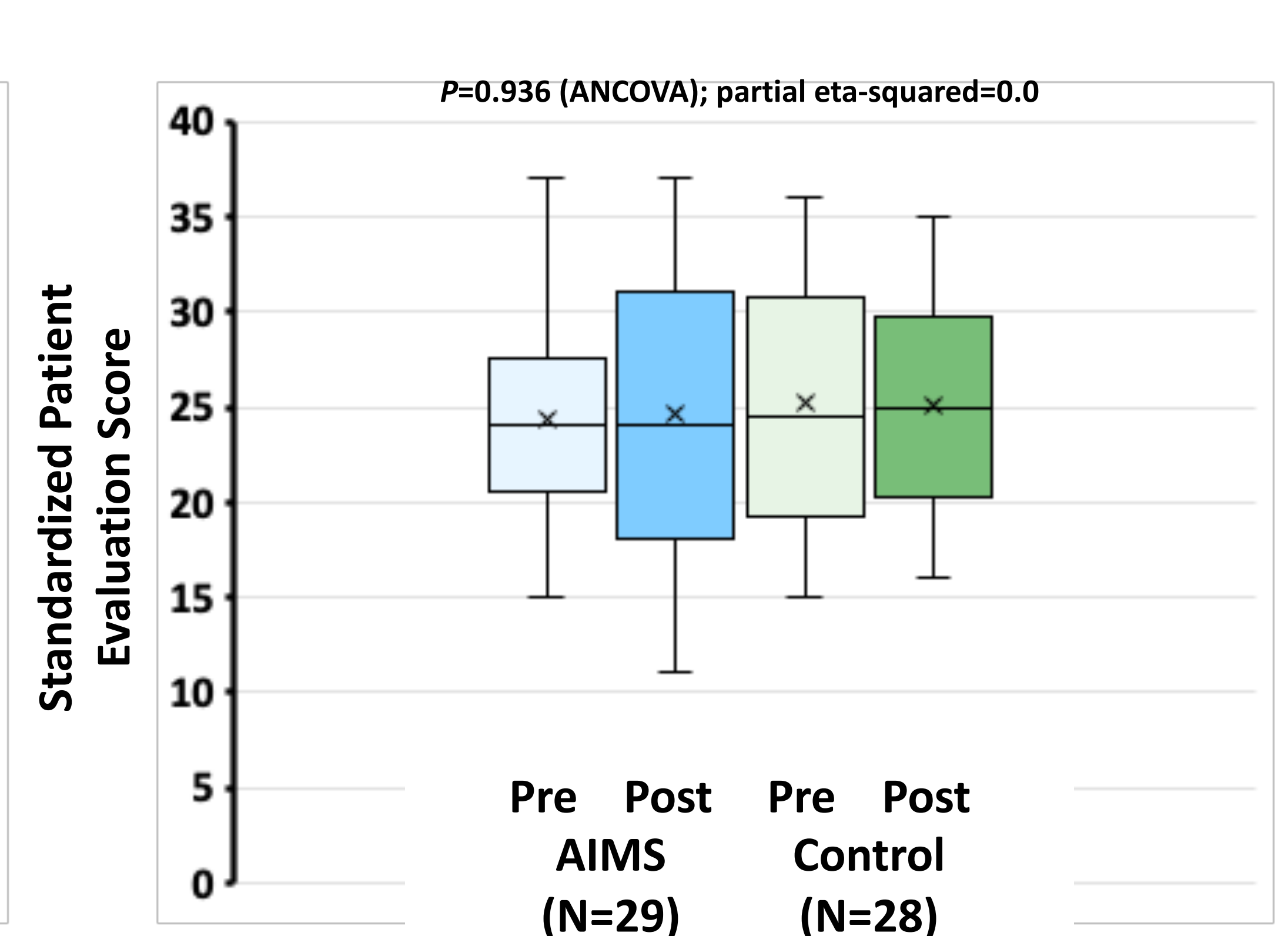## SUMMARY

— AIMS training resulted in AIMS-specific behaviors
— VHCA detected AIMS behaviors with moderate inter-rater reliability
— Both experimental and control training resulted in self-confidence gains
— SPs responded similarly to AIMS-trained and control-trained residents

CONCLUSIONS

— Testing the utility of AIMS training in real-world encounters with vaccine-hesitant parents is warranted
— Standardized vaccine-hesitant parents are a useful model for assessing communication strategies

REFERENCES

1. https://www.who.int/emergencies/ten-threats-to-global-health-in-2019
2. Attwell K, et al. *Vaccine* 2019;37:677
3. Vaccine Confidence Initiative: The AIMS Method for Healthy Communications Training Guide. Sanofi Pasteur