



BACKGROUND

Stuttering is characterized by involuntary repetitions, prolongations, and interruptions during speech (Blumgart et al., 2010). According to Blumgart, the prevalence of stuttering in adults is approximately 1%. Stuttering can negatively impact the quality of life, mental health, educational and employment attainment, and social interactions of those affected (Bayati & Ayatollahi, 2021; Erickson et al., 2021).

The Institute for Stuttering Treatment and Research (ISTAR) offers a three-week intensive treatment program called the Comprehensive Stuttering Program (CSP), which is one of the most effective treatment programs for adults who stutter.

- Individuals who completed the CSP in-person achieved: (Langevin, et al., 2010)
- Reductions in percent syllables stuttered
 - Increased speaking rate
 - Improved anxiety, self-evaluation, and beliefs about their stuttering and communication

COVID-19 necessitated a full transition to remote delivery of the CSP. Prior research indicates that remote stuttering treatment can decrease stuttering severity, but more studies are needed that compares remote and in-person stuttering treatment, especially with regards to factors that go beyond the standard outcome measures for stuttering and include client's perceptions and mental health (Jahromi et al., 2020; Yaruss & Quesal, 2006).

OBJECTIVE

The aim of this research project is to evaluate the efficacy of **remote** delivery of ISTAR's Intensive CSP in comparison to traditional **in-person** delivery.

METHODS

VARIABLES

%SS Conversation
Percent Syllables Stuttered during Conversational Speech

SR
Stuttering Severity Rating

PSI
Perception of Stuttering Inventory

S24
Revised Communication Attitude Inventory

DEMOGRAPHICS

	Total Sample	Remote	In-Person
Sample Size	32	10	22
Gender			
Male	70% (23)	5	17
Female	30% (10)	5	5
Age Group			
10 - 19 years old	18% (6)	0	6
20 - 29 years old	36% (12)	3	9
30 - 39 years old	21% (7)	4	3
40 - 49 years old	9% (3)	2	1
50 - 59 years old	9% (3)	1	2
60 - 69 years old	3% (1)	0	1

Note: 4 remote clients were a part of a hybrid method (remote with an in-person component)

The study was approved by the Research Ethics Board (Study #: Pro00093831). Pre-and post-treatment data was collected from consenting adult clients of ISTAR's Intensive CSP. The following two comparisons were performed for each variable.

Was remote treatment effective?

Pre- vs post-treatment: A statistical difference is expected.

These comparisons were conducted using multiple t-tests.

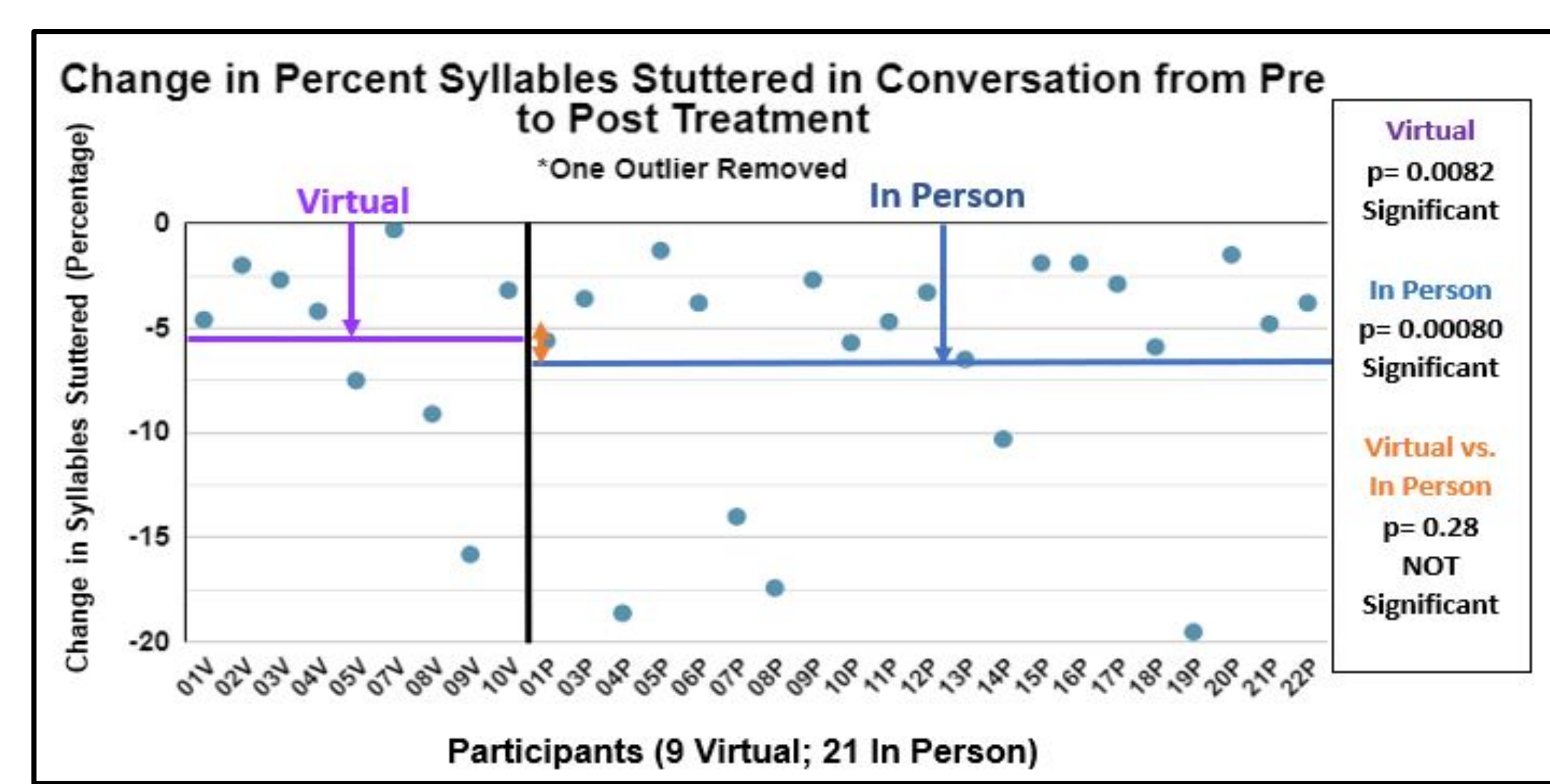
Our confidence level was set at 0.95, so any result with a $p < 0.05$ represents a significant difference between the groups.

Is there a difference between virtual and in person treatment?
Remote vs in-person delivery: A statistical difference is not expected.

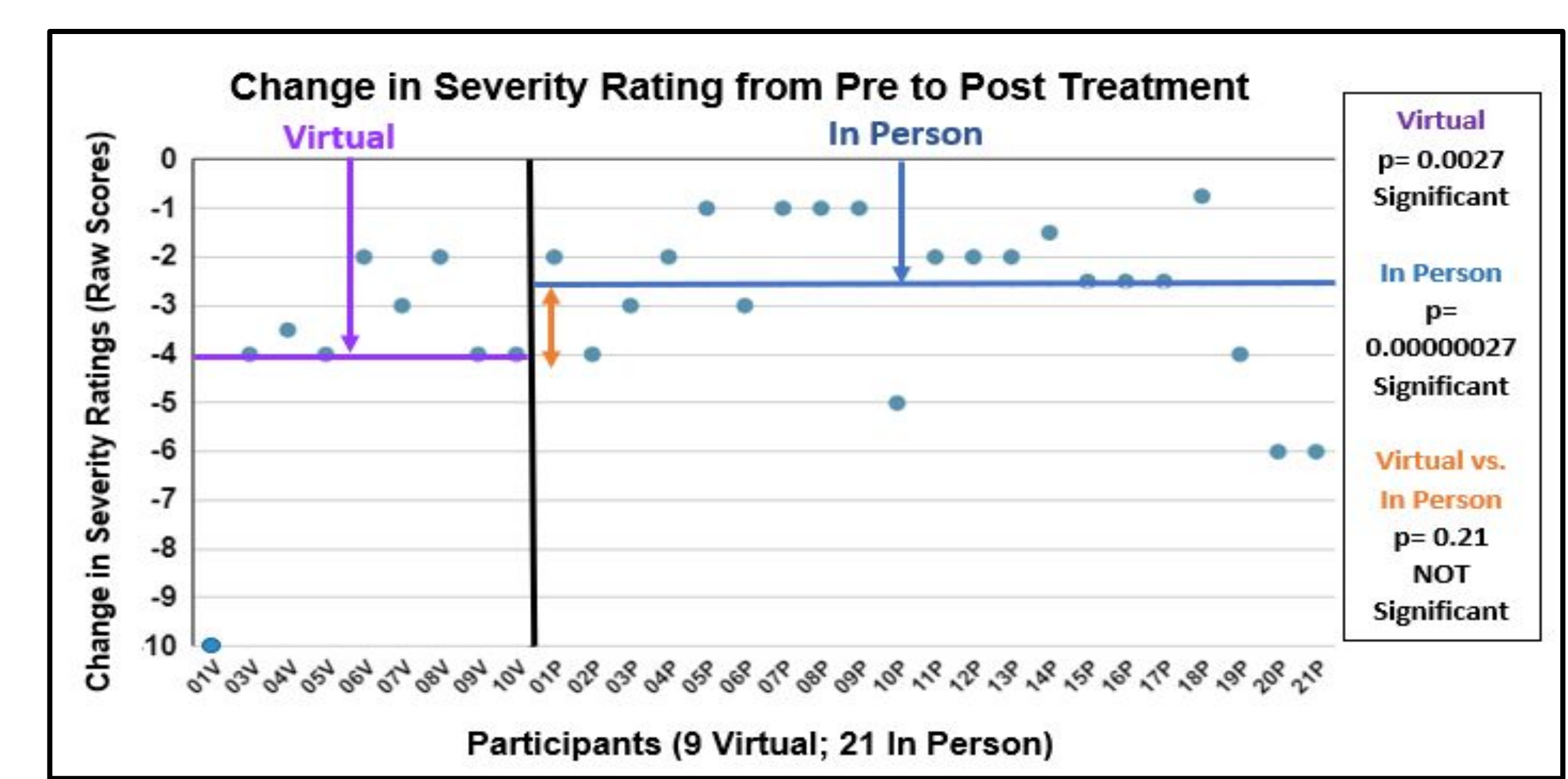
RESULTS

Legend for the Following Figures:

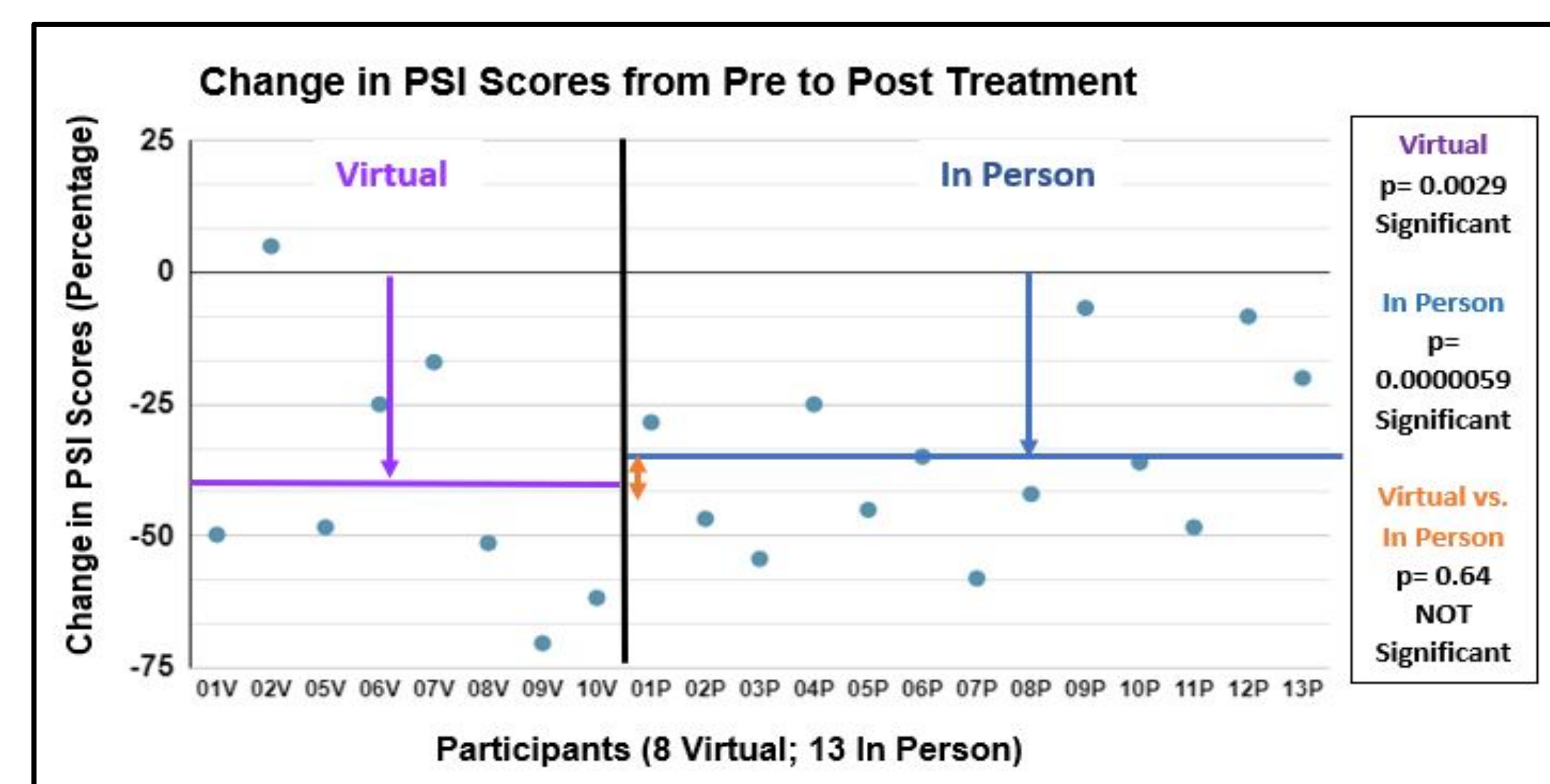
— Average Change: Virtual Group
 — Average Change: In-Person Group
 ↕ Difference in Average Change Between Virtual and In-Person
 Alpha Values for t-tests = 0.05



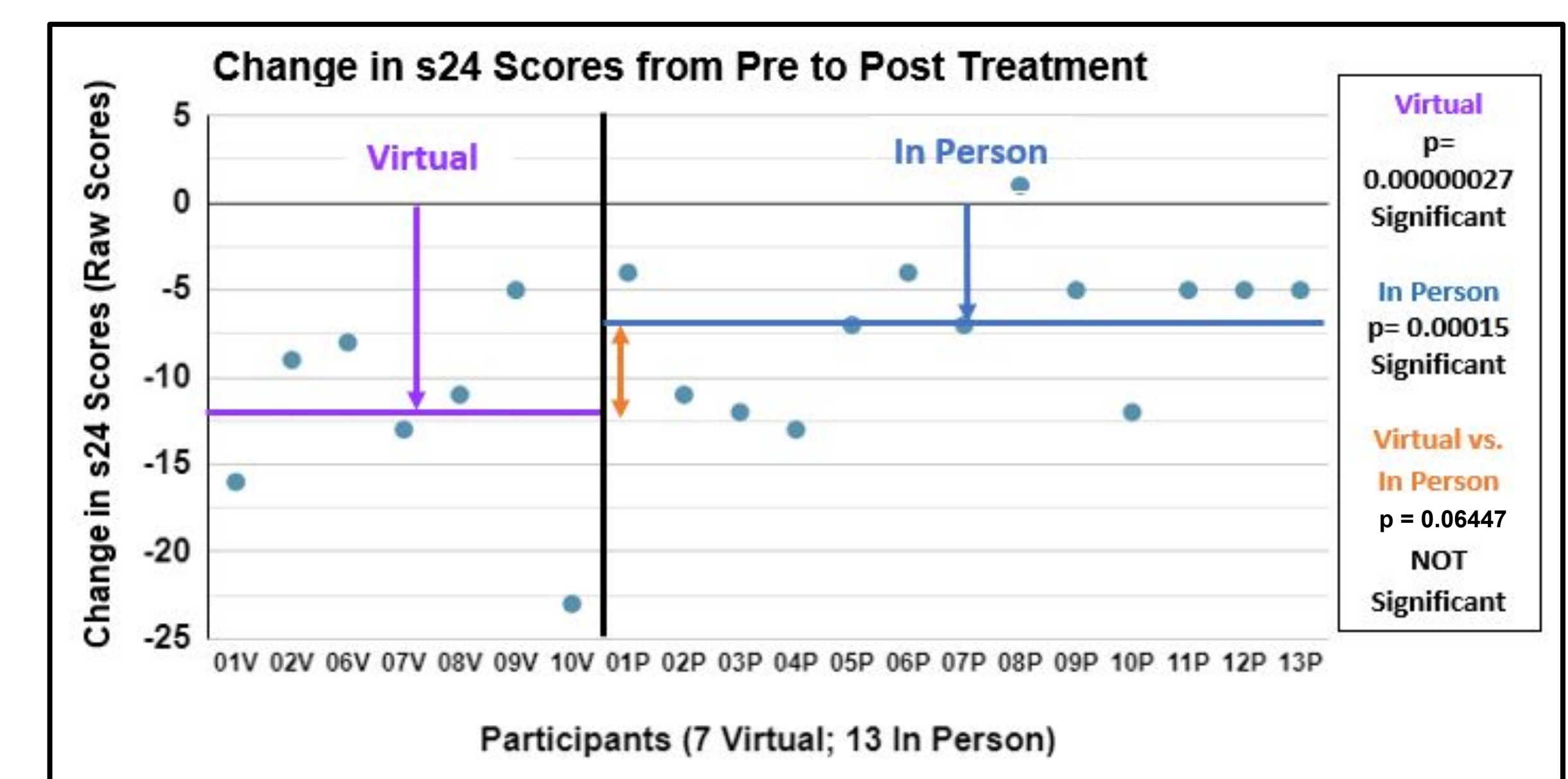
For both the virtual and in-person groups, scores from pre to post treatment **significantly decreased**. This means the clients in **both groups** had a lower percentage of syllables stuttered (less stuttering) after receiving treatment. Furthermore, there was **not a significant difference** between the virtual group and the in-person group.



For both the virtual and in person groups, scores from pre to post treatment **significantly decreased**. This means the clients in **both groups** had a more mild perception of their stuttering severity after receiving treatment. Furthermore, there was **not a significant difference** between the virtual group and the in-person group.



For both the virtual and in person groups, scores from pre to post treatment **significantly decreased**. This means the clients in **both groups** had a more mild perception of their stuttering after receiving treatment. Furthermore, there was **not a significant difference** between the virtual group and the in-person group.



For both the virtual and in person groups, scores from pre to post treatment **significantly decreased**. This means the clients in **both groups** had a more positive attitude regarding their communication after receiving treatment. Furthermore, there was **not a significant difference** between the virtual group and the in-person group.

DISCUSSION & SIGNIFICANCE

Results & Significance: This research provides support for the hypothesis that remote stuttering intervention can create the same improvements as in-person intervention. Participants consistently demonstrated significant improvements in all variables assessed. Remote therapy will remain a common method for intervention as it allows clients to overcome barriers to treatment such as distance, financial constraints, transportation barriers, and it broadens clinical services to culturally and linguistically diverse populations (McLean et al., 2021; Rangarathnam et al., 2015). However, it does introduce unique challenges for clinicians and researchers alike.

Limitations: Since the CSP was only offered remotely in 2020-2022, group randomization was not possible. In addition, these participants underwent therapy during the COVID-19 pandemic, which presents added confounds due to the additional stress a pandemic creates (Mahmud et al., 2022). Also, our research data was gathered over a number of years. Lastly, the CSP is offered in either an intensive or an extended timeline, and our participant sample contains both timelines.

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