Comparison between recovered and relapsed persons with stuttering following stuttering treatment

**Presenter**
Ms. Pravesh Arya

**Co-author**
Dr. Y.V. Geetha

All India Institute of Speech and Hearing, India
Van Riper (1982) defines “Stuttering” as a deviation in the ongoing fluency of speech, an inability to maintain the connected rhythm of speech.
Stuttering behaviors includes:

- Sound/ syllable repetitions,
- Prolongations,
- Blocks,
- Increased tension
- Fear and anxiety
- A series of faulty coping mechanisms (avoidance, escape, postponement, or starter devices) developed in response to communication failure
Incidence and Prevalence

The prevalence of stuttering (how many people stutter at a given point in time) appears to be somewhat lower than 1% (about 0.73% according to Craig, 2002), while the actual incidence (how many people have ever stuttered in their life) is approximately 5%, with onsets occurring mainly at the preschool age (Andrews & Harris, 1964; Bloodstein, 1995)
Onset and development of stuttering

- Stuttering can begin at any age

- Its onset in most cases is reported to be between the ages of **two to five years**

- The mean ages of onset in children with stuttering (CWS) has been reported to range from **28 months to 46 months** (Johnson & Associates, 1959; Yairi, 1983)
Recovery in stuttering

Recovery is….
Restoration to a former or better condition
Two forms: *Spontaneous
*Following treatment

Spontaneous recovery of stuttering is more common in young children and it is a rare occurrence in adults.
Some stop stuttering spontaneously for reasons even the experts cannot determine with any certainty.

Some view recovery as an immediate and complete cessation wherein they never stutter, never think about stuttering, and know they will never stutter again.

Changes in speech and desire to improve can lead someone to declare himself or herself recovered.
There are few longitudinal studies where investigators reported the percentage of individuals who were recovered from stuttering are:

<table>
<thead>
<tr>
<th>Authors</th>
<th>Year</th>
<th>Recovery percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Andrews and Harris</td>
<td>1964</td>
<td>79.1%</td>
</tr>
<tr>
<td>Panelli</td>
<td>1978</td>
<td>80%</td>
</tr>
<tr>
<td>Ryan</td>
<td>1990</td>
<td>65%</td>
</tr>
<tr>
<td>Yairi and Ambrose</td>
<td>1992b</td>
<td>70-80%</td>
</tr>
</tbody>
</table>
Yairi and Ambrose (1999) reported two conclusions on unassisted late recovery from stuttering are:

First, a high rate of recovery without treatment occurs during adolescence and adulthood. Also, females PWS are more likely to recover than males

Second, at least two thirds of PWS who recovered believes it was because of self-change their own efforts to reduce or eliminate stuttering without professional help
Recovery following treatment
<table>
<thead>
<tr>
<th>Authors</th>
<th>No. of subjects</th>
<th>Findings</th>
</tr>
</thead>
<tbody>
<tr>
<td>Yairi and Ambrose (1992)</td>
<td>27 preschool-aged CWS.</td>
<td>Results indicated that for the two subgroups there was a marked deceleration over time in the mean frequency of stuttering-like disfluency. There were indications that group differences between chronic and recovering CWS become distinct by approximately 20 months post-onset</td>
</tr>
<tr>
<td></td>
<td>18 of the 27 CWS received a few speech treatment sessions, whereas 9 children did not receive direct treatment</td>
<td></td>
</tr>
<tr>
<td>Finn (1996)</td>
<td>11 of 15 PWS self reported as recovered when continued to practice speaking with a modified speech pattern</td>
<td></td>
</tr>
<tr>
<td>---</td>
<td>---</td>
<td></td>
</tr>
<tr>
<td>Finn (1997)</td>
<td>using many of the same subjects, 9 of 15 recovered subjects stated that they still had a tendency to stutter.</td>
<td></td>
</tr>
</tbody>
</table>

So while a spontaneous and total cessation of stuttering can happen, it is atypical by any definition and, requires careful observance to speech modifications.
Factors related to recovery in stuttering
Stuttering recovery and gender

The incidence of stuttering is higher in males than in females. Also, female PWS tend to recover earlier than male PWS.

Sex type is the significant variable in the distributions of recovery and persistence of stuttering. (Seider, Kidd & Gladstien, 1983).
Stuttering recovery and age

It appears from all available findings that some degree of recovery may occur at any age. Study on recovered adults PWS by Martyn & Sheehan (1968) showed there was a considerable tendency for recovery between the ages 13 and 20 years. Seider, Gladstein, & Kidd (1983) showed a decreasing probability of recovery with age. However, they reported that the ages of recovery ranged from 3 to 38 years.
Stuttering recovery and family

Seider, Kidd and Gladstien (1983) studied recovery and persistence of stuttering in the first-degree relatives of a large group of adults with persistent stuttering.

The percentage of recovered individuals reported in these families supports the hypothesis that recovered and persistent stuttering are not independent disorders.
Other recovery related factors

The speech modifications, along with motivation to change, speaking more slowly, self evaluation, acquiring new attitudes towards self or speech problem were reported as the biggest factors in the recovery of the subjects (Quarrington, 1977; Finn 1996, 1997)

The one factor that seemed to make a difference is the severity of stuttering. The more severe cases tended to be more persistent presumably because recovered PWS had less severe problems and hence, had less often received formal speech therapy (Dickson, 1971)
Relapse in stuttering
Relapse is defined as the recurrence of symptoms after a period of improvement (Webster, 1989)

In other words, relapse is defined as a return of considered symptoms that therapy either had replaced or brought under control

Relapse has been called the “Achilles Heel” of stuttering intervention (Kuhr & Rustin, 1985)
The possibilities of relapse

“The old habits are always the strongest”

Van Riper (1973)

St. Louis and Westbrook (1987) reported that “relapse is a ubiquitous and familiar problem in stuttering therapy”. The literature indicates that for adult clients, the possibility of relapse is real.
<table>
<thead>
<tr>
<th>Authors</th>
<th>Year</th>
<th>Findings</th>
</tr>
</thead>
<tbody>
<tr>
<td>Prins</td>
<td>1970</td>
<td>Maximum regression occurred within 6 months after the termination of formal treatment</td>
</tr>
<tr>
<td>Young</td>
<td>1975</td>
<td>Clients should be followed for at least two to five years following formal treatment</td>
</tr>
<tr>
<td>Starkweather, Gottwald &amp; Halfond</td>
<td>1990</td>
<td>Relapse rates for younger children, however, appear to be significantly lower than that for adults and older children</td>
</tr>
<tr>
<td>Authors</td>
<td>Year</td>
<td>Result</td>
</tr>
<tr>
<td>--------------------</td>
<td>----------</td>
<td>---------------------------------------------------------------------------------------------------------------------------------------</td>
</tr>
<tr>
<td>Silverman</td>
<td>1980,1992</td>
<td>Relapse is likely to occur with a 40 to 90% probability and the relapse rates for stuttering reported as over 50% for adults and older children</td>
</tr>
<tr>
<td>Martin</td>
<td>1981</td>
<td>estimated relapse at approximately 30%</td>
</tr>
<tr>
<td>Craig and Hancock</td>
<td>1995</td>
<td>71.7% of 152 adults surveyed experienced relapse but that the majority found that they subsequently regained fluency. They also found that relapse tended to be cyclical, occur up to three times in a year</td>
</tr>
</tbody>
</table>
Factors related to relapse

Some of the common factors contributing to relapse as given by Sheehan (1966) and supported by other authors (Boberg, 1979; Kamhi, 1982) are:

- Client’s difficulty in adjusting to a new role as a fluent speaker or dissatisfaction of the client with the new speech mode
- Weak establishment and transfer of new speaking modes
- Failure to develop or more likely to use, self-monitoring adequately
- Failure to eradicate social avoidance behavior
**False fluency**
- Client is not fluent but in response to suggestion and pressure is persuaded into a false fluency.

**Self-efficiency doubts**
- Over dependence on the clinician and the therapy program, rather than develop confidence in their own capacities.

**Jost’s law**
- When two approximately equal responses compete, the older response will, over time, tend to displace the new one. The less sure, firm, acceptable the new response is, the sooner relapse will occur.

**Boredom**
- Behaviors that have to be worked on and nurtured can become boring and lose their appeal.

**Penalty of fluency**
- Many PWS obtain gains from dysfluency. Some find the responsibility and penalties of fluency just not rewarding enough to maintain.
Recovery and relapse from stuttering: cyclic variation

- ‘Relapse’ is an ever-present concern for those in ‘recovery’ from stuttering and the professionals who treat them.

- Some people grasp recovery quickly and have smooth sailing, while others require much more determination to pull out of lapses and not let them become total relapses.

- The criterion for success is following a strong plan of recovery free from relapse. However, for many PWS there are small successes along the way with four steps forward and three steps back.
Finn (1997) conducted a study to determine if listeners could differentiate the speech of unassisted recovered PWS from normally fluent speakers. The results showed that the speech of subjects who reported an occasional tendency to stutter were perceptually different and more unnatural sounding than normal speakers, but recovered PWS who reported no tendency to stutter were not perceptually different and just as natural sounding as normal speakers. At the same time, all of the unassisted recovered PWS attained more natural sounding speech than most treated recovered adult PWS.
Finn, Howard & Kubala (2005) conducted a study on fifteen PWS who recovered without treatment to investigate the nature of recovery from stuttering based on their experiences.

Seven speakers reported that they no longer stuttered and eight reported that they still stuttered on occasion.

Results suggested that complete recovery was possible for speakers who reported that they no longer stuttered; whereas, those who still stuttered occasionally appeared to no longer be handicapped by stuttering.
Need for the study
“The most vital part of science is not accurate measurement or the insistence on empiricism. It is an attitude of inquiry into the how and why of things”.

Bloodstein (1981)

Similarly, it is vital to understand how and why of recovery and relapse in stuttering
Significant proportion of persons treated relapse (Craig & Calver, 1991)

Reasons include

- Scientific research comparing recovery and relapse following treatment of stuttering has been scarce, especially in the Indian context with its multi-lingual and cultural issues known to affect recovery
  - The lack of objective and controlled studies in this domain

It highlights the immense need of the present study
In a review of research on maintenance of fluency, Boberg (1979) stated that..

“we found practically nothing written about why PWS relapse”

Boberg (1979)

Almost thirty years later also, the situation has not changed greatly. Controlled research into factors that raise risks of relapse or factors that reduce risks of relapse is uncommon.

Bloodstein (1995) stated that “relatively little is known about the relapse in stuttering” and the lack of objective and controlled studies in this area have been identified as a crucial area needing research (Craig & Hancock, 1995).
Some important reasons for studying recovery and relapses in stuttering

- Currently there are no standardized measures to elicit diagnostic information from subjects who represent the full range of expression of stuttering, individuals who recovered from stuttering and those who are relapsed following treatment.

- The ability to classify relapsed and recovered cases is particularly important for genetic and epidemiological research. This includes those who have recovered from stuttering with or without formal treatment or relapsed.
Research efforts should attempt to explain the multifactorial contribution to stuttering recovery and relapse. Such a model would assist and guide research into further exploring and investigating the complex nature of this problem. The development of such a model remains a challenge for the future.

Relapse research would have important clinical applications if variables are identified that predicted risks of (a) severity of stuttering returning to pretreatment levels, (b) the return of social avoidance behavior, (c) increased levels of anxiety or fear, (d) speech rate reductions due to increased stuttering and (e) avoidance of words previously used.
- Reduction of relapse would improve the cost effectiveness of treatment.

- Investigations of relapse would enhance our knowledge of the relationship between maintenance of behavior and stuttering management.
Aim of the study
The main aim of the study is to compare the recovered and relapsed persons with stuttering following treatment in terms of speech and non-speech characteristics.
Participants - A total of 17 PWS participated in the study based on following criteria:

**Inclusion criteria**
- 18 to 35 years
- Developmental stuttering
- Therapy taken minimum 6 months before

**Exclusion criteria**
- Acquired stuttering
- Positive history of any associated problem
Materials

- Questionnaire
- Reading passages
- General questions
- Stuttering Severity Instrument SSI-III (Riley, 1994)
- Sony handycamera Model no: HDR- TG1E
- Perceptual rating scale
- SPSS 18 software
- A speech naturalness scale
A perceptual rating scale - 8 parameters - Rate, Continuity, Effort, Stress, Articulation, Intonation & rhythm, Breathing pattern and overall speech naturalness following treatment.

Speech samples were given to three experienced judges (SLP) to rate the given speech samples on the basis of parameters of perceptual scale.

Scoring – judges were instructed to listen to the sample carefully and rate as ‘0’ i.e., unnatural sounding speech or ‘1’ as natural sounding speech for each parameter.
Procedure
Three phases:

**Phase I**
- Selection of participant
- Review of selected case files of PWS based on inclusion criteria

**Phase II**
- Re-evaluation and grouping of participants
- Interview, questionnaire, SSI-3

**Phase III**
- Analysis of speech samples
- Rating scale
- Transcription
For the **Reading task..**

Participants will be asked to read the given passages

For the **Spontaneous conversational task...**

Investigator-participant conversation on a topic will be done to collect the speech sample.
Participants divided into two groups i.e. G1 and G2 based on recovery and relapse respectively.
## Recovered PWS

<table>
<thead>
<tr>
<th>Participants</th>
<th>Pre-treatment SSI scores</th>
<th>Pre-treatment Severity</th>
<th>Post treatment SSI scores</th>
<th>Post treatment Severity</th>
<th>Follow-up (1-2 months) SSI scores</th>
<th>Follow-up (1-2 months) Severity</th>
<th>Group</th>
</tr>
</thead>
<tbody>
<tr>
<td>2</td>
<td>22</td>
<td>Mild</td>
<td>10</td>
<td>Very mild</td>
<td>9</td>
<td>Upto normal</td>
<td>Recovered</td>
</tr>
<tr>
<td>3</td>
<td>31</td>
<td>Moderate</td>
<td>6</td>
<td>Upto normal</td>
<td>8</td>
<td>Upto normal</td>
<td>Recovered</td>
</tr>
<tr>
<td>4</td>
<td>23</td>
<td>Mild</td>
<td>14</td>
<td>Very mild</td>
<td>7</td>
<td>Upto normal</td>
<td>Recovered</td>
</tr>
<tr>
<td>5</td>
<td>24</td>
<td>Mild</td>
<td>7</td>
<td>Upto normal</td>
<td>9</td>
<td>Upto normal</td>
<td>Recovered</td>
</tr>
<tr>
<td>6</td>
<td>20</td>
<td>Mild</td>
<td>10</td>
<td>Very mild</td>
<td>9</td>
<td>Upto normal</td>
<td>Recovered</td>
</tr>
<tr>
<td>7</td>
<td>21</td>
<td>Mild</td>
<td>9</td>
<td>Upto normal</td>
<td>8</td>
<td>Upto normal</td>
<td>Recovered</td>
</tr>
<tr>
<td>10</td>
<td>17</td>
<td>Very mild</td>
<td>12</td>
<td>Very mild</td>
<td>7</td>
<td>Upto normal</td>
<td>Recovered</td>
</tr>
<tr>
<td>17</td>
<td>17</td>
<td>Very mild</td>
<td>5</td>
<td>Upto normal</td>
<td>9</td>
<td>Upto normal</td>
<td>Recovered</td>
</tr>
<tr>
<td>Participants</td>
<td>Pre-treatment</td>
<td>Post treatment</td>
<td>Follow-up (1-2 months)</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>--------------</td>
<td>---------------</td>
<td>----------------</td>
<td>------------------------</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>SSI scores</td>
<td>Severity</td>
<td>SSI scores</td>
<td>Severity</td>
<td>SSI scores</td>
<td>Severity</td>
<td>Group</td>
</tr>
<tr>
<td>1</td>
<td>27</td>
<td>Moderate</td>
<td>12</td>
<td>Very mild</td>
<td>29</td>
<td>Moderate</td>
<td>Relapsed</td>
</tr>
<tr>
<td>8</td>
<td>21</td>
<td>Mild</td>
<td>13</td>
<td>Very mild</td>
<td>25</td>
<td>Moderate</td>
<td>Relapsed</td>
</tr>
<tr>
<td>9</td>
<td>25</td>
<td>Moderate</td>
<td>15</td>
<td>Very mild</td>
<td>22</td>
<td>Mild</td>
<td>Relapsed</td>
</tr>
<tr>
<td>11</td>
<td>18</td>
<td>Mild</td>
<td>9</td>
<td>Upto normal</td>
<td>19</td>
<td>Mild</td>
<td>Relapsed</td>
</tr>
<tr>
<td>12</td>
<td>25</td>
<td>Moderate</td>
<td>10</td>
<td>Very mild</td>
<td>28</td>
<td>Moderate</td>
<td>Relapsed</td>
</tr>
<tr>
<td>13</td>
<td>29</td>
<td>Moderate</td>
<td>10</td>
<td>Very mild</td>
<td>23</td>
<td>Mild</td>
<td>Relapsed</td>
</tr>
<tr>
<td>14</td>
<td>32</td>
<td>Severe</td>
<td>15</td>
<td>Very mild</td>
<td>31</td>
<td>Moderate</td>
<td>Relapsed</td>
</tr>
<tr>
<td>15</td>
<td>23</td>
<td>Mild</td>
<td>13</td>
<td>Very mild</td>
<td>18</td>
<td>Mild</td>
<td>Relapsed</td>
</tr>
<tr>
<td>16</td>
<td>26</td>
<td>Moderate</td>
<td>10</td>
<td>Very mild</td>
<td>19</td>
<td>Mild</td>
<td>Relapsed</td>
</tr>
</tbody>
</table>
Inter and Intra judge reliability

- Ten percent of the client’s data from both the groups was given to three experienced speech and language pathologists to evaluate the inter and intra judge reliability in terms of participant’s speech naturalness, rate of speech, and fluency of speech
RESULTS
<table>
<thead>
<tr>
<th>Groups</th>
<th>Rate</th>
<th>Content</th>
<th>Effort</th>
<th>Stress</th>
<th>I &amp; R</th>
<th>Articulation</th>
<th>Breathing</th>
<th>Overall</th>
</tr>
</thead>
<tbody>
<tr>
<td>Relapsed PWS</td>
<td>6</td>
<td>3</td>
<td>9</td>
<td>0</td>
<td>8</td>
<td>1</td>
<td>2</td>
<td>7</td>
</tr>
<tr>
<td>Recovered PWS</td>
<td>2</td>
<td>6</td>
<td>0</td>
<td>8</td>
<td>1</td>
<td>7</td>
<td>0</td>
<td>8</td>
</tr>
<tr>
<td>Sig (chi-square)</td>
<td>p= 0.15</td>
<td>p= 0.003</td>
<td>P=.26</td>
<td>P= 0.02</td>
<td>P= 0.124</td>
<td>P= 0.007</td>
<td>P= 0.00</td>
<td></td>
</tr>
<tr>
<td>Sig (equality of proportion)</td>
<td>Z= 1.71</td>
<td>Z= 3.14</td>
<td>Z= 1.41</td>
<td>Z= 2.50</td>
<td>Z= 1.79</td>
<td>Z= 2.87</td>
<td>Z= 4.12</td>
<td></td>
</tr>
<tr>
<td></td>
<td>P= 0.08</td>
<td>P= 0.004</td>
<td>P= 0.15</td>
<td>P= 0.07</td>
<td>P= 0.004</td>
<td>P= 0.00004</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Unnatural sounding speech

No. of PWS

Speech parameters

Recovered PWS
Relapsed PWS
Natural sounding speech

<table>
<thead>
<tr>
<th>Speech parameters</th>
<th>Recovered PWS</th>
<th>Relapsed PWS</th>
</tr>
</thead>
<tbody>
<tr>
<td>R</td>
<td>9</td>
<td>0</td>
</tr>
<tr>
<td>C</td>
<td>8</td>
<td>0</td>
</tr>
<tr>
<td>E</td>
<td>7</td>
<td>0</td>
</tr>
<tr>
<td>S</td>
<td>6</td>
<td>0</td>
</tr>
<tr>
<td>I &amp; R</td>
<td>5</td>
<td>0</td>
</tr>
<tr>
<td>A</td>
<td>4</td>
<td>0</td>
</tr>
<tr>
<td>BP</td>
<td>3</td>
<td>0</td>
</tr>
<tr>
<td>OSN</td>
<td>2</td>
<td>0</td>
</tr>
<tr>
<td></td>
<td>1</td>
<td>0</td>
</tr>
<tr>
<td></td>
<td>0</td>
<td>0</td>
</tr>
</tbody>
</table>
Comparison of naturalness in speech between two groups across parameters

- Relapsed PWS
- Recovered PWS

Parameters:
- Rate
- Continuity
- Effort
- Stress
- Inton. & rhythm
- Articulation
- Breathing pattern
- Overall speech

No. of PWS (in percentage)
<table>
<thead>
<tr>
<th>Groups</th>
<th>confidence</th>
<th>Sec. beh</th>
<th>avoid beh</th>
<th>Anx./ten</th>
<th>Attitude</th>
<th>Motiv. level</th>
<th>Self monitoring</th>
</tr>
</thead>
<tbody>
<tr>
<td>Relapsed PWS</td>
<td>U 6 N 3</td>
<td>U 9 N 0</td>
<td>U 8 N 1</td>
<td>U 2 N 7</td>
<td>U 5 N 4</td>
<td>U 3 N 6</td>
<td>U 6 N 3</td>
</tr>
<tr>
<td>Recovered PWS</td>
<td>U 2 N 6</td>
<td>U 0 N 8</td>
<td>U 1 N 7</td>
<td>U 0 N 8</td>
<td>U 0 N 8</td>
<td>U 0 N 8</td>
<td>U 0 N 8</td>
</tr>
<tr>
<td>Sig (chi-square)</td>
<td>p= 0.15</td>
<td>p= 0.00</td>
<td>p= 0.003</td>
<td>P=.265</td>
<td>P= 0.020</td>
<td>P= 0.124</td>
<td>P= 0.007</td>
</tr>
<tr>
<td>Sig (equality</td>
<td>Z= 1.71</td>
<td>z= 4.12</td>
<td>P= 0.00</td>
<td>Z= 1.41</td>
<td>Z= 2.50</td>
<td>Z= 1.79</td>
<td>Z= 2.87</td>
</tr>
<tr>
<td>of proportion)</td>
<td>P= 0.08</td>
<td>0.0004</td>
<td>0.01</td>
<td>P= 0.01</td>
<td>P= 0.07</td>
<td>P= 0.004</td>
<td></td>
</tr>
</tbody>
</table>
No significant difference between recovered and relapsed group of PWS stuttering in terms of non speech characteristics
On comparison between both the groups across different speech parameters, results revealed that there is a significant difference between both the groups i.e. recovered and relapsed PWS with respect to some of the parameters such as continuity, effort, intonation and rhythm, breathing pattern and overall speech naturalness.
Limitations of study

- Less number of participants
- Severity of the problem was not controlled
- Use of two dimensional perceptual scale
From a clinical standpoint, reasonably reliable estimates of the probability and timing of unassisted recovery, or risk of developing persistent stuttering or relapse, should significantly affect overall intervention strategies.
Present study would help in differentiating recovered and relapsed PWS following treatment in terms of their speech and non speech characteristics

Individual prognosis for each client regarding the risk for chronic stuttering and choosing between a waiting period and immediate treatment can become scientifically based

Present study has a therapeutic implications, as it would help speech-language pathologists in deciding intervention strategies which lead to recovery and not to relapse to some extent. Therefore, the objectives of the present study have immense clinical, financial and ethical consequences.
Acknowledgement

- Director, All India Institute of Speech and Hearing.
- Guide, prof. Y.V. Geetha
- All the participants of the study
Thank You!