

# The Impact of Neurological Intervention in Self-Talk Regulation: An Intervention Study.

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## Abstract

Self-talk is crucial since it significantly affects how people feel and what they do. It may be positive and encouraging, inspiring, or it can be damaging and diminishing one's self-confidence. Aim of the present study was to examine the impact of neurological intervention on self-talk of an individual. Single group pre-post research design was used.

Information was collected through self-report measure, self-talk scale by Brinthead et al., 2009. In total 108 participants (Male= 32 and female= 76) aged between 18-60 years participated. After conducting a pre-intervention assessment, participants were asked to practise the tongue drop intervention, learned from John Grinder for at least 24 hours. Postintervention the same test was re-administered with the same participants. T-test dependent was used for analysing the differences in score of self-talk before and after the intervention. Results show significant difference in scores after the intervention  $t(107) = 2.132, P < .043$ . Therefore, findings suggest that neurological intervention can be an effective method to regulate self-talk which can lead to a high functioning state of mind.

Keywords: *Neurological Intervention, Self-Talk, High Functioning State.*

## Introduction

Present study aims to examine the impact of neurological intervention on inner self-talk. Every day, we hold internal conversations or self-talk within ourselves about many issues, and the quality of these internal dialogues or self-talk can range from positive to negative, influencing our mental state, as well as how we feel and behave in specific situations. According to a study by Hurlburt, 2013 utilising Descriptive Experience Sampling have revealed significant variations in how much time people spend talking to themselves in their heads.

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The average amount of inner speaking among individuals who participated in the study was 23 percent, but this number hides a wide range: from 100 percent, meaning that some participants spoke to themselves internally every time they were sampled, to 0 percent, meaning that other participants never did. Individuals can communicate with themselves in different ways, Dialogue is one of the forms in which a person can communicate within one self and Dialogical self-theory represents the similar idea that a person has interpersonal communication that takes place within a person and 'I' can take a different position. Hermans, 1996; Hermans and Gieser, 2012. Thus, Understanding the phenomenon of inner speech can be complex, psychologist Lev Vygotsky, introduced that a child as young as three years old develops inner speech which is a result of cross- functional interaction between thoughts and language, and it is evident that child uses inner speech while performing a cognitive task as he learns to combine the two concepts of language and thought. He defined inner speech as non-verbal communication with oneself. Furthermore, research suggests that internal conversation is helpful

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to an individual's cognitive and overall development as a result of which self-talk can be useful in maintaining psychological wellbeing if regulated in a positive way. Therefore, engaging in self-talk can be more effective than socialising or seeking counsel from friends and family when we are in a tough circumstance since spending time with oneself and introspecting within helps with emotional regulation Langland-Hassan and Vicente, 2018. Previous research studies investigated the correlation between inner speech and neural connection and according to Buchsbaum and D'Esposito, 2008 the Sylvian parietal temporal area, or area Spt, is a crucial region along the dorsal language stream that serves as an interface between the auditory-phonological system and the motor system. It is situated within the Sylvian fissure at the parietal-temporal boundary. This role would implicate it in the creation of inner speech in adults and would suggest that it may serve as a good place to start when examining the neurological bases of inner speech in young children. In addition, an inner dialogue helps in hearing one's own voice while blocking out external noise and also assists in organising ideas and thoughts. Corollary discharge, a sort of brain signal, is considered to have a role in controlling inner voice. It helps in the categorization of different types of sensory experiences, such as those produced internally and external sources. Even though a person cannot hear an inner voice, everyone experiences some form of corollary discharge. It's especially important for the way the auditory system processes speech. However, it's sometimes difficult to silence one's inner monologue. When we are worried, nervous, or depressed, this is especially true. Our inner voice may send us down a downward spiral of negative ideas that is difficult to break free from, and it can have a bad influence on our mental health. Present research study focuses on the influence of neurological intervention on self-talk. It is observed that neurological tricks can bring conscious awareness to the present moment that can allow an individual to reflect on his/her thoughts and emotions. It can be said that it works on a bottom-up approach because body experiences or sensations are acknowledged as the initial events in the Bottom-Up method. It suggests that one must experience safety first before learning to control their responses. Bottom-Up approaches integrate the whole brain system, which is the main advantage. It concentrates on all four sides of the brain, not just one primitive region. One foot is in the logic (top/left brain) while the other is in the emotions (right/bottom brain). Now that both sensations are available, a person may utilise them to process the present moment and increase their level of awareness. For the current study, the tongue drop method learned from John Grinder was used as an intervention, it is a neurological trick,

the involuntary (autonomic) nervous system includes our tongue. Unconsciously, many of us carry tension in our tongues, and when a person is under pressure, most of them show it by forcing their tongue up against the roof of our mouths. It's interesting to note that the voluntary nervous system also includes the tongue as well. As a result, our tongue serves as a "bridge" between our voluntary and involuntary neurological systems, enabling us to cause the "deeper" or involuntary nervous system to start relaxing. Begin by slowly observing the position of the tongue in the mouth and putting it on the floor of the mouth like a dead fish heightens the body sensation and awareness. This consciousness of the here and now moment helps the person to reflect on the present state of mind and redirect it to the high-performance state. Rarely any research evidence was found which uses neurological interventions for managing self-talk. Therefore, the main objective of the current study is to investigate the effectiveness of neurological intervention (tongue drop method) to regulate self-talk.

**Method Objectives**

To study the impact of tongue drop technique on an individual's self-talk.

**Hypothesis**

There will be a significant impact of tongue drop technique on an individual's self-talk post intervention.

**Design**

In the present study, pre-post intervention design is used to examine the effectiveness of neurological techniques on self-talk. Tongue drop technique learned from John Grinder was used as an intervention for 24 hours by the participants. A self-talk scale was administered before and after the intervention to examine the differences in self-talk scores and pre-post scores were used to determine the influence of intervention on an individual's internal dialogue.

The present study was done in three phases. In the *first phase* participants were administered the Self-Talk Scale. In the *second phase*, the same group of participants were introduced to steps of tongue drop technique which they practised for at least 24 hrs. In the *third phase*, after seven days of practice of intervention technique, a Self-Talk Scale was re-administered to the same group of participants to assess the effect of the intervention.

Phase I	Phase II	Phase III
Pre intervention	Intervention	Post intervention
Conducting self-talk questionnaire	Workshop for intervention on tongue drop technique	Conducting self-talk questionnaire

**Sample**

The data for this study was gathered from a population aged 17 to 60 years. Total number of participants who gave their voluntary participation was 108 among which 76 were female participants and 32 were male participants. Data collection procedure included no specific criteria to gather the information. Only inclusive criteria were that a person should be a student in the above-mentioned age range and willing to participate in post intervention data collection.

**Measures**

**Self - Talk Scale**

Self-Talk Scale (STS) developed by Brinthaup et al., 2009, which is a self-report measure, assesses the frequency of four types of different kinds of self-talk. It report internal consistency values for the subscales ranging between 0.79 and 0.89, with a test-retest value of 0.69 over a 3-month period. The STS includes subscales on self-criticism (i.e., situations when bad things have happened to a person), self-reinforcement (i.e., relating to positive events), self-management (i.e., determining what one needs to do), and social-assessment (i.e.,

referring to past, present, or future social interactions). The 16 STS items are scored in the same direction and rated using a Likert-type scale (1= Never, 2 = Seldom, 3 = Sometimes, 4 = Often, 5 = Very often). Total STS score is calculated by summing the ratings of the 16 items, with a possible range of 16 to 80.

**Analysis**

1. Descriptive analysis of the data was done to calculate the frequency and percentages of the responses of the participants.
2. Inferential statistics (t-test) was calculated to assess the significance of the difference between the pre and post scores of the subjects.

**Results**

The sample in the present study consisted of 108 participants of age range between 17 to 60 years, with an average age being 38 years, of whom 32 were males and 76 were females. The data was collected using a self-report questionnaire and the pre-intervention and post-intervention scores were analysed through t-test for dependent samples.

**Table 1**

*shows the descriptive statistics*

	N	Mean	Std. Deviation
pre-intervention	108	54.2963	6.84900
post-intervention	108	51.2222	8.03039

Table 1, includes the mean scores, pre intervention mean score was 54.2963 and post intervention mean score was 51.2222 for N=100 participants and standard deviation scores pre and post intervention were 6.84900, 8.03039 respectively.

**Table 2**

*shows the analysis of the T-test for a dependent sample.*

Pair	Paired Differences	t	df	Sig. (2-tailed)					
					Mean	Std. Deviation	Std. Error Mean	95% Confidence Interval of the Difference	
			Lower	Upper					
1	pre-intervention post-intervention	3.0740	7.49321	1.44207	.10986	6.03829	2.132	107	.043

Results revealed that participants had better self-talk control (mean =54.2 , SD = 6.84) after the intervention (mean = 51.2 , SD = 8.03 ). A repeated-measures t-test found this difference to be significant,  $t(107) = 2.132$  ,  $p < 0.043$ . Findings suggest that neurological intervention can be used as a strategy to regulate self-talk. Thus, accepting the current hypothesis.

## Discussion

Purpose of the present study was to examine the effectiveness of neurological technique on internal speech and to measure its effect pre-post intervention research design was used in which participants were assessed using self-talk questionnaire before the neurological intervention introduced to them and after practising tongue drop technique for at least 24 hours they were assessed again using the same questionnaire. The scores obtained during pre and post intervention are analysed by t-dependent test using SPSS. Findings of the current study approves the hypothesis that there is a significant difference in pre and post intervention scores. Which suggests that neurological technique can be an effective tool to regulate inner speech. Self-talk questionnaire measures four self-talk functions which are self-criticism, self-reinforcement, self-management, and social-assessment and mean scores of self-talk were reduced after the neurological intervention suggesting that tongue drop intervention has significant impact on self-talk. Study by Bervoets, 2013 revealed that self-talk has an influence on the performance and awareness of an individual, the research investigates the relationship between flow (peak performance), mindfulness (present-moment awareness) and self-talk. Results indicate positive correlation between self-talk and flow and mindfulness and self-talk. These findings highlight the important function of self-talk in individuals' performance thus, it is necessary to inculcate positive and productive inner speech. Neurological strategy, one of it is the tongue drop technique introduced by John Grinder founder of neurolinguistics programming can help people transition from a sad or disappointed state of mind to a more conscious and aware state of mind, allowing them to act intentionally to change from a negative to a good state of mind. In other words, by using neurological techniques a person has the choice to become more aware of the present moment and choose his state of mind which might be stuck in negative self-talk and switch to more constructive inner dialogues. However, in particular no study, to our knowledge, has considered neurological interventions for regulation of inner speech and that is one of the reasons that present study focuses upon the impact of neurological intervention on self-talk. A person cannot feel or think positive unless he is consciously aware of his thoughts or emotions or what is going on in the mind. So, in such a situation when an individual is drowning in the pool of negative thoughts, neurological tricks give an opportunity to become more mindful of internal state which results in consciousness to take the forefront and allow individuals to make decisions that support a high functioning state. Inner voice and the quality of one's internal conversations is important since it shapes a person's belief system,

pattern of thinking, and perception, and as James Allen famously said, "A man is precisely what he thinks, his character being the whole sum of all his ideas." In basic terms, it implies that people become what they think. In a study, conducted by Salasa, 2018 examines the relationship between inner speech and emotional regulation. findings reveal significant positive correlations between emotional regulation, an emotional regulation strategy that is reappraisal in which a person thinks of alternative narratives to minimise the impact of negative emotional events and inner speech. Thus, inner speech can be used as an intervention which can lead to therapeutic results at cognitive and neurological level. However, it is necessary to rewire negative thought patterns into positive ones, and one of the approaches to do so is to practise neurological intervention that aids in the formation of new brain pathways. Donald Hebb, 1949 introduced the phrase "Neurons that fire together, wire together." which means the neural network becomes strong when the same activity is repeated over time and the new neural pathways are formed which makes the process more efficient. Similarly, repetition of the neural intervention tongue drop technique whenever a person wants to shift from a depressing state of mind to a more constructive state, reinforces the new neural pathways and gradually rewiring to a high functioning state of mind.

## Future Research Suggestion

Future research study can focus on details of how neurological intervention can result in modification of behaviour and cognition. Also, future studies can examine the relationship between physiology and neurological activities.

## Limitations

Present study has certain limitations, firstly data was collected from urban population so the results cannot be generalised for all types of population. Furthermore, the scope of the research study could not be refined due to a lack of research literature and only quantitative measures were used to collect the information which limits the qualitative or subjective experience of participants.

## Conclusion

Findings of the present study reveals that neurological intervention has a significant impact on self-talk regulation. Thus, suggesting the role of neurological activities to shift state of mind to a high functioning state. Secondly, revealing the scope of such interventions to regulate self-talk as neurological activities brings more consciousness to the present state and provides a choice where an individual can intentionally make a decision to shift his state of mind.

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