

Adaptation of Boston Naming[Test in Telugu (BNT-T(60)) Speaking Adolescents

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Abstract

Naming is the process of knowing and retrieval of the label for an object, picture or concept to a word which is the smallest independent unit of language. The present article aims check the naming ability by using Boston Naming Test in Telugu (BNT-T) adolescents in the age range of 10 to 19 years in three groups, which is early adolescence middle and late. Item analysis for Telugu words stimuli in Boston Naming Test was obtained and naming ability was compared between groups with respect to age and gender. In item analysis 91 % was correct and the incorrect responses were "Related Names" and were elicited from early adolescence in the item analysis. One way ANOVA followed by post hoc analysis revealed that the middle and late adolescents performed naming better than early adolescents. Hence naming ability increases with age. In G1 and G3 males performed better than females.

Keywords: Naming ability; Adolescents; Telugu; Boston naming test

Introduction

The ability to name is a fundamental aspect of language [1]: Naming also uses sensory input, memory and motor output systems for giving the appropriate word to an object, picture or concept. Suggested [2] that naming an object begin with detecting the stimulus then finding a suitable word representing the object and finally responding through speaking out the corresponding word. Twenty-eight bilingual Arabic-English speakers were given the BNT-15 as a measure of their low English proficiency [3-4], results showed that no participant with LEP failed the Word Choice Test accuracy cutoff; however 35.7% of them failed the time limit. The BNT-15 has the potential to be a quick and accurate objective test of LEP, according to the authors. Academic modifications may be necessary for LEP students to develop compensate for slower test completion times. The Boston Naming Test (BNT), are the most common method to assess word-finding skills in clinical and normative populations. As Boston naming test is developed for adult group, there is no naming test developed for the adolescent population. This age group is more susceptible for head injuries and traumatic brain injuries which can result in acquired language disorders. Hence the present article aimed to adapt Boston naming test for adults in Telugu to check the naming ability in Telugu speaking adolescents in the age range of 10-19years. The objectives of the current study are obtaining item analysis for Telugu words stimuli in Boston Naming, Comparison naming ability between groups with respect to age and comparison of naming abilities in males and females within the group. This study serves as a normative reference to document naming deficits, specifically in Telugu speaking adolescents.

Methods and Materials

Participants

60 Telugu native speaking children participated in this study. The participants were divided into three groups that are Group 1 (10 – 13yrs), Group 2 (14 – 17yrs) and Group 3 (18 – 19yrs) with 20 participants; each group consists of 10 males and 10 females. No participants reported any history of speech, language or hearing difficulties with no sensory, motor, cognitive and neurological impairments. All participants were

native speakers of Telugu.

Development of test stimuli

The test stimuli were taken and adapted from the Boston naming test in Telugu which consists of 57 items, developed and standardized. Pilot study was carried out in 10 adolescents in each group to select the stimuli the stimuli for 10 children in each group (adolescents) which revealed better performance on all 51 items and few difficulties were found in naming the remaining six words, which were /pillanagro:vi/, /na:ga:ta:li poḍa/, /koiva:ramu/, /kʰaḍḍamrugamu/, /bʰu:go:lamu/ and /konama:ni/, hence the words were replaced with other appropriate words i.e. /ḍaluru/, /kappa/, /ujjal/, /e:nugu/, /eluka/ and /palaka/. Three familiar words were added to the test stimuli i.e. /ḍaḍḍa/, /a:vu/ and /fe:ji/.

Administration procedure

Subjects were seated in comfortable position and were instructed as "I am going to present few pictures to you, you have to name it". Then the pictures were shown to participants one at a time presented through the stimuli booklet (enclosed in appendix 1). A maximum score of '2' was given and 0 was given for no response. The participants were provided semantic cue: if not answered in the first attempt, if answered a score of 2 was given and phonemic cue was given further on failed attempt using semantic cue with a score of 1. A score of 0 was given

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for no response, if the participant can name using both cues. The total score was 120 was given.

Analysis

Percentage of naming and error analysis was done using descriptive analysis to determine the accuracy of the items. Statistical analysis was done using SPSS 20 to determine mean and standard deviation (S.D). One way ANOVA and Independent t-test was used to analyze the differences between the groups with respect to gender and within the groups with respect to age.

Results

Item analysis

Firstly, the item analysis was done to know the percentage of the correctly produced word stimuli in the all the three groups. 90% of items were named correctly by the all the participants; the other 4 items i.e. /i:l/ by 48%, /fokka:/ by 45%, /fakra:lakurfi/ by 40% and /st^hambamu/ by 56% were named correctly by participants. The decrease in percentage could be attributed to the limited exposure of these words among this population.

Error analysis

Incorrect responses

The most of the responses were received from the early adolescence as compared with middle and late adolescence. Most of the incorrect responses were the related names, and then there were multiple responses for the picture presented. No response accounted for 17%. Frequent responses from the participants were the related name, as they were not exposed to the words. The incorrect responses were seen from 8% to 30%. Most of the responses were “Related Names” and were elicited from early adolescence. The BNT was administered to 60 non-brain-damaged adults the usage of these widespread procedures, age range from 40-78 years. Results showed that examiners can reliably carry out the revised test tactics. Additionally results show that two response categories (Related Name and Don't Know) accounted for almost 80% of mistaken responses in agreement [5,6].

Frequency of synonyms was used for test stimulation

The synonyms given for other items were from the early adolescence group when compared to middle and late adolescence. As early adolescence group was not so exposed to traditional word forms. In the present study synonyms were given to the names frequently for few words i.e. shirt, frock, wheelchair and garland, as they were no much exposed to the traditional vocabulary. The similar findings were found in the other supporting studies. Three were less precise names than the name specified in the Boston Naming Test. Ten items were called a consistent other name or synonym by 10% or more.

Comparison of naming ability across groups with respect to age

One way ANOVA followed by post hoc analysis was done to compare between the three groups; the overall mean and SD for the groups is 110.87 and 9.477. Significant differences were noticed between groups early and middle adolescence ($p < 0.01$); and middle adolescence and late adolescence ($p < 0.05$). [$F(2, 57) = 63, p = 0.000$]. There was a significant difference within and between the groups at $p < 0.05$ level. Post hoc test was done to know the differences between the groups. High significant difference ($p < 0.01$) was found when compared G1 with G2 and G3. Significance ($p < 0.05$) was found when G2 was compared

with G3 as shown in table 1 and depicted in the graph 1. This clearly indicates that the middle and late adolescents performed naming better than early adolescents. Hence naming ability increases with age. The normative data for total of 100 typical individuals in the age ranges of 20–40 years, 40–60 years and 60+ years where in the results indicated a significant difference across age groups, which support the current study results. Visual Naming Test (VNT) and auditory description naming (ANT) specifically for children [7], the participants were 200 typically developing children, ages 6–15 years. Accuracy scores were high across age groups, indicating that item names were within the mental lexicon of most typically developing children. (Table 1 and Graph 1).

Gender comparison of naming ability within each group

In G1 (early adolescence) Independent t test was done to compare between the genders. In early adolescence group the difference between males and females is very less. Mean and S.D scores of 101 and 6.749 (males) and 99.30 and 8.945 (females) were obtained. In G1 males performed better than females. In this middle adolescence group the mean and SD of 115 and 5.099 (males) and 113 and 4.899 (females). Results indicate that males performed better than females as seen in table. There was no statistical difference found between males and females in the group. In the late adolescence group the mean score for males is 119 S.D. is 0.816 and mean scores for females is 117.90 S.D. is 1.792 as shown in table 2 and depicted in graph 2. It suggests that males performed better than females. In the present study the males performed slightly better than female in all the three groups but there was no significant difference found, some studies suggest that males obtain higher scores than females on measures of confrontation naming [8-11]. Some studies supporting the present results showed significant effects of age and gender on BNT performance and revealed that as the age increases the naming ability also increases [5, 6, 12, 13, 14, 20,21]. (Table 2 and Graph 2).

Table 1: Indicates significant difference between the groups.

Groups	N	Mean	SD	Df	Mean Square	F	Sig.
G1	20	100.15	7.76	2	1821.72	62.72	.00*
G2	20	114	4.97				
G3	20	118.45	1.46				
Total	60	110.87	9.47				

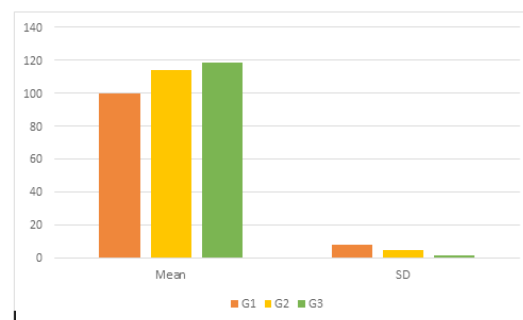


Figure 1: Mean and SD scores of naming ability between groups.

Table 2: Indicates gender difference within groups.

Group	Gender	N	Mean	Sd	F	Sig
G1	Males	10	101	6.74	0.31	0.58
	Females	10	99.3	8.94		
G2	Males	10	115	5.1	0	1
	Females	10	113	4.8		
G3	Males	10	119	0.816	3.362	0.83
	Females	10	117	1.792		

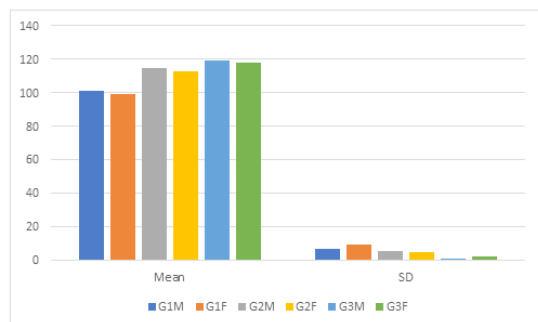


Figure 2: Performance of naming ability between genders within groups.

Discussion

Item analysis

The current results support the earlier study [15] administered BNT to 60 non-brain-damaged adults the usage of these widespread procedures, age range from 40-78 years. Results showed 91% of the test items were correct and the increase in errors across the test was not regular. This investigation supports the current findings that were four items with percentage scores below 1%; Igloo, Knocker, Muzzle, and Yoke. Many Japanese children could answer 'abacus' and 'compass,' at the Developmental age of 84 months. The participants for analysis in this study were 449 children (37 boys, 212 girls).

There was a significant difference between young and middle-aged groups as well as middle aged and geriatric groups only and indicated a significant difference across age groups; age related decline in naming abilities was not found. The participants of the study correctly named 40 items. Around 11 items were correctly named by 95% of the participants. The other four items were correctly named only by 60-70% of the participants, /na:ga:li poḍa/ was named only by 39% of the participants [16].

Error analysis

In error analysis the responses were related names by 30%, visual misperception by 8%, don't know by 8%, multiple attempts by 25% and no response by 17%. Most of the responses were elicited from the early adolescence. The BNT was administered to 60 non-brain-damaged adults the usage of these widespread procedures, age range from 40-78 years. Results showed that examiners can reliably carry out the revised test tactics. Additionally results show that two response categories (Related Name and Don't Know) accounted for almost 80% of mistaken responses [17]. Studied 21 dyslexic boys, aged between 11 and 18, 19 control boys from the same background were also given the tests total of 40 participants were present. It was found that the dyslexics were no less successful than the controls in finding the names for the parts of the objects, when an analysis of errors was carried out, it was found that, in comparison with the controls, they produced more distortions of words (for instance bucker for buckle), gave fewer "don't know" responses, and showed a greater tendency to repeat the parent word [18].

Frequency of synonyms was used for test stimuli

In the present study synonyms were given to the names frequently for few words i.e. shirt, frock, wheelchair and garland, as they were no much exposed to the traditional vocabulary. The similar findings were found in the other supporting studies [11]. Three were less precise names than the name specified in the Boston Naming Test. Ten items were called a consistent other name by 10% or more of our subjects.

Comparison of naming ability between groups with respect to age

When Boston Naming Test in Telugu (60) was compared between the groups significant difference was found in 3 groups. Results revealed that group 3 performed better than group1 and group 2. As the age increases vocabulary also increases in the current study which in support with present study. Compared the norms of BNT in Dutch-speaking Belgian primary school children. As with published norms for similarly aged North-American children and found a significant difference [5]. Found that confrontational naming within a sample of 70 normal 6- to 12-year-olds. Revealed significant between-group for several of the age ranges. This result is in consensus with the current results. Collected normative data for total of 100 typical individuals in the age ranges of 20-40 years, 40-60 years and 60+ years. Although results indicated a significant difference across age groups, which supports the current results [7-9]. Examined visual naming test (VNT) and auditory description naming (ANT) specifically for children. The participants were 200 typically developing children, ages 6-15. Accuracy scores were high across age groups, indicating that item names were within the mental lexicon of most typically developing children. Boston naming test was compared within the groups i.e. to know the difference between the males and females for naming ability. However, in the present study males performed better than the females in all three groups [10]. Supports the present findings. BNT performance revealed that male and female participants performed similarly. The performance on the BNT is impacted by a variety of factors including age, gender, measured intelligence, educational attainment, vocabulary knowledge, level of acculturation, and ethnicity in 15- to 18-year-old adolescents.

Comparison of naming ability between groups with respect to age.

In the present study the males performed slightly better than female in all the three groups but there was no significant difference found, some studies suggest that males obtain higher scores than females on measures of confrontation naming [19]. Some studies supporting the present results showed significant effects of age and gender on BNT performance and revealed that as the age increases the naming ability also increases [5,6,12,20,21]. However, explored the effects of age, education and gender on the performance on the BNT, it was found that male respondents achieved higher scores than the female. It supports the current findings age range of 6 to 7 yrs. Results indicate that the Boston Naming Test can discriminate within a normal population were found to have a significantly greater number of items correctly named but no gender differences in cue utilization in 6 to 7 yrs. old [18].

Conclusion

The present study aimed to assess the naming ability in Telugu adolescents by using Boston naming test (60). It was divided into three groups i.e. early adolescence (10 to 13 yrs.), middle adolescence (14 to 17 yrs.) and late adolescence (18 to 19 yrs.). The pilot study was done on adolescents, few difficulties were found in words like flute, cactus, compass, rhinoceros, globe and protractor hence those words were replaced by other appropriate words i.e. /pillanagro:vi/, /na:ga:li poḍa/, /koiva:ramu/, /k^hḍgamrugamu/, /b^hu:golamu/ and /konama:ni/, hence the words were replaced with other appropriate words i.e. /ḍluru/, /kaḥḥa/, /ujjaḥḥa/, /e:nuḥḥa/, /eluka/, and /palaka/.

Three familiar words were added to the test stimuli i.e. /ḍzḍa/, /a:vu/ and /ḥeji/ to make it as BNT-T (60), familiarity check were done.

The test was performed using 60 items line drawing pictures. Picture was presented to the individual using the stimulus book, scoring was given based on the response 2 score was given for correct response or response with semantic cue, score 1 was given when response was elicited with phonemic cue and 0 was given when no response was elicited.

Item analysis was done to check familiarity of each word in all three groups. Firstly the item analysis was done to know the percentage of the word stimuli which reveals 11 items were named correctly about 100%, 18 items were correctly named by named correctly by 70% of participants and 27 items were correctly named by the 60% of participants; the other 4 items i.e. whistle by 48%, shirt by 45%, wheelchair by 40% and pillar by 56% were named correctly by participants. Error analysis was done to check the 38 incorrect responses. Most of the incorrect responses elicited were the related names, and then there were multiple responses for the picture presented. Different names were given to the words like shirt, frock, wheelchair and garland which were received by group 1. Comparison between and within the groups with respect to gender revealed that males performed better than the females within the groups. However, late adolescence performed better than the early and middle adolescence. Comparison within the group reveals males performed better than the females. Early adolescence could not perform as they were not much exposed to the traditional vocabulary, language and had less vocabulary, middle adolescence performed better than early as they were aware of vocabulary and late adolescence performed better than early and middle as they are exposed to the language more.

Implications

The Boston naming test in Telugu (BNT-T 60) is the modified version of the previous BNT in Telugu. It will be clinically useful to speech language pathologists in order to assess naming ability in adolescents with acquired language disorders (traumatic brain injury, stroke and etc.). It can also be used in the intervention for the language disorders.

It has been done in limited population. Further researchers can standardize the BNT-T (60) [as in previous BNT standardization has been done, but we replaced the six words and added three words so standardization should be done as it was modified]. It has to be carried on various disordered population. It can be extended to bilingual population. It can be extended to other Indian languages.

References

1. Albert ML, Goodglass H, Helm NA, Rubens AB, Alexander MP (1981) Dysphasia without repetition disturbance. *Disorders of Human Communication* 92-106.
2. Tsang HL, Lee TM (2003) The effect of ageing on confrontational naming ability. *Arch Clin Neuropsychol* 18: 81-89.
3. Albert MS, Heller HS, Milberg W (1988) Changes in naming ability with age. *Psychol Aging* 3: 173-178.
4. Albert M, Goodglass H, Helm N, Rubens A, Alexander M (2013) *Clinical aspects of dysphasia*. Springer Science & Business Media.
5. Ali S, Elliott L, Biss RK, Abumeeiz M, Brantuo M, et al. (2022) The BNT-15 provides an accurate measure of English proficiency in cognitively intact bilinguals - a study in cross-cultural assessment. *Appl Neuropsychol Adult* 29: 351-363.
6. Cohen M, Town P, Buff A (1988) Neurodevelopmental differences in confrontational naming in children. *Developmental Neuropsychology* 4: 75-81.
7. Guilford AM, Nawojczyk D C (1988) Standardization of the Boston Naming Test at the kindergarten and elementary school levels. *Language, Speech, and Hearing Services in Schools* 19: 395-400.
8. Hamberger MJ, Seidel WT, MacAllister WS, Smith ML (2018) Auditory and visual naming tests for children. *Child Neuropsychology*, 24: 903-922.
9. Kindlon D, Garrison W (1984) The Boston Naming Test: Norm data and cue utilization in a sample of normal 6-and 7-year-old children. *Brain and Language* 21: 255-259.
10. Lansing A E, Ivnik R J, Cullum C M, Randolph C (1999) An empirically derived short form of the Boston naming test. *Arch Clin Neuropsychol* 14: 481-487.
11. Martielli T M , Blackburn L B (2016) when a funnel becomes a martini glass: Adolescent performance on the Boston Naming Test. *Child Neuropsychol* 22: 381-393.
12. Nicholas LE, Brookshire R H, MacLennan DL, Schumacher J G , Porrazzo S (1989) Revised administration and scoring procedures for the Boston Naming Test and norms for non-brain-damaged adults. *Aphasiology* 3: 569-580.
13. Riva D, Nichelli F , Devoti M (2000) Developmental aspects of verbal fluency and confrontation naming in children. *Brain Lang* 71: 267-284.
14. Rosselli M, Ardila A, Jurado MB, Salvatierra JL (2014) Cognate facilitation effect in balanced and non-balanced Spanish-English bilinguals using the Boston Naming Test. *Int J Biling* 18: 649-662.
15. Sheppard C, Kousaie S, Monetta L, Taler V (2016) Performance on the Boston Naming Test in bilinguals. *Journal of the International Neuropsychological Society* 22: 350-363.
16. Storms G, Saerens J, De Deyn PP (2004) Normative data for the Boston Naming Test in native Dutch-speaking Belgian children and the relation with intelligence. *Brain Lang* 91: 274-281.
17. Sunil Kumar R, Shyamala KC, Vijayetha S, Gnanavel K (2013) Development of Boston Naming Test in Telugu: Performance of typical individuals and individuals with aphasia. *J Speech Lang Hear Res*.
18. Stirling, E G and Miles T R (1988) Naming ability and oral fluency in dyslexic adolescents. *Annals of Dyslexia* 38: 50-72.
19. Albert MS, Heller HS , Milberg W (1988) Changes in naming ability with age. *Psychol Aging* 3: 173-178.
20. Tsang HL, Lee TM (2003) The effect of ageing on confrontational naming ability. *Arch Clin Neuropsychol* 18 : 81-89.
21. Ursula Kirk (1992) Confrontation naming in normally developing children: Word-retrieval or word knowledge? *Clinical Neuropsychologist* 6 :156-170
22. Yeates KO (1994) Comparison of developmental norms for the Boston Naming Test. *The Clinical Neuropsychologist* 8: 91-98.
23. Zec RF, Burkett NR, Maxwell SJ, Larsen DL (2007) A cross-sectional study of the effects of age, education, and gender on the Boston Naming Test. *Clin Neuropsychol* 21: 587-616.