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Research Article

Reducing Fatigue and Weakness: The Positive Effects of Blood Transfusions in HIV Care

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Abstract

Blood transfusions play a crucial role in the management of individuals living with HIV, particularly in alleviating fatigue and weakness associated with anemia. Anemia is a common complication in HIV patients, often resulting from the virus itself, antiretroviral therapy, or nutritional deficiencies. The debilitating symptoms of fatigue and weakness can significantly impact daily functioning, quality of life, and adherence to treatment. This review article explores the positive effects of blood transfusions on physical well-being and immune function in HIV care, highlighting the immediate benefits of increased hemoglobin levels and improved oxygen delivery to tissues. Clinical evidence supports the use of blood transfusions as an effective intervention for managing severe anemia in HIV patients. Studies have shown that transfusions lead to rapid restoration of hemoglobin levels, resulting in marked improvements in energy levels and a reduction in fatigue. Furthermore, transfusions have been associated with enhanced immune function, as improved oxygenation supports the activity of immune cells, thereby reducing the risk of opportunistic infections. These benefits underscore the importance of incorporating blood transfusion therapy into comprehensive care strategies for individuals living with HIV. Despite the benefits, it is essential to consider the risks associated with blood transfusions, including transfusion-related reactions and the potential for iron overload. Adhering to evidence-based guidelines and implementing individualized transfusion strategies can help mitigate these risks.

Keywords: blood transfusions; hiv; anemia; fatigue; weakness

Introduction

Language proficiency is usually assessed through rating scales and self-reporting questionnaires. These measures are subjected to bias and hence the findings on these measures may not reflect language proficiency accurately in order to obtain accurate measure objective measures has to be used. Verbal fluency skills measured through category fluency and phonemic fluency skills is one such objective measures. The present study aims to correlate the self-rating proficiency measures of LEAP Q with two verbal fluency measures the study was carried on 30 bilingual participants. The participants on the basis of their rating on LEAP Q were divided into three groups, low proficiency, high proficiency groups and perfect or native like proficiency groups. Correlation between the measures i.e. rating on LEAP Q and verbal fluency measures was determined through Spearman's correlation coefficient. The r values obtained on correlating LEAP Q ratings (speaking domain) with category fluency and phonemic fluency measures were greater than 0.8 for all three groups indicating that the measures correlated. Verbal fluency measures are time effective measures and gives useful information about bilingual proficiency. It can be used alongside proficiency measures Bilingualism is the ability to communicate in more than one language and is viewed as a continuum of language skills in which fluency in any of the languages used may vary over time and across social settings, conversational partners and topics (Grosjean, 1989). It is a common phenomenon seen in the society.

Earlier views on bilingualism assumed the bilinguals to be proficient in both the languages. However, this view was diluted in the following years with the introduction of the 'competence' factor also called as proficiency. A bilingual is assumed to have great facility and competence in the first language but this doesn't mean that a person's first language is the dominant language of the person; it is the language which the person is comfortable with. A language which is necessarily not the native language of the speaker but the language used in locality of that person is referred to as second language or L2 and the second language proficiency may vary from basic to advanced levels.

Questionnaires, self-rating scales, fluency tests, flexibility tests and dominance tests are used practically to estimate proficiency in the second language. Out of these measures, the self-rating scale is a time economy measure to rate proficiency and has extensive usage. Rating scales such as International Second language Proficiency Rating Scale (Ingram, 2000) or rating scales clubbed with questionnaires such as Language Experience and Proficiency Questionnaire (LEAP Q Marian, Blumfield & Kaushanskaya, 2007) are commonly used. Australian Second Language Proficiency Ratings which is now widely known as the International Second Language Proficiency Ratings (ISLPR), due to its increasing international use, is a scale that can be used to rate the second or foreign language proficiency in adolescent and adult learners. It consists comprises of four domains namely speaking, listening, reading and writing. The development of the target

language is rated from 0 (no ability to communicate in the target language) to 5 (indistinguishable from a native speaker of the same sociocultural background). It also has 'intermediate' 'plus' or 'minus' levels, accounting for a total of 12 levels in each subscale.

However, the proficiency rated on self-rating scale is subjected to bias and has to be compared with an objective measure for clarity in measurement. Verbal fluency assessment is one such objective measure. Verbal fluency skill is a short time test for verbal functioning (Lezak, 2004). It is a cognitive function that facilitates information retrieval from memory. Successful retrieval requires executive control over cognitive processes such as selective attention, selective inhibition, mental set shifting, internal response generation, and self-monitoring. In other words, it is the ability to form and express words in accordance with a preset criterion. Verbal perseverations or forming words that do not belong to a required category is a characteristic feature of disorders of verbal fluency. A normal level of verbal fluency is very much necessary for optimal communication and, therefore, for normal social and occupational functioning.

The two most common parameters of verbal fluency are (1) semantic fluency (wherein a person is asked to generate lexical items belonging to a specific lexical category (most commonly, names of animals); and (2) phonemic fluency (wherein the person is asked to produce words beginning with the given letter, most commonly F, A, and S). Tests of verbal fluency often evaluate a person's ability to retrieve the desired information with minimum search parameters (Lezak, Howieson, Loring, Hannay, & Fischer, 2004). This test is commonly used test for assessing verbal fluency. The performance on verbal fluency skills reflects the vocabulary size, speed of processing, lexical access and inhibition, thus can provide an estimate of proficiency. The aim of the current study is to compare the self-ratings on speaking domains of LEAP Q with category fluency and phonemic fluency to verify if the parameters correlate with each other.

Objective: To compare the self-rating on speaking domain of LEAP-Q with verbal fluency skills.

Method: A total of 30 participants in the age range of 18-25 years were recruited for the study. All the participants were native Kannada speakers with English as L2. All of them were exposed to L2 (English) right from their childhood and had a minimum of 10 years of exposure to L2 (English). The participants were asked to fill LEAP Q (Ramya & Goswami, 2009). The questionnaire contains 18 questions eliciting details about language acquisition and usage. Question 10 of the questionnaire requires the participants to rate their proficiency on four domains: understanding, speaking, reading and writing using a four-point rating scale (where, 1-Zero Proficiency, 2-Low, 3-Good and 4-Perfect Proficiency). Rating on only speaking domain was considered for analysis. Verbal fluency skill in the second language was assessed through two tasks; category fluency and phonemic fluency skills. In the category fluency skill, the participants were asked to name as many lexical items as possible under the five lexical categories (animals, birds, fruits, vegetables and common objects). The participant was given a duration of 2 minutes to list down the lexical items under each category. No cues were given and the number of lexical items named under each category was noted down. For the letter fluency task, the participant was asked to list words starting from the letter's 'F', 'V' and 'S'. The participants were given a duration of 2 minutes to list words same as category fluency skills and the number of correct entries under each letter was noted and analysed.

Results and Discussion: The rating on the speaking domains of LEAP Q was taken into consideration. Out of the 30 participants, 12 participants rated their proficiency to be 'good'. 10 participants rated 'perfect' proficiency and the remaining 8 participants rated their proficiency to be 'low' and none of the participants rated 'zero' proficiency. (see Table 1)

	Perfect Proficiency (4)	Good Proficiency (3)	Low Proficiency (2)	Zero Proficiency (0)
Number of participants	10	12	8	0

Table 1. Rating of second language proficiency of participants on speaking domain of LEAPQ

The performance on category fluency and phonemic fluency tasks was analysed with respect to the rating on speaking domain of LEAP Q. Participants who rated 'good' proficiency obtained a mean score of 12 on category fluency and 10 on phoneme fluency task as a whole. Participants who rated their proficiency to be 'perfect' proficiency obtained a mean score of 14 and 13 on category and phonemic fluency respectively. The 8 Participants who rated their proficiency to be 'low' obtained a mean score of 10 and 8 on category and phoneme fluency tasks (see figure 1 and 2). The mean scores on both category fluency as well as phoneme fluency task was more for participants who had rated their second language proficiency to be perfect followed by participants who had rated their proficiency as good and low.

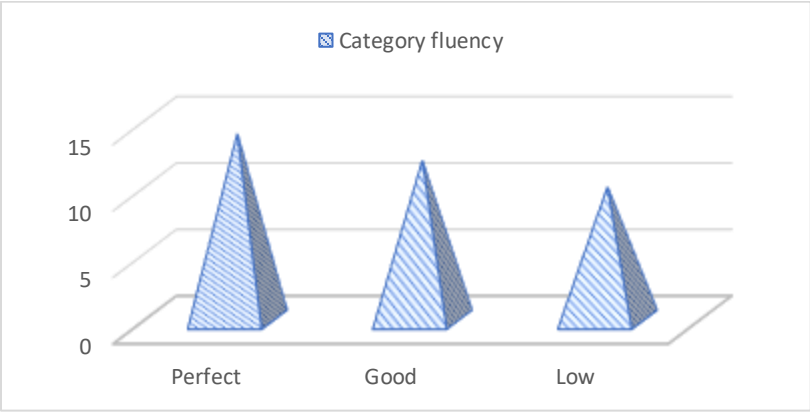

Figure 1. Performance of participants on category fluency task.

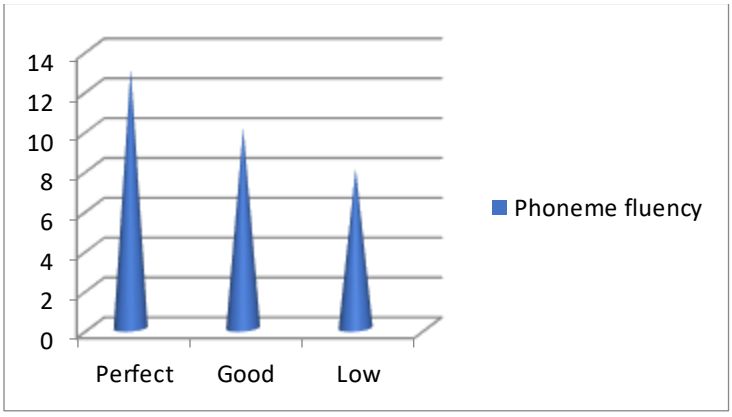

Figure 2. Performance of participants on phoneme fluency task

The performance on category fluency and phonemic fluency was compared with the self-ratings derived on LEAP Q by employing Kruskal Wallis Test (as the data did not abide the properties of normal distribution) the χ^2 value 4.14 ($p<0.05$) showed significant difference. Further Mann Whitney U test was carried out to compare the individual groups, the Z score between the subgroups on the basis of proficiency ranged from 5.16 to 6.94 showing significant difference. Correlation between LEAP Q rating and verbal fluency tasks was carried out by using Spearman's correlation coefficient, the r values for good proficiency group was 0.90 and 0.82 for category fluency and phonemic fluency tasks respectively. For the 'perfect proficiency' group, the r values were 0.95 and 0.85 respectively and for the 'low' proficiency group the r values were 0.91 and 0.89 for category fluency and phonemic fluency tasks respectively.

It is an established fact that any self-rating estimate of fluency is subjected to bias and has to be compared with objective measures of proficiency measurement. Verbal fluency assessment is one such measurement. The results of the present study showed good correlation between self-ratings and the performance on verbal fluency skills (category fluency and verbal fluency skills) showing that the measures used to tap proficiency could effectively do so. As the correlation score was high, it can also be inferred that the bias in self-rating would have been low. The r values between the two sub tasks of verbal fluency showed very less difference indicating that there was no much difference between the two measures. The verbal fluency is a less time-consuming test to assess second language proficiency it can be used as an independent measure for assessment or can be compared with the self-rating scales to verify if these two measures are linear.

Conclusion: Verbal fluency tasks can be used as a supplementary tool for proficiency estimation along with self-rating questionnaires. The subtasks i.e. category fluency measures can reflect vocabulary size, speed of processing etc, while phoneme fluency can provide an estimate of vocabulary size (especially infrequent items), lexical access etc. These measures are time effective and can be adjoined with self-rating questionnaires to tap proficiency.

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