

CRITICAL THINKING AND WRITING: THE EFFECTS OF CRITICAL THINKING ON WRITING SKILL AMONG IRANIAN UNIVERSITY STUDENTS MAJORING IN TEFL

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ABSTRACT

Critical thinking is fundamental to all language learning skills and to all disciplines and aspects of our lives as well. This study investigates the effects of critical thinking on writing skill of the learners of teaching language as a foreign language, TEFL, students in Tehran Payame Noor University, Iran. Participants of the study consisted of 26 female TEFL students between ages of 24 to 40, who were selected non-randomly. All the subjects, as one group, were pretested before treatment and received a posttest after that in the form of two writings. A 4-point Likert scale questionnaire was given to the subjects before and after the treatment. All the procedure of the study was done via the Internet. Applying t-test to the results of the research revealed that although enhancing critical thinking skills had a statistically significant impact on TEFL subjects' writings. The implication might be that critical thinking is a process that should be taught from the very beginning levels of education system and integrated with all aspects of instruction in language learning pedagogy.

KEYWORDS: Thinking, Critical thinking, Writing skill, Critical writing

INTRODUCTION

"A man who does not think for himself does not think at all" (Wilde, 1891). People often think about anything without a reason or a stimulus. Critical thinking often means "thinking about thinking"; it is a deeper thinking about a particular issue. The word "critical" doesn't mean taking a negative view or finding something wrong to criticize a person. Rather, critical applies to examining ideas thoroughly and deeply, not accepting ideas just because they seem wise, and tolerating questions. Through this process, the mind is open to all considerations, assumptions, and details before forming an opinion.

Philosopher Richard Paul, one of the most famous scholars of critical thinking style, and Linda Elder, an educational psychologist, have written extensively on the subject of critical thinking. They define critical thinking as: “That mode of thinking - about any subject, content, or problem - in which the thinker improves the quality of his or her thinking by skillfully taking charge of the structures inherent in thinking and imposing intellectual standards upon them”(Paul & Elder, 2008). Scriven and Paul (2003) define critical thinking in this way: “ Critical thinking is the intellectually disciplined process of actively and skillfully conceptualizing, applying, analyzing, synthesizing, and/or evaluating information gathered from or generated by: observation, experience, reflection, reasoning, or communication, as a guide to belief and action”. They explain critical thinking as a process, not an end. Their “disciplined” requirement suggests that critical thinking is a learned skill; it is methodical, and it is thought out, not random.

While writing critically, you as university students are participating in an academic debate and in this way you are developing your own academic voice through your subjects which is more challenging and risky. Therefore you need high level of skills for critical writing. As you learn these skills, your own skills of writing or reading will improve. You should develop the habit of step by step process of thinking about an argument. Each step in this process is similar to a domino in a long line of dominoes in a certain pattern. As one domino is out of its place, one error in the reasoning can throw off the whole chain of thinking and interrupt the flow and logic of the ideas.

REVIEW OF LITERATURE

Thinking refers to any mental activity involving an individual's subjective consciousness. Thinking allows us to understand the world in different ways. The word "to think" covers numerous and diverse psychological activities. It may refer to the act of being conscious of something, to tending to believe something, to the degree of attentiveness, and to other mental activities like interpreting, evaluating, imagining, planning, and remembering.

Critical thinking

Paul and Elder offer a list of what they call “elements of thought” including purpose, information, inferences/conclusions, concepts, assumptions, points of view, implications/consequences, and questions (2008). Paul (1998) states, “Critical thinking needs to be taught in a dialectical or dialogic way as arguments in relation to counter-arguments”. Scriven and Paul (2003) explain critical thinking as a process, not an end. They believe that critical thinking is a learned skill; it is methodical, and it is thought out, not random.

Halpern (1996) states:

Critical thinking is a kind of thinking which is purposeful, reasoned, and goal directed involving in solving problems, formulating inferences, calculating likelihoods, and making decisions when the thinker is using skills that are thoughtful and effective for the particular context and type of thinking task. Critical thinking is sometimes called directed thinking because it focuses on a desired outcome.

Cottrell (2005) believes:

Critical thinking is a cognitive activity which means thinking in the best way and using mental processes like attention, selection, judgment, etc. Using critical thinking skills, people become more precise in their work, thought, and decisions they make whether something is true and effective or not.

Critical thinkers

Critical Thinking is about becoming a better thinker in every aspect of your life-as a professional, as a consumer, citizen, friend, parent, and even as a lover. Paul and Elder identify the core skills of effective thinking and believe that:

A well cultivated critical thinker raises vital questions and problems, formulating them precisely; gathers and assesses relevant information, using abstract ideas to interpret it effectively; comes to well-reasoned conclusions and solutions, testing them against relevant criteria and standards; thinks open-mindedly within alternative systems of thought, recognizing and assessing their assumptions, implications, and practical consequences; and communicates effectively with others in figuring out solutions to complex problems (2008, p.2).

Ruggiero (2010) states:

Success depends on the ability to think critically. Training and practice turn this ability into a powerful skill. Becoming a critical thinker breaks up critical thinking into a series of cumulative activities, a unique approach that has made this text a staple of many critical thinking courses. Harris (2010) introduces six powerful characteristics for critical thinkers as: curiosity, humility, ability to research, active listening, objectivity, and creativity. In her article, she recommends everyone evaluate themselves for having these great characteristics.

There are so many studies about critical thinking and its effects on different fields and skills among different students at different levels all around the world. Paul (1998) discusses how not to teach critical thinking, and how to teach critical thinking. He lists means of evaluating a course on critical thinking taught in this way, and some “basic theoretic underpinnings” for such a course. Mc. Peck (1982) defines critical thinking as thinking with skepticism about a subject or field that can include certain aspects of problem solving and various skills. He argues that critical thinking can be taught using those drills and practice that encourage the use of critical thinking (pp.107-110). Nelson (1994) introduces key aspects of the pedagogy of critical thinking and their relationships with collaborative learning. He suggests that it is important to learn how to explain why incorrect responses occur, in addition to providing the disciplinary expectations of a subject (pp.45-58). Olson (1985) connects writing and thinking processes and presents a lesson plan to be used at grade-school level that supposedly encourages students to use all levels of thinking and all parts of the writing process (pp.102-107). Slattery (1990) suggests types of comments that can be made on student papers to encourage critical thinking: a support response and a challenge response (pp.332-335).

SIGNIFICANCE OF THE STUDY

A curriculum aimed at building thinking would benefit the individual learner, the community, and the entire democracy (Dewey, 1910). Most of the educational programs do not benefit critical thinking skills. In order to find out a reliable and critical program for educational systems, many studies should be conducted. The lack of sufficient amount of research particularly relating to the effects of critical thinking on writing essays among Iranian TEFL students demands more studies in this area. This study is designed to investigate the influence of critical thinking on academic writings through using research techniques. The following research questions are proposed to pinpoint the effects of critical thinking on writing skill among some university students.

RESEARCH QUESTIONS

This study is going to answer the following questions:

1. What is the significant effect of critical thinking on writing skill among Iranian TEFL students?
2. Are those students equipped with critical thinking, better academic writers?
3. How can teachers enhance their students' critical thinking abilities and skills?

METHODOLOGY

Participants

The participants of this study were 26 female English students in Payame Noor University majoring in TEFL, Tehran, Iran. They were all selected non-randomly, in different ages between 24-40 with the same native language. All the subjects participated in the study voluntarily. The homogeneity of the subjects was confirmed according to writing IELTS scoring standard. Each subject had two scores at each stage of the research, and all of them were assigned into one group. The study was conducted in the winter, 2013.

Instruments and data collection

The instruments used in the study to achieve some reasonable answers to the questions of the study included: testing materials, scoring materials, and teaching materials.

Testing materials

In order to collect the appropriate data, the participants should write two writings with different topics. Two topics were chosen from Longman Complete Course for the TOEFL Test, the first one as a pretest and the second one as a posttest. The first topic was: "Where do writers find their ideas?" and the second topic: "Do you agree with the following statement? Boys and girls should attend separate schools." The posttest was conducted at the end of the study after the treatment to find out the differences.

A questionnaire with the format of Likert scale was constructed by the researcher by making use of the related literature. The validity and reliability of the questionnaire was approved based on applying test, re-test which has been explained in subsequent sections. It concluded 26 items and was a 4-point close-ended one sent to the subjects via the Internet. The researcher sought to

measure the degree of the participants' acquaintance with critical thinking and critical thinkers' characteristics.

Scoring materials

It was the Writing IELTS standard scoring rubric applied to measure the homogeneity of the involved participants. It was used only for the first writing. In order to score the first and second writing based on critical thinking criteria, WSU, Washington State University rubric was applied. It is an analytical rubric that assesses seven thinking skills. The WSU rubric specifies the highest and lowest level of performances and the intervening levels are described and adapted by different faculties. The high validity and reliability of the rubric has been approved by many researchers in diverse disciplines and affairs. Holistic critical thinking scoring rubric, HCTSR, likewise, provides criteria to determine the level of critical thinking using a 1-4 scale (Facione & Facione 1994).

Teaching materials

Four instructional files about critical thinking were sent to the participants as treatments after writing the first topic. The contents of the files were thoroughly derived from the articles and books of the most famous scholars of critical thinking styles such as Richard Paul, Linda Elder, and others. The subjects were supposed to study the files carefully to know about concepts, tools, and characteristics of critical thinking and also to pose any questions about them. All the above-mentioned materials were applied via the Internet because the subjects were not available in real classes.

Procedure

The study was conducted using 26 participants. As the first step and a pretest, a topic was sent to the participants and they were asked to write about it. The topic was: "Where do writers find their ideas?" The subjects had about one week to send their first writings to the researcher. The homogeneity of the subjects was measured by applying the IELTS writing scoring standard including 9 bands in order to assess task response, coherence and cohesion, lexical resource, and grammatical range and accuracy of the writers. After scoring the writings, the researcher selected ten of them randomly. They were evaluated by another person majoring in TEFL to assign the inter-rater reliability between the two sets of scores. The second step was conducted through sending a questionnaire. It was a Likert, 4-point, close-ended questionnaire through which the subjects were asked to find out their degree of agreement about 26 statements concerning the characteristics of critical thinking and critical thinkers as well. To measure the reliability of the questionnaire, the test-retest technique was applied; 10 participants were chosen randomly and the questionnaire was resent to them about 3 weeks later and the correlation between the results was calculated.

The third step of the study was done by sending four instructional files as treatments. The files concluded the concepts and tools of critical thinking, some information about critical writing, the characteristics of critical thinkers and critical writers. The main point for the researcher was to choose the most comprehensible and explicit papers and documents about critical thinking in order for the subjects to be interested in the study, not being confused or somehow frustrated

from keeping on the succeeding stages. Among the files, there was also one which was an introduction to Pearson RED Model, (Recognize Assumptions, Evaluate Arguments, Draw Conclusions) and suggested for further reading for those interested in business affairs. The participants had about two weeks to study and analyze the files and they were supposed to inform the researcher whenever they were ready for the second writing. Some of the subjects who had some difficulties with the concepts of the files consulted with the researcher via the Internet and phone calls. After announcing their readiness, the subjects were received the second topic: "Do you agree or disagree with the following statement: Boys and girls should attend separate schools. Use specific reasons and examples to support your opinion." They had enough time to dedicate to the second writing as a posttest and they were expected to write it according to the information of the instructional files they had received before.

After gathering all writings, the standard WSU critical thinking scoring rubric, the modified version, was selected to score them. The Washington State University Critical Thinking Project which was an analytical rubric was administered to the scoring and its standard was a score between 1-4 ranging from very weak to partially developed, to substantially developed, and to excellent. The mentioned levels were corresponded to "confused fact finder", "biased jumper", "perpetual analyzer", "pragmatic performer", and "strategic revisioner", respectively. Two scorers attended to prevent the subjectivity. The first scorer was the researcher, herself, and the second one was an M.A. student majoring in TEFL in Tehran Payame Noor University. In the case of any conflicts, they were overcome by mutual conversation by the scorers.

RESULTS AND DISCUSSION

The purpose of the study was to find out the effect of critical thinking on writing skill among Iranian TEFL learners. In order to answer the questions of the study, the related data were collected through a process of pre-test, treatment, and post-test design and statistically analyzed by applying statistical package (SPSS).

In order to test the homogeneity of the participants' English background knowledge, an IELTS writing test was assigned to the first writings. Two raters scored ten writings independently according to the IELTS standard scoring rubrics. To examine the inter-rater reliability, Pearson correlation was used as shown in Table 1.

Table1: Inter-rater Reliability Correlation

		Test1	Test2
Test1	r	1	.892
	Sig. (2-tailed)		.001
	N	10	10
Test2	r	.892	1
	Sig. (2-tailed)	.001	
	N	10	10

As it is shown in Table 1, Pearson $r = 0.89$ proves that there is a significant correlation reliability at the 0.01 level (2-tailed).

For the next step, the reliability of the questionnaire used in the study was measured. To this end, the replies of ten participants were evaluated one by one by using kappa coefficient. The results showed that for 7 participants, there was a nearly good correlation ($0.662 \leq \text{kappa} \leq 0.931$, $0.001 < p < 0.005$) and for the rest of them there was no correlation coefficient between two sets of data.

In order to measure the correlation reliability between two sets of data in the questionnaire, Cronbach's Alpha was used (See Table 2).

Table 2: Reliability Statistics for two sets of data

Questionnaire	α
1st	0.918
2nd	0.895

As Table 2 shows Cronbach's Alpha (α) for the first questionnaire for ten subjects is 0.918 and for the second one is 0.895. For both cases, the value of (α) signifies the strong reliability of the questionnaire. To compare the standard deviation between the means of the two writings, before and after the treatment, the statistic technique paired sample t-test was applied. The results can be observed in Table 3. The mean of posttest ($M=2.19$) is higher than that of pretest ($M=1.50$). It might be due to the effect of the treatment assigned in posttest.

Table 3: Paired Samples Statistics

Pair 1	M	N	SD	SEM
Test1	1.50	26	.583	.114
Test2	2.19	26	.749	.147

Table 4 shows the correlation between scores of the two writing tests. As the results clarify there is no significant correlation between these two sets of scores.

Table 4: Paired Sample Correlations

Pair 1	N	Correlation	Sig.
Test1 & Test2	26	.229	.261

As it is clear in Table 5, observed value of sig (2-tailed) = 0.00, and less than the alpha level of .05. So it can be concluded that there is a significant difference between the performance of subjects in pretest and posttest.

Table 5: Paired Sample Test

	Paired Differences					t	df	Sig. tailed)	(2-tailed)
	M	SD	SEM	95% Confidence Interval of the Difference					
				Lower	Upper				
Pair 1 Pretest Posttest	-.692	.838	.164	-1.031	-.354	-4.215	25	.000	

Tests of normality of the data were applied through Kolmogorov-Smirnov and Shapiro-Wilk. Table 6 reveals the normality of the pretest might be rejected.

Table 6: K-S & Shapiro-Wilk Tests for pretest scores

	Kolmogorov-Smirnov			Shapiro-Wilk		
	Statistic	df	Sig.	Statistic	df	Sig.
Pretest	.343	26	.000	.715	26	.000

Figure 1 compares the pretest scores with normal distribution and shows that distribution of pretest scores is not normal. It also designates that most of the writings do not fulfill the necessary criteria for writing critically.

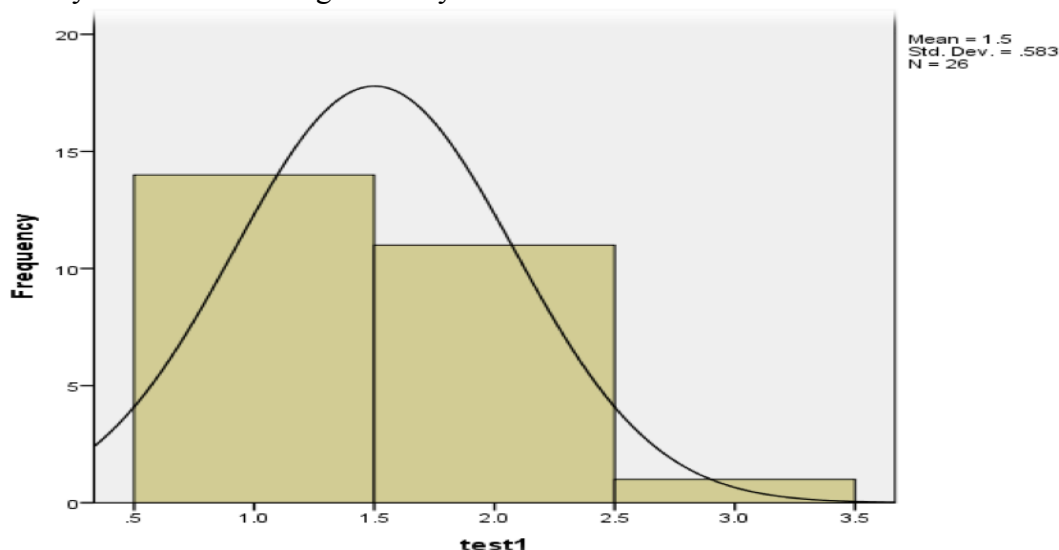


Figure1: Comparison of pretest scores distribution

For posttest scores, the results are as shown in Table 7. The result is as the same as the pretest one. Here $p=.001<0.05$, and data normality hypothesis might be rejected.

Table7: K-S & Shapiro-Wilk Tests for posttest scores

	Kolmogorov-Smirnov			Shapiro-Wilk		
	Statistic	df	Sig.	Statistic	df	Sig.
Posttest	.294	26	.000	.847	26	.001

Figure 2 shows that posttest scores differ in normality with normal distribution. As it can be derived from the Figure 2, the number of critical writings has been increased.

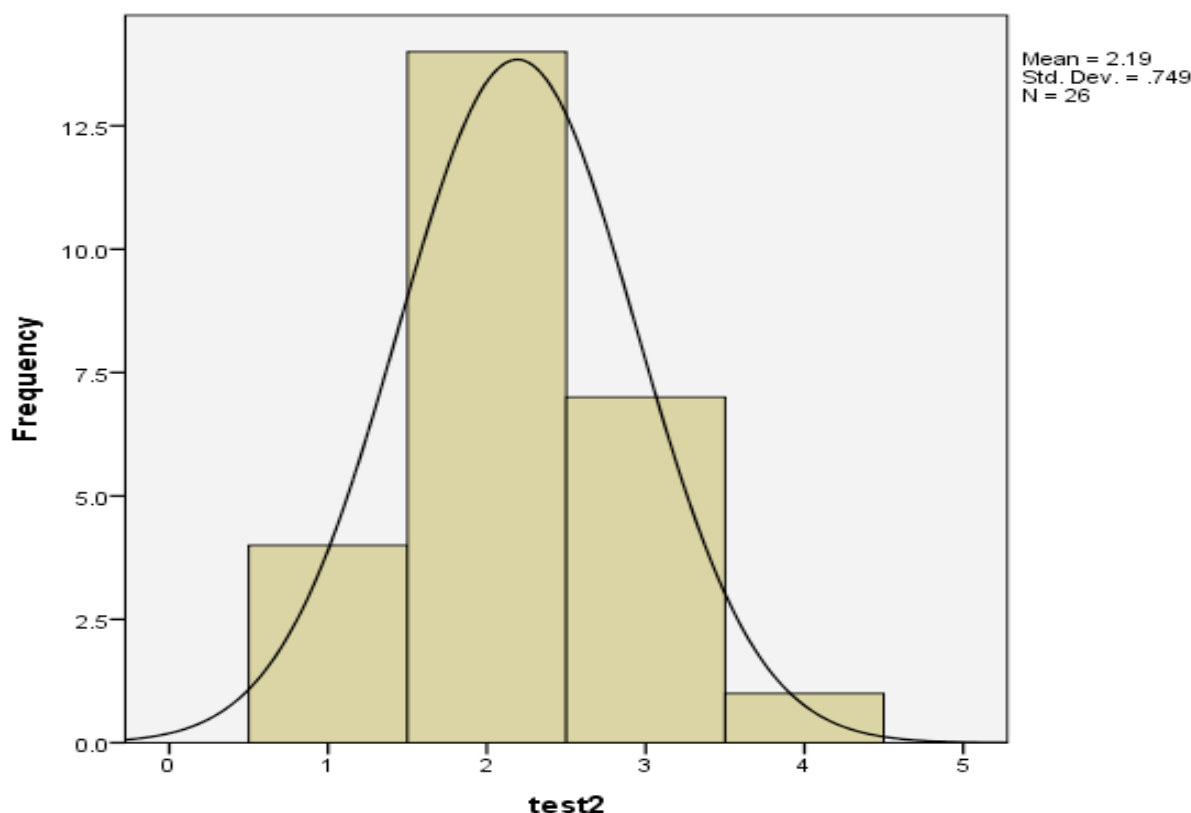


Figure 2: Comparison of posttest scores distribution

Considering the results of the study, one can infer that the performance of the participants was better after receiving the related instructions. It means that critical thinking skill might improve the level of writing among the participants of the study under investigation.

Discussion

This study sought to explore the effects of critical thinking on Iranian TEFL learners' writing skill. Its priority was to determine whether those learners equipped with critical thinking skills were better academic writers or not, and it also investigated how teachers can improve critical thinking skills in their students. Considering the findings, it can be inferred that instructing critical thinking concepts and tools to the learners had positively affected their writing abilities.

The first writing test was conducted with no instruction about critical thinking. However the effect of the related treatment was clear in the second writing test in such a way that above 50% of the subjects had improved their writings according to the criteria of critical thinking, from biased jumpers to pragmatic performers. The effects of the treatment were also visible in the findings of the questionnaire. While analyzing the questionnaire for the second time, after the treatment, the researcher found out that most of the participants had tried to make use of critical thinking concepts and characteristics to fill in the questionnaire. They also felt that they could claim to some extent that their thought changed critically.

One prominent point being considered in this study was about the basic definition of the critical thinking. The term critical originated from the Greek meaning of discerning, separating, or differentiating, (Farrell, 2001). The study tried to make clear for the subjects via the proper instructional files that the idea of being critical differs from being negative, such as only criticizing someone or some sort of that.

The results of the study are in line with findings reported by other Iranian researchers of critical thinking (Assadi, 2013) who showed that critical thinking had positive effects on the writings of an experimental group receiving proper treatments. Although the procedure of the current research was done only through the Internet with its own pros and cons, the practice of critical thinking has become an important topic in academia, and many researchers pay a great amount of attention in different kinds of disciplines. Some argue that thinking and reasoning skills can be taught as if they are generalizable and transferrable skills (Davidson & Hawkins, 1998). Some argue that critical thinking is not an autonomous, cognitive skill that can be learned out of context; domain knowledge and domain practice are essential for critical thinking practice both inside and outside the classroom (Atkinson & Pennycook, 1999).

To sum up, considering the previous studies and the findings of the current research, it could be realized that critical thinking has a statistically significant effect on many aspects of human beings' lives and skills including writing abilities.

CONCLUSION

Critical thinking is widely recognized as an essential component of education, yet it is not widespread. There is considerable evidence that most people fail to subject their behavior with the standards of critical thinking. Many studies have been conducted to introduce and also make use of critical thinking in different disciplines. This study tried to produce a chance for a limited number of Iranian learners to become more familiar with that kind of thinking which involves different aspects of an issue, evaluates different perspectives and opinions, and supports arguments with evidence and proper reasons. WSU analytical critical thinking scoring rubric was used to compare the writers' thinking style in pretest and posttest. Applying paired sample t-test to the collected data revealed that critical thinking instruction had a statistically significant effect on their thinking and accordingly their writing.

Critical thinking is significant in educational programs in schools, institutes, and academics because it is significant in learning. By the use of the findings of this research and the like, good teachers can cultivate critical thinking at every stage of learning in order to enable the learners to analyze, evaluate, explain, and restructure their thinking and hence to increase the good habit of thinking critically in every situation in all their life long.

Limitations of the study

In order to be able to generalize the results of the study to other scopes, some limitations should be taken into consideration. These limitations may cause some suggestions for further studies to support the findings of the research:

First, due to the lack of real classes, the necessary instruction was applied only through the Internet. Hence there was not enough practice and actually many problems and questions of the participants remained unsolved. Making use of real classes could have prepared much more treatments and therefore much more justifications for the claims of the study.

Second, the main scope of the study was on the basis of academic learners' abilities. It could have duplicated considering participants with initial backgrounds in order to build up the strong roots of critical thinking among learners from the very beginning of their educational programs.

Third, the current research did not consider the gender differences and all the participants were female, so some other researches might be conducted for male participants, and even for coeducational systems.

Fourth, the main focus of the study was based on writing skill. It could have been conducted for other skills like reading, speaking, or listening.

Finally, the small sample size in the study could have influence on the generalization of the results. Hence further researches might be suggested for larger sample sizes.

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