

## ORIGINAL RESEARCH ARTICLE

# Assessment/Evaluation of Dentistry Students' Perceptions of Distance Learning During the Covid-19 Pandemic Process : A Two Centers Study

Alem Coşgun <sup>1, \*</sup>, Necibe Damla Şahin <sup>1</sup>, Işıl Sarıkaya <sup>2</sup> and Burcu Nihan Yüksel <sup>3</sup>

<sup>1</sup>Tokat Gaziosmanpaşa University, Faculty of Dentistry, Department of Pediatric Dentistry, Tokat, Turkey and

<sup>2</sup>Tokat Gaziosmanpaşa University, Faculty of Dentistry, Department of Prosthetic Dentistry, Tokat, Turkey and

<sup>3</sup>Ankara University, Faculty of Dentistry, Department of Pediatric Dentistry, Ankara, Turkey

\*Corresponding Author; alemcosgun@hotmail.com

## Abstract

**Purpose:** The present study aimed to comparatively evaluate the acceptance perceptions of satisfaction towards distance theoretical education of students studying at Tokat Gaziosmanpaşa University Faculty of Dentistry (new faculty), which is newly established and located in the countryside, and Ankara University Faculty of Dentistry (old faculty) located in a metropolitan, during the Covid-19 pandemic.

**Materials and Methods:** For this cross-sectional study, a questionnaire consisting of 5 parts and compatible with a Likert scale was prepared. The prepared questionnaire was sent online to the 3rd, 4th, and 5th-grade students at the end of the 2020–2021 academic year. The appropriate chi-square test was used for comparison of categorical variables between groups. The statistical significance level was determined as  $p < 0.05$ .

**Results:** Students in the old faculty thought that the instructors prepared classes including up-to-date resources in distance theoretical education during the pandemic process at a higher percentage than the students in the new faculty (60.1% vs. 48.4%;  $p < 0.05$ ) and that the classes were given regularly with distance education (75.2% vs. 52.9%;  $p < 0.05$ ). 57.7% of the students in both faculties stated it would be useful to continue some theoretical classes with distance education even if the pandemic process ends

**Conclusions:** It is incorrect to apply the same educational strategies at all universities in the country. It would be less costly and much more beneficial for each faculty to produce solutions for their problems. The new faculty needs to develop improving strategies for the academic staff. In addition, dental faculties should design teaching standards that will ensure rapid response and safe continuation of dental education in case of possible epidemics, natural disasters and war in the future.

**Key words:** COVID-19; Dentistry; Distance Learning; Questionnaire

## Introduction

On March 11, 2020, the World Health Organization (WHO)<sup>1</sup> declared that the new type of coronavirus (COVID-19) outbreak, which caused international concern, constitutes a public health emergency and declared this situation as a global pandemic.

In order to control the COVID-19 outbreak, which spread to the whole world in a short time and turned into a pandemic, some measures were taken in the field of health and education. Based on the decision of the Republic of Turkey Higher Education Institution<sup>2</sup>, in most Turkish universities, the face-to-face education process

was interrupted for the 2019–2020 academic year spring semester and the theoretical classes were conducted via distance education. Distance education continued in the 2020–2021 academic year for theoretical classes.

Nowadays, information technologies are constantly changing and developing. These developments also affect the field of education and information technologies are becoming a necessity. At the same time, countries benefit from information technologies in solving problems of education. Thanks to information technologies, structural changes can be made in education systems.<sup>3</sup> As a matter of fact, due to the COVID-19 pandemic disaster that affected the

whole world, in Turkey, as in the entire world, a distance theoretical education system was suddenly adopted. However, since this transition was unexpected and sudden, it seemed to cause some problems.<sup>4</sup>

Universities must have sufficient technological infrastructure, personnel, and academic staff in order to carry out distance education without any problems. Considering these reasons, it could be argued that there may be fewer problems in transition to distance education at universities and faculties with settled establishments that are located in metropolitans during the pandemic period compared to universities and faculties with new establishments that are located in the countryside. However, the high number of students at universities with old establishments located in metropolitans could be a disadvantage in terms of distance education.

Assessment of distance theoretical education with students' feedback can provide important information for developing education strategies for the future.<sup>5</sup> Thus, in this study, it was aimed to comparatively examine the perception of satisfaction towards distance theoretical education of students studying at the new faculty, which is newly established and located in the countryside, and old faculty located in a metropolitan during the Covid-19 pandemic considering related to technical support, instructors, and distance theoretical education.

## Material and Methods

### Study design and ethical approval

All methods were performed in accordance with the guidelines and regulations contained in the Declaration of Helsinki. This study was approved by the Tokat Gaziosmanpaşa University Clinical Research Local Ethics Committee (March 4, 2021, study approval number 21-KAEK-073), and all participants gave their informed consent.

For this cross-sectional study, a questionnaire form consisting of 5 sections was created by two pedodontists with reference to previous survey study<sup>6</sup>, the EBA Distance Education Student Satisfaction Scale<sup>7</sup> and satisfaction surveys for distance education on Turkish university websites<sup>8-10</sup>. Questionnaire were organized under the headings demographic information of the students in the first part, technical support in the second part (3 questions), instructors in the third part (3 questions), distance theoretical education in the fourth part (7 questions), and satisfaction towards distance education in the fifth part (4 questions).

The questions were evaluated by three experts (pediatric dentists, prosthetic dentists, and a Turkish language specialist) before the study to evaluate the content adequacy of the questionnaire and the clarity of the statements of the questions. Based on the comments made by these experts, the questionnaire was designed to include 17 questions and demographic information (Table 1). A pilot test was conducted to evaluate the accuracy and clarity of the questions. 16 students answered the survey. Students were asked after completing each survey if there were any questions that could not be understood while completing the survey. The survey was then revised based on their feedback.

In the present study considering that first-grade students never received face-to-face education at all, and second-grade students received for half a semester, they were planned to be left outside the study, considering that they could not compare face-to-face education and distance education correctly. Therefore, 3rd, 4th and 5th grade students of both faculties were included in the study.

This questionnaire was conducted at the end of the 2020-2021 academic year when students were receiving distance theoretical education due to the pandemic. Due to the social isolation process implemented by government agencies to reduce the spread of COVID-19, 3rd, 4th, and 5th-grade students were asked to voluntarily fill in the questions in the online questionnaire using the Google® Forms program.

### Sample size calculation

With the help of the G \* Power 3.1.9.2 program (Franz Foul, Christian-Albrechts-Universität, Kiel, Germany), according to the exact test family, when using data from the reference article<sup>11</sup> the proportion of old faculty was 27% and the proportion of new faculty was 15%, with a power of 80% and a margin of error of 5%, 156 students for each faculty. Taking 10% less, a minimum of 282 people will be studied, 141 from old faculty and 141 from new faculty.

### Statistical analysis

The SPSS package program (The SPSS 22.0 Chicago, IL, USA) was used for statistical analysis. The appropriate chi-square test was used for comparison of categorical variables between groups. The statistical significance level was defined as  $p < 0.05$ . Data were expressed as numbers or percentages.

## Results

### Demographic data

A total of 310 students, including 153 students [male 45(29.4%), female 108(70.6%)] from Ankara University Faculty of Dentistry, which was an old establishment located in a metropolitan and 157 students [male 68(43.3%), female 89(56.7%)] from Tokat Gaziosmanpaşa University Faculty of Dentistry, which was a new establishment located in the countryside, participated in the study.

### Data on technical support

Compared to the students at the new faculty, students at the old faculty gave a higher percentage of "agree" to the question "I receive informative emails on time" (51% versus 36.9%;  $p < 0.05$ ).

The students, 47.7% of the old faculty and 47.1% of the students in the new faculty reported that they were connected to distance theoretical education without any problems. However, when they experienced technical problems related to distance theoretical education, 49.7% of the students in the old faculty and 38.9% of the students in the new faculty stated that they could not reach the relevant unit without any problems. The difference between the groups was not significant ( $p > 0.05$ ). Details of data related to technical support are given in Table 2.

### Data on related to instructors

The students at the old faculty gave a higher percentage of "agree" response (48.4% vs. 60.1%;  $p < 0.05$ ) to the question, "I think that in distance theoretical education, the instructors prepare courses that include up-to-date resources."

The students, 60.8% of the old faculty and 53.5% of the students in the new faculty stated that the instructors shared comprehensible information in distance theoretical education. 54.9% of the students in the old faculty and 50.3% of the students in the new faculty stated that they could easily convey their questions, ideas, and problems about distance theoretical education to the responsible faculty member. The difference between the groups was not significant ( $p > 0.05$ ). The details of the data related to the instructors are given in Table 3.

### Data related to distance theoretical education

Compared to the students at the new faculty, students at the old faculty gave "I agree" responses at a higher percentage (52.9%

**Table 1.** Questionnaire prepared for the study

<b>Part 1. Demographic information</b>					
Your gender	Male o		Female o		
Your university	Ankara University o		Tokat Gaziosmanpaşa University o		
Your Grade	1st grade o	2nd grade o	3rd grade o	4th grade o	5th grade o
			Agree	Neutral	Disagree
<b>Part 2. Technical support</b>					
I can connect to the distance theoretical education system without any problems.			o	o	o
I receive informative e-mails about my distance theoretical education classes on time.			o	o	o
When I have technical problems related to distance theoretical education, I can access the relevant unit without any problems.			o	o	o
<b>Part 3. Instructors</b>					
I think that in distance theoretical education, instructors prepare classes that include up-to-date resources.			o	o	o
Instructors share comprehensible information in distance theoretical education.			o	o	o
I can easily convey my questions, ideas, and problems related to distance theoretical education to the relevant instructor.			o	o	o
<b>Part 4. Distance theoretical education</b>					
During the pandemic process, classes are held regularly with distance theoretical education.			o	o	o
Thanks to the distance theoretical education system, I can quickly access the course content.			o	o	o
Thanks to the distance theoretical education system, it is beneficial for me to watch the repetitions of the courses.			o	o	o
In distance theoretical education, I ask questions more comfortably than face-to-face lessons.			o	o	o
The distance theoretical education I received during the pandemic strengthens my communication with both my instructors and classmates.			o	o	o
After the class I receive with distance theoretical education, I feel that I learned effectively.			o	o	o
Thanks to distance theoretical education, I can save time to take care of my other interests.			o	o	o
<b>Part 5. Satisfaction towards distance education</b>					
I am generally satisfied with the distance theoretical education activities carried out by our university.			o	o	o
Distance theoretical education is an effective learning model.			o	o	o
The classes given with distance theoretical education are as successful as the class given face-to-face.			o	o	o
Even if the pandemic process ends, I think it would be useful to continue to conduct some theoretical courses in the form of distance theoretical education.			o	o	o

**Table 2.** Data on technical support

	Total (n=310 ) n(%)	old faculty (n=153) n(%)	new faculty (n=157) n(%)	p value
I can connect to the distance theoretical education system without any problems.				
Agree	147(47.4)	73(47.7)	74(47.1)	0.856
Neutral	117(37.7)	59(38.6)	58(36.9)	
Disagree	46(14.8)	21(13.7)	25(15.9)	
I receive informative e-mails about my distance theoretical education classes on time.				
Agree	136(43.9)	78(51)a	58(36.9)b	0.026
Neutral	87(28.1)	41(26.8)a	46(29.3)a	
Disagree	87(28.1)	34(22.2)a	53(33.8)b	
When I have technical problems related to distance theoretical education, I can access the relevant unit without any problems.				
Agree	57(18.4)	27(17.6)	30(19.1)	0.138
Neutral	116(37.4)	50(32.7)	66(42)	
Disagree	137(44.2)	76(49.7)	61(38.9)	

(ab): The same letters as the row indicate statistical insignificance

**Table 3.** Data related to instructors

	Total (n=310 ) n(%)	old faculty (n=153) n(%)	new faculty (n=157) n(%)	p value
I think that in distance theoretical education, instructors prepare classes that include up-to-date resources.				
Agree	168(54.2)	92(60.1)a	76(48.4)b	0.001
Neutral	103(33.2)	36(23.5)a	67(42.7)b	
Disagree	39(12.6)	25(16.3)a	14(8.9)b	
Instructors share comprehensible information in distance theoretical education.				
Agree	177(57.1)	93(60.8)	84(53.5)	0.359
Neutral	103(33.2)	45(29.4)	58(36.9)	
Disagree	30(9.7)	15(9.8)	15(9.6)	
I can easily convey my questions, ideas and problems related to distance theoretical education to the relevant instructor.				
Agree	163(52.6)	84(54.9)	79(50.3)	0.690
Neutral	85(27.4)	39(25.5)	46(29.3)	
Disagree	62(20)	30(19.6)	32(20.4)	

(ab): The same letters as the row indicate statistical insignificance

**Table 4.** Data related to distance theoretical education

	Total (n=310) n(%)	old faculty (n=153) n(%)	new faculty (n=157) n(%)	p value
During the pandemic process, classes are held regularly with distance theoretical education.				
Agree	198(63.9)	115(75.2)a	83(52.9)b	<0.001
Neutral	84(27.1)	30(19.6)a	54(34.4)b	
Disagree	28(9)	8(5.2)a	20(12.7)b	
Thanks to the distance theoretical education system, I can quickly access the course content.				
Agree	216(69.7)	106(69.3)	110(70.1)	0.965
Neutral	63(20.3)	31(20.3)	32(20.4)	
Disagree	31(10)	16(10.5)	15(9.6)	
Thanks to the distance theoretical education system, it is beneficial for me to watch the repetitions of the courses.				
Agree	230(74.2)	116(75.8)	114(72.6)	0.736
Neutral	52(16.8)	25(16.3)	27(17.2)	
Disagree	28(9)	12(7.8)	16(10.2)	
In distance theoretical education, I ask questions more comfortably than face-to-face lessons.				
Agree	115(37.1)	60(39.2)	55(35)	0.475
Neutral	76(24.5)	33(21.6)	43(27.4)	
Disagree	119(38.4)	60(39.2)	59(37.6)	
The distance theoretical education I received during the pandemic strengthens my communication with both my instructors and classmates.				
Agree	81(26.1)	44(28.8)	37(23.6)	0.278
Neutral	72(23.2)	30(19.6)	42(26.8)	
Disagree	157(50.6)	79(51.6)	78(49.7)	
After the class I receive with distance theoretical education, I feel that I learned effectively.				
Agree	99(31.9)	53(34.6)	46(29.3)	0.469
Neutral	94(30.3)	42(27.5)	52(33.1)	
Disagree	117(37.7)	58(37.9)	59(37.6)	
Thanks to distance theoretical education, I can save time to take care of my other interests.				
Agree	174(56.1)	82(53.6)	92(58.6)	0.564
Neutral	78(25.2)	39(25.5)	39(24.8)	
Disagree	58(18.27)	32(20.9)	26(16.6)	

(ab): The same letters as the row indicate statistical insignificance

vs. 75.2%;  $p < 0.05$ ) to the question “Classes are held regularly with distance education during the pandemic process”.

The students, 75.8% of the old faculty and 72.6% of the students in the new faculty stated that they benefited from watching the lessons repeatedly thanks to the distance theoretical education system.

Thanks to the distance theoretical education system, 69.3% of the students at the old faculty and 70.1% of the students at the new faculty were able to access the course content quickly, 53.6% of the students at the old faculty and 58.6% of the students at the new faculty were able to save their time and be interested in other areas of interest, however, 39.2% of the students in the old faculty, 37.6% of the students in the new faculty could not ask questions more easily in distance theoretical education than in face-to-face lessons, 51.6% of the students in the old faculty and 49.7% of the students in the new faculty said that the distance theoretical education they received during the pandemic did not strengthen their communication with their instructors and friends. 37.9% of the students in the old faculty and 37.6% of the students in the new faculty stated that they did not feel they learned effectively after the course they took with distance theoretical education. The difference between the groups was not significant ( $p > 0.05$ ). The details of the data related to distance theoretical education are given in Table 4.

## Data on general satisfaction with distance theoretical education

The students, 60.8% of the old faculty and 54.8% of the students in the new faculty stated that they thought that it would be beneficial to continue some theoretical courses in the form of distance theoretical education, even if the pandemic process ends. The difference between the groups was not significant ( $p > 0.05$ ).

The students, 40.5% of the old faculty and 42% of the students in the new faculty stated that distance theoretical education was not an effective learning model, 41.2% of the students in the old faculty and 44.6% of the students in the new faculty stated that the courses given with this method were not as successful as the face-to-face courses. 41.8% of the students in the old faculty and 39.5% of the students in the new faculty stated that they were generally satisfied with the distance theoretical education activities carried out in their universities. The difference between the groups was not significant ( $p > 0.05$ ). Details of general satisfaction data related to distance theoretical education are given in Table 5.

## Discussion

In the literature, there are many studies evaluating distance education at universities during the Covid-19 pandemic process, as well as studies comparing education satisfaction between private and state universities.<sup>11–14</sup> However, this was the first study evaluating

**Table 5.** General satisfaction with distance theoretical education

	Total (n=310 ) n(%)	old faculty (n=153) n(%)	new faculty (n=157) n(%)	p value
I am generally satisfied with the distance theoretical education activities carried out by our university.				
Agree	126(40.6)	64(41.8)	62(39.5)	0.892
Neutral	108(34.8)	53(34.6)	55(35)	
Disagree	76(24.5)	36(23.5)	40(25.5)	
Distance theoretical education is an effective learning model.				
Agree	95(30.6)	48(31.4)	47(29.9)	0.953
Neutral	87(28.1)	43(28.1)	44(28)	
Disagree	128(41.3)	62(40.5)	66(42)	
The classes given with distance theoretical education are as successful as the class given face-to-face.				
Agree	100(32.3)	55(35.9)	45(28.7)	0.377
Neutral	77(24.8)	35(22.9)	42(26.8)	
Disagree	133(42.9)	63(41.2)	70(44.6)	
Even if the pandemic process ends, I think it would be useful to continue to conduct some theoretical courses in the form of distance theoretical education.				
Agree	179(57.7)	93(60.8)	86(54.8)	0.514
Neutral	65(21)	31(20.3)	34(21.7)	
Disagree	66(21.3)	29(19)	37(23.6)	

the satisfaction of students at an old dental faculty established in a metropolitan with distance theoretical education to that of students at a newly established dental faculty in the countryside. Determining problems related to distance theoretical education at the old and newly established dental faculties would guide the educational strategies that these faculties will develop for their own problems.

The present study showed that more than half of the students in both faculties were satisfied with watching the course repetitions in distance theoretical education (74.2%), accessing the course content quickly (69.2%), and saving time (56.1%). These results are in line with previous studies showing that distance education saves time and cost providing greater flexibility with study location and making commuting to and from campus unnecessary<sup>5,15</sup> in addition to watching classes repeatedly was useful.<sup>16</sup> Well-designed distance learning gives students more time to access an increased number of topics and unlimited knowledge. Such advantages are suitable to the learning process of medicine and dentistry students as they have to learn an increasing number of new and updated topics.<sup>17</sup>

Distance education brings with it some disadvantages as well as advantages. Increasing risk of distraction, complex technology, limited social interaction, and difficulty in communicating with instructors are some of the factors that may hinder the success of distance learning.<sup>18</sup> When the literature is reviewed, Studies show that students feel low learning satisfaction in distance education and have more difficulty communicating with instructors or peers.<sup>5,12,16</sup> The present study showed that 50.6% of the students thought that the distance theoretical education they received during the pandemic did not strengthen their communication with both their instructors and other friends. In addition, it was observed that the students were undecided about feeling themselves effectively learned after the course they took with distance theoretical education and asking questions more comfortably in distance theoretical education compared to face-to-face education. The present study showed that students in both faculties were undecided about whether face-to-face education is more successful than distance education. In the study by Amir et al.<sup>5</sup> in which dentistry students in Indonesia evaluated the perspective of distance education during the pandemic period, it was determined that students preferred in-class education to distance education. In some studies conducted in the field of dentistry education, it was demonstrated that student attitudes towards distance education were positive.<sup>17,19,20</sup> However, while the virtual learning module was integrated into classroom education in these studies, in the present study and in

the study conducted by Amir et al.<sup>5</sup>, entire training was given with distance education and during the pandemic period. This explains the difference between the results of the studies.

Blended learning is basically defined as the integration of classroom learning and distance learning to facilitate independent, interactive, and collaborative learning among students. However, for a more general understanding, the blended learning approach redesigns training that is developed, planned, and implemented through a combination of physical and virtual learning activities. This approach encourages active and self-learning and has been accepted as a complementary method to traditional learning in dentistry education.<sup>5</sup> The present study demonstrated that the students in both faculties were undecided about the distance theoretical education being an effective learning model and the courses given with distance theoretical education to be as successful as the face-to-face courses but more than half of the students in both faculties thought it would be useful to continue to conduct some theoretical courses in the form of distance education, even if the pandemic process ends, due to the advantages of distance education, such as rapid access to the course content, saving time, and watching course repeatedly. This showed that the blended learning model would be more beneficial for students in the future. There are studies in the literature that support the conclusion of this study and report that blended learning provides better student satisfaction, motivation, participation, and performance.<sup>17,21-23</sup>

Distance theoretical education is a different format from traditional education. In order for distance theoretical education to be successful, instructors need to prepare an appropriate curriculum, while the teaching skills and experience of instructors are important. In this study, students at the old faculty stated that they thought that the instructors prepared classes that included current resource in distance theoretical education at a higher percentage compared to the students at the new faculty and that the classes were held regularly. It was observed that the faculty members of the old faculty were better adapted to the sudden and unexpected transition from face-to-face education to distance education during the pandemic period. Although the faculty members at the new faculty were young and dynamic, the fact that the instructors at the old faculty were more experienced and the number of instructors was higher could explain this situation. Universities with new establishments need to develop improving strategies for their academic staff. In present study, nearly half of the students in both faculties stated that they were connected to distance theoretical education without any problems, but when they experienced tech-

nical problems related to distance theoretical education, they could not reach the relevant unit without any problems. It would be useful to prepare guides where students would receive help regarding the technical problems they would encounter in the distance education processes and to establish units that would support them in case of a problem.<sup>24</sup> In this study, students at the old faculty stated that they received more informative e-mails on time compared to the students at the new faculty. Mechanisms for informing students need to be developed by the new faculty. Identifying and resolving the problems related to distance education is important for the smooth continuation and restructuring of education in cases such as pandemics, wars, and natural disasters, which may raise the need for distance theoretical education again in the future.

As a matter of fact, due to the earthquake disaster that occurred in Turkey on February 6, 2023, the Republic of Türkiye Higher Education Council<sup>25</sup> decided to conduct education and training with distance education method in the Spring Term of the 2022-2023 Academic Year.

In this study, the views of students on distance education were stimulating for the transition to the blended system, which is a less costly education model where both distance and face-to-face education are conducted together. This study has some limitations. First, the generalizability of the study was limited to using data obtained from dental faculties at only two universities. More extensive research with more participants should explore ways to explore educational opportunities at private universities as well as old and new universities. Each faculty should make continuous assessments to establish quality standards in education, identify their own deficiencies and develop educational strategies in this direction. Second, the questionnaire used in this study only measured student perception. It was unclear how the distance education strategy affected students' academic performances. Previously, it was reported that there was a weak relationship between student perceptions of learning and actual knowledge acquisition.<sup>26</sup> Student perception may not reflect the student's course learning outcomes. Therefore, assessing the impact of distance education on a student's academic performance is as important as assessing curriculum transformation.<sup>5</sup> This should be further explored. Third, it should be investigated whether the opportunities (internet access, device) are sufficient for students to participate in distance education and its effect on the motivation of students to participate in distance education. Fourth, due to the study design, only one representation of perceptions of dentistry students' satisfaction over a given time period could be provided. Despite these limitations, the results of this study provide valuable information about the current perspectives of dentistry students regarding the distance theoretical education method applied during the COVID-19 pandemic.

## Conclusion

It is incorrect to apply the same educational strategies at all universities in the country. It would be less costly and much more beneficial for each faculty to produce solutions for their problems. The new faculty needs to develop improving strategies for the academic staff. In addition, dental faculties should design teaching standards that will ensure rapid response and safe continuation of dental education in case of possible epidemics, natural disasters, and war in the future.

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## Author Contributions

A.C., ND.Ş., I.S. conceived of and designed the work; A.C. and ND.Ş. acquired the data; A.C and ND.Ş. data analysis and interpretation; A.C and BN.Ş. led the drafting of the manuscript; all authors reviewed and revised drafts and approved the final version for submission.

## Conflict of Interest

The authors declare that they have no conflict interests.

## Authors' ORCID(s)

A.C. 0000-0001-6586-6700  
N.D.Ş. 0000-0003-0609-1612  
I.S. 0000-0002-2172-4724  
B.N.Y. 0000-0002-8133-6627

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