

2022

## Development of Learning Materials to Address Social and Medical Factors Impacting a Minoritized Population

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### Recommended Citation

Lucas Molitor, W., Ikiugu, M. N., Nissen, R., Avoseh, M., Kenyon, D., & Kupershmidt, S. (2022). Development of Learning Materials to Address Social and Medical Factors Impacting a Minoritized Population. *Journal of Occupational Therapy Education*, 6 (3). Retrieved from <https://encompass.eku.edu/jote/vol6/iss3/15>

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# Development of Learning Materials to Address Social and Medical Factors Impacting a Minoritized Population

## Abstract

Health outcomes are multi-factorial. Health professionals must weigh all factors when making recommendations and providing intervention, however, limited learning materials which describe the health of minoritized populations exist for students in health science educational programs, necessitating the development of content for interprofessional learning that address the health factors experienced by underserved populations. This study used a descriptive design. Eleven expert content reviewers from eight health science and medical professions were recruited and provided feedback on the quality and content of a developed case study that described the lifestyle and health status of an individual from an ethnic minoritized population. Participants strongly agreed that the content strengthened the case study's usefulness as a tool for interdisciplinary education. Most reviewers strongly agreed that social factors were a key component of the case and that it was suitable for use in interdisciplinary education. Incorporating social determinants into a case was viewed favorably by case reviewers who indicated that the components of the case were high quality and important as a tool for interprofessional education.

## Keywords

Social determinants, health sciences, interprofessional education

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## Acknowledgements

We would like to acknowledge the members of the Interprofessional Health Education Center as well as the expert reviewers who participated in this study.

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# JOTE

Journal of Occupational  
Therapy Education

Volume 6, Issue 3

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## Development of Learning Materials to Address Social and Medical Factors Impacting a Minoritized Population

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### ABSTRACT

Health outcomes are multi-factorial. Health professionals must weigh all factors when making recommendations and providing intervention, however, limited learning materials which describe the health of minoritized populations exist for students in health science educational programs, necessitating the development of content for interprofessional learning that address the health factors experienced by underserved populations. This study used a descriptive design. Eleven expert content reviewers from eight health science and medical professions were recruited and provided feedback on the quality and content of a developed case study that described the lifestyle and health status of an individual from an ethnic minoritized population. Participants strongly agreed that the content strengthened the case study's usefulness as a tool for interdisciplinary education. Most reviewers strongly agreed that social factors were a key component of the case and that it was suitable for use in interdisciplinary education. Incorporating social determinants into a case was viewed favorably by case reviewers who indicated that the components of the case were high quality and important as a tool for interprofessional education.

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## **Introduction**

Demographic data in the United States (U.S.) shows that nearly 40% of the population represents a racial or ethnic minoritized group (Ghosh, 2020; Sotto-Santiago, 2019). While advances in healthcare delivery and access have led to increases in disease prevention and utilization of primary healthcare, the health outcomes of minoritized groups fall below non-minorities (Centers for Disease Control and Prevention, 2019). For example, premature deaths are 60% higher among Native Americans, and the risk of death from heart disease is 30% higher among African Americans than they are for White individuals (National Academies of Science, Engineering, and Medicine [NASSEM], 2017). While not all minoritized groups experience poorer health outcomes, differences between specific population groups, referred to as health disparities, are higher among racial and ethnic minoritized groups. Disparities include higher incidences of preventable illnesses, higher rates of poverty, and lower life expectancy which prevent individuals from achieving their ideal health (World Health Organization [WHO], 2019). Health outcomes are also influenced by social determinants of health (i.e. living conditions, level of education, income, and the environment) that along with health behavior are more critical to health outcomes than genetics or lifestyle alone (Marmot et al., 2008; WHO, 2019).

The population of focus in this study were Native Americans, a historically marginalized group. Collectively, Native Americans represent less than 2.7% of the total U.S. population yet they experience barriers to quality and culturally appropriate medical care at much higher rates than other ethnic groups (U.S. Department of Health and Human Services Office of Minority Health, 2022). A history of generational trauma, along with other factors, have contributed to an increased incidence of alcohol use disorder (six times that of the general population), diabetes (over three times higher than the general population), and double the risk of suicide (Sandolu, 2020). Native Americans experience disproportionate rates of disease and poverty, live shorter lives, and collectively have lower health outcomes (Indian Health Service [IHS], 2019). In some areas of the Midwest, poverty rates among Native Americans are over 50%, with individual income lower than \$8,000 annually (Re-Member, 2020). Socioeconomic inequality is related to health, as it influences access to health information, resources, living conditions, and level of education (Mode et al., 2016; Pickett & Wilkinson, 2015; Venkataramani et al., 2016). Further contributing to the complexity of health is the lack of access to adequate healthcare. For positive health outcomes to be achieved social influences on health must be taken into consideration (Healthy People, 2021).

## **Background**

Increasingly, healthcare professionals provide services to a diverse clientele necessitating preparation of future healthcare workers who are equipped to address health comprehensively through acknowledging the social determinants of health and including these factors into the services they provide (LaVeist & Pierre, 2014; Taff & Blash, 2017). Ideally, such services should reflect the cultural values of the individuals and groups served (Horvat et al., 2014). When health professional students are educated about the social determinants of health, they become aware of the underlying causes of illness, disease, and disability as well as the importance of addressing these

factors at the population level (Institute of Medicine, 2014; NASEM, 2016). A collaborative approach to practice, and health science education may equip students to comprehensively address health (Bridges et al., 2011; Bultas et al., 2016; Cerra & Brandt, 2011). Learning becomes transformative when the education of health science students is relevant to global and societal issues and emphasizes the learners' life experiences and cultural values (NASEM, 2016).

This kind of education is likely to be achieved if there is comprehensive, collaborative, interprofessional education in which groups of students come together to learn from and with each other about holistic approaches to healthcare with the intended outcome of improving health outcomes (WHO, 2010). Interprofessional education emerged as a response to the increasing complexity seen in healthcare. As clients began to require multiple healthcare providers to treat and prevent disease, collaboration between health professionals has become a necessity. The aim of interprofessional education is to ensure both improved health outcomes and client experiences (Global Forum on Innovation in Health Professional Education, 2013). Literature reporting on interprofessional learning experiences often describes the results of learning activities. Less is known about the development of learning materials that are utilized in these didactic learning activities (NASEM, 2016).

Learning experiences may be enriched when case-based approaches are utilized to enhance critical thinking and problem solving (Allen & Toth-Cohen, 2019). This approach referred to as problem-based learning, involves the development of content that is integrated into case studies to prompt students to think critically, generate a problem list, explore potential hypotheses, and weigh evidence to determine the course of action necessary to produce desired outcomes (Azer et al., 2012). While evidence supports the notion that problem-based learning promotes critical thinking (Leon et al., 2015; Winksell et al., 2014) few studies have used this approach in an interprofessional learning context that focused on the social determinants of health (Brandt et al., 2014; Bultas et al., 2016; Uden-Holmen et al., 2015). Though case studies used in interprofessional education that depict individuals from a racial or ethnic minoritized group as the subject exist, few of these cases also include information related to the social experiences of the individual. As the social factors contribute to health, it is important to ensure this information is provided for student learning in order to equip future healthcare professionals with the skillset to address SDH in practice. Even fewer established case studies are published that depict an individual from Native American ancestry.

Students preparing to enter the healthcare workforce require knowledge of ways that social and contextual factors impact health and well-being and how these factors can result in health disparities. We identified that students being educated in a state where Native Americans represent the largest minoritized group should have exposure to the unique factors that influence the health of this population. For this reason, the purpose of this study was 1) to analyze a developed case study created for students in health science professions to help them learn about the social and environmental factors impacting a minoritized group and 2) to determine the efficacy of the content for future

interprofessional education experiences. The study question was: Is a developed case study perceived as useful for educating health science students about social determinants of health among interprofessional expert reviewers? We then implemented the case study into an interprofessional learning experience, results of which are reported elsewhere (Lucas Molitor et al., 2021).

### **Methods**

This study used a mixed methodology descriptive design. Descriptive studies are most often used in the initial exploration of phenomena that could be examined further in subsequent research (Portney, 2020). Exempt status was received by the Institutional Review Board at the authors' university as a non-regulated study.

### **Procedure**

The study began by developing a case study that depicted a Native American teenager and included social and environmental factors that were impacting health. A comprehensive review of literature on the social and clinical factors about population health and social determinants of health helped to inform the case. Themes arising from the literature review were used to draft the case study, along with the personal experiences of the first author who developed the case. Social determinants of health, which were consistent with Healthy People (2021) and the Ottawa Charter for Health Promotion (WHO, 1986) were included in the case study. These included: health status and access to healthcare, the built environment, socioeconomic status, level of education, and cultural factors which may influence occupational performance and health. Next, the case underwent review from health science faculty. The study co-authors were also asked to provide feedback in order to increase the applicability of the case to students from multiple health professions. Based on feedback received, the case study was revised and finalized. The developed case depicted a teenager diagnosed with type I diabetes mellitus. Social and environmental factors were also included (see Table 1).

### **Expert Reviewers**

Recruitment of content experts was a critical step in ensuring the final case study was created with diverse perspectives and approaches to healthcare. Potential reviewers were contacted via e-mail after a list was generated following input from colleagues in the university's School of Health Sciences. The case study and review questionnaire were sent to those who replied to the e-mail. The individuals that reviewed the case were clinical, teaching, and research professionals with experience in interprofessional practice, population health, diversity, and rural healthcare and had expertise in Native American healthcare or identified as a member of this ethnic group.

**Table 1***Medical and Social Factors Included in the Developed Case Study*

<b>Factor</b>	<b>Included Details</b>
Medical	<ul style="list-style-type: none"> <li>• Teenager diagnosed with type I diabetes mellitus</li> <li>• Inconsistent medical management</li> <li>• No primary medical provider</li> <li>• Family history of alcoholism</li> </ul>
Social & Environmental	<ul style="list-style-type: none"> <li>• Lives with single mother</li> <li>• Moves often due to financial instability</li> <li>• Currently living with her aunt and sleeping on the couch</li> <li>• Unreliable transportation and no public transportation</li> <li>• Lack of safe outdoor spaces</li> </ul>
Cultural	<ul style="list-style-type: none"> <li>• Native American residing in a rural area of her state</li> <li>• Interested in learning more about her culture</li> <li>• Does not live on Tribal lands</li> <li>• Attends Powwows during the summer</li> <li>• Enjoys cultural painting and drawing</li> </ul>
Health Behavior	<ul style="list-style-type: none"> <li>• Relies on family to help manage diabetes.</li> <li>• Most nutrition comes from the local gas station</li> <li>• Limited fresh ingredients in diet due to cost and access</li> <li>• Does not know anyone else with type I diabetes</li> </ul>
Access to Resources	<ul style="list-style-type: none"> <li>• \$1500 / month family income</li> <li>• Part-time job to help supplement family income</li> <li>• Must travel several hours to receive medical supplies through Indian Health Services</li> </ul>

**Instrument**

The case study questionnaire, developed by the lead author, was established by reviewing the literature on the social determinants of health, population health, and interprofessional education. Collaboration with the university's Interprofessional Health Education Committee was sought to assist in the layout and scope of the questionnaire. The questions were revised based on this committee's feedback. The questionnaire consisted of:

- Five demographic questions related to professional training and current job.
- Seven Likert-type items asked expert reviewers the extent to which the case study aligned with various social determinants of health. All seven items were

rated on a 4-point Likert-type scale ranging from 1 (strongly disagree) to 4 (strongly agree). The ratings were aggregated across the items to yield a score indicating the appropriateness of the case study in interprofessional student education on the social determinants of health.

- Reviewers were then asked to rank each content area of the case (medical/pharmacological, cultural, social, environmental, health behavior, access to resources) on a scale from 1 (most important information to include) to 6 (least important information to include) in the case.
- Participants then rated the holistic quality of the case for use to facilitate student learning which was assessed by asking participants to rank the case study on a scale from 0 (not relevant) to 100 (completely relevant) to student education.
- The reviewers were asked to provide comments on each question and to provide suggestions for intervention that could be used during case study implementation.

### **Data Analysis**

Data were analyzed using the Statistical Package for Social Sciences (SPSS) for Windows version 25 (IBM Corp, 2017). The first author began by cleaning the data set and computing descriptive statistics to determine the distribution of the data. To determine the quality of the social determinants of health factors that were viewed by expert reviewers as the most important to include in the case, a chi-square goodness of fit test was done. A Friedman's repeated measures analysis of variance (AVONVA) was conducted to determine if there was a main effect of the case on reviewer perceived importance of various components of the case to student education of social determinants of health and population health. The ratings for perceived importance were 1 (most important) and 6 (least important). The holistic quality of the case was assessed for applicability to student learning by comparing the observed versus expected distribution of ratings using a Kolmogorov Smirnov Test.

Written comments, which were provided throughout the questionnaire, were analyzed using summative content analysis. We used the approach described by Hsieh and Shannon (2005) in which keywords were derived from interest. We utilized the social determinants listed in the questionnaire as these keyword categories. The lead author read through each written comment multiple times to ensure understanding of the recommendation that the reviewer was making about the case. The text was interpreted about the content area (the social determinants of health category). Patterns among reviewer comments were analyzed and interpreted. Conceptually similar responses were grouped into one of three categories: revise a component, remove the component, maintain the component. The decision to revise the case study was based on the judgment of the content expert knowledge and the amount of agreement among reviewer recommendations.

## Results

The case study was sent to 32 potential expert content reviewers. Eleven of the reviewers completed the case study review (34% response rate). These reviewers included a dental hygienist, nurse, community health nurse, social worker, biomedical scientist, physical therapist, public health professional, and physician. Six respondents had at least 15 years of experience as practitioners in their specialty. All had experience teaching in higher education, a majority ( $n = 7$ ) had research experience. Descriptive statistics indicated that participants overall strongly agreed that the content in all categories except for the medical/clinical/pharmacological aspects strengthened the case study's usefulness as a tool for interdisciplinary education (see Table 2).

**Table 2**

*Perceptions of the Alignment of Case Content with the Social Determinants of Health*

Item	M	SD	<i>p</i>
The medical/clinical/pharmacological aspects of the case are accurate and appropriate.	2.7	.97	.55
The social and economic aspects of the case are accurate and appropriate.	3.4	1.1	.01
The environmental aspects of the case are accurate and appropriate.	3.4	.70	.27
The health behaviors described are accurate and realistic.	3.4	.70	.27
The healthcare utilization described in the case is accurate and realistic.	3.1	.87	.90
The cultural aspects of the case are accurate and appropriate.	3.4	.70	.27
The family aspects are relevant and add to the case.	3.3	.82	.50

*Note.* Items ranked on a 4-point scale with 1 = Strongly Disagree, 4 = Strongly Agree.

Sixty-four percent of the expert reviewers strongly agreed that social factors were a key component of the case if it was to be used for interdisciplinary education of students on the social determinants of health,  $\chi^2(3, N=10) = 10.8, p = .01$ . Reviewer agreement was not found for any of the other categories (medical, environmental, health behavior, cultural, family). Results of the Friedman's ANOVA indicated no significant differences in perceptions of the case reviewers, indicating that no one category was viewed as more important than any of the others for inclusion in the case study to help students learn about the social determinants of health  $\chi^2(5) = 8.86, p = .12$ . The item asking about the relevance of the case study in teaching students social determinants of health was not statistically significant  $D(9) = .21, p = .20$ . Overall the applicability, as rated on the 0 – 100 scale, was ranked high ( $M = 89.6 \pm 12.26$ ).

Analysis of written comments indicated the need to clarify information about the diagnosis of type I diabetes including a recommendation to expand the content about the subject's medications, management of the condition, and to add the subject's weight. One reviewer commented:

It would be beneficial to know what brand of insulins the patient is using. Is it a vial and syringe? Pen? Insulin pump? The method of insulin delivery is helpful in understanding if this method is working, or if a better option is available for the patient.

Information on medications, weight, and insulin delivery was added to the revised case based on these recommendations. Other general medication information was added to enrich the case based on reviewer feedback. The case reviewers also indicated that frequent optometry appointments and additional details about developmental status due to being born prematurely would be useful additions. Such information was added as was additional information on oral health to increase the relevance of the case to dental hygiene students.

Additional detail regarding family dynamics and home life was mentioned by several of the reviewers. These details were added to the final case study. One reviewer stated:

She appears to live in a neighborhood which she feels is not safe in the community for outdoor activities. Are there programs [sic] (at the Urban Indian clinic, YMCA, Boys, and Girls Club, etc.) for physical activities, as she does not appear to have regular exercise as a routine?

The expert reviewers also made recommendations on the cultural aspects of the case. The subject in the case study was of Native American descent. The reviewers recommended adding more information about this person's involvement in cultural ceremonies, religious, and spiritual activities. The case study was revised to incorporate these recommendations accordingly. For example, one reviewer commented:

If the client identifies importance of her tribal ancestral values and cultural practices to her identity, a role model or connecting with a Native cultural liaison would be important. Connecting to cultural identity has been important towards emotional, physical, and spiritual wellbeing.

Reviewers were also asked to provide recommendations for interventions that would be appropriate for the individual depicted in the case and which aligned with the reviewer's professional discipline. The content of these recommendations was analyzed and grouped by similarities in approaches or methods of intervention. Seven priority areas were identified: psychosocial factors, self-management of chronic disease, dental hygiene, food insecurity and nutrition, urinary frequency, access to healthcare services, and lifestyle factors (see Table 3 for exemplars by priority area).

**Table 3***Priority Areas for Intervention and Exemplars from Interprofessional Team Recommendations*

<b>Priority Area</b>	<b>Exemplars</b>
Psychosocial Factors	<ul style="list-style-type: none"> <li>• “Due to untreated grief, a depression screen is indicated.”</li> <li>• “Consider adverse childhood experiences and the role these may have on the patient’s current health and emotional status.”</li> </ul>
Self - management of Chronic Illness	<ul style="list-style-type: none"> <li>• “Refer to a diabetic educator. Patients could utilize Indian Health Services (IHS) to see a Certified Diabetes Educator. As the patient is dual enrolled (IHS and Medicaid), the patient should have little to no cost to attend diabetes education. Depending on the IHS clinic and tribal connections, transportation may also be provided using a Community Health Representative.”</li> <li>• “Consider discussing options for virtual support/health education. Focus on the self-management of care and transitioning to independent adulthood.”</li> </ul>
Dental Hygiene	<ul style="list-style-type: none"> <li>• “Oral diseases such as early-onset periodontal disease and lack of healing of bleeding points in diabetics who are not controlling blood sugars appropriately are very closely linked. Referral to dental hygiene.”</li> <li>• “Lantus may cause xerostomia (dry mouth). Recommendations for dry mouth products may be provided.”</li> </ul>
Food Insecurity / Nutrition	<ul style="list-style-type: none"> <li>• “Consider programming such as the Supplemental Nutrition Assistance Program.”</li> </ul>
Urinary Frequency	<ul style="list-style-type: none"> <li>• “Refer to a pelvic health specialist for urinary frequency both during the day and at night.”</li> <li>• “Would benefit from education on fluid intake (increased water intake) and avoidance of bladder irritants as well as managing urgency episodes and frequency.”</li> </ul>
Access to Health Services	<ul style="list-style-type: none"> <li>• “Accessing the necessary medications is a challenge. Obtaining medications outside of the IHS and closer to home would be a large barrier for this patient. Consult with social services or local programs to determine methods for assisting the patient in obtaining supplies.”</li> <li>• “The patient lives in a neighborhood that may not be safe or adequate in the community for outdoor activities. Education can be provided on local programs (Urban Indian clinic, YMCA, Boys and Girls Club, etc.) for physical activities that promote social connectedness and physical activity.”</li> </ul>

- Lifestyle Factors
- “Discussion regarding current habits, roles, and meaningful life activities. Consider referral to occupational therapy and community health promotion group if available.”
  - “It is recommended that [the client] participates in a minimum of 30 minutes of physical activity daily.”
  - “Discussion regarding options to attend college and career exploration are needed in addition to financial planning after high school.”
- 

### Discussion

The purpose of this study was to develop and analyze a case study that could be used to facilitate interprofessional education among health science students regarding the social determinants of health impacting an individual from an ethnic minoritized group. An interdisciplinary team of experts reviewed the case and provided feedback that was used to refine the case so that it was appropriate for use in interprofessional education. Occupational therapy educational literature focusing on learning content describes methods of curriculum development reflective of faculty, student, and institutional factors (American Occupational Therapy Association, 2021), utilizing occupation-centered methods to promote professional value (Hooper et al., 2020), and the development of competencies (i.e. collaboration, communication, evidence-based practice; Chun et al., 2020). A gap in the literature exists regarding the process for development of learning materials within a specific learning activity or course. Most of the current literature on social determinants of health within health sciences education focuses on outcomes of curricula rather than the development of instruction materials (Sharma et al., 2018). The development of the case study described in this study is consistent with Thistlethwaite et al.’s (2012) assertion that case studies are a realistic and relevant method of facilitating learning among students.

To increase the relevance of the case study to students’ education, specific details about the geographic, social, and cultural context in which the university is located were included. Further, the case was developed in collaboration with an interdisciplinary team of educators, working at different organizational levels, which increased the robustness of its content as recommended by Martinez et al. (2015). Also, the development of this case study for interdisciplinary use by all students in healthcare disciplines differed from materials that were previously developed as indicated in the literature review, which was primarily related to the education of medical or nursing students (Martinez et al., 2015; McDonald et al., 2015; Sharma et al., 2018; Williams et al., 2016).

The social, environmental, cultural, and health behavior in the case study received the highest ratings by reviewers. This high rating was consistent with Cowan et al. (2012) finding that there was a relationship between socioeconomic status and health, as well as Venkataramani et al. (2016), in which data from over 147,000 adults indicated a link between socioeconomic status, health, and mortality. The Robert Wood Johnson Foundation (2011) reported that four out of five physicians agree that addressing social determinants of health is an important step in healthcare. In this study, social and economic factors were perceived by reviewers to be important for inclusion in the final case study. This finding related to the overall purpose of this study and helped to answer the study question.

Aside from creating educational curricular materials relevant to population health, this study intended to ensure that the developed case study applied to interprofessional education. Incorporating interprofessional education experiences with a variety of topics into health science education may help ensure that students develop collaborative and teamwork skills in healthcare (Andermann, 2016; Cerra & Brandt, 2011; Uden-Holman, et al., 2015). When learning is culturally responsive, teaching becomes more effective (Gay, 2018). The results from the current study indicated how multiple professionals could contribute to the development of a case study to make it relevant and applicable to the interprofessional education of students.

### **Limitations**

This study included a small sample of expert reviewers. The reviewers may have had unconscious biases regarding the content of the case study that were not taken into consideration. The developed case study was created with the learners at a Midwestern university in mind, applicability for those from other geographic settings may be limited and cannot be broadly generalized. The use of an author-developed instrument is a limitation of this study as the questionnaire's reliability and validity were not tested before its use in the study. In addition, the rating of 0-100 for the holistic quality of the case may not have been the best method for assessing the relevance of the case. Finally, the development of learning materials such as the method described in this study may not be a feasible approach for all faculty or institutions.

### **Implications for Occupational Therapy Education**

A need exists for occupational therapy professionals to serve diverse populations to reduce health disparities and to promote health outcomes. A goal for occupational therapy education outlines a need to promote and support diversity within the profession and for the populations served by occupational therapists (American Occupational Therapy Association, 2018). This study provides an example for the development of teaching and learning materials that address the challenges experienced by one ethnic minoritized group. Occupational therapy educators may employ similar methods to design learning opportunities that align with the diverse health experiences of individuals and groups in all areas of the country.

### **Conclusion**

Health disparities are increasing. This is due, in part, to widening social differences among individuals. These social factors referred to as the social determinants of health, influence health outcomes. This study aimed to report the process of developing a case study with applicability to a variety of health science learners and specific to an ethnic minoritized population. Collaboration between healthcare professionals is a critical aspect of improving population health. When students learn these skills during their education, they may be more apt to utilize professional connections and collaborations in enhancing care for their clients once they are in clinical practice. The social and economic factors in the case study were rated as the highest quality component of the case by expert reviewers.

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