

The Role of Coping Self-Efficacy in the Effect of Climate Change Anxiety on Environmental Behaviour in Adolescents

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Abstract

Background

Climate change has become an increasing psychosocial stressor for adolescents, contributing to higher levels of climate change anxiety in this age group. However, the mechanisms linking climate anxiety to pro-environmental behavior remain unclear, particularly the role of coping-related psychological processes. This study aimed to examine the role of coping self-efficacy in the relationship between climate change anxiety and pro-environmental behavior among adolescents.

Method

This cross-sectional, descriptive–correlational study was conducted with 170 adolescents aged 10–20 years who attended the adolescent outpatient clinic of Dr. Behçet Uz Children’s Diseases and Surgery Training and Research Hospital. Data were collected through face-to-face interviews using standardized scales. Descriptive statistics, Pearson correlation analysis, and mediation analysis using PROCESS macro (Model 4) with 5000 bootstrap samples were performed.

Results

Climate anxiety was negatively associated with coping self-efficacy, while coping self-efficacy was positively associated with pro-environmental behavior ($p < .05$). No significant correlation was found between climate anxiety and pro-environmental behavior at the bivariate level. Mediation analysis indicated that coping self-efficacy did not have a significant mediating role. However, when coping self-efficacy was included in the model, climate anxiety showed a significant direct effect on pro-environmental behavior.

Conclusion

These findings suggest that climate change anxiety alone may not directly lead to pro-environmental behavior, but higher coping self-efficacy may strengthen adaptive behavioral responses. Interventions aimed at improving coping skills may help adolescents manage climate-related concerns more effectively and support environmentally responsible behavior.

Introduction

Extreme weather events and climate-related environmental changes are among the most prominent indicators of global climate change. According to the Intergovernmental Panel on Climate Change (IPCC, 2022), the frequency and intensity of extreme weather events are expected to increase significantly, posing serious risks to human health and wellbeing. Events such as heatwaves, floods and forest fires,

which are increasing in severity, directly affect not only ecosystems but also human health, leading to an increase in disease and mortality rates (Heys et al., 2021). These effects are particularly pronounced during adolescence, a developmentally sensitive period. Adolescents are considered a more vulnerable group to climate change-related risks, as they are undergoing intense biological, psychological, and social changes (McGushin et al., 2022).

The effects of climate change on adolescents are not limited to physical health. Rising temperatures, air pollution, and ecosystem degradation lead to an increase in respiratory diseases, allergic reactions, and infection risks, while also making it more difficult for young people to access clean water, safe living spaces, and healthy food (Sanson, Van Hoorn, & Burke, 2019; Bennouna, Stark, & Wessells, 2020).

However, the uncertainty, perceived threat and anxiety about the future caused by climate change have significant psychological consequences on adolescents' mental health. An increase in anxiety, depression, trauma and stress symptoms can be observed in this age group; experiences of natural disasters or perceived threats to the future particularly exacerbate these symptoms (Watts et al., 2021; Ross et al., 2020). One concept that has been increasingly addressed in the literature in recent years is "climate change anxiety (eco-anxiety)", which expresses feelings of fear, concern, and uncertainty about climate change (Clayton, 2020; Clayton et al., 2023; Ojala et al., 2021). While some researchers consider climate anxiety to be a risk factor that can lead to psychological distress, another approach suggests that this feeling may be a rational and adaptive response to environmental threats (Clayton and Karazsia, 2020; Pihkala, 2020). According to this view, anxiety about climate change can motivate individuals to develop environmentally conscious behaviours, seek information, and engage in solution-oriented actions.

Environmentally friendly behaviours encompass a broad range of actions aimed at avoiding harm to the environment or protecting it (Steg and Vlek, 2009). Examples of such behaviours include saving energy, participating in recycling programmes, choosing sustainable transport options, and engaging in environmental activism. Studies show that individuals concerned about climate change are more sensitive to environmental issues and are more likely to engage in environmentally friendly behaviours (Ogunbode et al., 2022; Whitmarsh et al., 2022; Wullenkord & Ojala, 2023). However, when anxiety reaches excessive levels, individuals may experience 'eco-paralysis,' characterised by helplessness, hopelessness, and inaction, which can reduce environmentally friendly behaviour (Albrecht, 2011; Verplanken et al., 2020). Therefore, the relationship between climate change anxiety and environmental behaviour is not linear but may vary depending on the individual's psychological resources.

At this point, coping self-efficacy, which refers to individuals' capacity to cope with stressful life events, emerges as an important variable in explaining the behavioural consequences of climate change anxiety. Coping self-efficacy refers to an individual's belief that they can effectively cope with challenging situations and is an important determinant of psychological resilience (Bandura, 1982; Lazarus and Folkman, 1987). The literature shows that individuals with high levels of self-efficacy evaluate stressful situations more functionally, use problem-focused coping strategies more frequently, and are more

inclined to engage in active behaviours. In the context of climate change, it is thought that individuals with high coping self-efficacy are more likely to transform anxiety into constructive actions (Crandon et al., 2024; Rickner Martinsson & Ojala, 2024).

However, studies examining the relationships between climate change anxiety, coping self-efficacy, and pro-environmental behaviour in adolescents are limited. Particularly in young individuals, who are a developmentally sensitive group, how climate anxiety is reflected in environmental behaviour and what role psychological resources play in this relationship has not yet been fully clarified. This gap suggests an important research need in the field of climate psychology and youth studies. The aim of this study is to examine the relationship between climate change anxiety and environmental behaviours in adolescents and to investigate the role of coping self-efficacy in this relationship.

Research Questions

1. Is climate change anxiety among adolescents associated with pro-environmental behaviour?
2. Does coping self-efficacy significantly predict pro-environmental behaviour?
3. Does climate change anxiety predict coping self-efficacy?
4. Does coping self-efficacy mediate the relationship between climate change anxiety and environmental behaviours?

Method

Study design and setting

This study was planned and conducted as a cross-sectional, single-centre study. The study was conducted with adolescents attending the adolescent outpatient clinic at Dr Behçet Uz Children's Diseases and Surgery Training and Research Hospital in Izmir. Data collection was carried out between July and September 2025.

Sample

The required sample size for the study was calculated using the G*Power 3.1 programme, assuming a linear regression model (fixed model, R^2 deviation from zero), a medium effect size ($f^2 = 0.15$), $\alpha = 0.05$, and power = 0.80. The analysis determined that a minimum of 68 participants would be sufficient, and considering the mediation model and multivariate analyses, the target sample size was planned to be at least 120. The study was conducted with adolescent individuals who applied to the paediatric and adolescent outpatient clinic of an education and research hospital in Izmir, and a total of 170 participants were included in the study. Participants were selected using an appropriate sampling method based on voluntary participation.

The inclusion criteria for the study were: being aged between 10 and 18 years, volunteering to participate in the study, and having the cognitive ability to understand and complete the data collection tools. The exclusion criteria were forms with missing data, refusal to participate in the study, and the presence of serious neurological or psychiatric conditions that could prevent the completion of the scales.

Measures

A Descriptive Information Form, the Climate Change Anxiety Scale, the Coping Self-Efficacy Scale, and the Pro-Environmental Behavior Scale were used as data collection tools in the study.

Descriptive Information Form

Descriptive Information Form was prepared by the researcher to determine participants' sociodemographic characteristics and some basic attitudes related to climate change. The form consists of two sections. The first section includes sociodemographic variables such as age, gender, class level, parental education status, and place of residence. The second section contains statements designed to assess perceptions of climate justice. These items are rated using a 3-point Likert scale (1 = Disagree, 2 = Undecided, 3 = Agree). This section was used to assess participants' awareness levels regarding the social dimensions of climate change.

Climate Change Anxiety Scale

The Eco-Anxiety Scale (HEAS-13) was developed by Hogg et al. (2021) to assess individuals' levels of anxiety regarding climate change and environmental crises. The Turkish validity and reliability study of the scale was conducted by Uzun et al. (2022). The scale consists of 13 items on a four-point Likert scale (0 = never, 3 = almost always) and includes four subscales: emotional symptoms, rumination, behavioural symptoms, and personal impact anxiety. Higher scores indicate a higher level of climate change anxiety. The original study of the scale reported Cronbach's alpha coefficients for the subscales ranging from .88 to .94, indicating high internal consistency (Hogg et al., 2021). For this study, the Cronbach's alpha value was found to be 0.832.

Coping Self-Efficacy Scale

The Coping Self-Efficacy Scale was developed by Chesney et al. (2006) to assess individuals' perceptions of self-efficacy in coping with stressful life events. Its Turkish adaptation was carried out by Kaya and Odacı (2021). The scale has a three-factor structure consisting of 21 items and includes the sub-dimensions of problem-focused coping, displacement of negative emotions and thoughts, and seeking social support. Items are scored using a Likert-type scale, with higher scores indicating higher coping self-efficacy. The original study of the scale reported Cronbach's alpha coefficients for the subscales ranging from .79 to .92. For this study, the Cronbach's alpha value was found to be 0.895.

Pro-Environmental Behavior Scale

The Environmental Behaviour Scale was developed by Sarı and Özkan (2023) to assess individuals' environmentally conscious behaviours in their daily lives. The scale consists of 11 items and includes two sub-dimensions: low-effort environmental behaviours and high-effort environmental behaviours. Items are scored using a 5-point Likert-type scale (1 = never, 5 = always). Higher scores indicate a greater tendency towards environmentally friendly behaviour. In the original study of the scale, the Cronbach's alpha coefficients for the subscales were reported as .65 and .81. For this study, the Cronbach's alpha value was found to be 0.844.

Data Analysis

The analysis of the research data was conducted using the IBM SPSS Statistics programme. Within the scope of descriptive statistics, categorical variables were summarised using counts and percentages, while continuous variables were summarised using mean, standard deviation, minimum, and maximum values. The internal consistency of the measurement tools was assessed using Cronbach's alpha coefficient, and the normality of the data distribution was checked by examining the skewness and kurtosis values. Pearson correlation analysis was used to examine the relationships between variables, and correlation coefficients (r) and significance levels (p) were reported.

The mediating role of coping self-efficacy in the effect of climate change anxiety on environmental behaviours was tested using Model 4 of the PROCESS macro developed by Hayes (2022). The bootstrap method was applied in the mediation analyses, and indirect effects were assessed using 95% confidence intervals obtained from 5000 resamples. The absence of zero in the confidence interval was accepted as a criterion for the significance of the indirect effect. The statistical significance level was set at $p < .05$ for analyses.

Results

The majority of adolescents participating in the study were female (57.6%). Most participants were attending secondary school (61.8%), and nearly half reported living in a metropolitan area (47.6%). A large proportion of adolescents indicated that they did not have a family member working or volunteering for an environmental or nature-based non-governmental organisation (77.1%). In addition, more than half of the participants reported that they had not previously received any training on climate change (62.4%).

Regarding perceptions related to climate justice, more than half of the adolescents stated that the effects of climate change are not equal for everyone (52.4%), and a higher proportion believed that some communities are more affected by the climate crisis (64.1%). Nearly half of the participants reported that governments have not taken sufficient measures to protect the groups most affected by the climate crisis (43.5%). About half of the adolescents considered climate justice to be an important part of social

justice (52.4%), while a larger proportion stated that young people's views should be taken into account in addressing the climate crisis (65.9%) (Table 1).

Table 1
Sociodemographic characteristics of the participants

Variable	Group	N	%
Gender	Female	98	57.6
	Male	72	42.4
Age	10–13	62	36.5
	14–15	49	28.8
	16 years and older	59	34.7
Education	Middle school	60	35.3
	High school	105	61.8
	University preparation	5	2.9
Place of residence	Rural area	4	2.4
	District center	55	32.4
	City center	30	17.6
	Metropolitan city	81	47.6
Presence of a family member working or volunteering in an environmental or nature-based non-governmental organization	Yes	7	4.1
	No	131	77.1
	Not sure	32	18.8
Participation in climate change–related training	Yes	64	37.6
	No	106	62.4
The effects of climate change are not equal for everyone	Disagree	39	22.9
	Agree	89	52.4
	Undecided	42	24.7
Some communities are more affected by the climate crisis than others	Disagree	32	18.8
	Agree	109	64.1
	Undecided	29	17.1
Governments do not take sufficient measures to protect the groups most affected by climate change	Disagree	31	18.2
	Agree	74	43.5
	Undecided	65	38.2

Variable	Group	N	%
Climate justice is an important part of social justice	Disagree	33	19.4
	Agree	89	52.4
	Undecided	48	28.2
Young people's views should be taken into account in solving the climate crisis	Disagree	25	14.7
	Agree	112	65.9
	Undecided	33	19.4
Wealthy countries should take greater responsibility because they contribute more to climate change	Disagree	29	17.1
	Agree	78	45.9
	Undecided	63	37.1

Descriptive statistics for the scales used in the study are presented in Table 2. The mean total score for the eco-anxiety scale was 12.29 ± 6.49 , the mean total score for the coping self-efficacy scale was 134.68 ± 34.58 , and the mean total score for the environmental behaviour scale was 36.74 ± 8.63 . The Cronbach's alpha coefficients of the scales ranged from .83 to .89 and were determined to be at an acceptable level.

Table 2
Reliability and descriptive statistics of the study variables

Scale	α	Min	Max	Mean	SD
Eco-anxiety scale	0.832	0.00	32.00	12.29	6.49
Coping self-efficacy scale	0.895	35.00	210.00	134.68	34.58
Pro-environmental behavior scale	0.844	15.00	55.00	36.74	8.63

α = Cronbach's alpha; M = Mean; SD = Standard deviation; Min = Minimum; Max=Maximum.

Pearson correlation analysis was performed to examine the relationships between the research variables (Table 3). According to the analysis results, a negative and weakly significant relationship was found between eco-anxiety and coping self-efficacy ($r = -.16$, $p = .035$). A positive and moderately significant relationship was found between coping self-efficacy and environmental behaviours ($r = .44$, $p < .001$). In contrast, no statistically significant relationship was found between eco-anxiety and environmental behaviours ($r = .08$, $p = .200$).

Table 3
Correlations among study variables

Variables	Eco-anxiety	Coping self-efficacy	Pro-environmental behavior
Eco-anxiety	r = 1		
	p		
Coping self-efficacy	r = - 0.162*	1	
	p = 0.035		
Pro-environmental behavior	r = 0.080	r = 0.442**	1
	p = 0.200	p < 0.001	

*p < .05, ** p < .01 Pearson correlation coefficients are reported.

The mediating role of coping self-efficacy in the relationship between eco-anxiety and environmental behaviours was examined using the PROCESS macro (Model 4). The model testing the effect of eco-anxiety on coping self-efficacy was found to be statistically significant ($R^2 = .026$, $F(1,168) = 4.53$, $p = .035$). It was determined that eco-anxiety significantly predicted coping self-efficacy in a negative direction ($B = -0.86$, 95% CI [- 1.66, - 0.06]).

The regression model established for environmental behaviours was also found to be significant ($R^2 = .219$, $F(2,167) = 23.42$, $p < .001$). In this model, both eco-anxiety ($B = 0.21$, $p = .026$) and coping self-efficacy ($B = 0.12$, $p < .001$) were found to significantly predict pro-environmental behaviours in a positive direction.

When examining the total effect model, it was found that the total effect of eco-anxiety on environmental behaviours was not significant ($B = 0.11$, $p = .298$). The indirect effect was tested using the bootstrap method and was found to be statistically insignificant because the 95% confidence interval included zero ($B = -0.10$, 95% CI [- 0.22, 0.00]). These results indicate that coping self-efficacy does not play a significant mediating role in the relationship between eco-anxiety and environmental behaviours (Table 4).

Table 4

Mediation analysis of the effect of eco-anxiety on pro-environmental behavior (PROCESS Model 4)

Path	B	t	p	95% CI
Eco-anxiety → Coping self-efficacy (a-path)	-0.86	-2.13	.035	
Coping self-efficacy → Pro-environmental behavior (b-path)	0.12	6.74	< .001	
Eco-anxiety → Pro-environmental behavior (direct, c')	0.21	2.25	.026	
Total effect (c-path)	0.11	1.04	.298	
Indirect effect (a×b)	-0.10			[-0.22, 0.00]
Boot SE	0.06			

X = Eco-anxiety, M = Coping self-efficacy, Y = Pro-environmental behavior. Bootstrap confidence intervals based on 5000 resamples.

Discussion

This study examined the relationships between climate change anxiety, coping self-efficacy, and pro-environmental behaviours among adolescents and tested the mediating role of coping self-efficacy. The findings revealed a negative relationship between eco-anxiety and coping self-efficacy, a positive relationship between coping self-efficacy and environmental behaviours, and that the mediating role of coping self-efficacy was not significant. However, the finding that eco-anxiety has a significant direct effect on environmental behaviours suggests that climate change anxiety may not only be a negative psychological state but may also be related to behavioural processes under certain conditions.

The finding of a negative relationship between coping with eco-anxiety and self-efficacy suggests that intense anxiety about climate change may weaken individuals' perceptions of their ability to cope with stress. The literature reports that the climate crisis has significant psychological effects, particularly on children and adolescents, and that mental health problems are increasing in this age group. Gislason et al. (2021) noted that symptoms such as sadness, feelings of guilt, distractibility, changes in sleep and appetite, solastalgia, and alienation from the environment can emerge in young people due to climate change. Similarly, Léger-Goodes et al. (2022) showed that eco-anxiety related to climate change in young individuals is associated with various psychological outcomes such as grief, anger, fear, anxiety, and depression. Such intense emotional responses can undermine an individual's belief in their ability to cope with stressful situations. Clayton and Karazsia (2020) and Ojala et al. (2021) indicate that climate change anxiety can increase feelings of loss of control and uncertainty, which can negatively affect coping processes. This finding is also consistent with Bandura's (1982) self-efficacy theory; when individuals' belief in their ability to manage threatening situations diminishes, their coping behaviours may also weaken.

The existence of a positive and significant relationship between coping self-efficacy and pro-environmental behaviours suggests that an individual's belief that their own actions can produce results may be related to pro-environmental behaviours. Theoretical models explaining the formation of environmental behaviours emphasise that an individual's perception of control and belief in self-efficacy play an important role in behaviour (Kollmuss & Agyeman, 2002; Steg & Vlek, 2009). Studies conducted specifically on young people report that individuals who believe they can tackle environmental problems participate more in environmental actions (Sarrasin et al., 2022). This result supports the notion that self-efficacy perception may be an important psychological variable related to environmental behaviour.

In this study, no significant correlation was found between eco-anxiety and pro-environmental behaviours; however, the regression model revealed that eco-anxiety significantly predicted pro-environmental behaviours. This finding suggests that the effect of climate change anxiety on behaviour may not be linear or unidirectional. The literature reports that there are generally small but significant relationships between climate anxiety and pro-environmental behaviours, and that this relationship is observed in both adults and adolescents (Ogunbode et al., 2022; Verplanken et al., 2020; Wullenkord & Ojala, 2023). However, one of the common views in the literature is that when climate anxiety reaches high levels, it can create helplessness and inaction in individuals, thereby reducing pro-environmental behaviours (Albrecht, 2011; Clayton, 2020). However, recent studies have shown that climate anxiety does not always inhibit behaviour and can lead to different outcomes depending on how the individual copes with anxiety (Ogunbode et al., 2022; Verplanken et al., 2020; Wullenkord & Ojala, 2023; Innocenti et al., 2023). Benoit et al. (2025) also report that the behavioural consequences of climate change anxiety must be considered alongside an individual's psychological processes and coping mechanisms; anxiety alone is insufficient to explain environmental actions, but the relationships become clearer when mediating psychological variables are included in the model. This suggests that climate change anxiety can have both motivating and inhibiting effects on individuals, and that this effect may vary depending on individual coping processes.

The fact that the mediating role of coping self-efficacy was not found to be significant in the mediation analysis suggests that the relationship between climate change anxiety and pro-environmental behaviour may not be explained solely by coping skills. This suggests that other psychosocial variables, such as values, environmental attitudes, social norms, and perceived responsibility, may also influence the emergence of environmental behaviours in young individuals (Clayton, 2020; Ojala et al., 2021). It is emphasised that social and cultural factors, as well as individual self-efficacy, are important in the transformation of environmental concern into behaviour, particularly during adolescence.

The descriptive findings obtained in this study indicate that participants' perceptions of justice and inequality regarding climate change are pronounced. A significant proportion of participants stated that the effects of climate change are not equal for everyone, that some communities are more affected by this crisis, and that young people's views should be taken into account in solving the climate crisis. These findings show that climate change is perceived not only as an environmental problem but also as a phenomenon related to social justice and inequality. The literature indicates that the effects of climate

change are not equally distributed among societies and that children, young people, and vulnerable groups are particularly affected by this process (Thomas et al., 2019; IPCC, 2022; UNICEF, 2021). It is suggested that increasing awareness of these inequalities can strengthen both climate anxiety and a sense of environmental responsibility among young individuals (Clayton, 2020; Jimenez Gomez Tagle & Vito, 2024).

In conclusion, this study demonstrates that climate change anxiety in adolescents is not a one-dimensional phenomenon, but may be related to both psychological distress and environmental behaviour motivation. Although coping self-efficacy is an important variable related to environmental behaviours, this variable was not found to play a mediating role in the relationship between climate anxiety and behaviour. These findings highlight the importance of approaches that not only aim to reduce anxiety but also strengthen coping skills and perceptions of self-efficacy in climate change education for young people.

The increasing importance of the effects of climate change on mental health necessitates that healthcare professionals have knowledge and awareness on this subject. The literature indicates that adopting a holistic approach in healthcare services that addresses both the physical and mental needs of individuals is important in supporting those experiencing climate change anxiety (Watts et al., 2021; Sanson et al., 2019). It is recommended that the emotional, cognitive, and behavioural consequences of climate change anxiety, particularly in adolescents, be assessed, psychosocial support be provided when necessary, and individuals' coping skills be strengthened (Ojala et al., 2021; Crandon et al., 2024). It is emphasised that anxiety related to climate change may affect sleep patterns, daily functioning, and overall well-being; therefore, jointly assessing the mental and physical health of young individuals is important for maintaining their quality of life (Clayton & Karazsia, 2020; Avan & Vural, 2025). In this context, it is recommended that healthcare professionals receive training on the health impacts of climate change and be able to identify at-risk individuals at an early stage.

Conclusion

The results showed that climate change anxiety was negatively associated with coping self-efficacy, while coping self-efficacy was positively related to pro-environmental behavior among adolescents. Climate anxiety had a direct effect on pro-environmental behavior, but the mediating role of coping self-efficacy was not supported. These findings suggest that climate change anxiety may act as both a stressor and a motivational factor for environmental action. Interventions aimed at strengthening coping skills and self-efficacy may help adolescents respond to climate-related concerns in a more adaptive way. Further longitudinal studies are needed to clarify causal relationships.

Limitations

This study has several limitations that should be considered. First, the data were based on self-reported measures, which may introduce response bias. Second, the sample consisted of adolescents from a

single region, limiting the generalizability of the findings. Third, due to the cross-sectional design, causal relationships among climate change anxiety, coping self-efficacy, and pro-environmental behavior cannot be established. Also, adolescents' psychological responses to climate change may be influenced by cultural, social, and environmental factors that were not examined in the present study. Future research should employ longitudinal and multi-site designs to clarify causal pathways and to better understand the mechanisms linking climate anxiety, coping processes, and behavioral responses.

Declarations

Consent for publication

Not applicable, as the manuscript does not contain any identifiable individual data.

Ethical Approval and Informed Consent

Ethical approval was obtained from the Non-Interventional Research Ethics Committee of University of Health Sciences, İzmir Dr. Behçet Uz Children's Diseases and Surgery Training and Research Hospital (Decision No: 2025/12-15; July 10, 2025). The study was conducted in accordance with the ethical principles of the Declaration of Helsinki.

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Consent to Participate

Before data collection, all participants were fully informed about the purpose, voluntary nature, and confidentiality of the study. Written informed consent was obtained from each participant.

Declaration of Conflicting Interests

The authors declare no potential conflicts of interest with respect to the research, authorship, and/or publication of this article.

Data Availability Statement

Due to ethical and institutional restrictions, the datasets generated and/or analyzed during the current study are not publicly available. The dataset contains personal information from nursing students and is stored securely to preserve confidentiality. Requests for access may be considered in accordance with data protection regulations and institutional review policies.

Author Contributions

Conceptualization: BG, DO, SOV

Methodology: BG, DO, SOV

Data Collection: BG, EG, CO, YT, GC, ZIPB

Formal Analysis: BG, DO

Writing – Original Draft: BG

Writing – Review & Editing: BG, DO, SOV

Supervision: SOV

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