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Managing malice in negative environments: the mediating effect of coping styles on the relationship between negative sense of place and malevolent creativity among Chinese high school students

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Abstract

Background Creativity motivated by negative intentions can be referred to as malevolent creativity. While existing findings have largely focused on environmental or individual factors influencing malevolent creativity, less attention has been directed towards understanding how the sense of place—derived from individual-environment interaction—affects malevolent creativity. Additionally, the role of coping styles as mediating mechanisms in negative environments has been insufficiently explored.

Methods This study aims to investigate the relationship between negative sense of place and malevolent creativity, while examining the mediating role of coping styles. To this end, a paper-based survey was conducted among 1310 Chinese high school students, utilizing the Negative Sense of Place Scale, Coping Styles Scale, and Malevolent Creativity Scale. Data were analyzed using SPSS 26.0 and Mplus 8.3.

Results The findings revealed that a negative sense of place in the school environment significantly and positively predicted malevolent creativity. Negative sense of place was also positively associated with negative coping styles and negatively associated with positive coping styles. Furthermore, coping styles mediated the relationship between negative sense of place and malevolent creativity.

Conclusion This study enriches existing literature by elucidating the links between sense of place, coping styles, and malevolent creativity. These findings provide valuable insights for strategies aimed at reducing malevolent creativity and preventing harmful creative behaviors in educational contexts.

Keywords Malevolent creativity, Negative sense of place, Coping styles, Mediating effects, Vocational high school students

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Introduction

Creativity, recognized as a key driver of modern scientific and technological progress [1], is broadly defined as the ability to generate novel and applicable ideas or solutions [2, 3]. In an era marked by rapid technological advancement, global interconnectedness, and increasingly complex challenges, creativity has become a fundamental educational goal, contributing significantly to individual self-actualization and lifelong development [4]. However, creativity possesses a "dark side" [5], exemplified by malevolent creativity, which involves the use of creative processes with the intent to cause harm [6]. Malevolent creativity encompasses both the potential for harm and the execution of harmful acts [7]. While malevolent creative potential shares core characteristics with general creativity, such as novelty and utility, it is distinguished by its harmful intent [8]. Malevolent creative behaviors—immoral, harmful actions aimed at causing damage—are characterized by novelty and intentional harm directed toward oneself or others [6]. Such behaviors, including cheating, lying, and betrayal, are frequently observed in everyday life [9].

Given the harmful effects of malevolent creativity on both individual development and societal stability, identifying its contributing factors and developing effective strategies to mitigate its occurrence is crucial. Studies indicate that, beyond individual traits such as personality and emotional intelligence [10, 11], external factors—including inequitable societal conditions and neglectful family environments—play a significant role in fostering malevolent creativity [10, 12]. Specifically, negative school environments are recognized as key triggers for malevolent creativity [13, 14]. Negative sense of place, defined as adverse experiences and perceptions of one's surroundings, has also been shown to negatively impact behavior and emotions. Such negative perceptions of school often lead to decreased academic performance and increased problematic behaviors [15, 16]. For example, school alienation is frequently linked to disruptive behaviors and higher dropout rates [17], while malevolent creativity—deliberate acts intended to cause harm—is more likely to manifest in students already exhibiting behavioral issues [6, 18]. Previous research has found that, in the context of stigma surrounding vocational schools, the perceived supportiveness of the school climate among vocational school students is relatively low, which may lead to consequences such as an escalation in aggressive behavior, deteriorating student-teacher relationships, and an increased risk of school dropout [19, 20]. Additionally, a negative sense of place can exacerbate emotional distress [21], heightening the risk of mental health challenges such as stress, anxiety, and depression [22]. Malevolent creativity is closely linked to negative emotional experiences [23] and poorer mental well-being [24]. However, existing research on malevolent creativity in adolescents has limited attention to the mechanisms of individual-environment interaction, particularly with regard to vocational high school students, a specific and widespread group that has been relatively underexplored.

Coping refers to the cognitive and behavioral strategies individuals employ to manage frustration, stress, or emotional distress, generally classified as positive or negative [25]. Positive coping, characterized by a proactive, problem-solving approach, involves seeking internal and external resources to formulate strategies for addressing challenges. In contrast, negative coping is marked by avoidance, denial, or escapism in response to difficulties [26]. The choice of coping styles plays a critical role in shaping individuals' perceptions of and reactions to their environment [27]. Positive strategies like reframing and reappraisal allow individuals to reinterpret negative situations more favorably, fostering resilience and enhancing their capacity to overcome adversity [28]. Moreover, positive coping enhances coping efficiency and mitigates the adverse effects of stress on adaptive outcomes, serving as a protective factor for mental health [29, 30]. In contrast, adolescents who rely on negative coping methods, such as avoidance, often display poorer psychological functioning and are more likely to develop aggressive or problematic behaviors [31]. Coping styles regulate emotions, shape psychological functioning, and indirectly influence malevolent creativity. Additionally, negative perceptions of place have been shown to impact coping styles, which in turn affect malevolent creativity. Studies show that negative campus perceptions, such as fear and alienation, are linked to increased stress and anxiety, shaping students' coping styles and often leading to avoidance behaviors [32]. Conversely, adopting positive coping styles can diminish the likelihood of malevolent behavior by tempering hostile or aggressive responses to adverse circumstances [33, 34]. However, research on the mediating role of coping styles between negative sense of place and malevolent creativity remains limited.

This study explored the relationship between adolescents' negative sense of place and malevolent creativity within the context of vocational high school education, focusing on the mediating role of coping styles. By examining these dynamics, the study enhances the understanding of the 5 A framework of creativity and provides valuable insights into strategies for reducing malevolent creativity within school environments.

Rationale and assumptions

Theoretical framework

Theoretical frameworks for malevolent creativity have progressed from a single-dimensional focus to more multidimensional perspectives [35]. These frameworks now encompass both social-environmental contexts [36] and individual-level factors [37, 38]. At the individual level, malevolent creativity is closely associated with personality traits and emotional factors [10]. For example, individuals low in conscientiousness and high in aggression tend to perform better in malevolent creativity tasks [37]. Additionally, factors such as emotional intelligence, gender, and other personal characteristics uniquely influence the expression of malevolent creativity [11, 38].

Rhodes introduced the widely recognized 4P model of creativity, encompassing four dimensions: person, process, product, and environment [39]. Hunter's Malevolent Innovation Transformation framework posits those individual motivations—such as internal drives, external pressures, justice-related beliefs, and group ideologies—play a critical role during both the ideation and execution phases of malevolent creativity [8]. Glăveanu expanded the socio-cultural perspective by developing the 5 A framework, which includes actor (creator), action (creative process), artifact (creative product), audience, and affordance [40]. In this framework, affordance emphasizes the role of environmental and material resources in supporting creativity. Both the 4P model [39], Malevolent Innovation Transformation framework [8], and the 5 A framework [40] highlight the influence of physical and socio-cultural contexts on creativity. These contexts can also trigger malevolent creativity, particularly when negative external factors—such as neglectful family environments—foster malevolent creative behaviors [10]. Research has shown that threatening social environments can promote malevolent creative ideas [12]. For example, school environments strongly predict students' involvement in drug use or criminal behavior [41], whereas a strong sense of community reduces the likelihood of aggressive behaviors [42].

This study, grounded in the 5 A framework of creativity, investigates the factors influencing malevolent creativity, with a specific focus on students' malevolent creativity within the campus environment. The socio-cultural perspective of the 5 A framework underscores the importance of considering both the individual and the campus environment, along with their dynamic interactions. Consequently, this study investigates the mediating role of coping styles adopted by students.

Negative sense of place and malevolent creativity

Tuan [43] introduced the concept of "sense of place", describing the emotional experiences individuals undergo when adapting to their environment. These experiences can be categorized as either "positive" or "negative". Positive responses lead to "place attachment", characterized by satisfaction and happiness, while negative responses result in "place fear", associated with discomfort or fear [44]. Hummon [45] introduced "place alienation", highlighting the weakening of emotional bonds with a particular geographic area. McCreanor et al. [46] also emphasized that sense of place encompasses both attachment and aversion to specific locations. Scannell and Gifford [22] developed a framework that includes elements such as place dissatisfaction and aversion. A negative sense of place includes dimensions such as place alienation, place aversion, and place fear. Place alienation refers to the erosion or loss of emotional connection to a location, often stemming from social alienation, lack of identity, or difficulty adapting to the spatial environment [45]. Place aversion involves emotional rejection or avoidance of a location [47], while place fear describes locations perceived as threatening or dangerous [48]. A negative sense of place affects not only emotions [47] but also behavior and attitudes [49]. Both quantitative and qualitative methods have been used to assess negative sense of place. Quantitative measures include the Workplace Fear and Avoidance Scale [50]. Qualitative approaches such as walking interviews [51] and semi-structured interviews [52] have also been employed. Building on the measures by Alagarsamy et al. [50] and Van Andel [53], this study developed a 10-item scale to assess three dimensions: campus alienation, campus aversion, and campus fear. An example from the campus fear dimension is, "I prefer routes that avoid certain areas of the campus."

Malevolent creativity is shaped by various factors, with significant individual differences observed in its manifestation [10]. Research has shown that gender plays a notable role, with males typically exhibiting higher levels of malevolent creativity, primarily due to the influence of dark personality traits [11]. Additionally, life circumstances such as exposure to unfair conditions [54] and social threats [12] can activate defense and aggression mechanisms, which in turn stimulate malevolent creativity. Measuring malevolent creativity is a complex process, with different methods employed to assess it. For example, Clark and James [54] utilized problem-solving tasks, whereas Lee and Dow [37] examined it through divergent thinking tests to evaluate individuals' thought processes. In this study, malevolent creativity was assessed using the scale developed by Ning Hao et al. [9], which evaluates individuals' daily behaviors.

The 5 A framework of creativity emphasizes the crucial roles of actors (creators), actions (creative processes), artifacts (creative products), audience, and affordances in shaping creativity [40]. This comprehensive perspective

has encouraged researchers to investigate the interconnected influences of these elements on creativity. In this study, the negative sense of place arises from the interaction between students and their campus environment, encompassing relationships with others (e.g., peers), physical aspects (e.g., campus infrastructure), and social dynamics (e.g., campus climate). These factors are strongly tied to students' creative development [50, 55]. On one hand, negative sense of place is understood as a multifaceted construct involving both environmental characteristics and individual perceptions [56, 57]. For instance, adverse campus features such as noise, overcrowding, and pollution often provoke emotions like disgust, irritation, and alienation [58]. These negative feelings can lead to behavioral issues and manifestations of malevolent creativity, including depression, absenteeism, dishonesty, and bullying [14, 59]. On the other hand, negative sense of place also refers to an individual's unfavorable perception of their environment, characterized by emotional disconnection, which can influence malevolent creativity by impacting mood and mental health. This emotional response may trigger stress reactions such as anxiety, fear, and depression [48]. During adolescence, a period of intense physical, social, and emotional growth, changes in school structure can intensify feelings of loneliness, isolation, and victimization, potentially leading to disruptive behaviors [60–62]. Based on these findings, the following hypothesis is proposed:

> H1: A positive correlation exists between negative sense of place and malevolent creativity.

The mediating role of coping styles

Coping is defined as the process by which individuals are adapted to their environment [27], and it significantly influences emotional and behavioral responses [63]. Lazarus and Folkman [27] conceptualized coping as dynamic mechanisms aimed at mastering or mitigating the impact of perceived threats or challenges. Endler et al. [64, 65] categorized coping strategies into three primary types: task-oriented, emotion-oriented, and avoidance coping. Similarly, Liu et al. [26] categorized coping into two broad types: positive and negative coping. Positive coping, which aligns closely with task-oriented strategies, involves a problem-solving approach wherein individuals actively seek internal and external resources to devise effective solutions. In contrast, negative coping, akin to emotion-oriented and avoidance coping, relies on strategies such as denial, avoidance, or fantasizing to address challenges. Research consistently highlights the substantial influence of coping styles on students' mental health, peer relationships, and problematic behaviors [66, 67]. For instance, adolescents with higher resilience are more likely to adopt positive coping styles, which are positively associated with improved psychological outcomes. Conversely, negative coping styles are linked to lower resilience and poorer psychological well-being [68]. Moreover, students who resort to negative coping styles in response to social exclusion are more likely to disregard others' interests and engage in socially deviant behaviors, including malevolent creativity [67, 69].

Individuals' coping styles are influenced by various factors, including environmental conditions [70], social support [71], emotions [72], and gender [73]. Students' coping styles are particularly shaped by their campus environment [74], which comprises physical, social, and psychological components [75]. In this context, academic pressures and peer relationships can foster a negative sense of place [76, 77], thereby impacting how students cope [74]. Social support serves as a critical resource for promoting positive psychological development [78] and plays a key role in determining students' coping behaviors. In educational settings, students often turn to family, teachers, and peers for support [79]. However, when students experience a negative sense of place, such as feelings of campus alienation, the social support they receive may diminish, negatively influencing their coping mechanisms [80]. Additionally, research has documented gender differences in coping styles, with women more likely to engage in maladaptive strategies, such as self-distraction, denial, and behavioral disengagement [73]. Women also tend to rely more on instrumental and emotional support to manage stress. In contrast, men are more inclined to adopt passive and avoidant coping styles, including substance use [73, 81, 82].

The 5 A framework emphasizes the creative process, the surrounding environment, and the availability of resources that nurture creativity [40]. Lazarus and Folkman [27] conceptualized coping as a mechanism for managing both internal and external demands. Internal demands, such as motivation and reflection, involve cognitive processes that are assessed based on whether they challenge or surpass an individual's resources. The ability to manage these demands can significantly impact the creative process and the accessibility of essential resources. Research consistently demonstrates a strong link between adolescents' coping styles and malevolent creativity [31]. Task-oriented coping strategies, regarded as positive coping styles, are associated with improved psychological well-being and a reduction in both internalizing and externalizing behaviors during adolescence [83, 84]. These effects, in turn, help diminish the likelihood of malevolent creativity [85, 86]. Conversely, avoidance-oriented coping strategies are linked to poor resilience and an increase in problematic behaviors, such as substance abuse [84], which can further escalate

malevolent creativity [12, 87]. Based on these findings, the following hypothesis is proposed:

> H2: Positive and negative coping styles mediate the relationship between a negative sense of place and malevolent creativity.

Figure 1 shows a diagram of the mediation model proposed in the two hypotheses that depicts relationships between the independent, mediator, and dependent variables.

Table 1 Detailed information about respondents

Characteristics	Number(*N*)	Percentage(%)
Gender		
Male	573	48.77%
Female	602	51.23%
Grade		
Vocational High School Year 1	654	55.66%
Vocational High School Year 2	441	37.53%
Vocational High School Year 3	80	6.81%

Research design and methodology

Survey procedures and research subjects

This study used convenience sampling to select a public vocational high school in eastern China for data collection, conducted between November and December 2023. Paper-based questionnaires were distributed during class breaks and collected on-site. A total of 1310 questionnaires were distributed. Following validity checks, including lie detection items and logical consistency evaluations to exclude incomplete or careless responses,1175 valid questionnaires were obtained, yielding an effective response rate of 89.70%.The confidentiality of all data was strictly maintained, and the information will be used exclusively for academic purposes. Informed consent was secured from all participants, their parents, classroom teachers, and geography teachers. The age of the respondents ranges from 15 to 18 years old. Table 1 provides a detailed overview of the study's respondents.

Research tools

The questionnaire used in this study consisted of four parts: demographic information, the Negative Sense of Place Scale, the Coping Styles Scale, and the Malevolent Creativity Scale. The demographic section collected data on gender and grade level. To ensure translation accuracy, portions of the questionnaire, originally in English, were adapted into Chinese using the back-translation method [88]. One researcher translated the instrument from English to Chinese, another translated it back to English, and a third researcher compared the original, translated, and back-translated versions to ensure consistency, thus minimizing potential translation errors that could compromise study validity.

Negative sense of place scale

The Negative Sense of Place Scale was developed with reference to relevant literature, including the work of Riley K and other scholars [48, 50, 51, 89]. This scale comprises three subscales: Campus Alienation, Campus Aversion, and Campus Fear, with a total of 15 items. The Campus Alienation subscale includes five items, such as, "I will not regret leaving this place after graduation." The Campus Aversion subscale contains five items, such as,

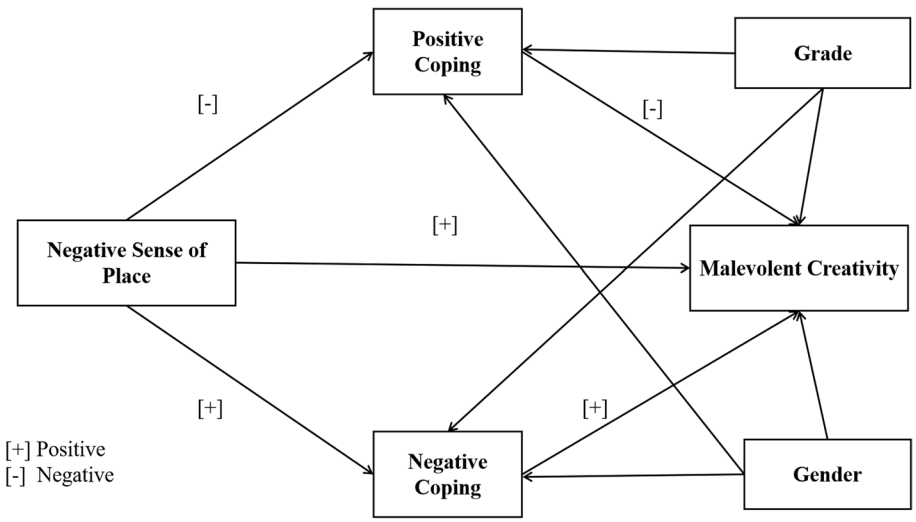

Fig. 1 Research model

"Even if offered a reward, I would not want to remain and study on this campus." Lastly, the Campus Fear subscale includes five items, such as, "I am afraid of being threatened or bullied here." The responses were recorded on a 7-point Likert scale ranging from "strongly disagree" to "strongly agree", with higher scores indicating stronger negative feelings about the campus. The Cronbach's alpha for the scale was 0.940, indicating high internal consistency. Confirmatory factor analysis (CFA) demonstrated strong model fit indices: $\chi^2/df = 5.0$, CFI = 0.960, TLI = 0.948, RMSEA = 0.076, and SRMR = 0.036, supporting the scale's reliability and validity.

Coping styles scale

The Coping Styles Scale was adapted from Xie [90] Simple Coping Styles Scale, comprising two subscales: Positive Coping and Negative Coping, with a total of 20 items. The Positive Coping subscale contains 12 items, such as, "When faced with a difficult problem, I seek advice from relatives, friends, or classmates." The Negative Coping subscale includes 8 items, exemplified by: "When encountering an intractable problem, I fantasize that a miracle might occur to change the situation." Responses were recorded on a 7-point Likert scale, ranging from "never" to "always", with higher scores reflecting stronger tendencies toward positive or negative coping. Item 15 was reverse scored. In this study, the scale demonstrated high internal consistency with a Cronbach's alpha of 0.951. Confirmatory factor analysis (CFA) indicated acceptable model fit indices: $\chi^2/df = 3.53$, CFI = 0.918, TLI = 0.907, RMSEA = 0.060, and SRMR = 0.076, supporting the scale's reliability and validity.

Malevolent creativity behavior scale

The Malevolent Creativity Behavior Scale, developed by Hao et al. [9], assesses three dimensions of malevolent creativity: inflicting harm, deceit, and mischief, with a total of 13 items. Sample items include: "I have devised innovative ways to punish those who commit wrongdoings," "I can think of numerous bad ideas for pranking others," and "When I do something wrong, I try to avoid getting caught to stay safe." Responses are rated on a 7-point Likert scale, ranging "never" to "always", where higher scores reflect greater tendencies toward malevolent creativity. In this study, the scale demonstrated excellent internal consistency with a Cronbach's alpha of 0.975. CFA results yielded strong model fit indices: $\chi^2/df = 3.5$, CFI = 0.960, TLI = 0.950, RMSEA = 0.060, and SRMR = 0.029, indicating robust internal consistency and validity.

Data analysis

Data analysis was conducted using SPSS 26.0 and Mplus 8.3. To ensure the validity of the analyses and control for potential common method bias, Harman´s One-factor Test was performed [91]. The results identified six factors with eigenvalues greater than 1, with the primary factor accounting for 27.71% of the variance, which is below the 40% threshold, indicating that common method bias was not a concern. Descriptive statistics and correlation analyses were performed in SPSS 26.0 to assess data distribution and explore relationships among the variables. Mplus 8.3 was employed to construct a model examining the effect of negative sense of place on malevolent creativity, while also investigating the mediating role of coping styles and the differences between negative and positive coping mechanisms.

Results

Descriptive statistics and correlation analysis

The results of the descriptive statistics and correlation analyses for all variables are presented in Table 2. The negative sense of place is slightly positively correlated with negative coping ($r = 0.073$, $p = 0.012$) and significantly positively correlated with malevolent creativity ($r = 0.386$, $p < 0.001$), while it shows a significant negative correlation with positive coping ($r = -0.356$, $p < 0.001$). Additionally, a significant negative correlation was found between positive coping and malevolent creativity ($r = -0.255$, $p < 0.001$). Conversely, negative coping displayed a significant positive correlation with malevolent creativity ($r = 0.102$, $p < 0.001$). Except for the weak correlation between negative sense of place and negative coping, the remaining variables demonstrated moderate to high correlation strength.

Table 2 Descriptive Statistics and Correlation Analysis Results for all variables

Variable	NSOP	PC	NC	MC
NSOP	1			
PC	−0.356***	1		
NC	0.073*	0.362***	1	
MC	0.386***	−0.255***	0.102***	1
Mean	3.30	4.43	4.00	2.42
Standard Deviation	1.19	1.14	1.13	1.28

NSOP Negative Sense of Place, *PC* Positive Coping, *NC* Negative Coping, *MC* Malevolent Creativity

*$p < 0.05$

**$p < 0.01$

***$p < 0.001$

Intermediary analysis

To further examine the hypothesized relationships between negative sense of place, coping styles, and malevolent creativity, structural equation modeling (SEM) was performed. Considering the significant gender differences in malevolent creativity, gender was included as a control variable in the model. After controlling for the gender and grade, the model fit indices indicated a strong fit [χ^2 = 127.891, df = 31, χ^2/df = 4.13, CFI = 0.979, TLI = 0.971, RMSEA = 0.052 (90% CI 0.042–0.061), SRMR = 0.047].

The results of the mediation model (Fig. 2) demonstrate that a negative sense of place exerts a significant positive direct effect on both negative coping styles and malevolent creativity (β = 0.077, p = 0.005; β = 0.279, p < 0.001), while exerting a significant negative direct effect on positive coping styles (β = −0.227,p < 0.001). Additionally, there was a significant positive correlation between positive and negative coping styles (β = 0.407, p < 0.001). Furthermore, positive coping styles have a significant negative direct effect on malevolent creativity (β = −0.227, p < 0.001), whereas negative coping styles have a significant positive direct effect on malevolent creativity (β = 0.159, p < 0.001).

To rigorously assess the mediating effects, a bias-corrected percentile bootstrap test was employed, drawing 1000 samples to calculate the 95% confidence intervals. The results (see Table 2) revealed that the total effect of negative sense of place on malevolent creativity was 0.343 (95% CI [0.286, 0.391]), with an indirect effect of 0.064 (95% CI [0.045, 0.083]). Both of the two mediation pathways between negative sense of place and malevolent creativity were statistically significant, as the 95% confidence intervals for both did not include zero. These findings suggest that negative sense of place influences malevolent creativity both directly and indirectly through positive and negative coping styles. The direct effect accounted for 81.34% of the total effect, while the indirect effect constituted 18.66%.

As shown in Table 3, when examining the relationship between negative sense of place and malevolent creativity, the findings indicate that gender has a direct impact on malevolent creativity. Male students demonstrate higher levels of malevolent creativity compared to female students (Estimate = 0.129, S. E.=0.014, p < 0.001). Gender also significantly influences coping styles: male students are more likely to adopt negative coping styles (Estimate = 0.035, S.E.=0.013, p = 0.005), whereas they are less likely to engage in positive coping styles (Estimate=−0.105, S.E.=0.011, p < 0.001). The findings also indicate that grade level has a direct impact on malevolent creativity, with higher-grade students exhibiting significantly higher levels of malevolent creativity compared to lower-grade students (Estimate = 0.160, S.E. = 0.018, p < 0.001). Grade level also significantly influences coping styles: higher-grade students are more inclined to adopt negative coping strategies (Estimate = 0.044, S.E. = 0.016, p = 0.005) and less likely to employ positive coping strategies (Estimate = −0.130, S.E. = 0.013, p < 0.001). Furthermore, both gender and grade level may indirectly influence malevolent creativity through their effects on coping styles.

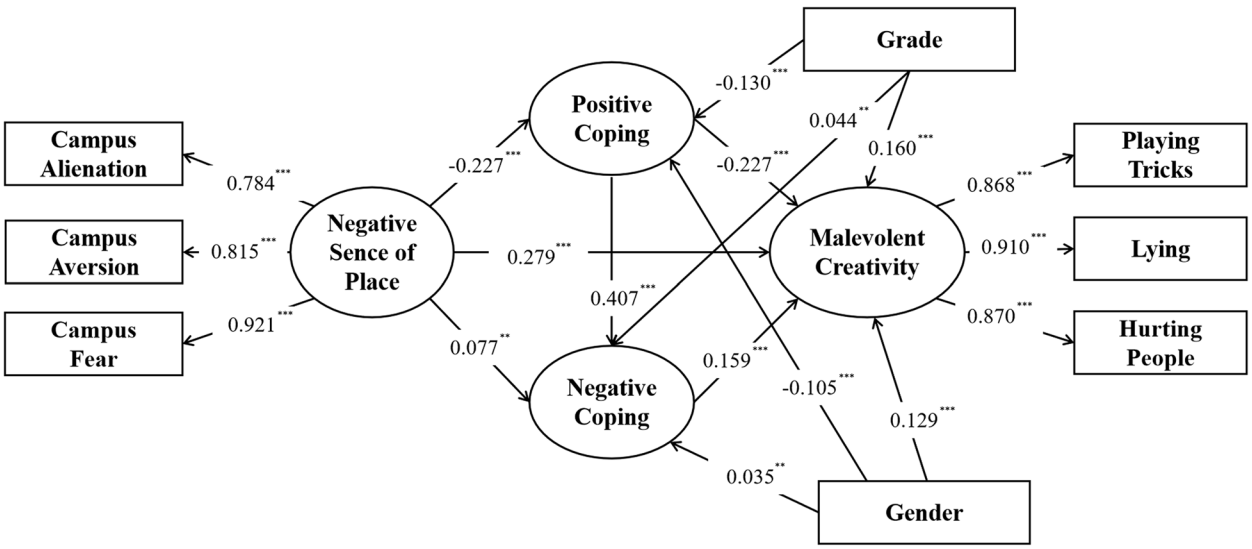

Fig. 2 Model of the mediating role of coping styles between negative sense of place and malevolent creativity.Note: *p < 0.05, **p < 0.01, ***p < 0.001

Table 3 Standardized indirect effects and 95% confidence intervals

Effects	Pathway	Estimate	S.E.	95%CI		*P* value
				Lower	Upper	
Direct	NSOP→MC	0.279	0.029	0.214	0.331	< 0.001
Indirect 1	NSOP→PC→MC	0.052	0.009	0.036	0.069	< 0.001
Indirect 2	NSOP→NC→MC	0.012	0.005	0.004	0.024	0.017
	Gender- PC	−0.105	0.011	−0.125	−0.082	< 0.001
	Gender- NC	0.035	0.013	0.011	0.060	0.005
	Gender- MC	0.129	0.014	0.099	0.155	< 0.001
	Grade- PC	−0.130	0.013	−0.156	−0.109	< 0.001
	Grade- NC	0.044	0.016	0.014	0.075	0.005
	Grade- MC	0.160	0.018	0.123	0.192	< 0.001
Total indirect		0.064	0.009	0.045	0.083	< 0.001
Total		0.343	0.026	0.286	0.391	< 0.001

NSOP Negative Sense of Place, *PC* Positive Coping, *NC* Negative Coping, *MC* Malevolent Creativity

Discussion

This study employed a mediation model based on the 5 A framework of creativity to examine the associations between negative sense of place and malevolent creativity. The results indicate that negative sense of place is associated with malevolent creativity through the mediating roles of both positive and negative coping styles.

The relationship between negative sense of place and malevolent creativity

Empirical studies have consistently demonstrated a positive correlation between a negative sense of place and malevolent creativity [12, 92]. Negative school environments, often associated with feelings of alienation and fear, tend to erode students' social support systems and psychological resilience. This deterioration increases the likelihood of engaging in maliciously creative behaviors [14, 93]. Hunter's Malevolent Innovation Transformation framework suggests that group ideologies are an important linkage factor in generating malevolent creativity [8]. Social psychological research further supports these findings, indicating that the degradation of a community's physical environment intensifies negative perceptions, fostering feelings of fear, insecurity, alienation, and a diminished sense of belonging. These emotions significantly influence individuals' behaviors and interactions within the community [94, 95]. Particularly, students in vocational high schools are a vulnerable group that is more susceptible to the influence of negative environments. For instance, one study found that the prevalence of direct self-harming behaviors among vocational school students is higher compared to that of high school students [96]. Moreover, a permissive school culture towards violent behaviors may further cultivate malevolent creativity [8]. Chen et al. [20] identified that vocational school students reported significantly higher rates of cyberbullying and lower levels of perceived school climate compared to students in regular schools. Neuroscientific evidence also corroborates these insights, showing that community alienation and insecurity are linked to heightened psychological stress [97], which impairs prefrontal cognitive functions and reduces inhibitory control [98, 99]. Damage to the prefrontal cortex—critical for moral judgment—has been associated with increased deceptive behaviors and impaired moral reasoning, rendering individuals more susceptible to malevolent creative behaviors [100, 101].

The mediating role of coping styles in negative sense of place and malevolent creativity

This study demonstrates that, in alignment with both the Creativity 5 A framework [40] and the Malevolent Innovation Transformation framework [8], negative sense of place is associated with malevolent creativity through coping styles. On the one hand, a negative correlation was identified between negative sense of place and positive coping styles, while a positive correlation emerged with negative coping styles. These findings corroborate earlier studies, which suggest that negative perceptions of school environments—such as feelings of alienation—can lead to dissatisfaction and avoidance behaviors, thus weakening positive coping styles and fostering negative ones [102, 103]. On the other hand, coping styles are closely related to psychological states and self-efficacy [104, 105]. Evidence shows that students' perceptions of classroom climate significantly affect their self-efficacy, with negative perceptions diminishing self-efficacy and increasing the likelihood of adopting negative coping

styles [106, 107]. Moreover, a lack of support or poor student-teacher relationships can reinforce a fixed mindset, leading students to avoid challenges and exhibit negative learning attitudes [104, 108].

The reduction in positive coping styles or the increase in negative coping styles has been positively correlated with the onset and progression of malevolent creativity, consistent with previous studies [109, 110]. Negative coping styles typically lower student satisfaction and increase the likelihood of engaging in malevolent behaviors [110]. In contrast, positive coping styles are associated with reduced stress levels and enhanced problem-solving abilities [109], which help mitigate the occurrence of malevolent behaviors, including malevolent creativity [111, 112]. Further research indicates that positive coping styles, such as confronting challenges and seeking social support, enhance psychological resilience and foster a supportive social environment, both crucial for alleviating psychological distress [113]. These strategies also foster positive emotions while reducing negative ones, thereby promoting overall emotional well-being [114]. A study conducted in a secondary vocational high school in a poverty-stricken county in China found that mindfulness promotes resilience, thereby enhancing quality of life and mitigating negative emotions such as depression and anxiety [115]. It is evident that adolescents who tend to adopt positive coping styles are better able to regulate their emotions in adverse environments, actively seek support, and thereby effectively suppress the emergence of malevolent creativity. Individuals who rely on negative coping styles often experience insufficient social support [113], which increases stress and psychological difficulties, ultimately impairing emotional health [116, 117]. While anxiety and stress can, at times, enhance creativity by fostering cognitive flexibility and persistence, they can also give rise to malevolent creativity [118]. Moreover, the absence of social support can exacerbate stress and dissatisfaction, potentially triggering maliciously creative actions [119].

This study demonstrates that a negative sense of place is associated with malevolent creativity through coping styles. This finding is consistent with existing research. A negative sense of place involves individuals' unfavorable perceptions and evaluations of their environment, which can impact emotional regulation [120]. Hunter et al. [8] found in their study that students' discomfort with their school environment may heighten their perceived need to engage in malevolent innovation, prompting malevolent creative acts. Moreover, emotional regulation is crucial in shaping coping styles. Effective emotional regulation encourages positive coping styles, while poor regulation leads to negative coping methods like avoidance and denial [121, 122], thereby increasing the risk of malevolent creativity [123]. Zhou et al. [124] reported that the prevalence of deliberate self-harm among vocational high school students is significantly higher than that of general high school students. Students who adopt positive coping styles, such as problem-solving and seeking social support, exhibit fewer instances of deliberate self-harm, whereas emotionally negative coping styles lead to adverse outcomes. Furthermore, malevolent creativity is a complex process involving interactions between various brain regions, including the prefrontal cortex and hippocampus [125, 126]. Positive coping styles activate the prefrontal cortex and other executive function networks, thereby reducing the likelihood of malevolent behaviors [127, 128]. Therefore, it can be concluded that coping styles, as adaptive responses to the environment, may serve as a mediating link between a negative sense of place and malevolent creativity, bridging these two constructs.

Moreover, the findings reveal a significant gender difference in malevolent creativity, with male students exhibiting higher levels of malevolent creativity compared to female students, consistent with previous studies [69]. A study found that males tend to score higher on average in the traits associated with the Dark Triad, which are linked to negative creativity [129]. Research by Wang et al. [130] indicates that boys exhibit a higher prevalence of health-risk behaviors compared to girls, which often increases the likelihood of health problems and psychological problems. This may stimulate malevolent creativity and lead to adverse aggressive behaviors. Other studies suggest that cultural norms, social expectations, and gender roles contribute to boys exhibiting higher levels of aggressive behavior [131, 132]. Consistent with previous studies, this study also found that females are more likely to adopt positive coping styles, such as acceptance, self-distraction, positive reframing, and seeking emotional support, while males tend to show higher levels of emotional suppression, avoidance, or rely on proactive aggression and confrontational coping strategies [133–135]. One study suggests that, when facing more daily stress than boys do, girls are more likely to adopt positive coping styles [136]. Another study also indicates that female students will overly consider how their behaviors are evaluated within social and cultural norms and exhibit higher maladaptive coping styles, which may curb the occurrence of malevolent creative behaviors [137]. In addition, the physical advantage gained by the increased height and weight of adolescent boys provides a basis for adopting emotional and aggressive coping strategies [138]. Therefore, gender differences in coping styles lead to disparities in behaviors such as malevolent creativity.

Differences in malevolent creativity were found between students of different grade levels, with higher-grade students exhibiting higher levels of malevolent creativity than their lower-grade counterparts. Çevik et al. [139] found that bullying behaviors or the risk of becoming a bully tend to be more prevalent as age and grade levels increase. While individuals with high aggression tendencies tend to perform better in tasks involving malevolent creativity. Moreover, in the context of collectivist values in China, individuals place greater emphasis on interpersonal relationships, adherence to the collective, and compliance with social norms and standards. Freshmen, who are new to an unfamiliar campus environment, are more likely to comply with campus discipline and be morally constrained. One study identified moral disengagement as a key mediator in the development of malevolent creativity [7]. Therefore, freshmen and lower-grade students may demonstrate lower levels of malevolent creativity. Additionally, the findings indicate that higher-grade students are more likely to adopt passive coping styles, whereas lower-grade students tend to adopt more active coping styles. One study reported that the frequency and emotional intensity of teacher-student conflicts tend to increase with grade level [140]. To adapt to the new environment and establish positive relationships [141], Freshmen often employ relatively active problem-solving strategies to reduce interpersonal tension and conflicts, which may suppress malevolent creativity. However, there are also viewpoints suggesting that students mature as they age. Wang et al. [142] found that effective peer conflict resolution strategies increase among middle school students during adolescence, peaking in the 12th grade. Therefore, it is both necessary to guide students towards healthier coping styles as they grow.

Discussion of significance

The study investigates the relationship between a negative sense of place and students' malevolent creativity. In contrast to previous research, this study specifically focuses on the "dark side" of creativity and highlights the mediating effects of coping styles, providing an explanation for the mechanisms that may drive malevolent creative behaviors. These findings are of significance in reducing students' malevolent creativity within the school context.

Several key practical implications arise from this study. First, acknowledging the psychological and behavioral effects of the campus environment and students' perceptions is crucial. Thus, improving the environment, such as repairing facilities and addressing security concerns, may help regulate these responses. Additionally, the role of coping styles in shaping malevolent creativity should be considered. Schools can provide counseling to promote positive coping styles, enhance social support perception, and strengthen psychological resilience and emotional well-being.

Limitations and future directions

Although this study provides significant insights into the relationship between a negative sense of place and malevolent creativity, it has certain limitations. Firstly, the cross-sectional design limits the ability to establish causal relationships. Secondly, the sample is confined to vocational high school students in eastern China, which may restrict the generalizability of the findings. Furthermore, the study overlooks the potential impact of family background and other individual characteristics on coping styles and malevolent creativity. In fact, factors such as the socio-economic and cultural capital of the family, support from peers, and individual traits may all influence how individuals cope with negative events, their mental health, and the expression of behaviors [143, 144].

Therefore, future research should consider adopting a longitudinal design to explore the causal mechanisms underlying the formation of malevolent creativity. In addition, it is important to further investigate individual background factors that may influence school sense of place, coping styles, and malevolent creativity, such as academic performance [145], family background [146], and individual health status [2]. Analyzing the potential impact mechanisms of these factors on malevolent creativity is crucial. Moreover, expanding the sample to include different types of schools and comparing the differences and similarities between samples from general schools and vocational schools would provide valuable insights. These improvements could contribute to the development of more effective and universally applicable interventions for mitigating malevolent creativity in adolescents.

Conclusion

This study explored the relationships between negative sense of place, coping styles, and malevolent creativity. The results revealed a significant positive correlation between students' negative perceptions of their school environment and their propensity for malevolent creativity, with coping styles serving as a mediating factor. These findings suggest that interventions targeting students' negative sense of place, alongside efforts to guide and cultivate more positive and adaptive coping styles, could effectively reduce both the likelihood and expression of malevolent creativity.

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Authors' contributions
Funding acquisition, research design and manuscript writing were done by J.Z; conceptualization, data analysis, manuscript writing, methods and visualization were carried out by J.L; database organization, manuscript writing and review were performed by J.G; manuscript writing and review were conducted by S.L; manuscript writing, review and editing were completed by X.L. All authors reviewed the manuscript.

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Data availability
The datasets used and/or analysed during the current study are available from the corresponding author on reasonable request.

Declarations

Ethics approval and consent to participate
Ethics approval was obtained from the Ethics Committee of Zhejiang Normal University. All methods were carried out in accordance with relevant guidelines and regulations. The survey informed consent was obtained from all participants included in the study before the survey.

Consent for publication
Not applicable.

Competing interests
The authors declare no competing interests.

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