Environmental Protection Begins at the Table: The Impact of Nature Connectedness on Sustainable Diet

Authors: Du Yifan, Shen Sicen, Jin Yuchang, An Junxiu, Zheng Peixuan, 靳宇倡

Date: 2024-08-06T00:00:00+00:00

Abstract

A sound ecological environment plays an indispensable supporting role in promoting the long-term prosperity of economy and society. As the core driving force of future society, college students' environmental awareness and prudent decision-making capacity are crucial for guiding the entire society toward a sustainable development path. Only when they establish a firm environmental protection philosophy and possess rational decision-making wisdom can they effectively propel society in a sustainable and harmonious direction. Based on the Theory of Planned Behavior, this study constructs a three-dimensional scale to measure sustainable dietary behavior from the concept of sustainable diet, namely perceived behavioral control, attitude, and subjective norm. On this basis, through questionnaire surveys and experimental methods, it examines the current status of sustainable dietary behavior among contemporary college students and conducts demographic variable difference analysis. It also thoroughly investigates the direct impact of nature connectedness on sustainable dietary behavior and the indirect influence of nature connectedness on sustainable dietary behavior through prosocial tendency. This study aims to provide theoretical supplementation for relevant research on sustainable diet and, by promoting individuals' pro-environmental behavior in daily dietary practices, enable environmental issues to be resolved to a certain extent.

Full Text

Preamble

Self-Check Report for *Acta Psychologica Sinica*

Please complete the following items and paste them on the first page of your manuscript.

1. Does this study represent a significant contribution? *Acta Psychologica Sinica* aims to publish cutting-edge psychological research that is "both scientifically excellent and of particularly broad interest and significance." If your study offers only minor, incremental contributions without attempting to open new areas of inquiry or propose unique and innovative perspectives—especially if it is purely an algorithmic or technical work without clear psychological questions—its chance of acceptance is low. We recommend submitting to another journal.

Answer: This study addresses questions such as "the concept and dimensional structure of sustainable dietary behavior among college students" by developing a reliable and valid scale for measuring sustainable dietary behavior in this population. The scale explores and validates the concept and dimensional structure of college students' sustainable dietary behavior, enriches the understanding of sustainable dietary behavior within the Chinese context, and provides theoretical supplementation for related research. This study employs both questionnaire and experimental methods to investigate the influence of connectedness to nature on sustainable dietary behavior and the role of prosocial tendencies, with the goal of promoting individuals' pro-environmental behavior in daily dietary practices and contributing to the resolution of environmental problems.

2. Have you published or submitted any articles using the same data as this study? If yes, please attach them for review. (We do not encourage authors to publish multiple articles using the same data with identical variables, nor do we support splitting a series of related studies into multiple publications.)

Answer: No.

3. Non-experimental, non-intervention studies in management, clinical, personality, and social psychology that rely solely on self-report (questionnaire) methods need to examine common method bias. What methods did you use to control or demonstrate that such bias does not affect the validity of your conclusions? (For literature on common method bias, see: http://journal.psych.ac.cn/xlkxjz/CN/abstract/abstract894.shtml) Studies based on cross-sectional data, using only self-reports, and conducted on convenience samples are easy to conduct but typically have limited innovative value and low acceptance probability.

Answer: This study randomly assigned participants to groups to reduce the impact of common method bias.

4. Did you report and analyze effect sizes (e.g., Cohen's d for t-tests, ^{2} or ^{2}p for ANOVA, standardized regression coefficients)? (Many studies mechanically report effect sizes without necessary analysis or explanation, such as whether the effect size is small, medium, or large, or its theoretical/applied significance.) (Search "effect size calculator" on Google for convenient apps. For explanations of effect sizes in Chinese,

see: http://journal.psych.ac.cn/xlkxjz/CN/abstract/abstract1150.shtml; in English, see: http://www.uccs.edu/lbecker/effect-size.html) Did you report 95% CIs for statistical analyses? (e.g., 95% CI for differences, correlation/regression coefficients) For calculations and plotting of confidence intervals, see https://thenewstatistics.com/itns/esci/)

Answer: This study has reported and analyzed effect sizes with necessary explanations. Statistical analyses include 95% CIs.

5. Please state your planned sample size and actual sample size. If they differ, please explain why. Low statistical power due to insufficient sample sizes has been a widespread problem in psychological research. We recommend explaining your rationale for sample size determination in the Methods section, using justified effect sizes and desired power, and reporting the software or program used. See https://osf.io/5awp4/ for guidance.

Answer: According to G*Power 3.1.9.7, with significance level $\alpha = 0.05$, effect size f = 0.3, and statistical power 1 - $\beta = 0.95$, the minimum planned sample size was 138. The actual sample size was 324 for Study 2 and 162 for Study 3.

6. [Question missing in original]

Answer: The paper meets this requirement.

7. If you excluded any data in your statistical analysis, did you report this in the text? What were the reasons? How would the results change if these data were included? How did you handle missing data? Did you delete any individual items from scales? Why? How would the results change if these items were included? Were there any measured items or variables not reported? Why? Please indicate where in the paper this is addressed.

Answer: The study excluded some data in statistical analysis, which was reported in sections "2.2.2 Data Collection," "3.1 Participants," and "4.1 Participants" with explanations.

8. Did you attach any experimental materials, scales, or questionnaires that have not undergone peer review to the end of the file for review? If not, please explain why. If the article is published, are you willing to share these materials with other researchers?

Answer: The unpublished questionnaire—"College Students' Sustainable Dietary Behavior Scale"—used in this study has been attached for review. If the article is published, I am willing to share these materials with other researchers.

9. This journal requires authors to provide raw data. Please choose one option:

(√) c) Raw data and programs have been shared on the Psychological Science Data Bank (https://psych.scidb.cn/)

d) If unable to provide, please explain the reason or provide relevant proof.

10. Is your study a clinical intervention or laboratory experiment? Yes (√) No ( )

If yes, please provide the pre-registration number. If not, please explain why. Note: Clinical interventions or laboratory experiments should be pre-registered before data collection. Other experimental studies are also encouraged to pre-register. Pre-registration requires stating all research hypotheses and their support, as well as detailed experimental/intervention procedures. This journal's pre-registration website is https://os.psych.ac.cn/preregister (see instructions in the "Download Center" on the journal's website) or https://osf.io/ or https://aspredicted.org/. Pre-registration significantly increases acceptance probability. See https://osf.io/5awp4/ for the importance of pre-registration.

Answer: The experiment has been submitted for pre-registration and is awaiting approval.

11. If your study involved human or animal subjects, was it approved by your institution's ethics committee? If yes, please send a scanned copy to the editorial office email. If no, please explain why.

Answer: The study involved human subjects and has been approved by the institution's ethics committee.

12. Did you write a 400-500 word extended English abstract following the "English Abstract Writing Guidelines" posted on the editorial office website? Has the English title and abstract been reviewed by a proficient English speaker or professionally edited by an SCI/SSCI paper editing company?

Answer: The English abstract has been written according to requirements and reviewed by a proficient English speaker.

13. If the first author is a student, please have the advisor send a separate email to the editorial office (xuebao@psych.ac.cn) stating that they have read the paper and carefully reviewed it. Have you reminded your advisor to send this email? (The editorial office will only consider the manuscript for processing after receiving the advisor's email)

Answer: The advisor has been reminded to send an email to the editorial office.

14. Please download and complete the "Manuscript Non-Confidentiality Certificate" from the "Download Center" on the right side of the editorial office website homepage, stamp it with the confidentiality office seal of the corresponding author's institution, and send a scanned copy to the editorial office email (xuebao@psych.ac.cn). If there is no confidentiality office seal, please use the institution's official seal. Have you sent the email?

Answer: The "Manuscript Non-Confidentiality Certificate" has been downloaded and completed, and will be submitted after stamping and scanning.

Environmental Protection Starts from the Dining Table: The Impact of Natural Connection on Sustainable Dietary Behavior

Abstract

A healthy ecological environment is indispensable for promoting long-term economic and social prosperity. As core drivers of future society, college students' environmental awareness and wise decision-making abilities are crucial for leading society toward sustainable development. Only when they establish firm environmental values and possess rational decision-making wisdom can they effectively promote society toward a sustainable and harmonious direction. Based on the Theory of Planned Behavior, this study begins with the concept of sustainable diets to construct a three-dimensional scale measuring this behavior: perceived behavioral control, attitude, and subjective norms. On this basis, through questionnaire surveys and experimental methods, we examine the current status of sustainable dietary behavior among contemporary college students and analyze demographic differences. We further explore the direct impact of connectedness to nature on sustainable dietary behavior and the indirect effect through prosocial tendencies. This study aims to provide theoretical supplementation for sustainable dietary research and, by promoting individuals' pro-environmental behavior in daily diets, contribute to solving environmental problems to some extent.

Keywords: sustainable diets, pro-environmental behavior, eating habits, prosocial tendencies, connectedness to nature

1.1 Problem Statement

Against the backdrop of continuous global population growth, human activity ranges are expanding daily, inevitably intensifying the overconsumption of natural resources. As this consumption increases, environmental pollution becomes more severe, and ecosystems suffer unprecedented impacts and destruction. This dual pressure on the environment not only threatens ecological balance but also poses challenges to human survival and development. Therefore, we must deeply recognize the urgency of this problem and seek effective solutions to achieve harmonious coexistence between humans and nature (Hartz, 2023). The Food and Agriculture Organization of the United Nations (FAO) defines sustainable diets as "dietary patterns that are beneficial to the environment, contribute to food and nutrition security and healthy lives for present and future generations, protect and respect individual health, are culturally acceptable, economically fair and affordable, meet nutritional adequacy and public health needs, and optimize natural and human resources." This definition comprises three dimensions: (1) At the environmental level, it must protect and respect biodiversity and ecosystem integrity; (2) At the socio-cultural level, it involves cultural acceptability, accessibility, and economic fairness and affordability; (3) At the health level,

it emphasizes nutritional comprehensiveness, product safety, and overall health benefits.

China's food system currently faces the dual challenge of providing healthy diets and reducing environmental impact, which concerns not only people's health and well-being and sustained economic growth but also ecological balance maintenance and sustainable development challenges. Therefore, we need to carefully consider these impacts and seek a harmonious development path that balances individual, social, economic, and environmental needs (Fan et al., 2021a). China's current dietary structure has undergone significant transformation, shifting from plant-based to mixed diets that include a large proportion of animal-based foods (Fan et al., 2021b). Moreover, most research on Chinese diets has focused on national averages, and the relationship between dietary quality and diet-related environmental impacts has not been deeply studied at the regional level (Dong et al., 2021; Xiong et al., 2022).

Many studies have attempted top-down policy interventions to incentivize sustainable food production and consumption, focusing on encouraging and supporting consumers' behaviors and attitudes to align more closely with sustainable dietary habits (Swinburn et al., 2019). However, any effort to change attitudes must consider underlying influences, including individual traits and socio-cultural factors, to achieve "long-term change" (Swinburn et al., 2019; Harrison et al., 2022). Therefore, to explore the relationship between individual traits and sustainable diets and provide a scientific basis for targeted policies and measures, this study will develop a localized sustainable dietary behavior measurement tool, understand the current status of sustainable diets, and further explore the relationship between individuals' connectedness to nature, prosocial tendencies, and sustainable diets. Additionally, this study will select common dietary behaviors from the behavioral level to deeply examine their influencing mechanisms.

1.2 Influencing Factors

Food connects humans and nature; how humans handle food reflects their attitude toward nature, and nature in turn influences human development through feedback (Uhlmann et al., 2022). The essence of sustainable diets is how to better produce and process food to meet contemporary nutritional and health needs while minimizing negative impacts on natural resources, ecological environments, and social environments. Connectedness to Nature (CTN) reflects the relationship between humans and nature, referring to the degree to which individuals connect and integrate with nature at cognitive and emotional levels (Mayer & Frantz, 2004). Research shows positive associations between pro-environmental behavior, connectedness to nature, and sustainable diets (Fox & Ward, 2008). Moreover, connectedness to nature influences individuals' love for nature, which in turn promotes vegetarian behavior (Kautish et al., 2024). Additionally, when consumers seek fresh and local products, they are also seeking to reconnect with nature (Salladarré et al., 2018), ultimately promoting

pro-environmental behavior.

Prosocial behavior is behavior aimed at benefiting others (Eisenberg & Shell, 1987; Eisenberg et al., 2016). In fact, prosocial behavior may be directed toward non-human others, including animals, plants, specific parts of nature, or nature as a whole (Otto et al., 2021). Klein et al. (2022) propose that prosocial behavior aims to promote individual or group well-being through helping others or groups to achieve social harmony and mutual benefit. Correspondingly, pro-environmental behavior focuses on maintaining and improving environmental quality, 致力于减少对环境的负面影响，从而确保环境的可持续发展。因此，个体的亲社会倾向可能与其环境友好行为存在某种潜在关联 (Bhattacharya et al., 2019). Thus, prosocial behavior is not only a goal but also a means to achieve sustainable dietary behavior. For example, vegetarians with pro-environmental concepts explain their behavior as driven by prosocial motives and purposes (Rosenfeld & Burrow, 2017). Moreover, compared to vegetarians who focus on individual health, those who care about environmental and animal welfare have stronger connectedness to nature and engage in more persistent and diverse pro-environmental behaviors (Rothgerber, 2014).

1.3 Theoretical Framework

The Theory of Planned Behavior (TPB), proposed by Ajzen based on the Theory of Reasoned Action (Ajzen, 1991), is one of the most widely used theories for predicting pro-environmental behavior (Chan & Bishop, 2013; de Leeuw et al., 2015; Truelove et al., 2022). The core assumption of this theory is that individuals' attitudes toward a behavior, subjective norms, and perceived behavioral control directly shape behavioral intentions, which in turn determine actual behavior. Attitude reveals individuals' positive or negative psychological tendencies toward a behavior; subjective norms reflect individuals' assessment of external factors such as social pressure and group expectations during decision-making; and perceived behavioral control represents individuals' cognition of the difficulty and self-control ability when performing specific behaviors. Although TPB is widely used, a more explicit model is still needed in research (Scalco et al., 2017). Therefore, an increasing number of scholars advocate adding different factors for further empirical and comprehensive evaluation (Grimmer & Miles, 2017). For example, social norms (Armitage & Conner, 2001), personal norms (Klöckner et al., 2020), emotions (Martini et al., 2024; Adamczyk et al., 2022; Cheah et al., 2020), self-identity (Fekadu & Kraft, 2001), and environmental self-identity (Whitmarsh & O'Neill, 2010). Compared to the original theoretical model, the extended model better predicts pro-environmental behavior (Sultan & Tarafder, 2020; Akhter et al., 2024).

TPB has been applied in various fields such as sustainable behavior and dietary preferences (Li et al., 2019). The theory has proven effective in predicting meat consumption and tendencies to reduce meat consumption, with attitude, subjective norms, and perceived behavioral control playing important roles in determining intentions and actual behavior to reduce meat consumption (Carfora

& Catellani, 2020; Wolstenholme et al., 2021). Akhter et al. added extensive variables to the original theoretical model, such as knowledge about food waste, moral norms, and dietary habits (Graham-Rowe et al., 2015), and found that the extended theoretical model better predicted food waste behavior (Akhter et al., 2024). In predicting plastic consumption, attitude, subjective norms, and perceived behavioral control effectively predicted intentions to use plastic bags (Sun et al., 2017), while environmental self-identity was related to straw use behavior and recycling behavior, including reducing consumption of single-use plastic items such as plastic bags, plastic cups, and takeout containers (Truelove & Nugent, 2020). Additionally, TPB-based interventions have proven effective in changing beliefs, behaviors, and intentions (Norman et al., 2018; Steinmetz et al., 2016).

Based on this foundation, this study, grounded in the specific Chinese context and combining established theoretical frameworks and rich research findings from abroad, develops a college student sustainable dietary behavior scale and explores the impact of connectedness to nature on sustainable dietary behavior and the role of prosocial tendencies, aiming to better promote further research in this area.

2 Study 1: Development of the College Student Sustainable Dietary Behavior Scale

The purpose of this study is to provide a specialized college student sustainable dietary behavior scale, evolved from early pro-environmental scales, based on the complexity of pro-environmental and dietary behaviors, offering a corresponding measurement tool for subsequent research. Hypothesis 1: The self-developed college student sustainable dietary behavior scale has good reliability and validity.

2.1.1 Determining Dimensions and Definitions of College Student Sustainable Dietary Behavior

(1) Definition of Sustainable Dietary Behavior

Currently, different fields at home and abroad have different views on the definition, composition, and principles of sustainable healthy diets (Irz et al., 2016). Given the continuous development of this field, many closely related concepts have gradually emerged, such as sustainability. These concepts are similar yet intertwined in connotation, collectively constituting the rich diversity of the theoretical system in this field, as shown in Table 1 . Their common characteristic is that they can meet the needs of the present generation without compromising the ability of future generations to meet their needs, and they largely correspond to nutritionally healthy diets (Clark et al., 2019). In this study, sustainable dietary behavior is defined as dietary habits that promote personal health and environmental protection by choosing environmentally friendly foods and reducing food waste. This behavior emphasizes practices such as reducing meat

consumption, choosing local and seasonal ingredients, reducing food waste, supporting sustainable industries, diversifying diets, and reducing single-use tableware use, aiming to reduce carbon emissions, lower energy consumption in food transportation, reduce resource waste and garbage emissions, and protect soil and water resources, thereby alleviating environmental pressure.

(2) Dimensions of Sustainable Dietary Behavior

Sustainable dietary behavior is a complex and multidimensional concept; therefore, the developed scale should also be multidimensional. On one hand, it includes items related to pro-environmental behavior, such as avoiding food waste, purchasing local and seasonal foods, and adhering to animal welfare principles (i.e., meeting animals' basic natural needs). On the other hand, it includes items related to healthy diets, such as dietary diversification, choosing low-fat foods, or reducing meat consumption. Although there is substantial foreign research on sustainable diets, it is not applicable to college students, who have high environmental protection potential. Therefore, this study referenced relevant research on sustainable dietary behavior to compile a scale suitable for this study, as detailed in Table 2 .

2.1.2 Item Generation

When constructing scale items, this study deeply integrated measurement methods from previous sustainable dietary behavior research, with specific details shown in Table 3 . Combined with the content and characteristics of this study, we fully considered the actual dietary contexts of college students and language expressions that conform to Chinese habits to ensure item rationality and accuracy. This approach lays a solid foundation for subsequent questionnaire revision, reliability and validity analysis, and investigation of college students' sustainable dietary behavior status and extended model validation in Study 2.

2.2.1 Questionnaire Design

The questionnaire comprised two main parts. The first part collected basic personal information, including gender, education level, family location, and monthly family income. The second part investigated college students' sustainable dietary behavior, initially generating 24 items: 10 for the perceived behavioral control dimension, 8 for the attitude dimension, and 6 for the subjective norms dimension. All items used a 5-point Likert scale (1 = strongly disagree, 5 = strongly agree).

2.2.2 Data Collection

To ensure questionnaire accuracy and validity, before formal administration, we invited 10 psychology graduate students to comprehensively evaluate the questionnaire's language comprehension and content. After evaluation, the questionnaire was found to be unambiguous and met content validity standards. We then conducted formal testing, distributing 300 questionnaires. To ensure

data authenticity and reliability, this study implemented restrictions during collection to enhance structural and content validity (Kan & Drummey, 2018; Newman et al., 2021). Subsequently, we carefully examined all returned questionnaires, deeming those that failed attention checks as invalid and excluding them, ultimately obtaining 252 valid questionnaires with an effective recovery rate of 83%. Finally, SPSS 22.0 was used for in-depth statistical analysis of the collected data.

2.2.3 Participants

A total of 300 questionnaires were distributed through Wenjuanxing (an online survey platform), yielding 252 valid questionnaires. The sample included 111 males (44.05%) and 141 females (55.95%); 34 junior college students (13.49%), 174 undergraduates (69.05%), and 44 graduate students (17.46%); 95 rural students (37.70%) and 157 urban students (62.30%); 25 students with monthly family income below 5,000 RMB (9.92%), 75 with income between 5,000-15,000 RMB (29.76%), 132 with income between 15,000-30,000 RMB (52.38%), and 20 with income above 30,000 RMB (7.94%).

2.2.4 Item Analysis

To ensure the scientificity and rationality of measurement items, we conducted item analysis on questionnaire data. First, we summed scores for each item and sorted them from high to low. The top 27% were classified as the high-score group, and the bottom 27% as the low-score group. Independent samples t-tests were used to examine significant differences between groups. Results showed that all items' critical ratios (5.12-15.14) met requirements (CR $>$ 3 and p $<$ 0.05). This means all items in the initial questionnaire reached significant levels, demonstrating good discriminability, and thus no items needed deletion.

2.2.5 Reliability Testing

(1) Correlation Between Items and Dimension Totals

To ensure consistency of each item in the College Student Sustainable Dietary Behavior Scale, we first conducted reliability testing and exploratory factor analysis to purify and optimize items. Based on initial data, correlation coefficients between the 10 perceived behavioral control items and their dimension total ranged from 0.60-0.82 ($p < 0.01$); between the 8 attitude items and their dimension total, 0.58-0.77 ($p < 0.01$); and between the 6 subjective norm items and their dimension total, 0.64-0.83 ($p < 0.01$). For the overall scale, correlations between each dimension total and the total scale score ranged from 0.52-0.89 ($p < 0.01$).

(2) Reliability Testing

To ensure comprehensive reliability assessment, this study used both Cronbach's α coefficient and McDonald's ω coefficient as reliability indicators (Trizano-

Hermosilla & Alvarado, 2016; Hayes & Coutts, 2020). After reliability analysis, the questionnaire's Cronbach's α coefficient was 0.90 and McDonald's ω coefficient was 0.91, indicating good reliability.

2.3 Exploratory Factor Analysis

At this stage, we conducted exploratory factor analysis (EFA) using SPSS 22.0, with results shown in Table 5 . The KMO value was $0.88 > 0.8$, and the significance level reached $\alpha = 0.001$, with all results meeting necessary conditions, indicating that the data were suitable for exploratory factor analysis.

Detailed data analysis results, as shown in Table 6 , revealed that 24 items clearly loaded on 3 factors, with each item's factor loading greater than 0.4. Three common factors were extracted, with a cumulative variance contribution rate of 61.42%, demonstrating good explanatory power.

[Figure 1: see original paper] Sample scree plot of common factors

We then named the factors for further research and analysis. Factor F1 included ten items, such as "I focus on choosing pure natural, pollution-free foods and reject processed foods" and "I minimize meat intake and prioritize animal protein sources with lower carbon emissions." This dimension expresses the difficulty or degree of control individuals have in performing sustainable dietary behavior. Factor F1 was named "Perceived Behavioral Control Dimension." Factor F2 included eight items, such as "I insist on eating less processed food, which will greatly reduce greenhouse gas emissions" and "Choosing organic food can effectively reduce the negative environmental impact of agriculture." This dimension reflects individuals' overall evaluation of sustainable dietary behavior and was named "Attitude Dimension." Factor F3 included six items, such as "If I don't protect the environment in my daily diet, I will feel guilty" and "I have strict requirements for myself in choosing both healthy and environmentally friendly foods." This dimension reflects the social pressure individuals feel when implementing sustainable dietary behavior and was named "Subjective Norms Dimension." In summary, Study 1 confirmed the stability of the developed College Student Sustainable Dietary Behavior Scale.

2.4 Confirmatory Factor Analysis

To further verify the scale's stability, we recollected data and screened it. Confirmatory factor analysis (CFA) was conducted on 213 questionnaires. This study proposed several competing models: M1 was a first-order single-factor model with all 24 items directly combined into one dimension; M2 was a first-order two-factor model assuming Q1-Q10 and Q19-Q24 as one dimension and Q11-Q18 as another; M3 was a first-order two-factor model assuming Q1-Q10 as one dimension and Q11-Q24 as another; M4 was the original model from exploratory factor analysis, a first-order three-factor model. Additionally, based on structural equation model theory, we recognized that model evaluation in-

volves multiple dimensions and thus used diverse indicators for comprehensive assessment. According to key fit index results for first-order models, as shown in Table 7 , Model M4 demonstrated superior fit among all options. Specifically, ^{2}/df = 1.16, and values for GFI, RMSEA, CFI, TLI, PNFI, and PGFI were 0.90, 0.03, 0.99, 0.99, 0.82, and 0.75 respectively, all within acceptable ranges. This result further solidifies the stability and reliability of the College Student Sustainable Dietary Behavior Scale.

2.5.1 Reliability Testing

Internal consistency testing of the College Student Sustainable Dietary Behavior Scale showed, as presented in Table 8 , that Cronbach's α was 0.81 for the total scale, 0.75 for perceived behavioral control, 0.67 for attitude, and 0.62 for subjective norms, indicating high reliability for all three dimensions and the total scale.

2.5.2 Validity Analysis

(1) Convergent Validity Analysis

Convergent validity analysis of the scale, as shown in Table 9 , revealed that standardized factor loadings for items corresponding to perceived behavioral control, attitude, and subjective norms dimensions ranged from 0.60-0.90, all greater than 0.5 and passing t-tests ($p < 0.001$). This strongly demonstrates high representativeness between latent variables and their corresponding items, confirming the high quality of items in this study. Convergent validity tests showed that average variance extracted (AVE) values for each latent variable were greater than 0.5, and composite reliability (CR) values for all three factors were greater than 0.8, indicating ideal convergent validity and good operational definitions.

(2) Discriminant Validity Analysis

This study assessed discriminant validity by comparing the square root of AVE values with absolute values of correlation coefficients between latent variables. Absolute values of correlation coefficients between factors were all less than 0.5 and less than the corresponding square root of AVE values, indicating that latent variables are somewhat correlated while maintaining clear differentiation, thus fully verifying good discriminant validity between scales, as shown in Table 10 .

(3) Content Validity Analysis

In scale development, content validity testing is crucial. We typically use logical analysis from two core aspects: examining whether the theoretical framework precisely defines appropriate content domains, and evaluating whether items within defined content domains are sufficiently representative. In this study, item design comprehensively considered relevant theoretical literature, existing sustainable dietary behavior assessment tools, and the unique characteristics of

Chinese college students. Furthermore, to enhance item content accuracy, we invited 30 psychology graduate students to evaluate the relevance of items in each dimension to their measured content on a 1-4 scale. According to psychometric requirements, all I-CVI values were greater than 0.78, and each scale's average content validity index (S-CVI/Ave) was not less than 0.9, thus meeting content validity requirements, with specific results shown in Table 11 .

In summary, this study ultimately obtained a College Student Sustainable Dietary Behavior Scale comprising three dimensions—perceived behavioral control, attitude, and subjective norms—with 24 measurement items, as shown in Table 12 .

3 Study 2: The Impact of Connectedness to Nature on Sustainable Dietary Behavior: The Mediating Role of Prosocial Tendencies

This study investigates the current status of sustainable dietary behavior among Chinese college students, focusing on analyzing differences across key demographic variables such as gender, education level, and family location. Furthermore, it verifies the positive associations between connectedness to nature, prosocial tendencies, and sustainable dietary behavior, and deeply explores whether prosocial tendencies play a mediating role. Therefore, two hypotheses are proposed. Hypothesis 2: College students' connectedness to nature, prosocial tendencies, and sustainable dietary behavior show significant differences across some demographic variables. Hypothesis 3: College students' connectedness to nature, prosocial tendencies, and sustainable dietary behavior are significantly positively correlated with each other. Specifically, connectedness to nature significantly positively predicts sustainable dietary behavior, while prosocial tendencies play an important mediating role in this relationship.

3.1 Participants

[Figure 2: see original paper] Mediation model of prosocial tendencies

This study successfully recruited 369 college students through the Wenjuanxing platform for an online questionnaire survey. To ensure data accuracy and reliability, we conducted strict attention checks on collected questionnaires. After careful screening, 45 invalid questionnaires that did not meet requirements were excluded, accounting for 12.20% of the total sample. Ultimately, 324 valid questionnaires were used as the data foundation for this study, as shown in Table 13 .

3.2 Measures

Connectedness to Nature: We used the Connectedness to Nature Scale revised by Li and Wu (2016), comprising 14 items (11 positively scored, 3 reverse-scored) with one dimension (Cronbach's $\alpha = 0.92$). Using a 5-point Likert scale

from "1" (completely uncharacteristic) to "5" (completely characteristic), higher scores indicate greater connectedness to nature.

Prosocial Tendencies: We used the Prosocial Tendencies Measure for Adolescents revised by Kou et al. (2007), comprising 26 positively scored items across six dimensions: public (4 items, $\alpha = 0.77$), anonymous (5 items, $\alpha = 0.85$), altruistic (4 items, $\alpha = 0.85$), compliant (5 items, $\alpha = 0.84$), emotional (5 items, $\alpha = 0.84$), and urgent (3 items, $\alpha = 0.71$) prosocial tendencies. Using a 5-point Likert scale from "1" (completely uncharacteristic) to "5" (completely characteristic), higher scores indicate greater prosocial tendencies.

Sustainable Dietary Behavior: We used the self-developed College Student Sustainable Dietary Behavior Scale, comprising 24 positively scored items across three dimensions: perceived behavioral control (10 items, $\alpha = 0.69$), attitude (6 items, $\alpha = 0.83$), and subjective norms (8 items, $\alpha = 0.78$). Using a 5-point Likert scale from "1" (completely uncharacteristic) to "5" (completely characteristic), higher scores indicate more frequent sustainable dietary behavior.

3.3 Procedure

This study recruited participants through Wenjuanxing and asked them to complete the Connectedness to Nature Scale, Prosocial Tendencies Measure, and College Student Sustainable Dietary Behavior Scale based on their actual situations and true thoughts. After completing the main questionnaire, participants provided personal information to minimize interference from irrelevant variables. After collection, all questionnaires were strictly examined, and invalid questionnaires that did not meet standards were excluded. Data were analyzed using SPSS 22.0 and PROCESS 4.0.

3.4.1 Descriptive Statistics

College students' mean scores were: connectedness to nature = 51.16 (79.26% of total score), prosocial tendencies = 89.31 (75.60% of total score), perceived behavioral control = 38.65 (77.31% of total score), attitude = 51.16 (72.89% of total score), subjective norms = 21.46 (71.54% of total score), and sustainable dietary behavior = 89.27 (74.39% of total score). One-sample t-tests showed that mean scores for all variables were significantly higher than theoretical midpoints: connectedness to nature ($t = 11.23$, $p < 0.01$), prosocial tendencies ($t = 11.55$, $p < 0.01$), and sustainable dietary behavior ($t = 13.84$, $p < 0.01$). This indicates that most college students have high emotional and experiential connections with nature, high prosocial tendencies, and more frequent sustainable dietary behavior, as detailed in Table 14 .

3.4.2 Demographic Differences in Connectedness to Nature, Prosocial Tendencies, and Sustainable Dietary Behavior

(1) Gender Differences

Results showed significant gender differences in connectedness to nature, perceived behavioral control, attitude, subjective norms, and sustainable dietary behavior, with females scoring significantly higher than males (see Table 15). This indicates that compared to males, females have closer connections with nature and engage in more sustainable dietary behavior. No significant gender difference was found in prosocial tendencies.

(2) Education Level Differences

Significant education level differences were found in connectedness to nature, perceived behavioral control, attitude, subjective norms, and sustainable dietary behavior (see Table 16). Post-hoc Tamhane's T2 comparisons showed that graduate students scored significantly higher than junior college students on connectedness to nature; graduate students scored significantly higher than undergraduates and junior college students on sustainable dietary behavior; graduate and undergraduate students scored significantly higher than junior college students on perceived behavioral control; and graduate students scored significantly higher than undergraduates and junior college students on attitude (with undergraduates scoring significantly higher than junior college students). No significant education level differences were found for subjective norms or prosocial tendencies.

(3) Family Location Differences

As shown in Table 17 , only connectedness to nature showed significant differences by family location, with rural college students scoring significantly higher than urban students. No significant differences were found for other variables.

(4) Family Income Differences

As shown in Table 18 , significant family income differences were found in perceived behavioral control, attitude, subjective norms, and sustainable dietary behavior. Pairwise comparisons showed that students with family incomes of 15,000-30,000 RMB and above 30,000 RMB scored significantly higher than those with incomes of 5,000-15,000 RMB on perceived behavioral control, attitude, and sustainable dietary behavior; students with incomes of 15,000-30,000 RMB scored higher than those with 5,000-15,000 RMB on attitude. No significant family income differences were found for connectedness to nature, prosocial tendencies, or subjective norms.

3.4.3 Correlation Analysis

Results showed that college students' connectedness to nature was significantly positively correlated with prosocial tendencies ($r = 0.76$, $p < 0.01$) and with sustainable dietary behavior (r perceived behavioral control = 0.37; r attitude = 0.36; r subjective norms = 0.33; r sustainable dietary behavior = 0.40, all $p < 0.01$). Additionally, prosocial tendencies were significantly positively correlated with sustainable dietary behavior (r perceived behavioral control = 0.33; r attitude = 0.35; r subjective norms = 0.33; r sustainable dietary behavior = 0.38,

all $p < 0.01$), as shown in Table 19 . These results support part of Hypothesis 3, showing significant positive correlations among connectedness to nature, prosocial tendencies, and sustainable dietary behavior, providing a prerequisite for regression analysis and mediation testing.

3.4.4 Regression Analysis

This study used regression analysis to explore the potential relationship between college students' connectedness to nature and sustainable dietary behavior. Statistical results showed that after controlling for irrelevant variables such as gender, connectedness to nature significantly positively predicted sustainable dietary behavior; prosocial tendencies significantly positively predicted pro-environmental behavior; and connectedness to nature significantly positively predicted prosocial tendencies.

To deeply explore the mediating role of prosocial tendencies between connectedness to nature and sustainable dietary behavior, this study conducted mediation testing using the Bootstrap method. As shown in Table 21 , the direct effect of connectedness to nature on sustainable dietary behavior was significant (effect = 0.25). The indirect effect of connectedness to nature on sustainable dietary behavior through prosocial tendencies was 0.16, with a 95% confidence interval of [0.01, 0.26] that did not include 0, indicating that prosocial tendencies play a mediating role, accounting for 38.34% of the total effect.

4 Study 3: The Impact of Connectedness to Nature on Vegetarian Behavior, Clean Plate Behavior, and Green Tableware Behavior Among College Students

This study examines the two most common daily dietary methods among college students—on-campus dining and online food delivery—observing and recording participants' meat-to-vegetable ratios and food waste in cafeteria meals, as well as their use of non-disposable tableware (green tableware behavior) when ordering takeout. Using vegetarian behavior, clean plate behavior, and green tableware behavior as indicators of sustainable dietary behavior, this study further examines the impact of connectedness to nature on sustainable dietary behavior and the role of prosocial tendencies at the behavioral level. Hypotheses are the same as in Study 2.

4.1 Participants

This study recruited 162 college students through Wenjuanxing for a self-report online survey, excluding questionnaires that failed attention checks. Specific participant demographics are shown in Table 22 .

4.2 Measures

Vegetarian Behavior: Measured by combining "behavioral intention" and "actual behavior." Behavioral intention used self-developed items such as "How interested are you in reducing meat consumption?" rated from "1" (not at all) to "7" (completely). Actual behavior was observed by recording the number of vegetarian and meat dishes participants purchased in the cafeteria, calculating the vegetarian ratio (vegetarian ratio = number of vegetarian dishes / total dishes). Ratios between 0 and 1 were divided into 10 equal-width intervals of 0.1, mapped to integer codes from 1-10 (e.g., "0-0.1" coded as "1," "0.1-0.2" as "2"). Higher scores indicate greater vegetarian behavior.

Clean Plate Behavior: Measured by combining "behavioral intention" and "actual behavior." Behavioral intention used items such as "How interested are you in reducing food waste?" rated from 1-7. Actual behavior was observed by recording the total amount of food purchased and remaining after meals, calculating the clean plate ratio (clean plate ratio = amount eaten / total amount). Ratios were divided into 10 intervals and coded 1-10 as above. Higher scores indicate greater clean plate behavior.

Green Tableware Behavior: Measured by combining "behavioral intention" and "actual behavior." Behavioral intention used items such as "How interested are you in reducing single-use tableware?" rated from 1-7. Actual behavior was self-reported through participants' reports of their takeout orders and non-use of disposable tableware on Meituan and Ele.me platforms over two weeks, calculating the green tableware ratio (green tableware ratio = times without disposable tableware / total takeout orders). Ratios were coded 1-10 as above. Higher scores indicate greater green tableware behavior.

Sustainable Dietary Behavior: The sum of codes for vegetarian behavior, clean plate behavior, and green tableware behavior served as the sustainable dietary behavior indicator, with higher scores indicating greater sustainable dietary behavior.

Connectedness to Nature: Used the Connectedness to Nature Scale revised by Li and Wu (2016) (same as Study 2).

Prosocial Tendencies: Used the Prosocial Tendencies Measure for Adolescents revised by Kou et al. (2007) (same as Study 2).

4.3 Procedure

Participants completed questionnaires including behavioral intention items, prosocial tendencies scale, and connectedness to nature scale. We then observed and recorded their meat-to-vegetable ratios and food waste in cafeteria meals, as well as their takeout orders and non-use of disposable tableware on Meituan and Ele.me over two weeks. After the experiment, participants completed basic information forms and received compensation.

4.4.1 Descriptive Statistics

Means and standard deviations for college students' connectedness to nature, prosocial tendencies, vegetarian behavior, clean plate behavior, green tableware behavior, and sustainable dietary behavior are shown in Table 23 .

4.4.2 Demographic Differences

(1) Gender Differences

Significant gender differences were found in connectedness to nature, vegetarian behavior, green tableware behavior, and sustainable dietary behavior, with females scoring significantly higher than males. This indicates that compared to males, females have closer connections with nature, greater prosocial tendencies, and engage in more sustainable dietary behavior.

(2) Education Level Differences

Significant education level differences were found in green tableware behavior and sustainable dietary behavior (see Table 25). Post-hoc Tamhane's T2 comparisons showed that graduate students scored significantly higher than undergraduates and junior college students on green tableware behavior, and significantly higher than junior college students on sustainable dietary behavior. No significant education level differences were found for other variables.

(3) Family Location Differences

As shown in Table 26 , significant family location differences were found in connectedness to nature, prosocial tendencies, vegetarian behavior, and sustainable dietary behavior, with rural college students scoring significantly higher than urban students. No significant differences were found for other variables.

(4) Family Income Differences

As shown in Table 27 , significant family income differences were found in connectedness to nature, vegetarian behavior, and sustainable dietary behavior. Pairwise comparisons showed that students with family income below 5,000 RMB scored higher than those with 15,000-30,000 RMB on connectedness to nature; students with 5,000-15,000 RMB scored significantly higher than those with 15,000-30,000 RMB and above 30,000 RMB on vegetarian behavior; and students with 5,000-15,000 RMB scored higher than those above 30,000 RMB on sustainable dietary behavior. No significant family income differences were found for prosocial tendencies, clean plate behavior, or green tableware behavior.

4.4.3 Correlation Analysis

Results showed that college students' connectedness to nature was significantly positively correlated with prosocial tendencies ($r = 0.76$, $p < 0.01$) and with sustainable dietary behavior (r vegetarian behavior = 0.69; r clean plate behavior =

0.30; r green tableware behavior = 0.42; r sustainable dietary behavior = 0.73, all $p < 0.01$). Additionally, prosocial tendencies were significantly positively correlated with sustainable dietary behavior (r vegetarian behavior = 0.528; r clean plate behavior = 0.34; r green tableware behavior = 0.32; r sustainable dietary behavior = 0.60, all $p < 0.01$). These results again verify Hypothesis 3, showing significant positive correlations among connectedness to nature, prosocial tendencies, and sustainable dietary behavior.

4.4.4 Regression Analysis

This study used regression analysis to again confirm Hypothesis 3. After controlling for irrelevant variables such as gender, connectedness to nature still significantly positively predicted sustainable dietary behavior; prosocial tendencies significantly positively predicted pro-environmental behavior; and connectedness to nature significantly positively predicted prosocial tendencies.

To again verify the mediating role of prosocial tendencies between connectedness to nature and sustainable dietary behavior, this study conducted mediation testing using the Bootstrap method. As shown in Table 30 , the direct effect of connectedness to nature on sustainable dietary behavior was significant (effect = 0.29). The indirect effect through prosocial tendencies was 0.08, with a 95% confidence interval of [0.06, 0.26] that did not include 0, again indicating that prosocial tendencies play a mediating role, accounting for 20.52% of the total effect.

5 Conclusion and Discussion

Grounded in the current status of sustainable diets in China, this study focused on three core questions: "How to define the conceptual connotation of college students' sustainable dietary behavior," "What constitutes the measurement dimensions of college students' sustainable dietary behavior," and "What is the current status and influencing factor analysis of college students' sustainable dietary behavior." First, we developed a reliable and valid College Student Sustainable Dietary Behavior Scale. Second, we used a combination of self-report questionnaires and experimental methods to investigate college students' actual status regarding connectedness to nature, prosocial tendencies, and sustainable dietary behavior. This research aimed to explore differences among these three factors across demographic variables and deeply analyze the potential mediating role of prosocial tendencies between connectedness to nature and sustainable dietary behavior. The main conclusions include three aspects:

First, through literature review, we extracted the connotation and dimensions of college students' sustainable dietary behavior and developed a localized scale. Through systematic review of concepts such as sustainable diets and sustainable healthy diets, and comparative analysis of measurement tools like sustainable healthy diet scales and organic food scales, we extracted key characteristics of sustainable dietary behavior. Based on this, this study defines sustainable

dietary behavior as dietary habits that promote personal health and environmental protection by choosing environmentally friendly foods and reducing food waste. This behavior emphasizes practices such as reducing meat consumption, choosing local and seasonal ingredients, reducing food waste, supporting sustainable industries, diversifying diets, and reducing single-use tableware use, aiming to reduce carbon emissions, lower energy consumption in food transportation, reduce resource waste and garbage emissions, and protect soil and water resources, thereby alleviating environmental pressure. Additionally, considering college students' high education level and quality, we ultimately determined a College Student Sustainable Dietary Behavior Scale consisting of three dimensions—perceived behavioral control, attitude, and subjective norms—with 24 items, demonstrating good reliability and validity.

Second, this study found demographic differences in connectedness to nature, prosocial tendencies, and sustainable dietary behavior and their dimensions, consistent with widely accepted conclusions. Female college students showed higher connectedness to nature and more sustainable dietary behavior. Compared to urban students, rural students demonstrated deeper, closer connections with nature. Education level showed significant differences in connectedness to nature, prosocial tendencies, and sustainable dietary behavior. Family income significantly affected sustainable dietary behavior. In Study 2, after controlling for irrelevant variables such as gender, connectedness to nature still positively predicted individuals' sustainable dietary behavior through prosocial tendencies.

Third, Study 3 examined the impact of connectedness to nature on sustainable dietary behavior from the perspective of daily diet—an indispensable part of college students' lives—selecting on-campus dining and online takeout as the two main dietary methods for young people. Using vegetarian behavior, clean plate behavior, and single-use tableware usage as indicators of sustainable dietary behavior, we observed, recorded, and measured these behaviors. Results consistent with Study 2 showed that both demographic and psychological variables affect sustainable dietary behavior through certain mechanisms. Connectedness to nature not only directly predicts vegetarian behavior, clean plate behavior, and green tableware behavior but also indirectly affects sustainable dietary behavior through prosocial tendencies. Importantly, this study provides more direct evidence from daily life, more powerfully proving from the behavioral level that individuals more closely connected to nature are more likely to reduce meat consumption, reduce food waste, and avoid single-use tableware.

This study has several theoretical contributions. **First**, through literature review and questionnaire surveys, we found that many college students are experiencing "emerging adulthood"—a life stage characterized by behavioral change and self-improvement—with increased independence and autonomy in dietary choices, making it an opportune time for dietary behavior change interventions (Muñoz-Martínez et al., 2024). This study explores and validates the concept and dimensional structure of college students' sustainable dietary behavior within the Chinese context, enriching the understanding of sustainable

dietary behavior based on China's situation. The connotation characteristics are mainly manifested in college students' proactive implementation of sustainable dietary behavior in daily life, with stable performance.

Second, under China's current sustainable development context, we developed a College Student Sustainable Dietary Behavior Scale. While most foreign scales provide valuable research perspectives by exploring how multi-dimensional factors affect individual behavior in the context of widespread ecological and environmental concerns (Caleffi et al., 2023; Fanzo et al., 2021; WWF, 2022), research measuring sustainable dietary behavior specifically for Chinese college students is scarce. This study aims to deeply analyze the actual development status of sustainable diets in China, and through rigorous statistical processing of data samples collected from various regions, successfully constructed a scale applicable to Chinese college students. This scale not only provides a powerful tool for subsequent research on antecedents, mediators, and outcomes of college students' sustainable dietary behavior but also lays a solid foundation for in-depth analysis of related influencing factors.

Third, to date, research results on the current status of college students' connectedness to nature, prosocial tendencies, and sustainable dietary behavior, as well as the impact of demographic variables, have not formed unified conclusions. Therefore, this study is committed to preliminary exploration and analysis of these statuses and differences among demographic variables, hoping to provide new perspectives and references for related fields. First, this study further verified the impact of factors such as gender on sustainable dietary behavior, connectedness to nature, and prosocial tendencies. Results showed that female college students scored significantly higher than males, consistent with previous research (Muñoz-Martínez et al., 2024). This may be because women are considered closer to nature ideologically, physically, materially, and socially (Meinzen-Dick et al., 2014). Second, rural college students scored significantly higher than urban students on connectedness to nature, providing important reference for understanding natural emotional tendencies across different environmental backgrounds, possibly related to rural residents' longer and more frequent contact with natural spaces (Power et al., 2017). Third, this study found significant education level differences in sustainable dietary behavior and its dimensions and green tableware behavior, possibly due to increased interest in food choices caused by knowledge or dietary issues (Morren et al., 2021). Finally, Study 2 confirmed that college students' sustainable dietary behavior shows a trend where frequency increases with family income (Tabi, 2013). According to post-materialist value theory (Inglehart, 2020), when individuals can meet basic material needs at low cost, their values tend to shift. Given that college students' economic resources mainly depend on parents, higher family income means more generous living allowances, making them less constrained by economic factors when choosing activities, including sustainable dietary behavior. However, this result differs somewhat from Study 3, possibly due to the specific behaviors selected in Study 3.

Fourth, Study 2 used questionnaire methods to explore the relationship between college students' connectedness to nature and sustainable dietary behavior, emphasizing the role of prosocial tendencies and adding theoretical support to this research area. Study 3 used experimental methods selecting vegetarian behavior, clean plate behavior, and single-use tableware usage as indicators of sustainable dietary behavior, further verifying the relationship among the three factors. Results found that connectedness to nature significantly positively predicts sustainable dietary behavior, with prosocial tendencies playing a partial mediating role. This result also confirms existing research showing positive links between connectedness to nature and sustainable dietary behavior (Clayton, 2003). Individuals with higher connectedness to nature are more pro-environmental, more likely to purchase organic food (Aguirre et al., 2021), eat meat moderately (Sanchez-Sabate et al., 2019; Vermeir et al., 2020), choose recyclable products (Aschemann-Witzel and Stangherlin, 2021), and engage in vegetarianism and environmental activities (Nisbet, Zelenski, & Murphy, 2009). Moreover, internalizing nature minimizes the negative environmental impact of individual behavior (Mayer & Frantz, 2004; Nisbet et al., 2009). Additionally, connectedness to nature provides a motivational basis for prosocial tendencies in the ecological domain, with interventions enhancing prosocial tendencies and leading to prosocial behavior in the ecological domain—that is, pro-environmental behavior (Neaman et al., 2018; Tapia-Fonllem et al., 2013; Zhang et al., 2014).

This study's practical significance is mainly reflected in two aspects. **First**, it provides a dimensional structure and measurement scale for developing college students' sustainable dietary behavior. For students, mastering knowledge about sustainable dietary behavior can guide their daily diets and improve physical fitness. For schools, public health departments, and related personnel, visualized data can better understand student needs and guide them toward sustainable dietary patterns that are moderately economical, nutritionally healthy, green and low-carbon, and civilized (Levin et al., 2021). Additionally, as cafeterias are important daily dining venues for college students, improved understanding of sustainable dietary behavior can better guide school cafeteria management and construction, providing important practical references for developing and implementing healthier and more environmentally friendly policies (Malan et al., 2020).

Second, the same strategy may produce different effects for different populations with different characteristics when targeting different intervention content (Bang et al., 2020). Researchers should combine specific population dietary characteristics with general models to develop effective interventions (Michie et al., 2011). This study deeply analyzed demographic differences in college students' connectedness to nature, prosocial tendencies, and sustainable dietary behavior and their dimensions, advocating customized, precise "person-specific" strategies to more effectively motivate and guide college students to adopt and practice sustainable, environmentally friendly life concepts and methods. Such strategies can better consider the characteristics and needs of different groups,

thereby enhancing individuals' enthusiasm and effectiveness in practicing green lifestyles (Celis-Morales et al., 2017; Hillesheim, 2023). Moreover, this study considered that behaviors that can be performed during daily lifestyle transitions are more likely to be sustained (Verplanken & Roy, 2016), and its results can be widely implemented across college campuses and even globally to promote individuals' sustainable dietary behavior and ultimately alleviate environmental pressure.

However, this study has some limitations. **First**, the sustainable dietary activities selected were common and low-cost daily activities. The applicability of our conclusions to activities requiring greater effort and cost needs verification through more in-depth empirical research. Previous studies show that individuals' perceived effort or cost can negatively predict pro-environmental behavior (Fujii, 2006; Tobler et al., 2012; Truelove & Gillis, 2018). Theoretically, we can speculate that if sustainable dietary actions require relatively more energy and effort, individuals with lower connectedness to nature and prosocial tendencies would be less likely to engage in sustainable dietary behavior, possibly even increasing the frequency of environmentally unfriendly and unhealthy dietary behavior.

Second, an important factor in individuals' engagement in different environmental activities is their recognition of the environmental potential of the behavior—sometimes people are more willing to perform behaviors they consider more effective in mitigating climate change (de Boer et al., 2016; Pickering et al., 2020). Future research could explore whether individuals' preferences for sustainable dietary behaviors with different potentials have different impacts.

Third, besides prosocial tendencies, other variables may mediate the relationship between connectedness to nature and sustainable dietary behavior. For example, Mullee et al. (2017) found that health is the strongest motivation for individuals to shift toward more vegetarian diets when exploring motivations for different dietary behaviors. It remains unknown whether individuals are more likely to engage in sustainable dietary behavior when dietary changes are promoted as beneficial for health or the environment. Additionally, psychological experiments have shown that viewing nature scene images can better control dietary habits (Wu et al., 2021). This study only examined the impact of connectedness to nature on sustainable dietary behavior through scales; future research could consider whether situational priming yields the same results.

Note: Figure translations are in progress. See original paper for figures.