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Can I read to save the planet?

Environmental Engagement and Literacy in Secondary School Students

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Abstract

This study examined the relationship between young people's reading engagement and both their environmental awareness and pro-environmental action. Additionally, the study investigated whether environmental awareness mediated the relationship between reading engagement and different types of environmental action. A total of 50,238 participants aged from 11 to 16 years old completed an online survey, which assessed their literacy habits, awareness of environmental issues, and any behaviours they engaged in to support or protect the environment.

Results found a positive correlation between reading engagement and both environmental awareness and action. Furthermore, the study found that environmental awareness mediated the relationship between reading engagement and daily environmental action (e.g., 'I do things to support the environment in my everyday life'), but not external environmental action (e.g., 'I have written to someone in power about the environment'). The findings provide evidence for the importance of reading engagement in promoting young people's environmental awareness and highlight the need to differentiate between types of environmental action when targeting reading behaviours. Applications of these findings in educational interventions and directions for future research are explored.

Keywords: environmental, climate change, literacy, reading engagement, young people, youth education, sustainability, behaviour change

This research report was written as part of a Bachelor of Science dissertation at the University of Sussex and is based on data from the National Literacy Trust's Annual Literacy Survey.

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Introduction

In 2023 climate change continues to pose the single biggest threat to our planet (Intergovernmental Panel on Climate Change, 2023). According to the recent Global Carbon Budget report, total global carbon dioxide emissions have reached a staggering 40.5 billion tonnes (Friedlingstein et al., 2022), which is a significant increase from the 15.9 billion tonnes recorded in 1960 (Global Carbon Project, 2022). The effects of climate change are ever more evidenced by melting ice sheets (Wunderling et al., 2020), rising sea levels (Nerem et al., 2018), food shortages (Gregory et al., 2005) and an increase in natural disasters (Banholzer et al., 2014). In fact, if humans burnt all identified fossil-fuel reserves, our planet would become uninhabitable (Hansen et al., 2013, as cited in McGuire, 2022, p. 145[1]).

Young people could play a crucial role in shaping the future of the planet, yet some remain disengaged from environmental issues and activism (Palupi & Sawitri, 2018; Sloam et al., 2022). For example, whilst UK research found that 83% of young people aged 8 to 15 wanted to look after the environment (Natural England, 2022), EU research has shown that only 64% of those aged 15 to 25 reported having taken action to protect the environment in the past six months (European Climate Pact, 2022). This indicates a gap between intentions to support the environment and actual behaviours and, also, a decline in youth engagement. As such, although over a decade old, the work of researcher Hill (2012) still rings true when arguing civic engagement to be vital for addressing the environmental crisis.

The study positions environmental awareness and action as being both distinct from one another and also linked. This is reinforced by Roth's (1992) definition of environmental literacy, as having "the capacity to perceive and interpret the relative health of environmental systems and take appropriate action to maintain, restore, or improve the health of those systems" (Disinger & Roth, 1992, p.3). Indeed, research has identified a relationship between environmental awareness and action, which can be strengthened by a sense of community belonging (Si et al.,

[1] McGuire, B. (2022). *Hothouse Earth*. Icon books.

2022), the development of environmental values and attitudes (Saifulina et al., 2023) and greater perceived behaviour control (Lin et al., 2021).

Previous research has also established a link between literacy and civic engagement (Hylton, 2018; Martens & Hobbs, 2015). Indeed, Garcia and colleagues (2015) argued literacy to be one of the most powerful routes to promoting civic awareness. However, the relationship between literacy, environmental awareness and action has received less attention. Indeed, pre-existing research has focused on the relationship between reading about environmental issues and subsequent levels of environmental awareness (Aurélio et al., 2021; Palmer et al., 2006) as opposed to reading as a behaviour in its own right. Consequently, this study set out to address this gap in the field by surveying young people in the United Kingdom to explore the relationship between reading engagement and both environmental awareness and action.

Specifically, the research question guiding this study was formulated as: Is there a significant relationship between reading engagement and both environmental awareness and action among young people? It was hypothesised that reading engagement would be positively correlated with both environmental awareness and action (H1). Additionally, it was predicted that the relationship between reading engagement and two types of environmental action would be partially mediated by environmental awareness (H2). Overall, the aim of the study was to contribute to an understanding of whether reading engagement promoted environmental awareness and action among young people, as well as shedding light on the role that reading could play in shaping pro-environmental behaviours.

Methods

Participants

The survey was completed by over 70,000 children and young people aged 5 to 18 across the UK at the start of 2022. To ensure that only the sample group of interest completed the survey, the survey link was shared directly via email with teachers who applied through their school email address rather than publicly online. This study focused on a subset of these participants: those in secondary school in the UK from Years 7 to 11. The decision to conduct the study with this demographic was made as research has found secondary school students to be more aware of environmental issues than primary school students (Zeeshan et al., 2021). In

addition, its appeal is in the lack of research in this field, as, to the best of the author's knowledge, there is currently no other UK research in this field involving this age group. The study therefore utilised survey responses from 50,238 young people aged 11 to 16 (see Table 1 for demographic breakdown).

Table 1: Sociodemographic characteristics of participants

Characteristic		*n*	%
Gender	**Boy**	22,922	45.8%
	Girl	24,299	48.3%
	Described their gender differently	1,611	3.2%
	Did not disclose their gender	1,336	2.7%
FSM status	**Received FSMs**	7,221	14.4%
	Didn't receive FSMs	38,974	77.6%
	Did not know FSM status	3,433	6.9%
	Did not disclose FSM status	600	1.2%
Age group	**11 to 12 (Year 7)**	16,297	32.4%
	12 to 13 (Year 8)	13,288	26.5%
	13 to 14 (Year 9)	10,740	21.4%
	14 to 15 (Year 10)	6,531	13.0%
	15 to 16 (Year 11)	3,382	6.7%

Materials

The material used in this research was an online survey (The Annual Literacy Survey/ALS), which was created using the online software SmartSurvey (https://www.smartsurvey.co.uk/). The ALS has been written, distributed and reported on by the National Literacy Trust since 2010. The survey is used to measure the literacy habits of children and young people by asking about their reading, writing and listening enjoyment, confidence, frequency, behaviours, attitudes and preferences. The survey included open-ended questions (e.g., 'Can you tell us what makes you want to read? If you don't read, can you tell us what might make you read?'), multiple choice questions (e.g., 'People read for different reasons. Why do you read? (Please tick all that apply)' and scale questions ('How good a reader do you think you are?'). For the first time in 2022, the survey also included questions relating to children and young people's environmental awareness, as well as potential actions that they may or may not engage in to support the environment.

Quality of materials

The questions used within the survey were constructed with guidance from children, young people and teachers. Additionally, the research team at the National Literacy Trust consulted its in-house primary and secondary school experts. These experts have the knowledge and experience to formulate questions that are appropriate for the target audience and are likely to generate reliable and meaningful data. The survey is reviewed and edited yearly, with an opportunity for teachers to provide feedback via email, which can help increase the validity and reliability of the questions.

Design

This research adopted a descriptive research design, surveying participants online at a single point in time. This enabled a large sample of data to be collected in a short period of time, increasing the generalisability of the findings to the wider demographic on which this study focused. Collecting data through a survey also enabled the author to use responses to form measures of reading engagement, environmental awareness, daily environmental action and external environmental action. Creating these variables allowed for correlational and mediational analyses to determine whether a relationship existed between reading engagement and both environmental awareness and (daily/external) action and test whether

environmental awareness mediated the relationship between reading engagement and (daily/external) environmental action.

Procedure

Data collection methods

The survey was advertised through emails, social media posts and the National Literacy Trust and partner websites. Teachers across the UK were given information about the survey and invited to register interest. Those who registered their interest online then received a school-specific link to the online survey, which they could preview before distributing to the students within their school or individual classes. Some chose to give the survey as homework, whilst most encouraged their pupils to complete the survey in class so they could help with any queries. No monetary compensation was provided for taking part; however, every school received a summary report of the findings personalised to their school as a thank you for participating. The survey opened in January 2022 and closed in the middle of March 2022. Schools received multiple reminders to complete the survey.

Data processing and diagnostics

Following data collection, the survey was closed and data were exported from SmartSurvey into IBM SPSS Statistics Version 28.0 to be cleaned. Data cleaning involved removing participants who had clicked through the survey but not submitted any responses, as well as the recoding/renaming of variables for ease of analysis. The participant number stated in the materials section of this report is the total number of participants once data cleaning was complete. For the purposes of this study, data excluding the sample group were also deleted from the dataset.

Ethical considerations

Ethical approval for this study was obtained from the School of Psychology at the University of Sussex (ER/AEC31/1). The survey was entirely voluntary and opened with a reminder of the participant's right to withdraw, and the confidentiality of their responses. As such, there were viewed to be no deceptive practices within this study.

A key ethical consideration of all research involving young people is minimising the potential risk of harm. As the survey included questions relating to literacy habits, as opposed to skill, there was perceived to be a low risk of psychological harm for participants. While the survey collected demographic information including age

group, gender and free-school-meal status, all data were treated as confidential, and key identifiers such as school names were stored separately. This ensured that data could not be linked back to individual pupils, thereby maintaining their privacy.

Finally, to ensure data security, all data were stored on secure servers in line with the ethical and GDPR (Information Commissioners Office, 2022) policies of both the University of Sussex and the National Literacy Trust. Overall, this study was found to align with the BPS Code of Human Research Ethics (Oates et al., 2021).

Results

Preliminary analysis

As aforementioned, the National Literacy Trust asked children and young people about their awareness of environmental issues and any pro-environmental actions that they engaged in. These statements were derived from, and influenced by, previously used scales of environmental/eco-awareness in children and young people, namely the Connection to Nature Index (Cheng & Monroe, 2010), the Children's Environmental Perceptions Scale (Larson et al., 2011) and the Children's Environmental Attitude and Knowledge Scale (Leeming et al., 1995). However, this is the first time that these statements were grouped together to form the two questions within the survey. Thus, it was necessary to assess whether these statements fit together into the constructs that they were intended to measure. If the statements demonstrated a good fit, it was deemed appropriate to combine them to create composite scores for each participant, reflecting each participant's degree of environmental awareness, environmental action and reading engagement. Three separate factor analyses were run to determine this.

Environmental awareness factor analysis and score development

The question relating to environmental awareness included seven statements. However, one statement was viewed to be an example of action rather than awareness ('I have read, spoken or written about the environment outside of school') and so was moved to the environmental action factor analysis. Following

the initial exploratory factor analysis, an additional statement ('I feel inspired by young climate activists and writers') was removed due to weak correlations and communality, which suggests that it did not contribute largely to the factor (see Costello & Osborne, 2005), so the remaining five statements were included in the factor analysis. The included environmental awareness statements were: 'Taking care of the environment is important to me', 'I know why it's important to look after the environment', 'I know what to do to help look after the environment', 'My actions can influence the environment' and 'I sometimes feel worried about the environment'.

Factors with an Eigenvalue of greater than 1.0 were included in accordance with the Kaiser-Guttman rule (Kaiser, 2016) and the analysis determined that the five statements loaded onto one factor. A Pearson's Correlation established that these statements significantly correlated with one another (see **Appendix A: Table A1**). The factor had an Eigenvalue of 2.59 and accounted for 51.68% of the variance in the data, with factor loadings from .70 to .77 (see Table 2). The factor was titled 'Environmental awareness'.

To ensure that a higher score indicated a higher degree of environmental awareness, responses to the five statements were then recoded (1 = Disagree, 2 = Neither agree nor disagree, 3 = Agree). In the original survey, there was also an option to select 'Don't know', but these responses were filtered out as it was unclear whether this response indicated a lack of environmental awareness or a lack of understanding as to how to respond to the question. Responses to the five statements were then computed to create an environmental awareness score for all participants ranging from 5 (participants who disagreed with all statements, *n* = 356) to 15 (participants who agreed with all statements, *n* = 10,295), with higher scores indicating greater environmental awareness.

Table 2: Factor analysis for environmental awareness statements

	Factor loadings	
	1	Communalities
14.1. Taking care of the environment is important to me	.77	.59

14.2. I know why it's important to look after the environment	.75	.57
14.3. I know what to do to help look after the environment	.71	.50
14.4. My actions can influence the environment	.70	.43
14.5. I sometimes feel worried about the environment	.70	.49
Percentage of variance	51.68%	
Eigenvalue	2.59	
Cronbach's alpha	.71	

Environmental action factor analysis and score development

Nine statements went into the initial factor analysis for environmental action, which consisted of the eight statements within the environmental action question and one additional statement from the environmental awareness question ('I have read, spoken or written about the environment outside of school'). However, after examining communalities and correlations, it was apparent that this additional statement, as well as two further statements ('I have written about the environment in my free time' and 'I have helped to clean up green areas where I live'), did not contribute to the factors and were subsequently excluded from further analysis (see Costello & Osborne, 2005). Six statements were therefore retained and subjected to exploratory factor analysis to extract underlying factors: 'I have spoken to my family or friends about the environment', 'I have read about the

environment in my free time', 'I do things to support the environment in my everyday life', 'I have written to someone in power about the environment', 'I have taken part in events or campaigns about the environment' and 'I have joined an environmental organisation'.

Again, factors with an Eigenvalue of greater than 1.0 were included (see Kaiser, 2016). To obtain independent factors, a rotated matrix of loadings using Varimax rotation was necessary, due to the cross-loading of multiple statements (Shrestha, 2021). The resulting factor analysis revealed two factors, which were titled 'Daily environmental action' and 'External environmental action'.

Daily environmental action included three statements: 'I have spoken to my family or friends about the environment', 'I have read about the environment in my free time' and 'I do things to support the environment in my everyday life'. The factor had an Eigenvalue of 2.25 and the statements accounted for 37.4% of the variance (with factor loadings from .72 to .79, see Table 3). A Pearson's Correlation identified that these statements significantly correlated with one another (see **Appendix A: Table A2**). To ensure that a higher score indicated a higher degree of daily environmental action, responses to the three statements were then recoded (1 = Didn't select the example of daily environmental action, 2 = Did select the example of daily environmental action) and computed. Scores ranged from 3 (participants who didn't select any daily environmental action statements, *n* = 19,874) to 6 (participants who selected all daily environmental action statements, *n* = 7,932).

External environmental action also included three statements: 'I have written to someone in power about the environment', 'I have taken part in events or campaigns for the environment' and 'I have joined an environmental organisation'. The factor had an Eigenvalue of 1.17 and the statements explained 19.5% of the variance (with factor loadings from .67 to .77, see Table 3). A Pearson's Correlation identified that these statements were significantly correlated (see **Appendix A: Table A3**). Responses to the three statements were then recoded (1 = Didn't select the example of external environmental action, 2 = Did select the example of external environmental action) and again scores ranged from 3 (participants who didn't select any external environmental statements, *n* = 42,893) to 6 (participants who selected all external environmental statements, *n* = 764).

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Table 3: Factor analysis for environmental action statements

	Factor loadings		
	1	2	Communalities
15.1. I have spoken to my family or friends about the environment	.79		.63
15.2. I have read about the environment in my free time	.72		.54
15.3. I do things to support the environment in my everyday life	.77		.60
15.4. I have written to someone in power about the environment		.67	.47
15.5. I have taken part in events or campaigns for the environment		.74	.57
15.6. I have joined an environmental organisation		.77	.60
Percentage of variance	37.43%	19.45%	
Eigenvalue	2.25	1.17	

Cronbach's alpha	.65	.58	

Reading engagement factor analysis and score development

Finally, three questions were subjected to exploratory factor analysis to create a reading engagement variable: 'How much do you enjoy reading?' [Not at all, a bit, quite a lot, very much], 'How often do you read in your spare time?' [Rarely or never, about once a month, a couple of times a month, about once a week, a couple of times a week, every day or almost every day] and 'How good a reader do you think you are?' [Not very good at all, not very good, good, very good].

The factor analysis found that the three questions loaded onto a single factor (following the Kaiser-Guttman rule (see Kaiser, 2016)) and explained 66.9% of the variance within this factor, with factor loadings from .73 to .88 (see Table 4). A Pearson's Correlation analysis indicated that the statements were moderately correlated (see **Appendix B: Table B4**), so it was deemed appropriate to combine the three questions into a single factor, which was labelled 'Reading engagement'. Responses to the three questions were recoded and computed such that a higher score indicated a higher level of reading engagement. Scores ranged from 3 (reflecting low reading engagement, i.e., those who didn't enjoy reading at all, rarely or never read, and felt they were not very good at reading at all, *n* = 854) to 14 (reflecting high reading engagement, i.e., those who enjoyed reading very much, read daily or almost daily, and felt they were very good at reading, *n* = 4,819).

Table 4: Factor analysis for reading engagement statements

	Factor loadings	
	1	**Communalities**
5.1. How much do you enjoy reading?	.88	.77

6.1. How often do you read in your spare time?	.84	.71
7.1. How good a reader do you think you are?	.73	.53
Percentage of variance	66.9%	
Eigenvalue	2.01	
Cronbach's alpha	.69	

Analysis

Correlational analysis

Firstly, a Pearson's two-tailed correlational analysis was conducted to explore the relationship between reading engagement and environmental awareness, daily environmental action and external environmental action. Results revealed a significant positive correlation between reading engagement and environmental awareness (r (30,988) = .31, p <. 001); reading engagement and daily environmental action (r (48,675) = .32, p < .001); and reading engagement and external environmental action (r (48,675) = .11, p < .001). Although significant, the correlations were interpreted as weak (Ratner, 2009).

To control for the effects of age group, gender and free-school-meal status[2], a partial two-tailed correlational analysis was also performed (see Table 5). All correlations remained significant. Indeed, regardless of the age group, gender or free-school-meal status of the participant, there was a positive and significant correlation between their reading engagement and environmental awareness (r (48,677) = .29, p < .001); reading engagement and daily environmental action (r (42,434) = .30, p < .001); and reading engagement and external environmental action (r (42,434) = .11, p < .001). However, as with the initial analysis, these correlations were still classified as weak (Ratner, 2009).

Table 5: Partial correlational analysis, controlling for age group, gender and free-school-meal-status

		Reading engagement	Environmental awareness	Daily environmental action	External environmental action
Reading engagement	**Pearson Correlation**	-	.29*	.30*	.11*
	Sig. (2-tailed)	-	<.001	<.001	<.001
	df	48,677	27,325	42,434	42,434

*Note: *Correlation is significant at the 0.01 level (2-tailed).*

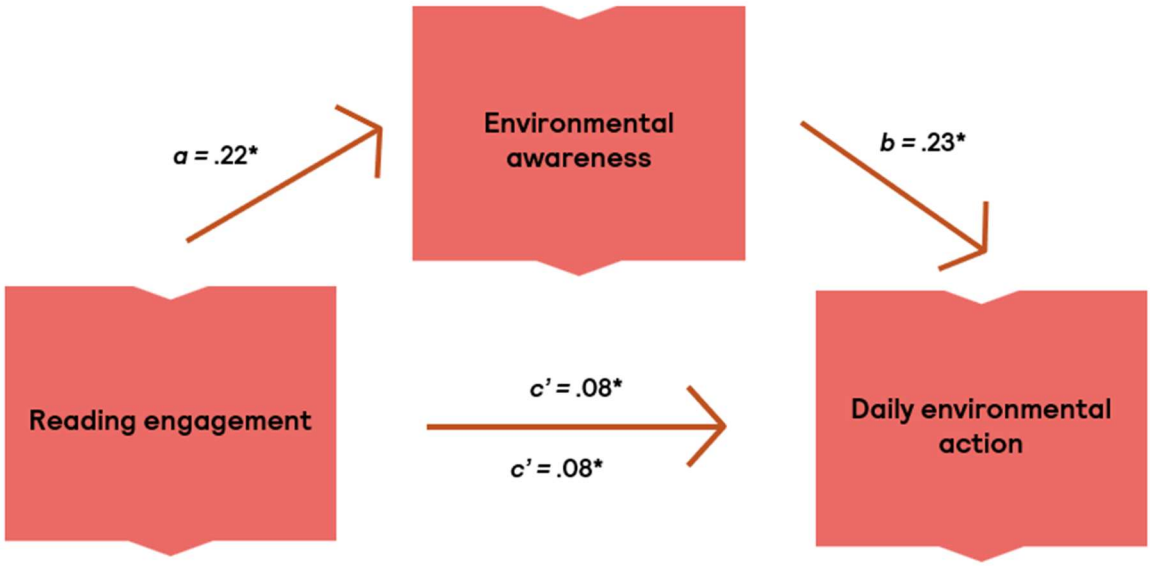
Mediation analysis

Finally, two mediation analyses were conducted to test whether environmental awareness acted as a mediator between reading engagement and the two types of environmental action. The first mediation investigated whether the relationship

[2] Typically, a partial correlation includes only continuous variables as controls. However, it was important to test that gender and free-school-meal status did not influence the relationship between the variables, and so they were included. The author acknowledges the limitations of this and suggests that the findings for this test are taken with caution.

between reading engagement and daily environmental action was mediated by environmental awareness. Results (see Figure 1) indicated that the direct effect[3] of reading engagement on daily environmental action was statistically significant (*b* = .08, SE = .002, *p* < .001, 95% CI [.07,.08]), as was the total effect[4] (*b* = .12, SE = .002, *p* = <.001, 95% CI [.12, .12]). As the total effect was larger than the direct effect, it was concluded that environmental awareness played a role in explaining the relationship between reading engagement and daily environmental action. This was considered to be evidence of partial mediation, as some of the effects of reading engagement on daily environmental action were transmitted through environmental awareness.

Figure 1: Unstandardised coefficients for the relationship between reading engagement and daily environmental action, mediated by environmental awareness.

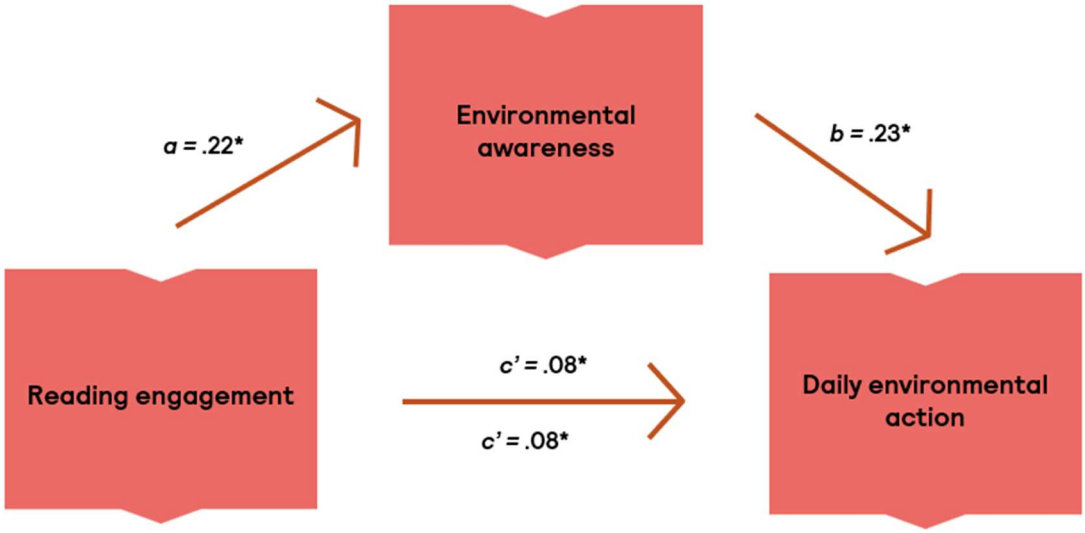


*Notes: * Effect is significant at the 0.01 level; a is the effect of reading engagement on environmental awareness; b is the effect of environmental awareness on daily environmental action, c' is the direct effect of reading engagement on daily environmental action; and c is the total effect of reading engagement on daily environmental action.*

[3] The direct effect is the effect of reading engagement on daily environmental action that is not explained by environmental awareness.
[4] The total effect is the overall effect of reading engagement on daily environmental action, through environmental awareness.

The second mediation investigated whether the relationship between reading engagement and external environmental action was mediated by environmental awareness. Results (see Figure 2) showed that the direct effect[5] of reading engagement on daily environmental action was significant (b = .02, SE = .001, p < .001, 95% CI [.02,.02]), as was the total effect[6] (b = .02, SE = .001, p < .001, 95% CI [.02, .02]). The total and direct effects were found to be identical in magnitude[7], suggesting that environmental awareness did not strongly mediate the relationship between reading engagement and daily environmental action. As such, reading engagement was found to primarily influence external environmental action through its direct effect, rather than through environmental awareness. However, the direct effect was weak, indicating the presence of other significant factors influencing the relationship between reading engagement and external environmental action, which were not explored in this analysis.

Figure 2: Unstandardised coefficients for the relationship between reading engagement and external environmental action, mediated by environmental awareness.



*Notes: * Effect is significant at the 0.01 level; a is the effect of reading engagement on environmental awareness; b is the effect of environmental awareness on external*

[5] The direct effect is the effect of reading engagement on external environmental action that is not explained by environmental awareness.
[6] The total effect is the overall effect of reading engagement on external environmental action, through environmental awareness.
[7] When reported to two decimal places.

environmental action, c' is the direct effect of reading engagement on external environmental action; and c is the total effect of reading engagement on external environmental action.

Discussion

Correlations between reading and environmental engagement (H1)

This study investigated the relationship between reading engagement and both environmental awareness and (daily and external) environmental action among young people aged 11 to 16 in the UK. Results showed a positive correlation (supporting H1), and, whilst causal assumptions cannot be made from a correlational analysis, this does suggest a positive link between reading engagement and both environmental awareness and action. The findings also support previous research, which found that reading about environmental issues contributes to environmental awareness. For example, Aurélio and colleagues (2021) studied the impact of reading sessions in Portuguese schools, incorporating a short story written by the Marine Environmental Sciences Centre. Children's knowledge of the environmental issues covered in the story increased significantly following the reading intervention, suggesting that it supported their understanding and learning of specific environmental issues (Aurélio et al., 2021, p.6).

The current study, however, was unique in that it focused on reading engagement – in terms of enjoyment, frequency and confidence – rather than solely on reading about environmental issues. In this way, to the best of the author's knowledge, these findings are the first to identify a significant relationship between reading engagement and both environmental awareness and action within a UK population. Future research could helpfully explore the ways in which reading engagement promotes environmental awareness and action. For example, reading might promote empathy and a sense of connectedness to nature (Liefländer et al., 2012), which may increase interest in environmental issues.

As the correlations between reading engagement and both environmental awareness and action were weak, it is important to consider that unidentified factors may have been at play. For example, the study did not investigate the range of texts that young people had read. Previous research has found that children and young people who read non-fiction were more engaged with environmental issues

(Cole et al., 2022) and that reading fiction directly impacted environmental awareness by presenting different perspectives on environmental issues (Bigger & Webb, 2010). Further studies could therefore consider the genres of the texts that young people read and how this may influence their awareness of environmental issues.

Additionally, given the advances in access to the online space and various eBook platforms, the role of digital reading in shaping young people's environmental awareness and action should be examined, such as by differentiating between reading print books and digital books (Tilwankar et al., 2019). Overall, incorporating more detailed information about the variety and/or type of reading materials young people engage with could provide a more nuanced understanding of the relationship between reading engagement and both environmental awareness and action, thereby strengthening these correlations.

Mediating role of environmental awareness (H2)

Whilst it seems logical that reading about environmental matters can contribute to an increased awareness of environmental issues (e.g., Aurélio et al., 2021), the way in which reading engagement can contribute to environmental action is less clear. Therefore, mediation analyses were run to test the hypothesis that environmental awareness mediates the relationship between reading engagement and both daily and external environmental action. The results partially confirmed this hypothesis, with environmental awareness acting as a significant pathway between reading engagement and daily environmental action. In other words, the relationship between reading engagement and daily environmental action was partially explained by environmental awareness.

However, results also showed that environmental awareness did not mediate the relationship between reading engagement and external environmental action. External environmental action includes behaviours such as writing to someone in power about the environment, taking part in events or campaigns for the environment, or joining an environmental organisation. Generally, these behaviours would require a greater commitment than daily environmental action, which involved speaking to family and friends about the environment and reading about the environment in their free time. In this way, whilst environmental awareness could support the relationship between reading engagement and daily environmental action, increasing engagement with external environmental actions may require a more direct intervention than reading. For example, the World Wild Fund for Nature developed a youth engagement programme aimed at 11- to 18-year-olds, which opts to support young people to explore environmental issues and take positive action to protect them (2023).

Implications

The findings within this study have practical implications for the design of educational reading interventions focused on environmental awareness and action in young people. Specifically, such interventions would support improvements in reading frequency, enjoyment and confidence. However, more focused methods of promoting environmental awareness could also be considered and incorporated to strengthen the relationship between reading engagement and daily environmental action. As mentioned earlier, previous research has suggested that reading about environmental issues promotes environmental awareness (Aurélio et al., 2021). Other researchers have also found evidence for the success of environmental education in school (Davis, 1998) and even mobile learning, which involved students using their phones to exchange images and observations of their local environment and different ways to maintain it (Uzunboylu et al., 2009).

Finally, as environmental awareness mediated the relationship between reading engagement and daily environmental action, but not between reading engagement and external environmental action, interventions should differentiate between types of environmental action and be designed to target these behaviours appropriately and separately. For example, interventions targeted at daily environmental action could be more localised and operate in schools, whereas interventions targeted at external environmental action might require the involvement of organisations (e.g., World Wild Fund for Nature, 2023).

Limitations

One practical limitation of this study relates to the exclusive use of self-report data. Self-report was deemed to be the most suitable method of collecting data for this study as it enabled the author to gain insight into the feelings, thoughts and motivations of young people (Pekrun, 2020). However, it is possible that participants shared that they engaged in more environmental action than they really had (see Muhammad, 2023). Therefore, findings relevant to external environmental action must be considered with caution. Further research could explore ways to mitigate the potential for response bias, while still maintaining participant autonomy and confidentiality. For example, the research could use objective standardised measures to supplement the existing self-report data, such as tracking attendance at climate action events. Overall, whilst participant responses may have been impacted by some degree of bias, they nonetheless provide valuable insight into young people's propensity for environmental action.

Additionally, the data for this study was collected via a survey at one point in time. This approach had value, as it allowed for the collection of data from a large sample of young people across the UK without the need for participants to commit to

submitting data at multiple time points. However, this means that it is not possible to make predictions about how environmental awareness and action change over time, or how reading engagement can impact such change in the longer term. To address this issue, further research could adopt a longitudinal design to study changes in reading engagement and both environmental awareness and action over time with the same participants.

Directions for future work

In addition to the previously suggested adaptations to the existing study, future work could look at the relationship between reading engagement and environmental awareness and action across different social groups. This study focused on young people aged 11 to 16 in the UK, owing to a gap in research for this demographic. All participants were within the education system, so they were easily accessible for this study. Hence, it would be valuable to conduct further research to investigate potential differences among those from the same age group who are not involved in the traditional education system. This could provide a more comprehensive understanding of reading engagement and both environmental awareness and action and also identify significant differences across social groups.

Conclusions

To conclude, this study identifies and contributes to an understanding of the relationship between reading engagement and both environmental awareness and action in young people in the UK. The findings reiterate the previously established importance of supporting and promoting reading engagement in young people but introduce a new rationale. Indeed, reading engagement can act as a pathway to improving young people's awareness of environmental issues and engagement in actions to protect the planet. This study is the first to investigate and provide evidence of such a relationship in the UK context, highlighting a potential new approach to promoting environmental engagement for this group.

Whilst the study cannot establish causal relationships, the findings provide valuable insight that can inform the development of educational interventions and public campaigns aimed at promoting pro-environmental behaviours. Educational interventions can support improvements in reading engagement, while public campaigns can leverage the link between reading and environmental engagement to raise awareness and inspire action. However, further research is necessary to validate the current findings and, additionally, investigate the specific types of reading that can most effectively influence environmental awareness and action.

Ultimately, this study highlights the importance of promoting reading engagement in young people to enhance environmental awareness and action. Given the scarcity of research in this area within the UK, I hope these findings will ignite interest and inspire future investigation of this topic.

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About the National Literacy Trust

Our charity is dedicated to improving the reading, writing, speaking and listening skills of those who need it most, giving them the best possible chance of success in school, work and life. We run Literacy Hubs and campaigns in communities where low levels of literacy and social mobility are seriously impacting people's lives. We support schools and early years settings to deliver outstanding literacy provision, and we campaign to make literacy a priority for politicians, businesses and parents. Our research and analysis make us the leading authority on literacy and drive our interventions.

Literacy is a vital element of action against poverty and our work changes life stories.

Visit www.literacytrust.org.uk to find out more, donate or sign up for a free email newsletter. You can also find us on Facebook and follow us on Twitter.

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Appendix

Table A1: Correlations between environmental awareness statements

		1	2	3	4	5
1. Taking care of the environment is important to me	Pearson Correlation	-	.33**	.31**	.36**	.49**
	df	-	39549	37551	35992	37923
2. I know why it's important to look after the environment	Pearson Correlation	.33**	-	.37**	.30**	.28**
	df	39549	-	38455	36734	38620
3. I know what to do to help look after the environment	Pearson Correlation	.31**	.37**	-	.32**	.24**
	df	37551	38455	-	35113	36680
4. My actions can influence the environment	Pearson Correlation	.36**	.30**	.32**	-	.32**
	df	35992	36734	35113	-	35241
5. I sometimes feel worried about the environment	Pearson Correlation	.49**	.28**	.24**	.32**	-
	df	37925	38622	36682	35243	-

Note: **. Correlation is significant at the 0.01 level (2-tailed).

Table A2: Correlations between daily environmental action statements

		1	2	3
1. I have spoken to my family or friends about the environment	Pearson Correlation	-	.38**	.42**
	df		50236	50236
2. I have read about the environment in my free time	Pearson Correlation	.38**	-	.36**
	df	50236		50236
3. I do things to support the environment in my everyday life	Pearson Correlation	.42**	.36**	-
	df	50236	50236	

Note: **. Correlation is significant at the 0.01 level (2-tailed).

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Table A3: Correlations between external awareness statements

		1	2	3
1. I have written to someone in power about the environment	Pearson Correlation	-	.28**	.29**
	df	-	50236	50236
2. I have taken part in events or campaigns for the environment	Pearson Correlation	.28**	-	.38**
	df	50236	-	50236
3. I have joined an environmental organisation	Pearson Correlation	.29**	.38**	-
	df	50236	50236	-

Note: **. Correlation is significant at the 0.01 level (2-tailed).

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Table A4: Correlations between reading engagement statements

		1	2	3
1. How much do you enjoy reading?	Pearson Correlation	-	.65**	.46**
	df	-	50236	48675
2. How often do you read in your free time?	Pearson Correlation	.65**	-	.38**
	df	50236	-	48675
3. How good a reader do you think you are?	Pearson Correlation	.46**	.38**	-
	df	48675	48675	-

Note: **. Correlation is significant at the 0.01 level (2-tailed).