REPORT FOR THE ROYAL SOCIETY FOR THE PROTECTION OF BIRDS (RSPB): CONNECTION TO NATURE QUESTIONNAIRE ON THE NORTHERN IRELAND KIDS LIFE AND TIMES SURVEY

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DR KAREN KERR, SCHOOL OF EDUCATION
QUEEN’S UNIVERSITY BELFAST

Karen Kerr

School of Education, Queen’s University Belfast

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How to Cite this Report

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1. Background

This report presents findings from the 2014 Kids Life and Times (KLT) Survey to include results from the Royal Society for the Protection of Birds’ (RSPB) Connection to Nature questionnaire for 8-12 year olds. The KLT 2014 is the seventh survey to be carried out by Access Research Knowledge (ARK) Northern Ireland, a joint resource between Queen’s University Belfast and the University of Ulster, aimed at making social and political information on Northern Ireland available to the widest possible audience. The KLT 2014 survey included a set of questions on Connection to Nature, funded by the RSPB.

This report will outline the background to the KLT survey and the Connection to Nature (CNI) scale as well as details on the sample and information on the reliability of the CNI scale and its subscales. Section 2 presents the overall scores on the CNI scale and its subscales as well as the percentage of children who can be considered ‘connected’, ‘neutral’ or ‘disconnected’ in relation to their overall score on the CNI scale and their scores on each of the subscales. Section 2 also presents the findings in relation to gender and school location for the purposes of comparison with an earlier RSPB (2013) report on children’s connection to nature. Section 3 presents a brief exploratory analysis of the children’s CNI scores in relation to their background factors and scores related to quality of life.

1.1 The Kids Life and Times survey 2014

Each year, the survey targets all children of Primary 7 age in Northern Ireland. Primary 7 is the final year of primary school in Northern Ireland. The target population was approximately 22,500 children and included children attending 876 primary schools children in hospital and special schools and also children in this age group who were not in school or who were being taught at home. Question groups can be requested by funders.

In total, 4757 children completed the survey which represents 21% of P7-age children overall. Due to a high demand for use of the KLT 2014 survey, two versions of the questionnaire were required. Version one included the Connection to Nature scale. In total, approximately 2418 children completed Version one which included the follow questions focused on:

- Home and family;
- Bullying in school;
- Happiness with school;
- Connection to Nature.

This list of question groups is not exhaustive but represents the questions for which the individual funder (RSPB) received data. Children who responded to the KLY 2014 Version one questionnaire also
answered questions on integrated education, children’s rights and health and questions on play. A complete list of the items which were analysed for the purposes of this report is given in Appendix 1.

1.2 Connection to Nature Scale

The Connection to Nature scale used in the KLT 2014 was the result of the RSPB’s work with the University of Essex in 2013 (Bragg, Wood, Barton and Pretty, 2013). In this study, Bragg et al. (2013) looked at various measures traditionally used to consider children’s connection to nature. They conducted statistical analysis on various measures and looked at children’s understanding of each measure as well as their preferred measure (Bragg et al., 2013). As a result of this work, the RSPB choose a version of Cheng and Monroe’s (2010) Connection to Nature Index which considers four dimensions of children’s connection to nature: Enjoyment of Nature, Empathy for Creatures, Sense of Oneness and Sense of Responsibility. This measure is a trait measure and is supposed to be used to evaluate programmes, particularly those which are long term. Therefore, it offers a good baseline of children’s Connection to Nature, which was the purpose of the inclusion of the scale on the KLT 2014.

The Connection to Nature questionnaire presents children with 16 statements and asks to rate their response on a 5-point Likert scale, from 1 (strongly disagree) to 5 (strongly agree). It is scored by creating a mean of the 16 items, with higher scores indicating a stronger connectedness to nature than lower scores. The internal reliability of the CNI using Cronbach’s alpha in the original paper was \( \alpha = 0.87 \). This overall score can be on a scale from 1 to 5 or on a scale from -2 to 2. For the purposes of the current analysis and to allow comparison with the RSPB’s previous report (RSPB, 2013), the Connection to Nature overall scores are presented on a scale from -2 to 2 in the current report.

The statements on the Connection to Nature questionnaire which were included in the KLT 2014 were as follows:

1. I like to hear different sounds in nature
2. I like to see wild flowers in nature
3. When I feel sad, I like to go outside and enjoy nature
4. Being in the natural environment makes me feel peaceful
5. I like to garden
6. Collecting rocks and shells is fun
7. I feel sad when wild animals are hurt
8. I like to see wild animals living in a clean environment
9. I enjoy touching animals and plants
10. Taking care of animals is important to me
11. Humans are part of the natural world
12. People cannot live without plants and animals
13. Being outdoors makes me happy
14. My actions will make the natural world different
15. Picking up trash on the ground can help the environment
16. People do not have the right to change the natural environment

A complete list of the items which were analysed for the purposes of this report is given in Appendix 1. As well as a calculation of the overall Connection to Nature score, the children’s scores on the four
dimensions were also calculated using the guidance from the original paper (Cheng and Monroe, 2010). The children’s Enjoyment of Nature score was calculated by working out a mean score for questions 1, 2, 3, 4, 5, 6 and 13, the Empathy for Creatures score was a mean value for questions 7, 8, 9 and 10. The children’s Sense of Oneness score was the mean of questions 11, 12 and 13 and their Sense of Responsibility was calculated as a mean score of questions 14, 15 and 16. The children’s scores on the four dimensions (subscales) are presented in the current report on a scale from -2 to 2 in order to allow comparison with the RSPB’s previous report (RSPB, 2013).

According to Cheng and Monroe (2010) a Connection to Nature score between -2 and -1 indicates the lowest connection to nature (i.e. ‘disconnected’), a score of 0 indicates neither a high nor low connection (‘neutral’) and a score between 1 and 2 indicates a higher connection (‘connected’) to nature. For the purposes of this report, the disconnected/neutral/connected indicator was calculated for the overall Connection to Nature scale as well as the four subscales.

1.3 The sample

In total, approximately 2418 children completed Version one of the KLT questionnaire and, of that total, 2240 children responded to the questions on Connection to Nature questions in order for a mean score to be calculated. Of the children for whom there is a mean score on the Connection to Nature questionnaire:

- 48% of the children are boys, 52% are girls
- 31% of the children attend rural schools, 69% attend urban schools
- 17% of the children were in schools in the Belfast Education and Library Board (ELB) area, 22% were in the North Eastern ELB, 25% in the South Eastern ELB, 20% in the Southern ELB and 15% in the Western ELB
- According to the Family Affluence scale calculated within the KLT data, 9% of the children are considered to have ‘low affluence’, 37% are considered to have ‘medium affluence’ and 53% are considered to have ‘high affluence’
- 53% of the children considered themselves to be ‘Northern Irish’, 7% considered themselves to be ‘Ulster’, 17% said ‘Irish’, 14% said ‘British’, 2% selected either Bangladeshi/Chinese/Indian/Irish Traveller/Lithuanian/Pakistani/Polish/Portuguese, 2% said ‘other’ and 4% selected ‘don’t know’
- 91% said they were born in Northern Ireland, 6% said they were born in Great Britain or Ireland and 3% said they were born somewhere else
- 79% of children said they live with their Mum and Dad in the same house, 14% said they live with their Mum for all or most of the time, 5% said they live with their Mum for half of the time and their Dad for half of the time and 2% said they live with their Dad for all or most of the time or somebody else.

1.4 Statistical reliability and analyses

ARK supplied all the relevant raw data in a Statistical Package for Social Scientists (SPPS) file. All calculations of mean scores and statistical analyses were conducted using SPSS. The reliability of the Connection of Nature scale can be tested for statistical reliability using Cronbach’s alpha coefficient which is used for ‘multi-item scales’ and considers the internal consistency of the scale (Cohen,
Manion and Morrison (2011, p.640). Given that the aim for this report is to consider results from one sample at one point in time, measuring the internal consistency is appropriate (as opposed to consideration of results from the same scale at difference times) because it considers the consistency in results across items in the same scale. As a guide, a Cronbach’s alpha coefficient of 0.60 to 0.69 is marginally/minimally reliable, 0.70 to 0.79 is reliable, 0.80 to 0.90 is highly reliable and >0.90 is very highly reliable (Cohen et al., 2011). The Cronbach’s alpha coefficient for the Connection to Nature scale for the current data set was $\alpha=0.87$, which is exactly the same value as the Cronbach’s alpha coefficient in the original study (Cheng and Monroe, 2010). In addition, when Bragg et al. (2013) considered the internal consistency of the Connection to Nature scale, they stated that every individual question on the scale should have a correlation of between 0.30 and 0.70. In the case of the current study, the corrected item-total correlations values were between 0.34 and 0.61. Therefore the overall Connection to Nature scale is considered to be highly reliable.

The Cronbach’s alpha coefficients for the four subscales were also calculated. However, in the previous RSPB study (Bragg et al., 2013) pointed out that Cronbach’s alpha is sensitive to the number of items in a scale so for scales with less than 10 items (i.e. all the scales for the four dimensions) it is more appropriate to report the mean inter-item correlation for the items with the optimum range being between 0.2 and 0.4. Therefore, the Cronbach’s alpha coefficients and the mean inter-item correlations for all four dimensions are reported below:

- Enjoyment of Nature subscale: $\alpha=0.82$, inter-item correlation values were between 0.28 and 0.56
- Empathy for Creatures subscale: $\alpha=0.79$, inter-item correlation values were between 0.42 and 0.55
- Sense of Oneness subscale: $\alpha=0.54$, inter-item correlation values were between 0.25 and 0.32
- Sense of Responsibility subscale: $\alpha=0.46$, inter-item correlation values were between 0.23 and 0.26

This means that all four subscales can be considered to have acceptable internal consistency in this study.

For the purposes of this report, other analyses were conducted using SPSS. These included descriptive statistics (mean scores, standard deviation) for the overall sample and various groups as well as the percentage of children who can be considered to have an acceptable level of connectedness in line with the RSPB’s target (Section 2). Pearson Correlation analyses were also conducted to test for relationships between the background factors and the children’s score on the CNI scale and its subscales as well as to test for relationships between health-related quality of life scores and scores on the CNI scale and its subscales (Section 3).
2. Connection to Nature score

2.1 Northern Ireland overall scores

As previously mentioned the children’s Connection to Nature (CNI) overall score was calculated on a scale from -2 to 2 and the children’s scores on each of the four subscales (Enjoyment of Nature, Empathy for Creatures, Sense of Oneness Sense of Responsibility) were calculated on a scale from -2 to 2. The mean Connection to Nature scores for the children in this study was **1.05** (n=2240, SD=0.58). The mean scores on the subscales, in order of highest to lowest, for the children in this study are as follows:

- Empathy for Creatures subscale: mean score=**1.35** (n=2359, SD=0.69) with **57%** scoring 1.5 or higher
- Sense of Oneness subscale: mean score=**1.33** (n=2359, SD=0.62) with **45%** scoring 1.5 or higher
- Sense of Responsibility subscale: mean score=**1.07** (n=2356, SD=0.69) with **29%** scoring 1.5 or higher
- Enjoyment of Nature subscale: mean score=**0.77** (n=2323, SD=0.76) with **18%** of children scoring 1.5 or higher

Figure 1 presents the **mean scores** for the overall CNI scale and each of the four subscales for the current sample:

![Figure 1: A bar graph to show the mean scores for the overall CNI scale and each of the four subscales.](image-url)
These results indicate a moderately high level of connection to nature among these children, a large sample of 10 and 11 year olds in Northern Ireland. On consideration of the subscales, the children scored higher in relation to their Empathy for Creatures (mean=1.35) and Sense of Oneness (mean=1.33) in comparison to their Sense of Responsibility (1.07) and their Enjoyment of Nature (mean=0.77).

Whilst this is the first large scale (n=2240) baseline survey of CNI scores for children in Northern Ireland, the RSPB’s (2013) study reported a mean CNI score of 1.12 for a much smaller sample of 112 children aged 8-12. However, the results for the children in the current study (mean=1.05) are more in line with the reported UK average (1.05). There are no reported normative values for the CNI scale, however, Ernst and Theimer (2011) used the CNI scale in their recent study which set out to explore the influence of participation in an environmental education programme on students’ connectedness to nature. This study involved a treatment (children who received the programme) and a control group (children who did not receive the programme) and reported an overall mean CNI score of 3.92 (on a scale from 1 to 5) which is much lower than the score for the current sample.

### 2.2 Connectedness to Nature – the target for every child

Whilst the average score for children in this sample was **1.05** (on a scale from -2 to 2) it is important to note that:

*The RSPB believes that a score of 1.5 is a realistic and achievable target for every child. This is based on our initial assessment of the average score for school children visiting our nature reserves and amongst our junior membership.* (RSPB, 2013)

For the current study, the percentage of children scoring 1.5 or higher was also calculated for their overall Connection to Nature score as well as their scores on each of the subscales. Figure 2 presents the percentage of children who scored 1.5 or higher with in relation to their overall score on the CNI scale and their scores on each of the subscales. In short:

- In total, **25%** of the children in this sample scored 1.5 or higher in relation to their overall score on the CNI scale
- Empathy for Creatures subscale: **57%** of children scored 1.5 or higher
- Sense of Oneness subscale: **45%** of children scored 1.5 or higher
- Sense of Responsibility subscale: **29%** scored 1.5 or higher
- Enjoyment of Nature subscale: **18%** of children scored 1.5 or higher
These findings suggest that, overall, only a quarter of the children in this sample (25%) can be considered as having a realistic connection to nature and as meeting the RSPB’s target (RSPB, 2013). It is also important to note the difference between the subscales with regard to the number of children scoring 1.5 or higher. Whilst more children scored 1.5 or higher with regard to their Empathy for Creatures (57% of children scoring 1.5 or higher) and their Sense of Oneness (45% scoring 1.5 or higher) with nature, fewer children scored 1.5 or higher in relation to their Sense of Responsibility (29% scoring 1.5 or higher), something which environmental educators should keep in mind.

More worrying is the low percentage of children who scored 1.5 or higher in relation to their Enjoyment of nature. Only 18% of children scored 1.5 or higher in relation to their Enjoyment of nature (approximately 5 children in every average sized class). In other words, approximately half of the children in this sample have an acceptable level of empathy for the creatures living in their natural environment and feel part of it. However, only a third (approximately) are adequately aware of their responsibilities in relation to looking after it and only 18% report an acceptable level of enjoyment of experiencing nature first hand. This is a finding which merits further research in Northern Ireland.
2.3 Comparative descriptive data

In order for comparisons to be made with an earlier RSPB (2013) report the overall Connection to Nature scores were also broken down by gender and school location – both urban/rural and according to Education and Library Board (ELB) which, at the time of writing, referred to regions within Northern Ireland\(^1\). The overall CNI scores for each of these factors are presented in Table 1:

<table>
<thead>
<tr>
<th>Response option/comparative factor</th>
<th>N</th>
<th>SD</th>
<th>Mean CNI scores</th>
</tr>
</thead>
<tbody>
<tr>
<td>Gender</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Girls</td>
<td>1164</td>
<td>0.512</td>
<td>1.17</td>
</tr>
<tr>
<td>Boys</td>
<td>1072</td>
<td>0.610</td>
<td>0.92</td>
</tr>
<tr>
<td>School location (urban/rural)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Urban</td>
<td>1540</td>
<td>0.582</td>
<td>1.03</td>
</tr>
<tr>
<td>Rural</td>
<td>694</td>
<td>0.558</td>
<td>1.08</td>
</tr>
<tr>
<td>School location (ELB)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Belfast ELB</td>
<td>388</td>
<td>0.549</td>
<td>1.00</td>
</tr>
<tr>
<td>North Eastern ELB</td>
<td>491</td>
<td>0.586</td>
<td>1.02</td>
</tr>
<tr>
<td>South Eastern ELB</td>
<td>597</td>
<td>0.592</td>
<td>1.05</td>
</tr>
<tr>
<td>Southern ELB</td>
<td>412</td>
<td>0.569</td>
<td>1.07</td>
</tr>
<tr>
<td>Western ELB</td>
<td>346</td>
<td>0.563</td>
<td>1.10</td>
</tr>
</tbody>
</table>

Table 1: Comparative descriptive data presented as mean CNI scores broken down by gender and school location

There are slight differences in the mean scores between each of the groups with girls scoring higher than boys, children in rural schools scoring higher than those in urban schools. Children in schools in the Western ELB had the highest score by region and children in the Belfast ELB had the lowest scores by region. In relation to the RSPB’s (2013) target for children’s connection to nature, these findings particularly highlight that **boys** and **children in urban areas** in Northern Ireland fall even further below the target score of 1.5.

The presentation of these findings is for comparative purposes, particularly with the previous RSPB (2013) report and they are descriptive. In order to explore correlations between these factors as well as other background factors and measures of the children’s health-related quality of life, an exploratory analysis is presented in the next section.

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\(^1\) As of April 2015, the five Education and Library Boards were replaced with a single body known as the Education Authority
3. Exploratory analysis

3.1 Background factors

The KLT survey included several items and scales related to the children’s backgrounds and demographics. These included gender, school location (rural or urban), school location (education and library board), identity (Northern Irish, Ulster, Irish, British, Bangladeshi/Chinese/Indian/Irish Traveller/Lithuanian/Pakistani/Polish/Portuguese, other, don’t know), where the child was born (Northern Ireland, Great Britain, Ireland, somewhere else) and who the child lives with (Mum and Dad in the same house, Mum for all or most of the time, Mum for half of the time, Dad for half of the time, Dad for all or most of the time or somebody else). There were also several questions related to family affluence. These included a question asking children whether or not they think they have enough money to do the same things as their friends. There were also three items on a family affluence scale (the number of computers/laptops owned by their family, how often they have travelled away on holiday with their family in the last 12 months, whether or not they have a bedroom to themselves and whether or not their family owns a car, van or truck).

A correlation analysis was conducted to examine the relationship between the CNI scale (and its subscales) and the various background factors. The results are presented in Table 2 which shows the Pearson Correlation value (r) and the significance level (p value presented as * or ** where * = p<0.05 and ** = p<0.01). The coefficient of determination (R²) is also presented when the correlation is significant at the 0.05 level or below. In other words if the significance level (p value) is less than 0.05 it indicates that the result is not due to chance. The R² is the amount of variance explained by another variable – the percentage of variance that is common to the two measures, also referred to as the ‘variance explained’ is also presented.
Table 2: Results from a correlation analysis of background factors (the significance level is presented as *= p<0.05, **=p<0.01; N = the sample size, R²= the coefficient of determination - this is the amount of variance explained by another variable).

However, an air of caution is required when interpreting the results in Table 2 given that it is only correlations ranging from 0.20 to 0.35 (Cohen et al, 2011) show only a very slight relationship between variables, although they are statistically significant. Correlations greater than 0.35 allow for group predictions and correlations over 0.85 are high and indicate a close relationship between the variables (Cohen et al, 2011).

As can be seen from Table 2, three of the correlations in relation to gender are greater than 0.20. However, they are lower than 0.35 which means that there is only a very slight relationship between these variables but they can be discussed in relation to an exploratory analysis such as this. Therefore, the overall CNI mean score and the mean scores for the Empathy for Creatures and Enjoyment of Nature subscales are presented for boys and girls on Figure 3.
The correlation analysis and data presented in Figure 3 shows that girls are more positively connected to nature than their male counterparts, have greater empathy for creatures and are more likely to enjoy nature. However, it is important to note that gender only predicts 4.6% of the variance in the overall CNI score, 3.7% of the variance in the Empathy for Creatures score and 4.0% of the variance in the Enjoyment of Nature scores.

### 3.2 Health and well-being

The KLT survey included several items and a scale related to the children’s health-related quality of life. These included questions which asked the children if they are mostly happy or unhappy at school, how their health is (in general) as well as whether or not they have a long term illness. The KLT also included the KIDSCREEN measure – a well cited and researched measure of children’s health-related quality of life and well-being. The items on the KIDSCREEN measure included the following questions: Have you felt fit and well?; Have you felt full of energy?; Have you felt sad?; Have you felt lonely?; Have you had enough time for yourself?; Have you been able to do things in your free time?; Have your parents or guardians treated you fairly?; Have you had fun with your friends?; Have you got on well at school?; Have you been able to pay attention? These questions are a reliable, tied and tested scale and were treated as such for the purposes of the exploratory analysis.

A correlation analysis was conducted to examine the relationship between the CNI scale (and its subscales) and the various health-related quality of life scores. The results are presented in Table 3 which shows the Pearson Correlation value ($r$) and the significance level ($p$ value presented as * or **).
where *\( p < 0.05 \) and **\( p < 0.01 \). As with the presentation for the background factors (Table 2), the coefficient of determination \( R^2 \) is also presented when the correlation is significant at the 0.05 level or below. In other words if the significance level (p value) is less than 0.05 it indicates that the result is not due to chance. The \( R^2 \) is the amount of variance explained by another variable – the percentage of variance that is common to the two measures, also referred to as the ‘variance explained’ is also presented.

<table>
<thead>
<tr>
<th>Variable/scale</th>
<th>Overall CNI</th>
<th>Sense of oneness</th>
<th>Empathy for creatures</th>
<th>Sense of responsibility</th>
<th>Enjoyment of nature</th>
</tr>
</thead>
<tbody>
<tr>
<td>Would you say you are mostly happy or unhappy at school?</td>
<td>r=-0.096**  N=2234  ( R^2=0.009 ) (0.9%)</td>
<td>r=-0.100**  N=2352  ( R^2=0.010 ) (1.0%)</td>
<td>r=-0.023  N=2354</td>
<td>r=-0.073**  N=2349  ( R^2=0.005 ) (0.5%)</td>
<td>r=-0.124**  N=2317  ( R^2=0.015 ) (1.5%)</td>
</tr>
<tr>
<td>In general, how is your health?</td>
<td>r=-0.183**  N=2229  ( R^2=0.033 ) (3.3%)</td>
<td>r=-0.167**  N=2346  ( R^2=0.028 ) (2.8%)</td>
<td>r=-0.089**  N=2348  ( R^2=0.008 ) (0.8%)</td>
<td>r=-0.138**  N=2342  ( R^2=0.019 ) (1.9%)</td>
<td>r=-0.185**  N=2311  ( R^2=0.034 ) (3.4%)</td>
</tr>
<tr>
<td>Do you have a long term illness?</td>
<td>r=0.007  N=2203</td>
<td>r=-0.019  N=2319</td>
<td>r=0.020  N=2318</td>
<td>r=-0.014  N=2315</td>
<td>r=0.015  N=2281</td>
</tr>
<tr>
<td>KIDSCREEN</td>
<td>r=0.208**  N=2222  ( R^2=0.043 ) (4.3%)</td>
<td>r=0.220**  N=2333  ( R^2=0.048 ) (4.8%)</td>
<td>r=0.100**  N=2331  ( R^2=0.010 ) (1.0%)</td>
<td>r=0.145**  N=2329  ( R^2=0.021 ) (2.1%)</td>
<td>r=0.207**  N=2299  ( R^2=0.043 ) (4.3%)</td>
</tr>
</tbody>
</table>

Table 3: Results from a correlation analysis of quality of life scores (the significance level is presented as *\( p < 0.05 \), **\( p < 0.01 \); N = the sample size, \( R^2 \) = the coefficient of determination - this is the amount of variance explained by another variable).

Again, an air of caution is required when interpreting the results in Table 2 given that it is only correlations ranging from 0.20 to 0.35 (Cohen et al, 2011) show only a very slight relationship between variables, although they are statistically significant. Correlations greater than 0.35 allow for group predictions and correlations over 0.85 are high and indicate a close relationship between the variables (Cohen et al, 2011).

As can be seen from Table 3, three of the correlations in relation to the KIDSCREEN measure are greater than 0.20. However, they are lower than 0.35 which means that there is only a very slight relationship between these variables but they can be discussed in relation to an exploratory analysis such as this. Therefore, a higher score on the KIDSCREEN measure was associated with a higher overall CNI score. A higher score on the KIDSCREEN measure was also associated with a higher score on the Sense of Oneness subscale and a higher score on the Enjoyment of Nature subscale. However, it is important to note that the KIDSCREEN score only predicts 4.3% of the variance in the overall CNI score, 4.8% of the variance in the Sense of Oneness scores and 4.3% of the variance in the Enjoyment of Nature scores.
4. Key Findings

This report presents findings from the 2014 Kids Life and Times (KLT) Survey to include results from the Royal Society for the Protection of Birds’ (RSPB) Connection to Nature questionnaire for 8-12 year olds. In total, 2240 children responded to the questions on Connection to Nature (CNI) questions within Version one of the KLT survey. The overall CNI scores and the children’s scores on the various subscales were calculated (Section 2). An indication of the children’s connection to nature was also calculated (Section 2) in relation to the RSPB’s (2013) realistic and achievable target of 1.5 (on a scale from -2 to 2). In order for comparisons to be made with an earlier RSPB (2013) report a descriptive analysis was conducted (Section 2). The overall Connection to Nature scores were also broken down by gender and school location – both urban/rural and according to Education and Library Board (ELB). Finally a brief exploratory analysis was conducted in order to explore correlations between the background factors and measures of the children’s quality of life (Section 3). The key findings are outlined below:

- The mean Connection to Nature scores for the children in this study was **1.05** (n=2240, SD=0.58), on a scale from -2 to 2. These results indicate a moderately high level of connection to nature among these children, a large sample of 10 and 11 year olds in Northern Ireland;
- On consideration of the subscales, the children’s mean scores were higher (on a scale from -2 to 2) in relation to their Empathy for Creatures (**1.35**) and Sense of Oneness (**1.33**) in comparison to their Sense of Responsibility (**1.07**) and their Enjoyment of Nature (**0.77**)..
- Only a quarter (25%) of the children in this sample can be considered as meeting the RSPB’s (2013) target in relation to their overall score on the CNI scale.
- Of all four subscales, 57% of children met the RSPB’s target of scoring 1.5 or higher in relation to their Empathy for Creatures and 45% scored 1.5 or higher in relation to their Sense of Oneness.
- It is worth noting that only 29% of children met the RSPB’s target with regard to their Sense of Responsibility and, worryingly, only 18% of children scored 1.5 or higher in relation to their Enjoyment of Nature.
- There are slight differences in the mean scores (on a scale from -2 to 2) between girls (**1.17**) and boys (**0.92**), between children in rural schools (**1.03**) than those in urban schools (**1.08**). Children in schools in the Western ELB (**1.10**) had the highest score by region and children in the Belfast ELB (**1.00**) had the lowest scores by region.
- The correlation analysis shows that girls are more positively connected to nature than their male counterparts, have greater empathy for creatures and are more likely to enjoy nature. However, an air of caution is required when interpreting the findings from the correlation analyses related to gender because they show only a very slight relationship between variables.
• In relation to the RSPB’s (2013) target for children’s connection to nature, these findings particularly highlight that boys and children in urban areas in Northern Ireland fall even further below the target score of 1.5 when compared their counterparts which merits further attention.

• A higher score on the KIDSCREEN measure was associated with a higher overall CNI score. A higher score on the KIDSCREEN measure was also associated with a higher score on the Sense of Oneness subscale and a higher score on the Enjoyment of Nature subscale. However, an air of caution is required when interpreting the findings from the correlation analyses related to the KIDSCREEN measure because they show only a very slight relationship between variables.

Overall, the findings reported here indicate a moderately high level of connection to nature among these children, a large sample of 10 and 11 year olds in Northern Ireland. However, the overall score of 1.05 falls below the RSPB’s (2013) realistic and achievable target of 1.5 for every child. In addition, the mean connection to nature score is lower than average for boys and children living in urban areas.

The value and importance of outdoor learning and a connection to nature is well cited in relation to health benefits, educational impacts (cognitive, affective, interpersonal, social, physical and behavioural), community and environmental benefits (Moss, 2012). In particular, the current study shows that connection to nature and the children’s rating of their health and well-being are correlated – children who are more connected to nature rate their health and well-being as significantly higher. This supports recent findings and directives to increase children’s time in the outdoors in order to improve their mental health (MIND, 2007) with Barton and Petty (2010) reporting that as little as five minutes of ‘green exercise’ can have significant mental health benefits and a TNS survey for the National Trust in 2010 reporting that 80 per cent of the happiest people in the UK said they have a strong connection with nature, compared with just 37 per cent of the unhappiest.

The reports and findings from the other studies cited here in relation to health and well-being are particularly important in relation to the current sample given that only 18% of children in this sample meet the RSPB’s (2013) target score of 1.5 in relation to their enjoyment of nature. Whilst the children in this sample score better in relation to their empathy for creatures, their sense of oneness and responsibility they do not enjoy nature which might be related to their opportunities for experiencing nature first-hand. The findings from this study lead to a call for a greater emphasis on opportunities for spending time outdoors engaging with and enjoying nature given the correlation with health and well-being.

The findings in this report are limited to the quantitative analysis of questions set on the KLT survey in relation to specified background factors and one health and well-being scale. However, the discovery of correlations within these domains calls for further research in the area for a much deeper investigation into why these correlations exist and the potential links between children’s connection to nature and other benefits (educational, community and environmental).
References


## Appendix

An overview of the analysed questions/scales from the KLT survey

<table>
<thead>
<tr>
<th>Questions/Scale (if applicable)</th>
<th>Response options/response groups</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Background factors</strong></td>
<td></td>
</tr>
<tr>
<td>Gender</td>
<td>Boy, Girl</td>
</tr>
<tr>
<td>School location</td>
<td>Urban, Rural</td>
</tr>
<tr>
<td>School location (ELB)</td>
<td>Belfast ELB, North Eastern ELB, South Eastern ELB, Southern ELB, Western ELB</td>
</tr>
<tr>
<td>Identity</td>
<td>Northern Irish, Ulster, Irish, British, Bangladeshi/Chinese/Indian/Irish Traveller/Lithuanian/Pakistani/Polish/Portuguese, Other, Don’t know</td>
</tr>
<tr>
<td>Where the child was born</td>
<td>Northern Ireland, Great Britain or Ireland, Somewhere else</td>
</tr>
<tr>
<td>Who the child lives with</td>
<td>Mum and Dad in the same house, Mum for all or most of the time, Mum for half of the time and their Dad for half of the time, Dad for all or most of the time or somebody else</td>
</tr>
<tr>
<td>Do you have enough money to do the same things as your friends?</td>
<td>Never, Seldom, Quite often, Very often, Always</td>
</tr>
<tr>
<td><strong>Family affluence scale</strong></td>
<td></td>
</tr>
<tr>
<td>How many computers or laptops do your family own?</td>
<td>None, One, Two, Three or more</td>
</tr>
<tr>
<td>Question</td>
<td>Options</td>
</tr>
<tr>
<td>-------------------------------------------------------------------------</td>
<td>----------------------------------------------</td>
</tr>
</tbody>
</table>
| How often in the past 12 months did you travel away on holiday with your family? | Not at all
                                             Once
                                             Twice
                                             More than twice                               |
| Do you have a bedroom to yourself?                                      | Yes                                          |
|                                                                          | No                                           |
|                                                                          | I don’t know                                 |
| Does your family own a car, van or truck?                               | Yes                                          |
|                                                                          | Yes, two or more                             |
|                                                                          | No                                           |
| **Quality of life questions/scales**                                    |                                              |
| Would you say you were mostly happy or unhappy at school?               | Mostly happy
                                             Mostly unhappy
                                             I can’t decide                              |
| In general, how is your health?                                         | Excellent
                                             Very good
                                             Good
                                             Fair
                                             Poor                                         |
| Do you have a long term illness?                                        | Yes                                          |
|                                                                          | No                                           |
|                                                                          | I don’t know                                 |
| **KIDSCREEN**                                                           |                                              |
| Have you felt fit and well?                                             | Not at all
                                             Slightly
                                             Moderately
                                             Very
                                             Extremely                                     |
<p>| Have you felt full of energy?                                           | Never                                        |
|                                                                          | Seldom                                       |
|                                                                          | Quite often                                  |
|                                                                          | Very often                                   |
|                                                                          | Always                                       |
| Have you felt sad?                                                      | Always                                       |
|                                                                          | Often                                        |
|                                                                          | Sometimes                                    |
|                                                                          | Seldom                                       |
|                                                                          | Never                                        |
| Have you felt lonely?                                                    | Always                                       |
|                                                                          | Often                                        |
|                                                                          | Sometimes                                    |
|                                                                          | Seldom                                       |
|                                                                          | Never                                        |
| Have you had enough time for yourself?                                  | Never                                        |
|                                                                          | Seldom                                       |
|                                                                          | Quite often                                  |
|                                                                          | Very often                                   |
|                                                                          | Always                                       |</p>
<table>
<thead>
<tr>
<th>Question</th>
<th>Options</th>
</tr>
</thead>
<tbody>
<tr>
<td>Have you been able to do things in your free time?</td>
<td>Never, Seldom, Quite often, Very often, Always</td>
</tr>
<tr>
<td>Have your parents or guardians treated you fairly?</td>
<td>Never, Seldom, Quite often, Very often, Always</td>
</tr>
<tr>
<td>Have you had fun with your friends?</td>
<td>Never, Seldom, Quite often, Very often, Always</td>
</tr>
<tr>
<td>Have you got on well at school?</td>
<td>Not at all, Slightly, Moderately, Very, Extremely</td>
</tr>
<tr>
<td>Have you been able to pay attention?</td>
<td>Never, Seldom, Quite often, Very often, Always</td>
</tr>
</tbody>
</table>

**Connection to Nature**

**Enjoyment of Nature subscale**
- I like to hear different sounds in nature
- I like to see wild flowers in nature
- When I feel sad, I like to go outside and enjoy nature
- Being in the natural environment makes me feel peaceful
- I like to garden
- Collecting rocks and shells is fun
- Being outdoors makes me happy*

**Empathy for Creatures subscale**
- I feel sad when wild animals are hurt
- I like to see wild animals living in a clean environment
- I enjoy touching animals and plants
- Taking care of animals is important to me

**Sense of Oneness subscale**
- Humans are part of the natural world
- People cannot live without plants and animals
- Being outdoors makes me happy*

**Sense of Responsibility subscale**
- My actions will make the natural world different
- Picking up trash on the ground can help the environment
- People do not have the right to change the natural environment

*Although this question appears in two subscales, it is only asked once on the questionnaire.