Rural-Urban Differences in Environmental Concern in Canada

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ABSTRACT Distinctions between rural and urban populations are well documented in environmental sociology literature. Rural and urban places may exert different influences on participation in environmentally supportive behavior (ESB) as well as on other forms of environmental concern (EC). The influence of these distinct geographies may be due to present circumstances or because of childhood socialization in these places. Using data from a national survey in Canada (n = 1,664), we use cognitive (basic values, environmental worldview, and environmental attitude) and behavioral indicators (public and private sphere) of EC to explore differences among rural and urban populations and we include analyses accounting for place of socialization.

We extend the conventional private sphere category of ESB by including stewardship behaviors. Results showed few differences between rural and urban residents on indicators of EC. Rural residents, however, scored higher on altruistic values, placed a higher priority on the environment, and reported higher participation in recycling and stewardship behaviors. Analysis that included place of socialization showed differences on environmental worldview, basic values, and some ESB. In terms of ESB, we conclude that residence and place of socialization may be less of a factor than opportunity and highlight the importance of providing services and facilities. We recommend future research on residence and ESB include a variety of behaviors that reflect opportunities for both rural and urban residents.

Introduction

In response to the negative impact that humans have had on the natural environment, research efforts from a variety of disciplines have sought to understand and ameliorate human-caused problems. Within the social sciences, efforts have largely focused on identifying factors that induce an individual to practice behavior that has a positive (or less negative) impact on the environment. One factor that has received considerable attention is place of residence. Early studies of environ-
mental concern among rural and urban citizens generally showed that urban residents exhibited greater concern (e.g., Arcury and Christenson 1993; Fortmann and Kusel 1990; Jones and Dunlap 1992; Lowe and Pinhey 1982; Van Liere and Dunlap 1980). More recent studies, however, suggest that differences among rural and urban citizens may be diminishing. Migration of urban residents with pro-environmental values to rural communities (Smith and Krannich 2000), rural communities gaining access to environmental services such as recycling facilities (Derkson and Gartrell 1993; Saphores et al. 2006), and the decline in the economic dependency of rural areas on natural resource industries (Jones et al. 2003) have been cited as factors influencing the growing similarities between rural and urban populations.

Although considerable attention has been focused on the topic of rural-urban differences, several gaps in the literature remain. First, most of the literature on rural-urban differences has examined populations in the United States, where there has been a large migration of urban residents to rural areas. The extent to which rural-urban differences exist in other countries that have not experienced the same population changes is largely unknown. Second, studies of rural-urban differences have not taken into consideration the influence of childhood socialization context (a rural or urban upbringing) on environmental concern later in life. Finally, some studies have suggested that conceptual bias in the measurement of environmental concern have lead to overestimating urbanites’ concern (Jones et al. 1999). For example, reports on environmental behavior often use several items that relate to infrastructure or opportunities more readily available in urban areas, such as curbside recycling and public transit. This paper addresses these issues by examining similarities and differences between urban and rural residents with respect to environmental concern. Specifically, we address the following objectives:

1. To extend the rural-urban analysis of environmental concern to citizens in Canada, a predominately urban country.

2. To provide some nuance to the traditional rural-urban dichotomy by including the influence of place of childhood socialization on current environmental concern.

3. To extend the current literature by including behavioral items that take into consideration potential contextual differences between rural and urban communities.

**Background**

This article explores similarities and differences between urban and rural residents with respect to their environmental concern. Environ-
mental concern refers to a suite of values, worldviews, attitudes, and behaviors that reflect respondents’ concern for the environment. The quantity of research since the 1970s indicates the importance placed on understanding environmental concern (Buttel and Flinn 1978; Catton and Dunlap 1978; Dietz et al. 1998; Lowe et al. 1980; Norlund and Garvill 2002; Schultz 2000; Scott and Willits 1994). Although some of these researchers have suggested that public concern for the environment has fluctuated over the years, environmental concern continues to be a prominent topic of research. In recent years, new issues such as climate change have emerged in addition to many existing challenges such as water quality, air pollution, waste management, species at risk, and soil contamination. Thus, better understanding environmental concern continues to be a relevant goal.

Rural-Urban Differences

Much of the earlier literature on the influence of residence on environmental concern focused on rural-urban differences (Arcury and Christenson 1993; Fortmann and Kusel 1990; Jones and Dunlap 1992; Lowe and Pinhey 1982; Van Liere and Dunlap 1980). This work generally reported that urban residents are more likely to be concerned about the environment and act on this concern. These differences have been attributed to rural residents having lower education levels, lower income, and a more utilitarian value orientation. The utilitarian value orientation, or extractive commodity hypothesis, refers to the likelihood of rural residents having an economic dependence on resource extraction, thus valuing economic growth over environmental protection (Jones et al. 2003). In contrast, urban residents are more likely to have higher levels of education and income as well as exposure to higher levels of environmental degradation, such as pollution, resulting in values, beliefs and attitudes that are more amenable to environmental protection (Saphores et al. 2006; Van Liere and Dunlap 1980).

Other studies, however, suggest that differences in environmental concern between rural and urban individuals may be diminishing. For example, Tarrant and Cordell (1997) found that rural-urban distinctions did not affect participation in environmental behavior, where ‘rural’ was defined as a ‘farm’ or ‘rural area but not a farm’. Similarly, Jones, et al. (1999) found no differences between urban and rural residents in the southern United States on cognitive, affective, and behavioral indicators of environmental concern when the effects of demographic variables were controlled. McFarlane and Hunt (2006) found no differences among urban and rural Canadians (where ‘rural’
is living in a resource-dependent community) on the number of environmental activism behaviors and McFarlane and Boxall (2003) found that residing in an urban environment (defined as the two cities with populations over 100,000 in a Canadian province) did not affect involvement in environmental activism directed at the forest sector.

The narrowing gap between urban and rural differences has been partially explained by the availability of community environmental services. Many community environmental services, such as recycling facilities and public transit, are more readily available in an urban settings. The diminishing effect of residence has been attributed to rural communities gaining access to some of these services (Derkson and Gartrell 1993; Saphores et al. 2006). However, other opportunities, such as maintaining habitat or reducing one’s ecological footprint by growing some of one’s own food, have rarely been accounted for and may be more easily practiced by rural residents. In this study, we try to provide a balance of behaviors by including some behaviors that might be more easily practiced in a rural setting and others that might be more amenable to an urban setting.

Another factor that can influence rural-urban differences is increased movement between urban and rural areas (Smith and Krannich 2000). Fortmann and Kusel’s (1990) study lends evidence to the notion that urban residents who move to rural areas are more involved in the political aspects of environmentalism. Similarly, Jones et al. (2003) found that amongst a rural population, migrants from urban areas participated in more activist behaviors than did rural residents. To address the issue of migration and to account for place of socialization, we use a measure documenting not only the current place of residence but also where people were raised. We argue that whether one is raised in a rural or an urban environment can affect future perceptions and interactions with the natural environment.

**Conceptualizing Environmental Concern**

Environmental concern has been conceptualized as consisting of behavioral and cognitive dimensions. The behavioral dimension includes an individual’s direct involvement in actions aimed at benefiting the environment. Stern (2000) called these ‘environmentally significant behavior’. We use the term environmentally supportive behavior (ESB) to describe behaviors that are undertaken as a manifestation of one’s pro-

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1 Fortmann and Kusel only sampled in rural areas and then distinguished between ‘newcomers’ and ‘long-standing’ residents. A long-standing resident is one who lived in the area for at least ten years.
environmental values and beliefs. The cognitive dimension of environmental concern includes basic values, environmental worldviews, and attitudes. As such, the cognitive elements provide an indication of the propensity to act to benefit the environment or support environmental protection policies and initiatives.

The behavioral dimension of environmental concern has included several ESB classified broadly as public and private sphere (Stern 2000). Public sphere behaviors include activities directed at changing public policy and the acceptance of policies directed at protecting the environment. Typically, private sphere behaviors include consumer purchases and the use and disposal of personal and household goods that can have a significant positive (or reduction of negative) impact on the environment. Private sphere behaviors generally take place in a household context.

Despite the successes in defining ESB and the efforts made to explain variation in participation (Dietz et al. 1998; Norlund and Garvill 2002; McFarlane and Hunt 2006), many studies have favored urban participants by including ESB that are more easily practiced in an urban environment (e.g., public transit, recycling) (Blake 2002). We attempt to address this potential bias by selecting a wider array of ESB indicators, some of which may be more accessible to urban residents and some more accessible to rural residents. In order to more accurately reflect rural citizens’ ESB, we add a dimension of stewardship behavior in our study. The inclusion of these behaviors in conjunction with behaviors that might be more feasible in an urban environment provides a more comprehensive analysis of the effects of place of residence. Thus, in keeping with earlier research, we include behaviors typical of private and public spheres but extend the private sphere to include stewardship behaviors (Figure 1).

Basic values are broad, fundamental guiding principles in an individual’s life that may guide the formation of other environmental cognitions (worldview and attitudes) and influence ESB. We use Stern et al.’s (1998) 15-item scale to assess basic values. The authors derived this scale from 12 of 57 of Schwartz’s Values Inventory items and added three items that are meant to reflect environmental values. Schwartz conceptually arranged ten individual values categories to reflect two axes: openness to change through traditional values, and self-enhancement (egoism) through self-transcendent (altruism) values. Altruistic values have been shown to have a positive influence on ESB (Dietz et al. 1998, Aoyagi-Usui et al. 2003). Altruistic values include protecting the Earth, unity with nature, a world at peace, and social justice, among others. Egoistic values include having authority, leading
an exciting life, experiencing variety, and exploring, among others. Results are mixed for the relationship between egoistic values and environmental concern. When there is a demonstrable benefit to the self, then egoism may be positively related to environmental concern. Egoism is often positively related to activism, or public ESB (Stern et al. 1994; Stern et al. 1995; Stern 2000; Poortinga et al. 2004).

The term ‘worldview’ refers to deeply held beliefs regarding the world in which one lives (Dake 1991). More specifically, one’s environmental worldview could describe their beliefs about the relationship between humans and the environment, and about the environmental responsibility of human beings. For example, the popular New Ecological Paradigm (NEP) scale measures the degree to which an individual views interconnectedness between human beings and the natural world (Dunlap et al. 2000). The relationship between environmental worldview and various indicators of ESB has shown that individuals with a pro-environmental worldview tend to be more involved in ESB (Stern et al. 1995; Stern et al. 1999; Stern et al. 1993; Dietz et al. 1998).

Another cognitive element that has been used in conceptualizing environmental concern is an individual’s attitude towards the environment. Attitudes have several conceptualizations, one of which is specific beliefs. Unlike more general environmental attitudes, specific beliefs can represent judgements of acceptable or normative standards related to specific policies and actions (Zinn et al. 1998). In this study, we
represent normative standard for the environment as the degree to which an individual considers the environment in their daily lives.

Methods

The Sample
A sample of Canadian residents \((n = 5794)\) was selected from a national directory supplied by a research-marketing firm (SM Research Inc.). The sample was stratified to include equal numbers of urban and rural residents and representation proportional to the populations of Canada’s ten provinces. We used Statistics Canada’s definition of urban and rural: urban is a population center with more than 10,000 people and rural is located outside the commuting zones of urban areas (Du Plessis et al. 2001). Respondents within a household were randomly selected by requesting that the resident who most recently had a birthday and was over eighteen years old complete the survey. The survey package was printed in both official languages of Canada, French and English. Our survey package was mailed in February 2004 and included an introductory letter, the questionnaire and a stamped and addressed return envelope. Two weeks after mailing the survey package, we sent a reminder card to our entire sample. Four weeks later we sent another complete survey package to non-respondents. This mailing schedule was based on Dillman’s Tailored Design Method (Dillman 2000).

The Variables
The variables used in this study were part of a larger questionnaire that collected information related to barriers and opportunities for ESB. Residence and demographic characteristics. In order to create the residence variable, which is the focal measure of our analyses, respondents indicated their place of residence until their 18th birthday and their current residence self-selecting both as either rural or urban. A definition was provided for each: urban was defined as an area with more than 10,000 residents, rural as areas with a population less than 10,000 and geographically distinct from urban areas. We developed a residence continuum using the two temporal and the two spatial residence categories mentioned above.

The continuum is based on where a person lived until their 18th birthday (rural or urban) and where they currently reside (rural or urban). The categories are ordered from one (rural socialized, currently rural) through four (urban socialized, currently urban), based on the influence of past residence (or place of socialization). The category rural-rural \((n = 533)\), for example, indicates the respondent
lived in a rural setting until 18 years old and currently resides in a rural area. The ordering of the two intermediate categories – rural-urban \((n=291)\) and urban-rural \((n=249)\) – is based on the assertion that the type of residence in which a person lived until their 18th birthday will have more bearing on their environmental concern than where they currently reside (Hutcheon 1999; Rokeach 1973). Respondents in the rural-urban category are assumed to have stronger rural socialization influences than people in the urban-rural category. The final category, urban-urban \((n=522)\), is comprised of respondents who grew up in an urban setting and currently reside in an urban area.

Age, sex, and education are included as control variables. Age is measured as year of birth and converted to years for the analysis. Sex is measured as 1=male and 0=female. Education is measured as the highest level of educational attainment using 11 categories ranging from never attended school to completing a graduate university degree.

Behavioral dimension. The ESB items incorporate several private and public sphere behaviors from previous studies (Blake 2002; Dietz et al. 2002; Stern et al. 1995; Tindall et al. 2003) and additional items designed to reflect stewardship ESB. We aimed to phrase the items to include activities that could be practiced by either urban or rural residents, though we acknowledge that those who have a detached dwelling, particularly in a rural area could more easily practice the stewardship items. Our intent with the selection of stewardship items was not to eliminate the urban bias of past surveys, but to allow for the demonstration of a distinct form of ESB that has been underrepresented in previous literature. That is, we created a list of ESB that contained some elements biased toward urban residents (i.e., public transit), some biased toward rural residents (i.e., restoring habitat on your property), and some equally available to both (i.e., choosing to reduce overall consumption). Overall, we tried to balance the number of items between those biased toward rural and urban to provide equal opportunities for both rural and urban participants to demonstrate their ESB.

Principal components analysis revealed four ESB factors: reduce, recycle, stewardship, and public (Table 1). Reduce ESBs include water and energy conservation, and reduction of packaging and consumer goods. All items were measured on a scale of “never”, “rarely”, “sometimes”, “often”, and “always”. The items were summed as a single construct and ranged from zero to 16 (Cronbach’s alpha = 0.755). Recycle ESB includes using a recycling facility, composting refuse, and reusing goods rather than throwing them away. As with Reduce ESB, each item was measured on a scale of “never”, “rarely”, “sometimes”, “often”, and “always”. The items were summed as a
single construct and ranged from zero to 12 (Cronbach’s alpha = 0.575). Stewardship ESB includes three items: protecting or improving natural areas, tree-planting, and growing vegetables in a garden. The first two items were coded on a scale of “never”, “once in the past 6–10 years”, “several times in the past 6–10 years”, “once in the past 5 years”, and “several times in the past 5 years” with a “not applicable” option. Having a garden to grow vegetables was measured as a binary variable (yes/no). The items were summed as a single construct that range from zero to 9 (Cronbach’s alpha = 0.573). Although the reliability scores are below the traditionally accepted level of 0.7, values around 0.6 are considered to be acceptable in exploratory research (Hair et al. 1998). Public sphere ESB includes five items that relate to influencing policy through support of
environmental organizations or expressing environmental concerns is a public forum. All were coded on a Likert scale of “never”, “sometimes”, “often” and “always”. The items were summed and range from zero to 15 (Cronbach’s alpha = 0.703).

Cognitive dimension. We used Stern et al.’s (1998) 15-item values scale to assess basic values. Respondents rated each item on its importance to them on a Likert scale ranging from 1 = not at all important to 7 = of the highest importance. We conducted a factor analysis on the items that revealed three categories: altruistic, egoistic, and traditional (Table 2). The altruistic factor included the three environmental values that Stern et al. (1998) added to Schwartz’s items, as well as three social justice items (Cronbach’s alpha = 0.868). The egoistic factor included Schwartz’s self-enhancement sphere (Cronbach’s alpha = 0.776). The traditional factor resembled Schwartz’s traditional sphere. However, because the reliability was low (0.458), this factor was dropped from subsequent analyses. The altruistic and egoistic items were summed and range from seven to 49 and five to 35, respectively (Table 2).

Environmental worldview was assessed using the NEP scale (Dunlap et al. 2000). Each of the 15 items in the NEP scale was rated on a five-point Likert-type scale ranging from one (strongly agree) to five (strongly
disagree), with an intermediate category (unsure). Following Dunlap et al.’s (2000) recommendation and the methodology used in existing research (Skogen 1999; Kotchen and Reiling 2000; Zelezny et al. 2000), we treated the NEP as a single dimension and reverse coded anti-ecological statements such that a summed score represented a pro-ecological orientation. (Cronbach’s alpha = 0.755).

To assess normative standards related to the environment, respondents indicated the degree to which the environment is a priority in their daily lives. Response options included a high priority: ‘I have oriented my entire lifestyle around my concern for the environment’; a low priority: ‘My impact on the environment is a very low priority for me’; and an intermediate option: ‘I always consider what my impact is when I act, but often time and resources prevent me from doing what I know is best’. Responses were coded as an ordinal variable (low priority = 1, intermediate = 2, high = 3).

Analysis

The analysis proceeds in three stages, according to the three objectives of the paper. To address the first objective (to extend the rural-urban analysis to citizens of Canada), we compare all currently rural and currently urban respondents for all indicators of environmental concern. Because our sample was stratified to provide equal numbers of rural and urban respondents, we weight the data when making generalizations about the Canadian population to approximate the actual distribution of rural and urban residents (79% urban, 21% rural). We address the second objective (accounting for place of socialization) by using a one-way analysis of variance (ANOVA) to explore differences in environmental concern across the four residence categories. Next, we use ordinary least squares (OLS) regression to address objective three (to take into consideration the contextual differences between rural and urban communities) by examining the influence of residence on ESB controlling for demographic variables and cognitive indicators of environmental concern.

Results

Response Rate

Of the 5,794 questionnaires mailed, 994 could not be delivered and 42 were returned but contained incomplete information and thus were excluded from the analyses and the total response rate. Although returned, unusable surveys are sometimes included in the calculation of response rate, we base our calculation on Baruch’s (1999) comparative
analysis of response rates. Baruch concludes that the relevant response rate should include only returned, usable surveys. A total of 1,706 questionnaires were returned, of these, 1,664 were usable. Adjusting for the undelivered and unusable, this represents a 34.7% response rate.

Non-Response
We performed a non-response test to determine whether non-respondents have different demographic characteristics from respondents. We telephoned seventy-one non-respondents and spoke with fifty-three individuals. There was no clear indication of a demographic bias in our sample. The average age of the non-respondents is forty-nine compared to fifty-three for respondents. Average level of education is ‘some technical school’ for both non-respondents and respondents. The percentage of non-respondents that grew up in a rural area is slightly higher than those who responded. Current residence is similar between the respondents and non-respondents. The respondents have a higher proportion of men than exists in the Canadian population (Statistics Canada 2001). The level of education attained for the respondents and the data from Canada’s 2001 census are similar (Statistics Canada 2001). Although the response rate is at the lower end of acceptability, given the results of the non-response checks we feel that there is not a substantive non-response bias.

Respondent Characteristics
Respondents are comprised of 56% men and the mean age is 53 years (sd = 15.21), while the mean level of education is 13.71 (sd = 2.80). About 59% of respondents indicated they currently live in an urban area and approximately 41% indicated they live in a rural area. About 40% were socialized in an urban area and currently live in an urban area, and 21% were socialized in a rural area and currently live in an urban area. Of those who currently reside in a rural community, 13% were socialized in an urban area and 26% were socialized in a rural region.

Objective 1: Canadian Environmental Concern
Overall, Canadians in our study showed a moderate level of pro-environmental beliefs, as measured by the NEP (M = 34.36, sd = 8.88), strong altruistic values (M = 41.07, sd = 6.78), and weak egoistic values (M = 24.61, sd = 5.62). They considered the environment as neither a high nor a low priority in their lives, with 72% indicating they are restricted from always acting on their priority for the environment, 15%
saying the environment is a low priority for them, and 11% saying the
environment is a top priority and that they have oriented their lives
around this concern.

Canadians’ participation in ESB was most common for reduce
activities (e.g. reducing electricity and water consumption) \((M = 11.31
sd = 3.02,\) out of a possible maximum of 16). The least common behaviors
were in the public sphere (e.g. attending environmental protests and
writing to politicians about environmental issues) \((M = 1.53, sd = 2.17,\)
out of a possible maximum of 15). Level of participation in the
stewardship behaviors (e.g. restoring habitat and planting trees) was quite
low \((M = 4.22, sd=3.11\) out of a possible maximum of 9) and participation
in recycle behaviors (e.g. using a recycling facility and reusing items) was
moderate \((M = 7.70, sd=2.78\) out of a possible maximum of 12).

A comparison of respondents who currently reside in rural and urban
areas using an independent samples t-test shows that there are few
differences between them on the cognitive indicators of environmental
concern (attitude, NEP, basic values) (Table 3). There were no
significant differences on the egoistic values score or environmental
worldview and slight differences in priority for the environment and
altruistic values scores. There were differences between rural and urban
residents on their participation in recycle and stewardship behaviors
with rural residents showing higher levels of participation in both. This
difference is particularly great for stewardship behavior.

**Objective 2: Place of Socialization**

Examining the influence of place of socialization, ANOVA results
(Table 3) show that respondents who were raised in an urban
environment and currently reside in a rural area (urban-rural) scored
higher on environmental worldview and lower on altruistic values and
egoistic values than their neighbors who were raised in a rural
environment (rural-rural). However, although statistically significant,
these differences are not large.

The urban-rural group also differed from other residence categories
on ESB. They participated in more recycle behaviors than the urban-
raised residents who remain in an urban environment (urban-urban)
but they participated in fewer reduce behaviors than the rural-urban
group. Although the urban-rural group also reported a higher level of
participation in public ESB than the other groups, these differences are
not statistically significant. Regardless of where they were socialized,
rural residents reported a higher level of participation in stewardship
ESB than urban residents.
Table 3. Environmental concern by residence; current* and accounting for place of socialization** (n=1,597)

<table>
<thead>
<tr>
<th></th>
<th>Current residence</th>
<th>Socialization categories***</th>
<th>F test</th>
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<tbody>
<tr>
<td></td>
<td>Rural</td>
<td>Urban</td>
<td>t test</td>
</tr>
<tr>
<td>Environmentally supportive behavior:</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Reduce</td>
<td>11.18</td>
<td>11.41</td>
<td>−1.453</td>
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<tr>
<td>Recycle</td>
<td>7.91</td>
<td>7.54</td>
<td>2.5301</td>
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<tr>
<td>Stewardship</td>
<td>4.80</td>
<td>3.83</td>
<td>6.1743</td>
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<td>Public</td>
<td>1.63</td>
<td>1.50</td>
<td>1.046</td>
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<td>Environmental attitude:</td>
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<tr>
<td>Priority</td>
<td>1.99</td>
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<td>Environmental worldview:</td>
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<tr>
<td>New Ecological Paradigm</td>
<td>54.74</td>
<td>55.36</td>
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<td>Basic values:</td>
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<tr>
<td>Altruistic</td>
<td>41.49</td>
<td>40.79</td>
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<td>Egocentric</td>
<td>24.34</td>
<td>24.80</td>
<td>−1.575</td>
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</table>

Notes: *Independent samples t-test; **One-Way ANOVA; ***any two means that do not share a letter are significantly different at p<.05 according to Scheffé’s post-hoc method; 1 = p<.05; 2 = p<.01; 3 = p<.001
Objective 3: Exploring the Influence of Residence on ESB

Results of the OLS regression are presented in Table 4. Model 1 for each of the four behavior categories uses the residence categories (with rural-rural as the reference group) as independent variables. Model 2 for each behavior category then controls for demographic and cognitive measures. Across the behavior categories, Model 1 shows that there are no differences among the residence groups on reduce and public behaviors; where an individual was socialized does not influence participation in these behaviors. People residing in urban areas, from rural areas or from urban areas, participate less frequently in stewardship behaviors than people who were socialized and currently reside in rural areas (reference category). Urban-urban residents also have lower participation in recycle behaviors than the rural-rural category. However, the socialization variables explain little of the observed variance in ESB (< 1.0% to 8.0%).

When we control for demographics (age, sex, and education) and the cognitive indicators of environmental concern (basic values, environmental worldview, and attitude), the effects of residence remains (Table 4, Model 2). However, for reduce ESB, rural-urban respondents now participate significantly more than the rural-rural group.

Demographic variables also affected ESB but were inconsistent in their effects. Older respondents participated in higher levels of ESB, except on stewardship behavior. Higher levels of education were associated with higher levels of participation in stewardship and public ESB. Men participated in higher levels of stewardship ($b = .094; p < .01$) but lower levels of reduce behaviors. Of the cognitive indicators, environmental worldview and attitude had a significant positive effect on all ESB categories, except stewardship. Of the basic values, only egoism had a significant association with public ESB. Including the demographic and cognitive environmental concern variables increased the explained variance to between 5% and 17%.

Discussion

The results of this study provide several contributions to the literature. First, as far as we know, this is the only study of environmental concern in Canada that considers place of socialization and stewardship activities. Existing Canadian studies have focused on specific types of behavior such as environmental activism (McFarlane and Hunt 2006; Tindall et al. 2003) and recycling (Derksen and Gartrell 1993) and are often limited in scope to a single province (e.g. Tindall et al. 2003) or geographic area (e.g. Wall 1995). Our study suggests that Canadians have a moderately pro-
Table 4. Ordinary Least Squares Regression Models of ESB and residence, controlling for demographics and additional measures of environmental concern (n=1,597)

<table>
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<tr>
<th>MODEL</th>
<th>Reduce 1</th>
<th>Reduce 2</th>
<th>Recycle 1</th>
<th>Recycle 2</th>
<th>Stewardship 1</th>
<th>Stewardship 2</th>
<th>Public 1</th>
<th>Public 2</th>
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Notes: 1 = p < .05; 2 = p < .01; 3 = p < .001
environmental worldview; they tend to consider the environment in their daily lives but recognize that they do not do as much as they could to protect the environment. They are taking steps to reduce their overall consumption and have moderate levels of participation in recycle behaviors but low participation in public and stewardship ESB. This type of participation is consistent with other studies (Derksen and Gartrell 1993; Theodori and Luloff 2002) that have shown that the characteristics of specific ESBs such as convenience (e.g. curbside recycling) and the level of financial resources required (e.g. planting trees) can affect participation.

Second, our results suggest that there are more similarities than differences between rural and urban residents on environmental concern. There were few differences on the cognitive indicators and only recycle and stewardship ESB showed differences. The higher level of participation in stewardship among rural residents probably reflects more opportunity to conduct the activities rather than a greater conviction of rural residents to act. Clearly, the stewardship dimension is biased towards rural areas where many people live on properties with land available for conservation. We intentionally included this bias to counter some of the traditionally studied behaviors that are more readily available in urban areas (e.g. recycling, using public transit). Our results suggest a convergence of rural and urban residents on their levels of participation on the more traditional ESBs. These results are consistent with the work of Jones et al. (1999; 2003), Smith and Krannich (2000) and Fortmann and Kusel (1990), all of whom found weakening differences in ESB among rural and urban respondents. While these studies, which were conducted in the United States, attributed the decline to an ‘urban greening’ of rural areas, that is, an influx of educated, environmentally concerned urbanites to rural areas, our results suggest a different trend. Although the urban-rural group reported a stronger environmental worldview and weaker egoistic values than the rural-rural category, this concern does not translate into higher rates of participation in ESB.

A good indicator of converging rural and urban ESB participation is evident in the public ESB category which typically includes protest activities. Those who participate are often categorized as young, idealistic, urbanites. Our results, however, suggest that participation in public sphere behaviors is not the domain of the young and urban. We found no differences between rural and urban residents and participation increased with age. Environmental protests should not be dismissed as the views of a few young radicals. Regardless of where they live, the Canadian public appears to be sympathetic to the cause of the environment. Factors inhibiting greater participation in public ESB
may relate more closely to a lack of time than to a lack of concern for the environment. Tindall et al. (2003) found evidence for this possibility; the authors found that even for professional environmentalists, the time required for protest activities was incompatible with their typical schedule of paid and unpaid work.

Third, our results do not support the hypothesis that place of socialization effects environmental concern in adulthood. The urban-rural group was the only group that showed differences across several indicators. This group could represent the newcomers to rural areas (some support for the newcomer hypothesis advanced by Fortmann and Kusel (1990)). But they appear to be more similar to rural-rural residents than urban-urban residents, suggesting that being raised in an urban area might not be particularly important. The urban-rural groups’ worldviews and altruistic values were more similar to the urban-urban category, but urban-rural respondents are more active than those urbanites that remained in an urban area. Thus, the urban-rural group could represent urban residents who moved to rural areas for a lifestyle that is more in line with their values and beliefs. The formation of those values and beliefs may have little to do with their upbringing in an urban area.

The new category of ESB, stewardship, was the only ESB that showed a clear distinction between urban and rural residents. These behaviors are primarily a rural activity and are probably a function of the availability and ownership of land on which to plant trees and conserve. Urbanites who had moved to rural areas participated at the same level as those who were raised in a rural environment, suggesting that place of socialization is less of a factor than opportunity. These findings highlight the importance of providing services and facilities to facilitate public participation in ESB.

Finally, we recommend that future studies of residence differences in ESB include a variety of behaviors that reflect opportunities for both rural and urban residents. The residence effects that were observed in past studies may be declining as recycling and other community environmental services become more available and people are becoming more conscious of the impact of their consumer behaviors on the environment. The potential for a conceptual bias favoring urban residents mentioned by Jones et al. (1999) appears to be supported by our results. The characterization of urban residents as more environmentally concerned does not hold in our results. Earlier studies that showed differences tended to focus on activities such as recycling and public transit, for which there was greater opportunity in an urban environment. However, as rural areas gain access to recycling programs or facilities these differences may be diminishing.
Conclusion

Canadians have a moderately pro-environmental orientation and practice a range of levels of ESB, depending on the behavioral category. The use of an ordinal residence variable revealed nuances between rural and urban populations. Early studies that looked at rural-urban differences reported higher levels of ESB in urban populations. More recently, studies have suggested that rural-urban differences in ESB are diminishing and our results support this trend. However, while other authors have argued this weakening is due to increased mobility and urban in-migration, a “greening” of rural places, we argue that the broad similarities between rural and urban populations are an artifact of incomplete measurement tools that may falsely represent empirical differences. Our results demonstrate the importance of including a variety of behaviors that offer opportunities for urban and rural residents to express their environmental concern in studies examining the effects of place of residence. By including the stewardship ESB items that can be practiced in rural areas, we are illuminating a real and significant contribution of rural citizens to the amelioration of human-caused environmental problems. Given the importance placed on mitigating climate change, we feel that stewardship activities such as habitat restoration and aforestation practices should play a more prominent role in future survey research. In addition, by accounting for place of socialization, we were able to explore some subtle differences between respondents who chose to move to either a rural or an urban area, and those who currently live in the same type of locale in which they were raised.

References


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