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**A MIXED-METHODS INVESTIGATION OF COMMUNITY
ATTACHMENT IN RURAL ROMANIA ***

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ABSTRACT

This article explores the intricacies of community attachment using a multidimensional construct; attachment to the social and natural environment. A central focus is to assess whether attachment to the social and natural environment are distinctively predicted by length of residence, social interaction, and sociodemographic characteristics. Furthermore, this work elaborates on current understandings of community attachment by qualitatively exploring feelings of attachment toward the place of residence. All are explored in the context of rural Romania and communities managing the natural resources available to them. The results show the effect of several independent variables on attachment to social and natural environments. Residency was a stronger predictor of attachment to the social environment, while social interaction was a stronger predictor of attachment to the natural environment. Residents' narratives underscored the importance, and interconnection, of the social and natural environment in defining feelings of local attachment. We conclude that community attachment is grounded in different facets of the locale that each play unique roles in shaping citizen perceptions.

Rural communities attract considerable attention due to their continuous exposure to external pressures instigating local economic and social instabilities. Flora and Flora (1990) and Wilkinson (1991) emphasized that, to achieve sustainability in such communities, building social structures, maintaining population, and engaging residents in community action is imperative. This need is particularly relevant in Romania, the Eastern-European country exposed over the last twenty years to a wide range of economic and social changes following almost a half century under a communist regime. Institutional renewal, massive restructuring, and privatization are characterizing the postcommunist period. In this process, demographic and social-economic changes continue to take place with

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direct impacts on citizens' attitudes and behaviors (Roman and Roman 2003). The treatment and management of natural resources remain a vitally important issue in this setting.

The rural landscape of Romania is experiencing complex social, economic, and institutional developments. Often in the public media increased attention is given to out-migration in rural Romanian communities, with younger generations being strongly driven by more stable economic opportunities to urban areas. Equally important has been the attention given to what is seen as an acute lack of citizen interest and participation in community affairs in rural Romania (pjb Associates 2006). This has particular implications for the management of natural resources in rural areas. Some have argued that such developments are a direct consequence of a low sense of community in rural areas. Others suggest a legacy of the communist system, primarily based on a centralized political power where little expectations for public engagement existed (Oostenbrink and Kosterink 2005).

Central to an active, engaged citizenry is the concept of community attachment. It is a key concept discussed as being at the root of community action that ultimately fosters community development and sustainable resource management (Trentelman 2009; Wilkinson 1986, 1991). Consequently, such attachment has been examined in a variety of disciplines, focusing on operationalizing the construct, as well as understanding its major determinants and its implications for community well-being (Theodori 2000).

The focus on attachment and community is particularly relevant in Romania, where public engagement, participation, and involvement in resource management has been called for and viewed as paramount in areas rich in natural resources. The research literature underscores that successful management endeavors and environmental sustainability depend on the cooperation and support of local communities (Brandon and Wells 1992; de Beer and Marais 2005; Hall 2004). Actively involving local communities in the management of protected areas has been associated with an increased awareness in terms of the benefits of biodiversity conservation, a more responsible use of resources, and ultimately enhanced livelihoods and welfare of local people (Pagdee, Kim, and Daugherty 2006).

To date, various research studies have explored the complexity of the community attachment concept and the contributions of the social and natural environment in shaping emotional connections to community (Brehm 2007; Beckley 2003; Cross 2003; Trentelman 2009). It is relevant to note that most of these studies were conducted in North America, with multiple assertions being proposed in terms of community attachment and its dimensions, but only a few being actually

empirically tested under different international conditions and settings (Brennan and Luloff 2007). Examining the community attachment construct in an international context would further strengthen the current literature on community attachment and the generalizability of current knowledge across cultures and diverse socioeconomic contexts. Thus, assessing this concept in the Romanian context would generate valuable insights in terms of levels of community attachment in Romania (attachment to the social and natural environment), the dimensionality of the construct in a different cultural context, and how it compares with current literature, as well as the predicting factors that sustain feelings of attachment in rural communities rich in natural resources. Such research provides an exploration of community attachment and natural resource management in an international setting previously unexplored.

Based on current theoretical conceptualizations of community attachment, this article has sought to assess the structural relationships among the following variables: attachment to the social environment, attachment to the natural environment (specifically a national park bordering the local communities participating in the study), social interaction, length of residence, and sociodemographic characteristics (age, family status, number of children under 18 years of age, education, and income). In this study, we explored the dimensionality of the construct of community attachment, as well as proposed relationships using both quantitative and qualitative methodologies. The mixed-methods approach was used based on previous literature calling for further exploration of the community attachment construct to better understand place-specific attributes shaping the emotional bond that people have with their place of residence (Brehm 2007).

THE CONCEPTUALIZATION OF COMMUNITY ATTACHMENT

Hummon (1990) defines community attachment as an emotional connection to a place that emerges in the context of residence and belonging. Predominantly, the community attachment literature views social relations within a community as the foundation of the emotional bond people have with their communities. Consequently, community attachment has often been operationalized as a unidimensional construct, consisting of items capturing feelings of being at home in the community, knowing what is going on in the community, and feelings about moving away (sorry or happy) being widely used (Gursoy and Rutherford 2004).

Another dimension has been acknowledged to frame the community attachment concept; attachment to the natural environment. Stedman (2002, 2003), Beckley (2003), and Brehm (2007) emphasized the importance of the natural environment

in shaping community attachment. Hummon (1990) argued that community attachment is most strongly rooted in involvement in local social relations, but acknowledged that the built and natural environments can also contribute to emotional ties. Furthermore, Cross (2003) underscored that a unidimensional approach to community attachment limits the depth of information captured and our ability to distinguish how different dimensions of attachment might shape community behavior and action differently.

Extensive literature exists that focuses on place-based attachments, sense of place, and place attachment (Altman and Low 1992; Kyle et al. 2004; Williams et al. 1992; Williams and Vaske 2003). Place attachment has also been discussed as a subjective evaluation not only of the physical features of one's environment, but also tangentially integrating a personal assessment of the social environment (Mesch and Manor 1998). Consequently, it could be argued that community attachment integrates an emotional response to the natural environment and should be viewed as a variation of sense of place and place attachment, constructs primarily rooted in the connections people have with some physical locations in the natural world.

The previous remarks come to highlight the importance of better understanding the interplay between place-based attachments and community attachment, and the role played by the natural environment in the overall assessment of community attachment. The sociological analyses have been deficient at capturing the influence of the natural environment on community attachment, though they did constantly highlight the interlinked relationship between community and ecological well-being and the ability of the natural environment to support social integration (Wilkinson 1991). In this study, attachment to the natural environment was assessed using a conceptualization employed in the place attachment literature, more specifically the two dimensions of attachment: place dependence and place identity (Kyle et al. 2004; Williams and Roggenbuck 1989; Williams et al. 1992). Furthermore, in this study, assessment of attachment to the natural environment was focused on a more specific area or physical location, the park adjacent to the communities participating in the study.

The multidimensionality of the community attachment construct has rarely been assessed, with few studies proposing measures of attachment to social and natural environments and investigating their predictors. While there are likely other dimensions of attachment, these are seen as two key components. Generally, the major determinants of community attachment discussed in the literature are length of residence, participation in community activities and groups, local ties and networks, and various sociodemographic characteristics, such as age, family status,

income, and education (Beggs, Hurlbert, and Haine 1996; Brennan 2007; Brennan and Luloff 2007; Kasarda and Janowitz 1974; Theodori and Luloff 2002; Trentelman 2009).

The influence of length of residence on community attachment has been primarily attributed to social interaction and social integration components that define residency, yet this relationship was not always significant (Brennan 2007; Theodori and Luloff 2002). McCool and Martin (1994) for example, found newcomers highly attached to their community. An argument was made that this might suggest a tendency for newcomers to be attached to biophysical or landscape features of place, as opposed to social networks and local relationships. Consequently, it can be argued that attachment to the natural environment can be equally strong in forming emotional investments in a community.

Brehm, Eisenhauer, and Krannich (2006) examined the relationship between length of residence and attachment to social and natural environments. The study findings indicated that the strength of social attachments to the community were significantly different between residents who had lived in the area more than ten years and those who had not. In contrast, there was not a significant difference between newcomers' and long-term residents' strengths of attachment to their community's natural environment. Such findings are indicative and supportive of prior propositions underscoring the importance of assessing multiple dimensions of community attachment and their predictors.

In terms of sociodemographic characteristics, Kasarda and Janowitz (1974) viewed individuals' life cycle stage, as reflected by age, family status, and number of children, as indicative of emotional investments in community. Others emphasized the importance of education and income in explaining attachments (Brehm et al. 2006; Gursoy and Rutherford 2004). To date, the strength of such relationships is still not clear and little is known about how different sociodemographic characteristics relate to attachments to social and natural environments.

Brehm's (2007) work speaks to the complexity of developing a discrete separation of the natural environment dimension from the social dimension, yet argues that the natural environment does play an important role in the overall formation of community attachment. The author argued that in communities where natural amenities are abundant and often on a grand scale, they can play an important role in the development of a person's sentimental and emotional attachment, despite length of residence. It is this interrelationship of the social and natural world that in part creates our attachment and connection to place. Brehm

(2007) advocated for studies focused on better understanding specific place attributes (natural environment versus social) to which people are attached and the mechanisms through which such attachments are formed.

This study supplements current literature by examining quantitatively and qualitatively two dimensions of the community attachment construct, attachment to the social and natural environment, and their relationship with some major predictors of community attachment. There is minimal investigation in the literature on these two proposed dimensions of community attachment. Understanding such dimensions and their predictors would further enhance our ability to distinguish how different dimensions of community attachment might shape community action differently. This study builds on previous work directed at exploring the multiple roots of the emotional bond people form with their place of residence.

METHODOLOGY

To accomplish our research goals, multiple research sites in Romania were studied using a mixed-methods research design (qualitative and quantitative methods) (Tashakkori and Teddlie 1998). Individual residents serve as the unit of analysis in this study. Their attitudes, experiences, and opinions were used to determine their level of attachment to the social and natural environment as well as factors that contributed to it.

Study Area

Retezat National Park (RNP) was designated in 1935, being the first national park established in Romania. In 1979, RNP was declared an International Biosphere Reserve under the UNESCO Man and Biosphere program and in 2004 RNP received its Protected Area Network (PAN) Certification. Retezat National Park is located in the southwestern Carpathian mountains, and the total surface area of the park is 38,138 ha (RNP Management Plan 2008). Within the park, there are more than twenty mountain peaks 2,000 meters or higher, in addition to eighty lakes of glacial origin. There are more than 1,100 species of plants, over 50 species of mammals including roe deer, chamois, lynx, bear, and otter and 168 recorded bird species including the golden eagle.

This national park was chosen due to its size, history, local management structure, and the number of adjacent communities. RNP was the first park in Romania with a formal management system (van Hal 2006). The co-management framework initiated by RNP is perceived as a model for other protected areas in

Romania. A large portion of the park area (17,564 ha, 46 percent) is owned by the state, while local associations own the remaining lands (20,574 ha). Of the 43 villages adjacent to the park, 26 have grazing rights to alpine meadows, with their rights administered either through community-based associations or local governmental councils (Kuijs and van den Bergh 2006). A commune is an administrative division in Romania encompassing one or more villages that share similar economic, socio-cultural, geographic, and demographic conditions.

In this setting, local communities rely on park resources primarily for grazing and the use of natural resources such as wood, non-timber forest products, mushrooms, and medicinal plants. The major management concerns, in conservation, are related to overgrazing of pasture areas and illegal wood harvesting (RNP Management Plan 2008).

Data Collection

Rural communities adjacent to Retezat National Park belong to five communes encompassing 43 villages with a total population estimated at 14,009 adult residents. Nine villages (drawn from all communes) were selected for this study using multistage random sampling. The nine villages selected have a combined population of 4,232 persons residing in 1,159 private households. Cross-sectional data were collected from 260 residents surveyed between June and October of 2009. Multiple strategies to assure face and content validity were utilized. Included were a review of research materials by a panel of survey experts, translation of materials to Romanian and back translation to English by two Romanian natives, and a review of the survey by park staff. Systematic sampling with a random household start was used to select participants for surveys.

Data collection began with a series of key and action informant interviews with 24 local residents and community representatives drawn from the communities adjacent to Retezat National Park. Semi-structured interviews were employed to organize the discussion. These individuals were identified through a snowball sampling methodology where knowledgeable individuals were suggested by community members and members of local organizations.

These interviews provided a basis for the development of later quantitative tools, but more importantly provided insight and understanding of local conditions that might not otherwise be evident. Key informants are individuals who, because of their knowledge, experience, or social status in a community, can provide insights and access to information valuable in understanding the issues, problems, and needs of a local society (Krannich and Humphrey 1986; Schwartz, Bridger, and Hyman

2001). Following Brehm's (2007) approach to investigating the multiple facets of community attachment, the interviews began with a very general discussion of each informant's community. The respondents were asked to describe their community to someone who has never been there, and to more specifically talk about things they were attached to or cared about most in their community.

The interviews were conducted in the native language, tape-recorded, translated, and transcribed by the author who is a native speaker of, and fluent in, Romanian. Interviews were analyzed using a grounded theory approach (Strauss and Corbin 1990), allowing for unique theoretical categories to emerge. A series of steps specific to grounded theory research were followed in analyzing the data collected through the in-depth interviews. First, the investigator coded the data for their major categories of information. This stage was followed by a process of linking categories, focusing on a deeper understanding of the interrelationships among categories.

The second stage of data collection consisted of face-to-face surveys of local citizens. When a face-to-face survey could not be conducted, surveys were mailed to respondents. Based on the population size of each community, a random sample that was significantly representative of the local population was randomly drawn. The sample consisted of 580 households across the nine communities.

Due to few surveys being conducted historically in rural Romania, how effective this method would be for data collection was uncertain. To maximize responses, surveys were therefore collected both via face-to-face survey (350 distributed, 239 collected; 68 percent response rate) and through multi-wave mail survey (Dillman, Smyth, and Christian 2009) (230 mailed, 21 returned; 9 percent response rate) methodologies. A mail survey was sent to households where the residents were not at home, even after multiple visits at different times during the day. The person in the household age 18 or older with the most recent birthday was asked to respond. The face-to-face surveys showed a high response rate. As expected, the mail survey exhibited a very low response rate ($n = 21$) and did not appear to be a useful method for collecting data in these communities. Rural Romania over the past 10 years has experienced a decrease in population. Thus, some households where mail surveys were delivered might actually not have permanent residence in the village anymore. Also, the low response rate for the mail survey could be a result of residents lacking the time or the motivation to complete a survey (commuting for work or extensive agricultural responsibilities over the summer), or the education needed to be able to complete a survey in a timely manner. Historically, the Romanian Census as well as other surveying in rural Romania has been conducted using face-to-face

interviewing. Nonetheless, based on community sizes, the numbers of responses were sufficient to be statistically representative of the population at a .05 level (Isaac and Michael 1997; Kraemer and Thiemann 1987). All respondents were aggregated into an overall single dataset representing the region.

Participants were asked to express their opinions on a series of questions about their attachment to the community, social interactions, length of residence, and several sociodemographic characteristics. This study employed an assessment of community attachment based on attachments to the social environment and the natural environment. The items for the social dimension of community attachment were adapted from Theodori and Mayfield (2008) and were measured on a five-point Likert scale, where 1 = Strongly disagree and 5 = Strongly agree. Attachment to the natural environment (the park neighboring the community) was assessed using two dimensions of attachment: dependency and identity (Kyle et al. 2004; Williams et al. 1992; Williams and Roggenbuck 1989). Natural environment attachment items were also measured on a five-point Likert scale, where 1 = Strongly disagree and 5 = Strongly agree. Social interaction was measured using the frequency of interaction with various types of people in the community. The following question was asked: "How often do you see or meet the following types of people? Close Friends, Acquaintances, Public officials, etc." For each type, the respondents were given response options of: (1) never, (2) a few times a year, (3) once a month, (4) a few times a month, (5) once a week, (6) more than once a week, and (7) every day. The mean and standard deviation for the items measuring attachment to the social environment, attachment to the natural environment (the park in this case), and social interaction are depicted in Table 1.

The respondents were also asked to report how long they had lived in their community. Individual-level sociodemographics included age, family status, number of children under 18 years of age, educational attainment, and monthly household income. Table 2 depicts the descriptive statistics for the sociodemographic data. Continuous data were collected and used in the analysis for age, length of residence, and the number of children under 18 years of age.

RESULTS

Quantitative data analyses were done in three stages. First, descriptive statistics were computed using the Statistical Package for the Social Sciences (SPSS) version 18.0. Second, the data collected were screened and critical assumptions underlying the statistical techniques employed were assessed. Third, a two-step data analysis

TABLE 1. SUMMARY RESULTS FOR MEASUREMENT MODEL

| FACTORS AND ITEMS | MEAN | SD | λ | α | CR | AVE |
|---|------|-------|-----------|----------|------|------|
| <i>Attachment to the social environment</i> ** | | | | .773 | .891 | .546 |
| I feel like I belong in this community..... | 4.50 | .842 | .76* | | | |
| The associations that I have with other people in this community mean a lot to me. | 4.52 | .762 | .69* | | | |
| Given the opportunity, I would move out of this community..... | 3.82 | 1.520 | .67* | | | |
| I feel loyal to the people in this community..... | 4.17 | 1.034 | .77* | | | |
| I plan to remain a resident of this community for a number of years..... | 4.42 | 1.004 | .87* | | | |
| I like to think of myself as similar to the people who live in this community..... | 3.97 | 1.249 | .65* | | | |
| <i>Attachment to the natural environment</i> ** | | | | .903 | .963 | .731 |
| Retezat National Park means a lot to me..... | 4.54 | .784 | .91* | | | |
| I am very attached to Retezat National Park. | 4.18 | .992 | .93* | | | |
| Retezat National Park is very important to me. | 4.33 | .910 | .95* | | | |
| I identify strongly with the Retezat National Park. | 3.78 | 1.178 | .66* | | | |
| I get many personal benefits out of living near Retezat National Park..... | 3.72 | 1.280 | .84* | | | |
| I enjoy living near Retezat National Park. | 4.54 | .750 | .87* | | | |
| I get lots of satisfaction out of living near Retezat National Park. | 4.17 | .996 | .80* | | | |
| <i>Social Interaction</i> *** | | | | | | |
| Interactions with friends. | | | | .750 | .786 | .650 |
| Acquaintances. | 4.85 | 1.606 | .85* | | | |
| Close Friends..... | 5.40 | 1.573 | .76* | | | |
| Interactions with public officials..... | 3.54 | 1.790 | .83 | N/A | N/A | N/A |
| Interactions with park. | | | | .682 | .779 | .641 |
| Retezat National Park Staff..... | 2.71 | 1.821 | .93* | | | |
| Tourists..... | 3.09 | 1.816 | .65* | | | |

NOTE: *t-statistic (>1.96) at a significance level of $p<0.05$; λ =factor loadings; α =Cronbach's alpha coefficients; CR=composite reliability; AVE=average variance extracted. ** 1=Strongly disagree, 2=Disagree, 3=Neutral, 4=Agree, 5 = Strongly agree. *** 1=never, 2=a few times a year, 3=once a month, 4=a few times a month, 5=once a week, 6=more than once a week, and 7=everyday.

TABLE 2. DEMOGRAPHIC CHARACTERISTICS OF THE RESPONDENTS

| | FREQUENCY | PERCENT (%) |
|-------------------------------------|-----------|-------------|
| Age | | |
| 18 to 30 years..... | 59 | 23.7 |
| 31 to 50 years..... | 90 | 36.1 |
| 51 and above. | 100 | 40.2 |
| Mean (SD). | 45.02 | 16.405 |
| Length of residence | | |
| 1 to 20 years..... | 52 | 20.6 |
| 21 to 40 years..... | 101 | 40.1 |
| 41 to 60 years..... | 69 | 27.4 |
| 61 to 80 years..... | 28 | 11.1 |
| Over 80 years..... | 2 | 0.8 |
| Mean (SD). | 37.36 | 18.267 |
| Family status | | |
| Single. | 64 | 25.7 |
| Married/Partnered. | 162 | 65.1 |
| Divorced/ Separated..... | 9 | 3.6 |
| Widowed. | 14 | 5.6 |
| Number of children <18 | | |
| 0..... | 128 | 51.4 |
| 1..... | 61 | 24.5 |
| 2..... | 52 | 20.9 |
| 3..... | 6 | 2.4 |
| 4..... | 1 | 0.4 |
| 5..... | 1 | 0.4 |
| Mean (SD). | 0.77 | 0.933 |
| Education | | |
| None. | 2 | 0.8 |
| Primary school (1-4)..... | 6 | 2.4 |
| Elementary school (5-8)..... | 27 | 10.8 |
| Professional/vocational school..... | 37 | 14.8 |
| Some high school (9-10)..... | 14 | 5.6 |
| High school graduate (9-12). | 79 | 31.6 |
| Post high school. | 34 | 13.6 |
| Some college. | 7 | 2.8 |
| College degree..... | 28 | 11.2 |
| Advanced degree..... | 16 | 6.4 |
| Household Income | | |
| Almost no income. | 15 | 6.2 |
| Less than 250 RON..... | 10 | 4.1 |
| Between 250 and 499 RON. | 14 | 5.8 |
| Between 500 and 999 RON. | 47 | 19.4 |
| Between 1000 and 1499 RON. | 48 | 19.8 |
| Between 1500 and 2000 RON. | 34 | 14.0 |
| More than 2000 RON..... | 74 | 30.6 |

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was employed to assess the hypothesized relationships (Anderson and Gerbing 1988). As part of this process, individual items were examined using Confirmatory Factor Analysis (CFA) and the measurement model for constructs was estimated using MPLUS version 5.21 to determine how well the indicators captured their specific constructs and the ability of the respondents to differentiate between constructs (Hair et al. 2006). This was followed by an assessment of the Structural Equation Model (SEM) assessing the hypothesized relationships between constructs. SEM was assessed using MPLUS version 5.21 using the WLSMV (weighted least squares mean and variance adjusted) method of estimation, the method recommended for categorical ordinal data (Muthen, du Toit, and Spisic 1997). After adjustments (specified below), the models utilized in reporting the findings exceeded minimum standards of acceptability for model fits.

The average age of respondents was 45 years old, with almost one quarter of the respondents (23.7 percent) being between 18 and 30 years old and slightly more than one third of the respondents (36.1 percent) being between 31 and 50 years old. Respondents who were over 51 years old were the most represented group (40.2 percent). Fifty four percent were males and 46 percent were females. The average length of residence was 37 years. The majority (65.1 percent) were married or partnered, 48.6 percent had one to five children younger than 18 years old, and the average number of adults per household was three, reflecting the common presence of grandparents and other extended family in the household. Almost one third of the respondents (31.6 percent) indicated high school as the highest level of education attained, 14 percent of the respondents had a college degree, and 13.2 percent had an elementary school education or less. About one third of respondents (33.8 percent) reported a monthly household income between 1,000 and 1,999 RON (about \$330-\$660 in U.S. dollars (USD)) and 30.6 percent indicated a monthly household income of more than 2,000 RON (about \$661 USD). Most of the respondents (70.6 percent) indicated that they do not have any property rights (ownership or land use rights) in Retezat National Park.

Most respondents (96.0 percent) reported that they do not personally receive any income from the park or its visitors. Similarly, most of the respondents (97.2 percent) reported that their immediate family does not receive any income from the park and its visitors. Furthermore, the respondents indicated they visit the park primarily for hiking (79.5 percent), camping (32.6 percent), or collecting non-timber forest products (30.5 percent). Consequently, the economic dependence of the local population on the park and its resources seems to be very limited.

Individual constructs and their measurements were examined using Confirmatory Factor Analysis (CFA). Because of initial CFA tests, several items in various factors were dropped due to their low factor loadings. Marsh, Craven, and Debus (1991) underscored that when a model has been misspecified (poor model fit), the researcher has to respecify the model. One way to respecify the model is to delete poor indicators (with low factor loadings) and the other option is to allow errors to correlate; decisions should be supported by theory or rationale (Joreskog 1993). In this study, weak items could be viewed as a possible reflection of translation constraints or cultural differences and thus those items were considered for elimination. Ultimately, for each construct, those items were retained that were substantive in size and had significant loadings on the factor. In this stage, the correlation between identity and dependence on the natural environment (the park in this study) was high ($r = .89$), suggesting a weaker differentiation of these constructs by the study respondents. Consequently, scale items were collapsed and one measure of attachment to the natural environment was retained including seven items. Furthermore, due to a high correlation between age and length of residence ($r = .57$) and multicollinearity concerns, age as an observed variable was eliminated from further analysis.

After assessing the measurement model for each construct and determining a good fit to the data, the fit indices for the total measurement model were examined. The measurement model including five latent factors (attachment to the social environment, attachment to the natural environment, interaction with friends, interactions with public officials, and park interactions) and five observed variables (length of residence, family status, number of children under 18 years of age, level of education, and income) was tested. The fit indices for a total measurement model with five latent factors revealed good fit (Table 3). The chi-square or χ^2/df ratio (2.08: $\chi^2 = 133.12$, $df = 64$, $p < .001$) was within the suggested criteria (i.e., < 3.0 ; Kline 2005). CFI (.98), TLI (.98), RMSEA (.064), and WRMR (.764) yielded a good model fit and all of the item (indicator)-loadings were significant ($p < .001$) and ranged from .67 to .95, providing strong evidence of convergent validity (Table 1).

Table 3. Fit Indices for Measurement Model and SEM Model

| Construct | χ^2 | df | χ^2/df | RMSEA | CFI |
|--|----------|----|-------------|-------|-------|
| Measurement Model | 133.12 | 64 | 2.08 | 0.064 | 0.976 |
| Measurement Model with Second Order Factor. | 139.99 | 67 | 2.09 | 0.065 | 0.975 |
| SEM. | 139.09 | 68 | 2.05 | 0.063 | 0.975 |

Evidence of internal consistency is provided by Cronbach's alphas near or above the recommended level of .70 (Nunnally and Bernstein 1994), ranging from .68 (interaction with park) to .90 (attachment to the natural environment) and composite reliability (CR) above the recommended level of .70 (Fornell and Larker 1981), ranging from .79 (interactions with friends) to .96 (attachment to the natural environment). Also included in table 2 are the average variance extracted (AVE) estimates with recommended levels of .50 or higher indicating convergent validity for a construct's measure (Bagozzi 1994; Fornell and Larker 1981). All values exceeded the recommended level ranging from .55 (attachment to the social environment) to .73 (attachment to the natural environment). All intercorrelations among latent factors were lower than the suggested threshold of .85 (Kline 2005), ranging from -.23 to .57 and being a strong evidence of discriminant validity (Table 4). These findings reveal that the proposed measurement model satisfied all psychometric requirements, thus the measures were adequate for further analysis.

A hierarchical model was tested with interaction with friends, the public, and park officials set to load on a second-order factor, social interaction. The fit indices for the model revealed good fit, social interaction being found to have a hierarchical structure, and this model was used for further analysis. The chi-square/ df ratio (2.09: $\chi^2 = 139.99$, $df = 67$, $p < .001$) was within the suggested criteria (i.e., < 3.0 ; Kline 2005). CFI (.98), TLI (.98), RMSEA (.065), and WRMR (.826) yielded a good model fit and all item (indicator)-loadings were significant ($p < .001$), with the factor loadings for the second-order model ranging from .67 (interactions with park) to .80 (interactions with public officials).

SEM analysis was performed to examine the overall model as well as individual tests of the hypothesized relationships among the latent constructs. The hypothesized model to the data resulted in adequate fit with chi-square/ df ratio (2.05: $\chi^2 = 139.09$, $df = 68$, $p < .001$) falling within the suggested criteria (i.e., < 3.0 ; Kline 2005). The goodness-of-fit indices CFI (.98), TLI (.98), RMSEA (.063), and WRMR (.827) revealed acceptable fit. All factor loadings were significant and substantial in size.

Support for the hypotheses was examined via the significance of the individual path coefficients (Figure 1). Statistically significant path coefficients were found between: social interaction and attachment to the social environment ($\beta = .402$; $p < .001$) and attachment to the natural environment ($\beta = .482$; $p < .001$); length of residence and attachment to the social environment ($\beta = .318$; $p < .001$) and attachment to the natural environment ($\beta = .195$; $p < .05$).

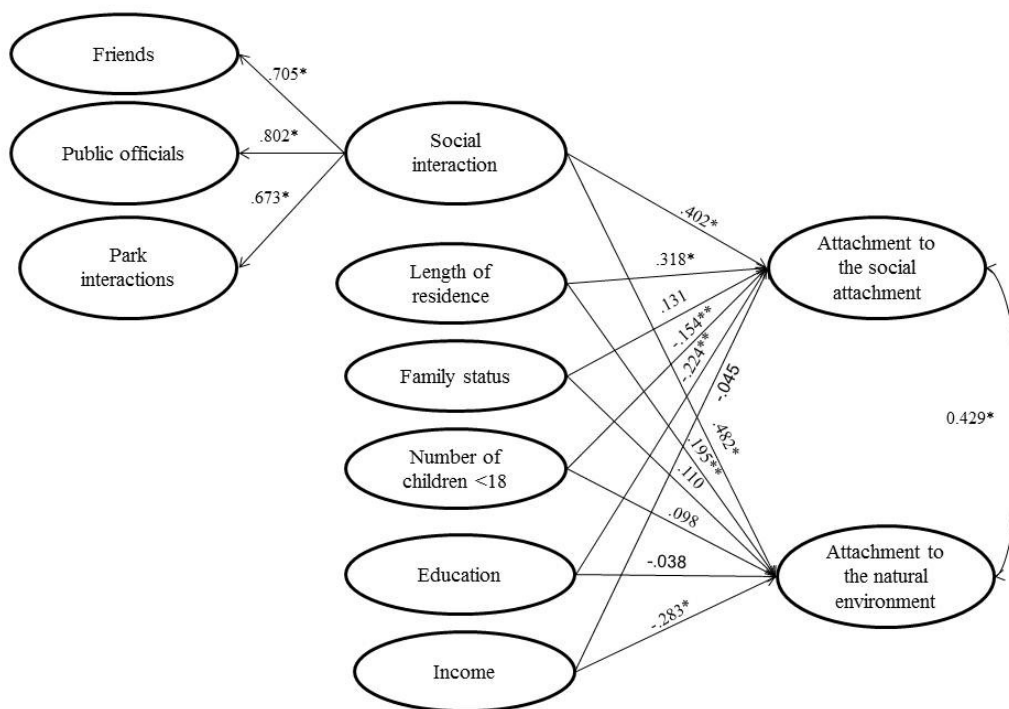
TABLE 4. CORRELATIONS AMONG FACTORS (BASED ON THE MEASUREMENT MODEL)

| | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 |
|---|-------|--------|--------|------|------|-------|------|-------|-------|-------|------|
| 1. Attachment to the social environment. | 1.00 | | | | | | | | | | |
| 2. Attachment to the natural environment. | .56** | 1.00 | | | | | | | | | |
| 3. Residency..... | .42** | .23** | 1.00 | | | | | | | | |
| 4. Family status..... | .19 | .15 | .25** | 1.00 | | | | | | | |
| 5. Kids under 18..... | -.13* | .08 | -.16** | .10 | 1.00 | | | | | | |
| 6. Education..... | -.20* | -.08 | -.09 | .02 | -.14 | 1.00 | | | | | |
| 7. Income..... | -.05 | -.23** | .01 | .06 | .13 | .30** | 1.00 | | | | |
| 8. Interaction with friends..... | .27** | .34** | .04 | .00 | .06 | .05 | .04 | 1.00 | | | |
| 9. Interaction with public officials..... | .31** | .39** | .04 | .00 | .06 | .06 | .05 | .57** | 1.00 | | |
| 10. Interaction with park..... | .26** | .33** | .04 | .00 | .05 | .05 | .04 | .47** | .54** | 1.00 | |
| 11. Social interaction..... | .39** | .48** | .05 | -.01 | .08 | .08 | .06 | .71** | .80** | .67** | 1.00 |

NOTE: *Correlation significant $p < .05$; **Correlation significant $p < .001$.

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Family status did not have a statistically significant impact on attachment to the social environment ($\beta = .131$; $p > .05$) or attachment to the natural environment ($\beta = .110$; $p > .05$). A significant negative path coefficient was found between the number of children younger than 18 and attachment to the social environment ($\beta = -.154$; $p < .05$), although this variable did not have a statistically significant impact on attachment to the natural environment ($\beta = .098$; $p > .05$). Furthermore, a significant negative path coefficient was found between level of education and attachment to the social environment ($\beta = -.224$; $p < .05$), and between income and attachment to the natural environment ($\beta = -.283$; $p < .001$). The model explained 38 percent of the variance in attachment to the social environment, and 37 percent of the variance in attachment to the natural environment.

The quantitative analysis provided insight into the process through which attachment to the social and natural environment, as two dimensions of community attachment, emerges. To further expand and explain this process, we explored the qualitative data. The respondents' narratives evoked the multidimensionality of the community attachment construct. One theme that emerged from the respondents' narratives captured the social environment within the community as a discrete dimension of attachment. Respondents mentioned the importance of social

connections in shaping feelings of emotional attachment. The narratives underscored that strength of the community as well as personal attachment to the community emerges from the care and respect community members have for each other, feelings shaped by constant interaction with fellow community members.

... What makes me attached? I'm attached to the people and how they are, meaning there is this connection between people based on respect, love in the end, because if you don't have respect you don't love either... it's a quiet community, without conflicts... not only here, in general I noticed that people here, even though others say that people from the mountain areas are uneducated, and I don't know what else they say... yes, they haven't always had electricity, they haven't always had television either, but they have always had their work, they had to work to survive and in exchange they had that kindness because ones without the others, they had to help each other, you know, and... this is what I'm attached to... even now people greet each other. (Ioana)

Respondents, through their work responsibilities, show their care and attachment to fellow community members. This finding further reinforces the role played by social position (as a representation of occupation) in shaping social care and attachment. Feelings of attachment to the social environment translate to behavior directed at protecting the social structure of the community.

I care about the people, their well-being, because of this we even allow them to pick up non-timber forest products and use them... mushrooms. We did not follow a campaign against them because they are poor families, without any income and because of this we did not force them. A proof is that we don't even have penalties, fines, given to the local population... (Ioana)

Attachment to the social environment also relates to the family background, respondents attaching strong meaning to the place due to genealogical roots in the area. Notions such as "place of birth" and "this being a home" were strongly emphasized in the narratives.

I have strong roots in the area, being a local, my whole family is from the area, thus, of course I like this area, I like it, it's my home, it's my place, I

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have here all the properties I inherited from my parents, grandparents, and so forth... (Florenta)

The natural environment emerged as a distinct dimension of community attachment; the respondents talked about the natural environment in very distinct terms. It is worth emphasizing that attachment to the natural environment goes beyond the park and its beauty, the whole local landscape contributing to the connections people have to their natural environment. The relationships developed between the residents and nature seems to emerge from the ability of the natural environment to provide opportunities for relaxation and self-actualization.

... for me going for a walk in the area, not necessarily in Retezat, I can go up here on the hill, Magura Zambrului, as we call it, it's a relaxation and, it totally changes me... so, I love this area very much... (Alexandru)

Respondents reflected on different aspects of the natural environment that permeate their emotional investment in the community. The respondents indicated being attached to different features in the natural environment. For instance, the natural beauty of the park was emphasized by the respondents in their narratives.

The church and the Colt Fortress, and of course, Retezat National Park, because it's something that cannot be described in words, so if you go there it cannot be described in words, there are glacier lakes, it's a dream like... and I like it very much, there is vegetation and there is so much silence and if you go there you recharge your batteries like nowhere else, like nowhere else... (Miruna)

The respondents, in their description of the natural environment, constantly depicted the importance of nature throughout their lives and primarily how much it meant for their childhood. Furthermore, the ability of nature to provide and support their existence was also highlighted, being viewed as the foundation of the community well-being. The area and the location of the community provided opportunities for constant interaction with the natural environment, being an object of appreciation derived from constant activities strongly connected with the natural environment.

I love the nature I spent my childhood with and being with the cattle while grazing since I was 8, 9 years old, our parents sent us with the cattle on the hill... and we have beautiful hills here, near the village. The nature, the forest, the water bodies, the wildlife in the forest, from school since I was a kid I loved these things which I still admire, and it happened for me, I was lucky to be close to them quite often... (Verde)

It was noticed from the respondents' narratives the multidimensionality the community attachment construct captures. Besides distinct dimensions, there was an interplay of the different facets of attachment. This suggests that such dimensions are distinct but, simultaneously, they do share common connotations, links, and interrelationships existing between the different facets. The natural and social dimensions are strongly linked, primarily considering the importance of the natural resources for sustaining livelihoods.

The people are very good, people with fear of God, hard-working people, assiduous, they like to take care of the livestock, they care about the forest, because this was their occupation here; our parents raised us this way. They grew up like this as well. In the future we want to protect as much as we can, primarily to protect nature because it gives us everything... (Stefan)

The area encompasses not only the natural environment, but also the social structure that is an integral part of the environmental elements that sustain the welfare of these communities. Much of the attachment evolves from love for nature and love of the socio-cultural life, elements rooted in years of persistence in the area that give distinctiveness and enforce connections to the community.

Primarily, the beauty of the area keeps me here, the people from the mountain areas, and as you could see it's very dispersed, spread, they persisted here even though... how should I say it... under the communist times the village was totally destroyed... (Stefan)

The respondents' narratives emphasize that community attachment is embedded in the social and natural dimensions of community that ultimately create the emotional bonds at the foundation of attachment. Distinct objects of attachment ultimately permeate the residents' sentimental and emotional responses to the community. Supported by the previous remarks, it can be argued that the

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community attachment construct has a multidimensional structure, different environmental dimensions being at the foundation of defining emotional investments in the community.

DISCUSSION

Based on 24 key informant interviews and responses by 260 residents to a survey on their thoughts and opinions, the multidimensionality of the community attachment construct was assessed in this study. More specifically, the focus was on determining whether different facets of community attachment (attachment to the social and natural environment) are distinctively predicted by length of residence, social interaction, and sociodemographic characteristics. This analysis was complemented by a qualitative exploration of the social and natural facets of community attachment previously discussed in the literature.

The quantitative results indicate that attachment dimensions of the social and natural environments are distinctively predicted by variables commonly associated with community attachment. Social interaction was found to have a stronger effect on attachment to the natural environment (the park), while length of residence had a stronger association with attachment to the social environment. The weaker effect of length of residence on attachment to the natural environment further supports previous assertions that one can decide to live in a community and rapidly become attached to the natural environment (Brehm et al. 2006; McCool and Martin 1994). Furthermore, the stronger association of social interaction with attachment to the natural environment could be the result of social groups and shared experiences that relate to the park and the natural environment overall. The park surrounding these rural communities and the natural resources overall has strong effects on the residents due to the relevance on their livelihoods. Activities such as agriculture, livestock raising, and even hiking can bring people together to interact on topics of common interest. This assertion emerged in the qualitative analysis; the respondents' narratives constantly depicting the natural environment as an integral part of their existence.

Being in a social relationship was not identified as making any difference for the attachment people held toward their social and natural environment. Ultimately, other factors have greater ability in predicting personal feelings of attachment and belonging. In addition, a significant negative effect was found between the number of children under 18 years old in the household and the strength of attachment to the social environment. The social network literature on community interaction suggests that stronger ties (family ties) have weaker influences on community

attachments (Beggs et al. 1996). Thus, it could be argued that larger families with children often devote more of their time to their family and have weaker levels of interaction with the community. Previous literature has underscored that the stronger the family ties are, the weaker the interaction in the community is and thus ultimately, a reduced level of attachment to the community occurs (Brennan 2007; Bridger and Alter 2008; Summers 1986; Wilkinson 1991). The number of children in the household was found not to affect attachment to the natural environment, further reinforcing that attachment to community lies in multiple community facets and various personal conditions, facilitating the development of attachment to different dimensions of the community.

Education and income, as a reflection of social position in the community, were two other measures assessed in this study. Education was found to have a significant negative effect on attachment to the social environment, while income had a significant negative influence on attachment to the natural environment. Previous literature has underscored that local concentration of network ties should be higher among persons of lower social position (e.g., persons with lower level of education and income) (Beggs et al. 1996; Campbell, Marsden, and Hurlbert 1986; Goudy 1990). Beggs et al. (1996) found that persons with higher levels of education had weaker local ties than persons with lower levels of education and that income negatively affected local sentiments. Brehm et al. (2006) identified household income as a stronger predictor of attachment to the natural environment than attachment to the social environment. The main argument behind such findings is that more educated individuals or individuals with higher incomes might hold higher expectations for their community and its leaders, and therefore, they may often be more critical of the community than less affluent persons. In this study, those with higher incomes often reported lower levels of attachment to the natural environment (the park) and this might reflect a negative response to current park management efforts. Furthermore, the more educated individuals reported negative emotional reactions toward the social environment, which might be the result of a weaker identification of the more educated population with the locale.

The results of the quantitative findings revealed the distinct nature of the two dimensions of community attachment, with some predictors being more powerful than others in predicting attachment to social and natural environments. Consequently, the importance of incorporating measures of attachment to the natural environment in the broader assessment of community attachment is emphasized. In various contexts and settings, natural environments might be a stronger dimension of attachment having a greater ability to generate powerful

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emotional responses. Simply acknowledging that the natural dimension does exist, and could be embedded in the social environment, as suggested by Brehm (2007), is not sufficient. Much more information can be captured by integrating assessments of various dimensions of community attachment. This study reveals that attachment to the natural environment is strongly correlated with connections to the social environment, emphasizing its role in tangentially supporting the social dynamics that are at the foundation of the community. The correlation between the two dimensions further supports the shared meanings that the two dimensions capture, a finding strongly supported by the qualitative results.

The multidimensionality of the community attachment construct and the intertwined nature of the relationships between the emerging dimensions were underscored in the residents' narratives. Brehm (2007) talked about the complexity of the construct, and discussed two dimensions of attachment, the natural and social environments and the tangled relationship of the two dimensions. Respondents emphasized their attachments to the social and natural environments, their connections being shaped by various experiences; some that go back to their childhood when family tasks required greater interaction with the social and natural environments. Various activities (e.g., agriculture, livestock) were depicted as being at the root of attachment; their ability to bring people together and closer to social and natural environments was emphasized. Furthermore, the respondents' narratives suggest that many of these activities have been lost over the years in these communities; thus a weakened interaction being the current reality, with direct implications for the strength of the connections with social and natural environments. Thus, such interactions should be encouraged in the future, primarily for children and their connections and interactions with the surrounding environment.

This study supports and complements previous findings in relation to the two dimensions of community attachment. Furthermore, considering this study was conducted in an international setting, it further supports that such dimensions and relationships stand in a different cultural context. The sociodemographic characteristics, primarily education and income, may be more volatile and place related which is not necessarily in contradiction with current literature, mixed findings being identified in the literature in relation to their implications for community attachment.

CONCLUSION

Based on this study, a refinement of community attachment measures is needed that better captures the multidimensionality of the construct. This study emphasizes the importance of understanding how different dimensions of attachment are shaped and distinctively contribute to overall community attachment. The importance of depicting the connections people have to the multiple dimensions of their environment derives from current understandings that attachment is relevant for development, planning purposes, and conflict resolution.

People are attached to various community attributes that they care about and ultimately want to protect. Brehm et al. (2006) underscored that community attachment might have other facets not examined, such as cultural traditions and beliefs, economic linkages and activities, and political engagements. Thus, assessments focusing on understanding the multiple facets of community attachment can provide deeper understandings of community aspects and their contribution to local attachments. Furthermore, informed programs could be developed, aimed at strengthening various dimensions of the community that lack attachment and public concern through the establishment of channels of interaction and communication. This further suggests a need to understand how various dimensions of community attachment are formed, how are they evolving, and how they separately and combined predict various attitudinal and behavioral patterns.

Listening to local residents and understanding their attachments within a community context so that informed decisions can be made and over time conflicts avoided, is paramount. Warren (1987) emphasized the importance of understanding the shared interests in particular local geographical attributes, due to their implications for community togetherness, that ultimately are a crucial element in the formation and continuation of community.

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