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Adolescent Place Attachment, Social Capital, and Perceived Safety: A Comparison of 13 Countries

**Lorenza Dallago · Douglas D. Perkins ·
Massimo Santinello · Will Boyce ·
Michal Molcho · Antony Morgan**

Abstract In adolescence, children become increasingly independent and autonomous, and spend more time in neighborhood settings away from home. During mid-to-late adolescence, youth often become more critical about the place they live. Their attachment to home and even community may decrease as they explore and develop new attachments to other specific places. The aim of this study is to understand how 15-year-old students from 13 countries perceive their local neighborhood area (place attachment, social capital and safety), and how these different community cognitions are interrelated. We hypothesize that their place attachment predicts safety, and that the relationship is mediated in part by social capital. Result show that, despite cross-cultural differences in neighborhood perceptions, the proposed theoretical model fits robustly across all 13 countries.

L. Dallago · M. Santinello
University of Padova, Padua, Italy

L. Dallago (✉)
Via S. Vito 33, 38023 Cles (TN), Italy
e-mail: lorenza.dallago@unipd.it

D. D. Perkins
Vanderbilt University, Nashville, TN, USA

W. Boyce
Queen's University, Kingston, ON, Canada

M. Molcho
National University of Ireland, Galaway, Ireland

A. Morgan
National Institute for Health and Clinical Excellence (NICE),
London, UK

Introduction

Place attachment is the deep emotional bond or connection that people develop toward specific places over time via repeated positive interactions (Altman and Low 1992; Giuliani 2003; Milligan 1998; Williams et al. 1992). Interest in place attachment can be found in a variety of social science disciplines over several decades (Russell and Ward 1982). Sociologists, for example, focus on symbolic meanings of settings and try to understand their influence on human interactions (Cuba and Hummon 1993; Greider and Garkovich 1994). Anthropologists seek to understand the cultural significance of places in everyday life (Gupta and Ferguson 1997). Human geographers have explored the concept of "sense of place", as "the psychological or perceived unity of the geographical environment" (Relph 1976; Buttimer and Seamon 1980; Tuan 1977), which is similar to the notions of place attachment (Brown 1987; Altman and Low 1992) and place identity (Proshansky 1978; Proshansky et al. 1983) as developed in environmental psychology. The concepts of place attachment and place identity have slowly gained interest in more applied fields, such as community development, community psychology (Perkins and Long 2002; Pretty 2002; Puddifoot 1995; Rowles 1990), and urban planning (Hull 1992; Manzo and Perkins 2006).

One of the limitations in the study of place attachment has been its common restriction to the spatial range of residential neighborhoods, which fails to account for time spent at work or visiting other areas (Hidalgo and Hernandez 2001). This critique may have some validity for adults, but not for adolescents, who tend to spend most of their time in their own neighborhood at home, with peers, or in nearby schools, recreation facilities, libraries, and houses of worship.

Neighborhoods have been recognized as an important life context during adolescence and their important effect on youth antisocial behavior and well-being is well known (Brooks-Gunn et al. 1997; Ingoldsby and Shaw 2002; Kalff et al. 2001; Leventhal and Brooks Gunn 2000; Wandersman and Nation 1998). Beginning in early adolescence there is an increase of direct, frequent and unsupervised exposure to neighborhood settings and conditions and direct contacts with neighborhood members (Allison et al. 1999). The neighborhood is therefore an important environment for adolescent development providing opportunities to forge supportive networks with people and organizations (Pretty 2002).

Likewise, adolescence is considered a crucial period for the development of place attachment (Hidalgo and Hernandez 2001), both because of the amount of time students spend in neighborhoods and the important role this place has for autonomy. Altman and Low (1992, p. 10) argue that "place attachment may contribute to the formation, maintenance, and preservation of the identity of a person, group, or culture" thus making it particularly relevant during adolescence. According to Hay (1998), place attachment may also serve as a resilience factor against identity crises that may occur in periods of transitions, such as adolescence, by fostering individual, group, and cultural self-esteem, self-worth, and self-pride. To be more precise, place attachment appears to be even more important during middle adolescence (14–16 years old) than during early adolescence (11–13), when children are less mobile and independent, or late (17–19) adolescence, when they are focused more on people than place and become so mobile they explore beyond their home territory or neighborhood (Chipuer et al. 2003; O'Brien et al. 2000; Derr 2002). Strong place attachment is therefore important to healthy human development throughout the lifespan, and especially during middle adolescence.

Place attachment is also assumed to be beneficial for the neighborhood since it can be a predictor of future involvement and participation (Bronfenbrenner 1986; Jessor 1993; Manzo and Perkins 2006), civic activity in the form of sustainable behaviors (Pol 2002; Uzzell et al. 2002), and environmental concerns and ecological behaviors such as protecting nature and keeping public places clean (Vorkinn and Riese 2001).

Place attachment has also been closely and consistently associated with feelings and perceptions of safety (Austin et al. 2002; LaGrange et al. 1992; Skogan 1990; Raudenbush 2003), both using objective measures, such as decreased crime rates (Brown et al. 2004; Sampson et al. 1997; Martinez and Richters 1993) as well as subjective perceptions of residents (i.e., low fear of crime; LaGrange et al. 1992; Perkins and Taylor 1996; Robinson et al. 2003).

This association has been explained in several ways. Some authors showed that physical manifestations of place attachment may provide some protection from crime: place attachment may guard against physical and social incivilities, as residents remove litter, trim lawns, and otherwise maintain appearances of places that are sources of pride and identity. Studies show that observed incivilities and weak place attachments are important predictors of crime (Brown et al. 2004). Other researchers show that place attachment can increase reactions to violation of one's territory, fostering greater vigilance and protectiveness toward one's own and neighbors' residences (Kyle et al. 2004; Warin et al. 2000).

Finally, place attachment, which tends to be a stable variable that takes a long time to develop (Brown and Perkins 1992), may directly foster behaviors and attitudes that protect against crime and that enhance social ties (Brown et al. 2004). People who feel attached to their near-home territory develop stronger sense of community, neighbor relations and mutual assistance, which are the behavioral foundations of social capital (Perkins and Long 2002; Long and Perkins 2007). Perceptions of neighborhood cohesion, trust and expectations that neighbors would exercise informal control over others are key conditions for social capital, and are more common among residents who feel a strong and meaningful bond with the place in which they live (Lewicka 2005; Brown et al. 2004).

As with place attachment, social capital is thought to be protective of the public's safety (Sampson et al. 1997): living in a neighborhood low in cohesion among neighbors is connected with perceptions of danger and disorganization. Communities with high levels of social capital are more effective at exercising social control over deviant and uncivil behaviors (Subramanian et al. 2002; Sampson et al. 1997). Similarly, weaker social ties directly increase vulnerability to crime by decreasing the likelihood of receiving deterrence, help or information from neighbors and limiting connections to and thus help from police and other institutions (Bellair 1997; Kennedy et al. 1998), although this effect may vary by type of community (Warner and Rountree 1997) or, in the present study, cross-culturally between countries.

Research Gaps and Questions

In sum, the literature based on adult samples shows strong relationships among place attachment, perceived safety, and social capital (Brown et al. 2003; Lewicka 2005; Warner and Rountree 1997). As suggested by other studies (e.g., Franzini et al. 2005; Kennedy et al. 1998; Sampson et al. 1997), we hypothesize that social capital will partially mediate the effect on perceived safety, in this case of place attachment. Further, we test this model on a large, international sample of adolescents hypothesizing that those relationships emerge during that critical stage of development and apply universally across different societies.

This paper also seeks to address some of the limitations of existing research on the importance of neighborhood perceptions and place attachment during adolescence. These limitations include:

First, the focus on objective features of neighborhoods: while it is critical to be able to describe physical, material and psycho-social features of areas (Ceballo et al. 2004; Quane and Rankin 2006), it is also key to capture the meaning that people ascribe to their local neighborhoods and the social ties within it (Daykin 1993; Pavis et al. 1997, 1998; Popay et al. 1998).

Second, the scarcity of studies done outside the United States. Little is known about variations in perceived neighborhood qualities in different socio-cultural contexts within a country or between countries (Harpham et al. 2002; Drukker et al. 2005).

Third, the scarcity of youth samples: the majority of studies concerning social capital, place attachment and safety have used adult samples. Considering the relevant role of neighborhood during adolescence, using a sample of youth is an important gap to fill (Kalff et al. 2001).

Fourth, the relative scarcity of research using nationally representative samples drawn from the full diversity of communities, including middle- and upper-income, and not just low-income neighborhoods (Drukker et al. 2005).

These limitations have been overcome through secondary analysis of the Health Behaviour in School-aged Children (HBSC) study, a World Health Organization's (WHO) collaborative study, which samples 11–13–15-year-olds in over 40 European and North American countries. The study allows for a cross-cultural examination of the study variables described above using a sample of 15-year-olds from a range of social backgrounds.

The research therefore allows us to observe differences across the three kinds of neighborhood cognitions and across multiple countries. The main questions of the research are:

First, do adolescent perceptions of neighborhood (in terms of place attachment, safety, and social capital) differ across countries? This is a new question in this research field, considering most of the studies were carried on in USA. Second, do male and female adolescent perceptions of neighborhood (in terms of place attachment, safety, and social capital) differ? Based on research with adults, many researchers believe that both social capital and fear of crime are higher for women (Campbell and Lee 1992; Lagrange and Ferraro 1989), but results have often been mixed or nonsignificant (Perkins and Taylor 1996; Robinson et al. 2003). Third, is there an association between place attachment and perceived safety? Fourth, does social capital play a mediating role in the place attachment-safety relationship? Fifth, is the relationship between place attachment, safety, and social capital consistent across countries?

Methods

### The Health Behaviour in School-aged Children Study

The HBSC study is a collaborative, cross-national research project supported by WHO/Europe (Aaro et al. 1986), that is carried out every 4 years. The study was conducted in 2001 and 2002 by a multi-disciplinary network of researchers from 36 countries and regions in the WHO European Region and North America, and coordinated by the University of Edinburgh in the United Kingdom. The study seeks new insight into adolescents' health, health behavior, and lifestyles in the social context (Currie et al. 2001).

Questionnaires, self-administered in classroom settings, have been chosen as the standard instrument for the collection of data. The international standard version of the questionnaire is developed through cooperation between countries, with consensus reached through international planning meetings. Independent re-translation of country surveys back to English, and careful checking for discrepancies with the original English version, is required for maximum comparability.

Most of the survey questions are mandatory but specific optional packages of questions are available for more in depth study. Questions on the neighborhood context were an optional part in HBSC 2001/2002 and were administered in representative samples of the early-adolescent population of 13 countries (see Fig. 1).

Sample

Although the HBSC study collected data from three age cohorts (11, 13 and 15 year-olds) we will analyze data from the 15 years old group, due to the relevance of the perception of neighborhood context at this age: this period of life is critical for the attachment to their neighborhood
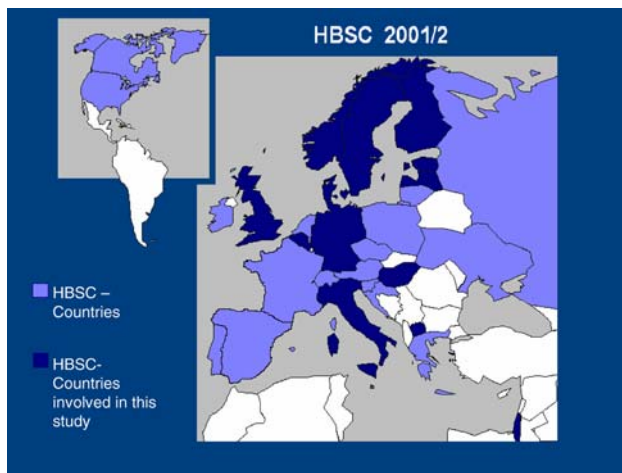
Fig. 1 Map of the HBSC countries (*shaded*) and of the HBSC countries involved in the present study (*dark*)

(Kalff et al. 2001). Representative samples of adolescents were drawn in each country (local areas sampled ranged from wealthy to poor, urban to rural, and small villages to large cities), using cluster sampling with school as the cluster unit.

The sample was composed of 20,810 students, 9,924 male (47.7%) and 10,883 females (52.3%), whose mean age was 15.64 years old. The students come from 12 European countries and Israel (Table 1) which represented Western Europe (Belgium, Germany), Eastern Europe (Estonia, Hungary, Latvia), Scandinavia (Denmark, Finland, Norway, Sweden) the British Isles (United Kingdom), and the Mediterranean countries (Italy, Macedonia, Israel).

Measures

The term "local area" was used as a proxy for the term "neighborhood" as this was more easily translatable and understood in different countries (Currie et al. 2001). Variables on perceived safety, place attachment and social capital were taken from a larger scale used by Kawachi et al. (1997).
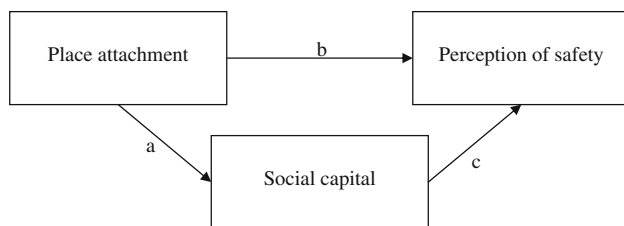
Dependent Variable: Perceived Safety

Individual personal *perception of safety* was measured using one item: "Generally speaking, I feel safe in the area where I live…." (1 = always, 2 = most of the time, 3 = sometimes, 4 = rarely or 5 = never). The item was reverse coded and standardized to create a single measure of "perceived safety." Although perceived safety or fear is often measured using various multi-item scales, it has most often been analyzed using single items (Ferraro and LaGrange 1987, p. 74) and the question above is one of the more common wordings used.

Table 1 Number of students, mean age and gender ratio in each country

	Mean age			Gender		
	N	M	SD		N	%
Belgium	2,030	15.52	0.31	M	1,027	50.59
				F	1,003	49.41
Denmark	1,380	15.76	0.33	M	664	48.12
				F	716	51.88
Estonia	1,267	15.29	0.29	M	619	48.86
				F	648	51.14
Finland	1,745	15.79	0.31	M	870	49.86
				F	875	50.14
Germany	1,576	15.65	0.33	M	762	48.35
				F	814	51.65
Hungary	1,330	15.46	0.38	M	512	38.50
				F	818	61.50
Israel	788	16.05	0.33	M	356	45.18
				F	432	54.82
Italy	1,229	15.90	0.30	M	548	44.59
				F	681	55.41
Latria	1,117	15.45	0.33	M	485	43.42
				F	632	56.58
Norway	1,624	15.48	0.29	M	800	49.26
				F	824	50.74
Sweden	1,226	15.46	0.31	M	614	50.08
				F	612	49.92
Macedonia	1,412	15.46	0.33	M	680	48.16
				F	732	51.84
United Kingdom	4,086	15.81	0.33	M	1,987	48.63
				F	2,099	51.37
Total	20,810	15.64	0.38			

Independent Variable: Place Attachment

Place attachment was also measured with a single question: "Do you think that the area in which you live is a good place to live?" (1 = Yes, it's really good, 2 = Yes, it's good, 3 = It's OK, 4 = It's not very good, and 5 = No, it's not good at all). Responses were reverse coded and standardized. While a more complex multi-item scale would be desirable, place attachment has been measured in many ways, most commonly by either a single item or just a few items (Brown et al. 2004; Cuba and Hummon 1993; Hidalgo and Hernandez 2001). To check whether adding another item or dimension would make any difference, we reanalyzed Table 4 on the whole sample adding the Likert-scaled item "(Re) the area where you live: There are good places to spend your free time (e.g., leisure centers, parks, shops)" to create a two-item place attachment scale; the results did not change.

Fig. 2 Theoretical relationships between place attachment, social capital, and perceived safety

Mediating Variable: Social Capital

Social capital was measured using a three-item scale: "People say 'hello' and often stop to talk to each other in the street"; "You can trust people around here"; "I could ask for help or a favor from neighbors." Compared to other measures of social capital, this scale emphasizes informal neighboring and social interaction rather than participation in organized civic activities. All Social Capital items used a five-point Likert response scale, from 1 = Strongly agree to 5 = Strongly disagree. The three items were reverse coded, summed, with an acceptable Alpha ($\alpha = .68$) for the total sample,[1] and we used the standardized mean score to measure "social capital".

Statistical Analysis

Mean differences were detected using MANOVA and testing the three factors as dependent variables and gender and country as independent variables. To verify the theorized mediation model (Fig. 2) we then ran a linear regression. In order to verify the mediating hypothesis we used a Sobel Test (MacKinnon et al. 1995; Preacher and Hayes 2004). According to the mediation model, the variable social capital is a mediator if: (a) place attachment significantly predicts the mediator variable social capital; (b) place attachment predicts the dependent variable safety; and (c) social capital has a significant effect on the dependent variable safety when controlling for the effect of place attachment (Fig. 2).

We used the Sobel test to estimate the significance of the mediation effect, in each country.

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[1] In checking the scale consistency within each country, only one country (Latvia) showed a Cronbach's Alpha below .65 ($\alpha_{\text{Latvia}} = .58$), which is considered acceptable internal consistency (DeVellis 2003). Most of the countries showed an alpha ranging from .65 to .70 ($\alpha_{\text{Belgium}} = .66; \alpha_{\text{Denmark}} = .65; \alpha_{\text{Estonia}} = .69; \alpha_{\text{Hungary}} = .66; \alpha_{\text{Italy}} = .68; \alpha_{\text{Norway}} = .67; \alpha_{\text{Macedonia}} = .66; \alpha_{\text{UK}} = .68$), and four countries showed an alpha above .70 ($\alpha_{\text{Finland}} = .70; \alpha_{\text{Germany}} = .71; \alpha_{\text{Israel}} = .73; \alpha_{\text{Sweden}} = .73$).

Results

The MANOVA shows significant multivariate results on the three analyzed factors for gender ($F_{(3,20053)} = 57.710$; $p < .001$), for country ($F_{(36,60171)} = 108.494$; $p < .001$) and for the interaction between gender and country ($F_{(36,60171)} = 3.165$; $p < .001$).

We found significant differences in perceived safety among countries ($F_{(12,20083)} = 237.992$; $p < .001$; see Fig. 3; Table 2): Latvian youth had by far the lowest perceptions of safety. Students from Belgium, Estonia, Germany, Israel, Italy, and the United Kingdom (UK) perceive their neighborhoods as moderately safe, while students from Norway, Sweden, Denmark, Finland and Hungary have a better perception of safety. We also found gender differences for perceived safety ($F_{(1,20083)} = 155.155$; $p < .001$): in each country girls perceive less safety than boys. Also the interaction between gender and country was significant ($F_{(1,20083)} = 2.543$; $p = .002$).

The second factor considered was place attachment which was stronger in Denmark, Norway, Sweden and Macedonia, and, for girls, in Finland. This perception was weaker in Latvia, UK, and for girls in Estonia and Italy ($F_{(12,20083)} = 100.441$; $p < .001$; see Table 2; Fig. 4). Considering gender differences, boys had a stronger place attachment than girls ($F_{(1,20083)} = 69.348$; $p < .001$), except in Israel (and marginally in Latvia), where girls have a slightly stronger place attachment than boys. Overall, this factor showed a significant interaction effect between country and gender ($F_{(12,20083)} = 3.907$; $p < .001$).

The final factor considered is social capital. We found that in Latvia, Estonia and Finland, for girls, social capital was perceived to be weaker ($F_{(12,20083)} = 76.637$; $p < .001$; see Table 2; Fig. 5), while in Macedonia, Germany, Denmark and Norway (especially for males) and in Israel (especially for females), social capital was perceived to be stronger. We also found gender differences in social capital: females perceived social capital to be weaker ($F_{(1,20083)} = 47.178$; $p < .001$), except in Israel, where girls showed a stronger perception of social capital. Also for this factor the interaction term between gender and country was significant ($F_{(1,20083)} = 3.085$; $p < .001$).

Model Verification

In accordance with MacKinnon et al. (1995), the mediation model was verified using a three-model procedure. In the first model, we used a linear regression model where place attachment was the independent variable and social capital was the dependent variable. We found a positive and significant relationship among the variables: place attachment is connected with the perception that there were friendly

Fig. 3 Perceived safety divided by country and gender (standardized mean scores)
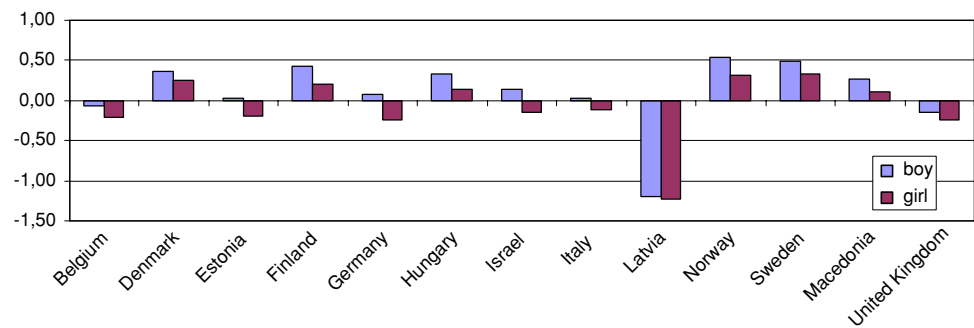
and supportive relationships among neighbors, independent of the effects of gender (see Table 3).

The second model analyzed the relationship between social capital and safety. For the whole sample, this association was positive and significant: having a good and trustful relationship with neighbors is associated with students feeling safer, independent of gender effects.

The third model regressed social capital on safety controlling for the effects of both gender and place attachment. Data showed that this relationship was significant for the entire sample across all countries.

Using the Sobel test, we verified the presence of a mediation effect of the variable social capital on the relationship between place attachment and safety (Sobel = 25.368, $p < .001$). According to this analysis, social capital in part explained the relationship between place attachment and safety: attachment to the neighborhood increased the quality of local social relationships which increased perceived safety.

We repeated the analysis for each of the 13 countries involved (Table 4): The proposed mediation effect was significant in each country. The variance explained by the final model varied from 11.2% in Israel to 29.9% in Latvia.

Discussion

In this study, we examined different youth perceptions of the communities where they live, and compared those perceptions cross-culturally across 13 different countries. Each perception—safety, place attachment, and social capital—has been found to be important to both individual social development as well as community development. We also tried to understand how these perceptions were connected with each other. The proposed model of analysis focused on the mediating role of social capital in the link between place attachment and perceived safety.

We found strong gender differences: girls tended to have a weaker bond with the local area where they lived, perceived their neighbors as less connected, and felt less safe than boys. Gender patterns regarding safety perceptions have been consistently found in adults (Lagrange and Ferraro 1989), but our data suggest that the pattern starts in adolescence or earlier and that it is consistent across all 13 countries in our study. Literature on adults usually shows that woman perceive a better social network than men: this is not true for our sample (Campbell and Lee 1992; Lagrange and Ferraro 1989; Perkins and Taylor 1996). This can be explained by girls' differential use of their local area: it is more common for boys to hang out in their neighbourhood than it is for girls (Carver et al. 2005), and therefore to know it better, while during adulthood woman are the ones to spend more time in their local area, using facilities and meeting people.

We found many between-country differences that cannot be easily ascribed to cultural or regional differences alone. Youth in Scandinavian countries showed a stronger perception of safety, place attachment and social capital, while those in Eastern European and Baltic countries had a weaker perception of all three constructs. The first result may be explained by policies which aim to increase social capital in Scandinavian countries, where level of trust and the density of membership in voluntary associations are much higher than in other European countries (Rothstein and Stolle 2003). The second result may be due to former Soviet influences suppressing the development of social capital. It is interesting to note that these cultural patterns are present even in adolescence.

National-level factors may explain other between-country differences. Although the number of countries and the variance among countries were not sufficient to allow a multi-level analysis, we have correlated our results to various country-level data (population growth and diversity, economic indicators (Gini inequality of income distribution, GDP, unemployment rates), masculinity and rates of women in power, territorial characteristics (size, rural/urban land ratio), immigration rates, crime rates). For example, we have found that perceived safety was higher in countries where GNP (gross national product) was higher and where woman had more power (parliament or other leadership positions). Social capital was connected with certain population indexes, such as higher life

Table 2 Place attachment, social capital and perceived safety non-standardized means and standard deviations for boys and girls in each country with Bonf

|	Country	Place attachment			Social capital			Perceived safety		
		Mean	SD	N	Mean	SD	N	Mean	SD	N
Boys	1. Belgium	3.39	0.68	986	3.98	0.92	986	3.62	0.86	986
	2. Denmark	3.70	0.57	653	4.25	0.89	653	3.88	0.73	653
	3. Estonia	3.46	0.78	612	3.86	0.99	612	3.43	0.91	612
	4. Finland	3.75	0.49	810	4.16	0.96	810	3.69	0.77	810
	5. Germany	3.49	0.74	735	3.98	1.00	735	3.97	0.82	735
	6. Hungary	3.68	0.56	502	4.05	0.95	502	3.78	0.84	502
	7. Israel	3.53	0.69	335	4.05	1.07	335	3.78	0.93	335
	8. Italy	3.45	0.74	536	3.93	0.99	536	3.73	0.85	536
	9. Latvia	2.56	0.88	398	3.48	1.05	398	3.42	0.66	398
	10. Norway	3.83	0.45	767	4.39	0.88	767	3.93	0.84	767
	11. Sweden	3.80	0.46	560	4.33	0.93	560	3.78	0.81	560
	12. Macedonia	3.63	0.76	662	4.33	0.90	662	4.12	0.79	662
	13. United Kingdom	3.32	0.77	1,947	3.70	1.07	1,947	3.71	0.85	1,947
	Total	3.50	0.73	9,503	4.01	1.01	9,503	3.76	0.85	9,503
Girls	1. Belgium	3.28	0.64	992	3.96	0.85	992	3.57	0.79	992
	2. Denmark	3.62	0.56	701	4.18	0.84	701	3.84	0.73	701
	3. Estonia	3.29	0.79	646	3.60	1.02	646	3.37	0.82	646
	4. Finland	3.59	0.57	850	3.97	0.96	850	3.46	0.79	850
	5. Germany	3.25	0.75	782	3.86	1.00	782	3.86	0.76	782
	6. Hungary	3.53	0.62	805	3.85	0.93	805	3.73	0.79	805
	7. Israel	3.33	0.75	405	4.13	0.95	405	3.88	0.92	405
	8. Italy	3.35	0.72	670	3.67	1.06	670	3.63	0.79	670
	9. Latvia	2.53	0.85	573	3.53	0.90	573	3.28	0.65	573
	10. Norway	3.67	0.53	801	4.20	0.89	801	3.76	0.78	801
	11. Sweden	3.68	0.56	564	4.19	0.96	564	3.73	0.78	564
	12. Macedonia	3.51	0.80	717	4.12	1.00	717	3.97	0.75	717
	13. United Kingdom	3.26	0.75	2,074	3.64	0.99	2,074	3.66	0.82	2,074
	Total	3.37	0.74	10,580	3.88	0.98	10,580	3.67	0.81	10,580
Post hoc for country (Bonferroni)		1 ≠ 2; 1 ≠ 4; 1 ≠ 6; 1 ≠ 9; 1 ≠ 10; 1 ≠ 11; 1 ≠ 12; 2 ≠ 3; 2 ≠ 5; 2 ≠ 7; 2 ≠ 8; 2 ≠ 9; 2 ≠ 12; 2 ≠ 13; 3 ≠ 4; 3 ≠ 6; 3 ≠ 9; 3 ≠ 10; 3 ≠ 11; 3 ≠ 12; 3 ≠ 13; 4 ≠ 5; 4 ≠ 7; 4 ≠ 8; 4 ≠ 9; 4 ≠ 12; 4 ≠ 13; 5 ≠ 6; 5 ≠ 9; 5 ≠ 10; 5 ≠ 11; 5 ≠ 12; 5 ≠ 13; 6 ≠ 7; 6 ≠ 8; 6 ≠ 9; 6 ≠ 10; 6 ≠ 11; 6 ≠ 13; 7 ≠ 9; 7 ≠ 10; 7 ≠ 11; 7 ≠ 12; 7 ≠ 13; 8 ≠ 9; 8 ≠ 10; 8 ≠ 11; 8 ≠ 12; 8 ≠ 13; 9 ≠ 10; 9 ≠ 11; 9 ≠ 12; 9 ≠ 13; 10 ≠ 12; 10 ≠ 13; 11 ≠ 12; 11 ≠ 13; 12 ≠ 13			1 ≠ 2; 1 ≠ 3; 1 ≠ 8; 1 ≠ 9;1 ≠ 10; 1 ≠ 11; 1 ≠ 12; 1 ≠ 13; 2 ≠ 3; 2 ≠ 4; 2 ≠ 5; 2 ≠ 6; 2 ≠ 8; 2 ≠ 9; 2 ≠ 13; 3 ≠ 4; 3 ≠ 5; 3 ≠ 6; 3 ≠ 7; 3 ≠ 9; 3 ≠ 10; 3 ≠ 11; 3 ≠ 12; 3 ≠ 13; 4 ≠ 5; 4 ≠ 6; 4 ≠ 8; 4 ≠ 9; 4 ≠ 10; 4 ≠ 11; 4 ≠ 12; 4 ≠ 13; 5 ≠ 7; 5 ≠ 8; 5 ≠ 9; 5 ≠ 10; 5 ≠ 11; 5 ≠ 12; 5 ≠ 13; 6 ≠ 7; 6 ≠ 8; 6 ≠ 9; 6 ≠ 10; 6 ≠ 11; 6 ≠ 12; 6 ≠ 13; 7 ≠ 8; 7 ≠ 9; 7 ≠ 10; 7 ≠ 11; 7 ≠ 13; 8 ≠ 9; 8 ≠ 10; 8 ≠ 11; 8 ≠ 12; 8 ≠ 13;9 ≠ 10;9 ≠ 11;9 ≠ 12;9 ≠ 13; 10 ≠ 13; 11 ≠ 13; 12 ≠ 13			1 ≠ 2; 1 ≠ 3; 1 ≠ 5; 1 ≠ 6; 1 ≠ 7; 1 ≠ 9; 1 ≠ 10; 1 ≠ 11; 1 ≠ 12; 1 ≠ 13; 2 ≠ 3; 2 ≠ 4; 2 ≠ 6; 2 ≠ 8; 2 ≠ 9; 2 ≠ 12; 2 ≠ 13; 3 ≠ 4; 3 ≠ 5; 3 ≠ 6; 3 ≠ 7; 3 ≠ 8; 3 ≠ 10; 3 ≠ 11; 3 ≠ 12; 3 ≠ 13; 4 ≠ 5; 4 ≠ 6; 4 ≠ 7; 4 ≠ 8; 4 ≠ 9; 4 ≠ 10; 4 ≠ 11; 4 ≠ 12; 4 ≠ 13; 5 ≠ 6; 5 ≠ 8; 5 ≠ 9; 5 ≠ 11; 5 ≠ 12; 5 ≠ 13; 6 ≠ 9; 6 ≠ 12; 7 ≠ 8; 7 ≠ 9;7 ≠ 12; 7 ≠ 13; 8 ≠ 9; 8 ≠ 10; 8 ≠ 12; 9 ≠ 10; 9 ≠ 11; 9 ≠ 12; 9 ≠ 13; 10 ≠ 12; 10 ≠ 13; 11 ≠ 12; 12 ≠ 13		

expectancies, higher population growth, and higher percentages of youth in the total population. Place attachment was not as clearly connected with national data with one exception: in countries where Gini (income inequality) was higher, girls' place attachment was weaker. Further analysis should aim for a better understanding of between-country differences, and to explain them using second level (national) data.

Despite the cross-cultural differences we have found in the descriptive analysis, showing how students from different countries perceived their neighborhood differently on all three factors, the model of the relationship among the different factors was the same across countries. This was our over-riding finding: despite different perceptions and discordant opinions shown by 15-year-olds of different nationalities, the proposed model was confirmed in each

Fig. 4 Place attachment divided by country and gender (standardized mean scores)
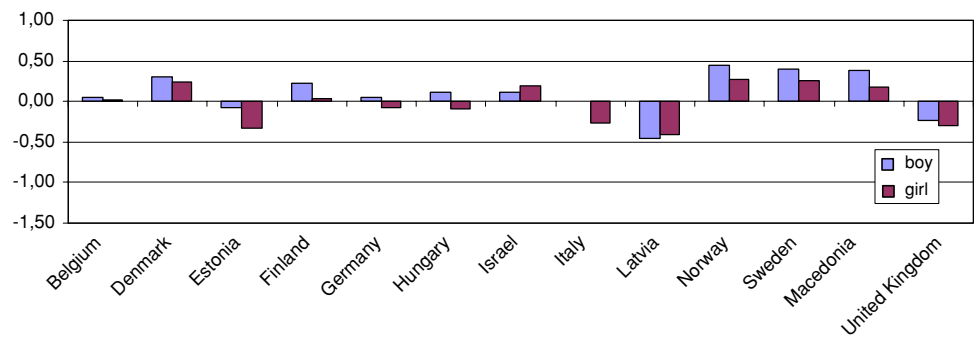
Fig. 5 Social capital divided by country and gender (standardized mean scores)
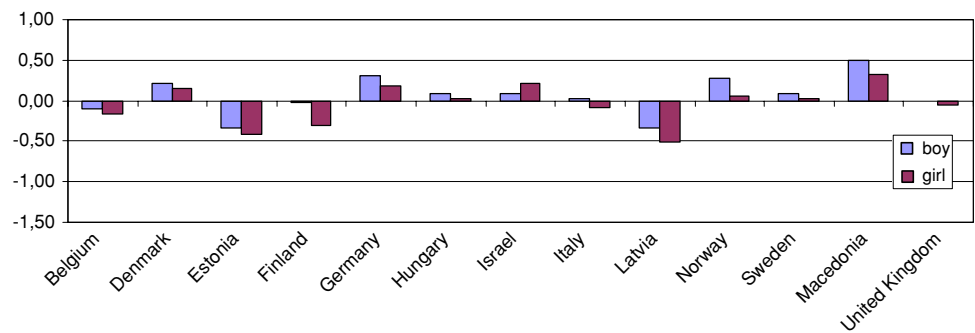
Table 3 Test of the mediation model using linear regression and Sobel test with the whole sample (controlled by gender)

		B	SE B	Beta	F	p	R^2	Sobel
Total	1st model[a]	0.393	0.006	0.393	60.590	<.001	0.157	25.368***
	2nd model	0.432	0.006	0.430	68.131	<.001	0.192	
	3rd model I	0.359	0.007	0.357	52.720	<.001	0.223	
	3rd model II	0.189	0.007	0.189	27.934	<.001		

*** $p < 0.001$

[a] 1st model: place attachment → social capital; 2nd model: place attachment → safety; 3rd model I: place attachment → safety; 3rd model II: social capital → safety

country. Thus, despite cultural and geographic differences, social capital had an important role in making students feel safer, and it mediated the connection between place attachment and perceived safety.

All of these cross-national similarities in the model added substantially to our understanding of the universal relationships among place attachment, informal social capital and perceived safety, just as the differences in those key community cognitions between boys and girls and especially between countries revealed potential areas of strength or concern. Further, using a youth sample confirmed that relationships assumed, and gender differences found, for adults were, in some cases, already present in adolescence. Despite the strengths of this study, this was just a first step in exploring these variables and this model internationally and in young people. There is still a need for further research to better understand the sources, dynamic development, and nature of community attachments, social fabric, and sense of security, among

youths and adults of different cultures living in different sociopolitical contexts around the world.

Limitations and Future Research

A main limitation of the study was that its reliance on cross-sectional data does not permit verification of the direction of effects in the model. Only a longitudinal study could confirm the direction of the associations between chosen variables. Even though our model was supported by previous research showing that place attachment is the most stable and perceived safety the most sensitive and least stable of the three variables, there are studies showing an opposite pattern. For example, some studies showed that key indicators of neighborhood decline were crime and fear (Taylor 2001) and therefore it was fear of crime (or perception of too many neighborhood delinquents; Mesch and Manor 1998) that had an impact on neighborhood attachment (Taylor et al. 1985; Sampson and Groves 1989). Fear

Table 4 Linear regressions and Sobel test of social capital mediating the relationship between place attachment and perceived safety for each country (controlled by gender)

		B	SE B	Beta	F	p	R^2	Sobel
Belgium	1st model[a]	0.415	0.024	0.366	17.461	<.001	0.134	5.008***
	2nd model	0.462	0.020	0.450	22.690	<.001	0.208	
	3rd model I	0.416	0.022	0.407	19.022	<.001	0.217	
	3rd model II	0.101	0.019	0.112	5.228	<.001		
Denmark	1st model	0.307	0.027	0.300	11.567	<.001	0.089	5.509***
	2nd model	0.292	0.023	0.328	12.814	<.001	0.112	
	3rd model I	0.245	0.024	0.275	10.351	<.001	0.133	
	3rd model II	0.145	0.023	0.166	6.265	<.001		
Estonia	1st model	0.331	0.028	0.319	11.854	<.001	0.100	6.367***
	2nd model	0.399	0.028	0.378	14.455	<.001	0.152	
	3rd model I	0.332	0.029	0.315	11.651	<.001	0.189	
	3rd model II	0.206	0.027	0.202	7.548	<.001		
Finland	1st model	0.396	0.022	0.399	17.896	<.001	0.178	6.588***
	2nd model	0.238	0.018	0.312	13.614	<.001	0.117	
	3rd model I	0.178	0.019	0.233	9.307	<.001	0.138	
	3rd model II	0.137	0.019	0.178	7.085	<.001		
Finland	1st model	0.386	0.023	0.401	17.026	<.001	0.163	6.354***
	2nd model	0.356	0.024	0.348	14.815	<.001	0.145	
	3rd model I	0.290	0.026	0.283	11.074	<.001	0.173	
	3rd model II	0.186	0.027	0.175	6.848	<.001		
Hungary	1st model	0.229	0.028	0.220	8.091	<.001	0.047	5.577***
	2nd model	0.253	0.023	0.292	11.102	<.001	0.096	
	3rd model I	0.214	0.023	0.247	9.324	<.001	0.135	
	3rd model II	0.168	0.022	0.203	7.698	<.001		
Israel	1st model	0.297	0.039	0.267	7.542	<.001	0.072	2.828***
	2nd model	0.295	0.034	0.299	8.665	<.001	0.107	
	3rd model I	0.260	0.035	0.263	7.321	<.001	0.112	
	3rd model II	0.097	0.032	0.110	3.051	.002		
Italy	1st model	0.362	0.026	0.377	14.002	<.001	0.141	6.383***
	2nd model	0.386	0.025	0.400	15.129	<.001	0.160	
	3rd model I	0.305	0.027	0.318	11.298	<.001	0.190	
	3rd model II	0.201	0.028	0.201	7.171	<.001		
Latvia	1st model	0.283	0.023	0.351	12.092	<.001	0.126	6.006***
	2nd model	0.629	0.033	0.517	19.113	<.001	0.266	
	3rd model I	0.558	0.035	0.456	16.149	<.001	0.299	
	3rd model II	0.292	0.042	0.197	6.920	<.001		
Norway	1st model	0.436	0.026	0.394	16.970	<.001	0.163	6.717***
	2nd model	0.278	0.018	0.363	15.611	<.001	0.153	
	3rd model I	0.222	0.019	0.290	11.571	<.001	0.181	
	3rd model II	0.127	0.017	0.183	7.315	<.001		
Sweden	1st model	0.373	0.028	0.367	13.192	<.001	0.134	6.196***
	2nd model	0.259	0.020	0.350	12.674	<.001	0.133	
	3rd model I	0.207	0.022	0.278	9.504	<.001	0.172	
	3rd model II	0.150	0.021	0.205	7.019	<.001		
Macedonia	1st model	0.365	0.025	0.372	14.865	<.001	0.145	7.559***
	2nd model	0.396	0.028	0.354	14.133	<.001	0.128	
	3rd model I	0.306	0.029	0.276	10.449	<.001	0.180	
	3rd model II	0.263	0.030	0.232	8.779	<.001		

Table 4 continued

		B	SE B	Beta	F	p	R²	Sobel
United Kingdom	1st model	0.471	0.014	0.480	34.651	<.001	0.230	14.494***
	2nd model	0.498	0.014	0.498	36.609	<.001	0.280	
	3rd model I	0.385	0.015	0.384	25.459	<.001	0.296	
	3rd model II	0.246	0.015	0.241	15.957	<.001		

*** $p < 0.001$

[a] 1st step: place attachment → social capital; 2nd step: social capital → low safety; 3rd step I: sex → low safety; 3rd step II: place attachment → low safety; 3° step III: social capital → low safety

of crime may keep residents away from neighborhood places and events, and erode social ties. We suggest that both points of view are probably correct: the direction between safety and place attachment could be circular and not linear. Despite this, we also tried to analyze other hypothesized models with our data, changing the directions of the connection in our theoretical model: the results showed that the model presented is the strongest one.

Another possible weakness of our study regards measurement: the measures we used are not based on validated scales, and two of them are single items. The use of single-item measures was required for practical reasons in that the multi-scope HBSC survey was very long (particularly for adolescents with short attention spans) and focused mainly on other variables; and single-item measures minimized respondent refusal and reduced data collection and data-processing costs. Single-item scales are more common in sociological, economic, or medical research, although many psychological studies have used single items to measure equally complex constructs (e.g., quality of life, job satisfaction, religious values; Gorsuch and McFarland 1972; Cunny and Perri 1991; Wanous et al. 1997). Some of the strengths of single-item measures are: (a) more efficient use of questionnaire space and time; (b) reduced cost; and (c) increased face validity (Drolet and Morrison 2001; Gardner et al. 1998; Aiken 1980). However, concerns still exist regarding internal consistency and reliability as well as the challenge of measuring multi-dimensional constructs (Loo 2002). Despite the wide use of single or few items as proxy measures, future research should aim to use more thoroughly validated measures. In particular, the social capital scale only captured informal neighboring perceptions, trust, and social interactions rather than the more common participation in organized civic activities.

We considered place attachment as a positive cognition and reflection on one's community, but there is a stream of literature that is against this view, considering how place attachment can be seen as a limitation to students' autonomy (cf. Fried 2000). These authors argue that emotional attachment to place may be a result of the absence of life alternatives, as opposed to some form of conscious choice. Other research or further analysis of our own data can help

disentangle this issue. Connecting place attachment to other youth outcomes (such as health behaviors, participation, mobility), apart from perceived safety, could help us to build a better understanding of the role of the concept in adolescent development.

Further research could also focus on other ages: analysis of different age cohorts can underline the development phases of place attachment and social ties: it would be interesting to see if they become stronger or weaker during adolescence, and if there are contextual factors explaining these changes.

Finally, although we had data from too few countries to effectively use multilevel analysis, data nested at both the national and local levels could better address questions of the relative influence of individual, community, and societal-level factors.

Conclusions

Despite the above limitations, we consider this study to be a unique example of the use of comparative international research to test and support a community and environmental psychological theoretical model. The universality of such psychological theories are frequently taken for granted, but rarely tested cross-nationally. Our findings (a consistent model across countries despite both national and gender differences in the levels of each variable) offer support for the universality of this particular theory, and the use of international data offers community psychologists an important tool to examine the validity of our concepts, theories, and potentially interventions across different cultures and sociopolitical and historical contexts.

One lesson gained from these results is that increasing safety does not depend only on lowering crime rates or adding controls (on which politicians tend to focus), but also on how young people perceive their neighborhood and the relationships among neighbors. This is extremely relevant for community psychology: if the aim of our work is to increase citizens' safety, we have to address their cognitions and attachments toward both their neighbors and the place where they live. Furthermore, we now understand

better how place attachment works through social ties, increasing opportunities to meet neighbors and become better acquainted. This reinforcing and extending of one's place-based social network, starting in childhood, appears to increase perceived safety across different nations and cultures.

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