



Earthquake risk perception, communication and mitigation strategies across Europe
Piero Farabollini, Francesca Romana Lugerì, Silvia Mugnano (Eds.)

Assessing Resilience of Mountain Communities Hit by the Central Italy Earthquakes of 2016

Teresa Carone¹, Giulio Burattini², Fausto Marincioni³

Abstract

Community resilience is “the ability of a system to recover from the effect of a hazard, preserving its essential structures and functions”. Psychological aspects have a significant influence on the adaptive capacity of populations hit by natural disasters. Among such aspects, place attachment appears to play an important role.

The well-being deriving from the identification with a place has been acknowledged in literature; the loss of one's own place has devastating effects on the emotional state of individuals.

Studies about natural disasters have largely underlined how such events change the emotional bonds with the territory, but only recently place attachment has been explored as a crucial aspect for maintaining the communities' resilience; most of the papers concerned climate change resilience, very few earthquake resilience.

This chapter aims to contribute to the understanding of the influence of territorial bonds on the social resilience of communities hit by earthquakes.

Data were collected through paper questionnaires, in three small mountain communities of central Italy, about one year after the earthquake of August 24th, 2016. Results show that place attachment was a central value for the three-quarters of the interviewees, despite the seismic hazard, in all three areas.

Findings encourage further investigations in other areas with different territorial settings and urban size, for a better knowledge of the role of place attachment for earthquake resilience.

Keywords: community resilience, earthquake, place attachment, Italy, Marche region.

Works cited

Altman, I., Low, S.M., 1992, *Place attachment. A conceptual inquiry*. Human Behavior and Environment book series. Springer.

Bark, R.H., Sutherland, P., 2019, “Reconciling place attachment with catchment-based flood risk management: what can we learn from film?”, *Journal of Flood Risk Management*, 12(Suppl. 2), e12531. Doi.org/10.1111/jfr3.12531.

Baylan, E., Aşur, F., Şehribanoğlu, S., 2018, “Sense of place and satisfaction with landscaping in post-earthquake housing areas: the case of Edremit TOKI-Van (Turkey)”, *Architecture, City and Environment*, 13(38), 31 – 56. Doi.org/10.5821/ace.13.38.5207.

¹ Università Politecnica delle Marche – Dipartimento di Scienze della Vita e dell’Ambiente, Via Brecce Bianche, SNC, Ancona (AN), Italy, e-mail: m.t.carone@staff.univpm.it.

² Università Politecnica delle Marche – Dipartimento di Scienze della Vita e dell’Ambiente, Via Brecce Bianche, SNC, Ancona (AN), Italy, e-mail: giulio.burattini.22@alice.it.

³ *Corresponding Author*; Università Politecnica delle Marche – Dipartimento di Scienze della Vita e dell’Ambiente, Via Brecce Bianche, SNC, Ancona (AN), Italy, e-mail: f.marincioni@univpm.it.



Earthquake risk perception, communication and mitigation strategies across Europe

Piero Farabollini, Francesca Romana Lugerì, Silvia Mugnano (Eds.)

Bratman, G.N., Daily, G.C., Levy, B.J., Gross, J.J., 2015, “The benefits of nature experience: improved affect and cognition”, *Landscape and Urban Planning*, 138, 41–50. Doi: 10.1016/j.landurbplan.2015.02.005.

Brown, B., Perkins, D.D., 1992, *Disruption in place attachment*. In: Altman I., Low, S.M. (Eds.), *Place Attachment*, New York: Plenum Press. Doi: 10.1007/978-1-4684-8753-4_13.

Brown, K., Adger, N.W., Devine-Wright, P., Anderies, J., Barr, S., Bousquet, F., Butler, C., Evans, L., Marshall, N., Quinn, T., 2019, “Empathy, place and identity interactions for sustainability”, *Global Environmental Change*, 56, 11 - 17.

Casey, E.S., 2000, *Remembering, Second Edition: A Phenomenological Study*. Indiana University Press. JSTOR, www.jstor.org/stable/j.ctt16gzfjf.

Clemente, M., Salvati, L., 2017, “Interrupted Landscapes: Post-Earthquake Reconstruction in between Urban Renewal and Social Identity of Local Communities”, *Sustainability*, 9. Doi:10.3390/su9112015.

Costa, M., 2010, *Psicologia ambientale e architettura, Come l'ambiente e l'architettura influenzano la mente e il comportamento*. Franco Angeli, Milano.

Dannenbergh, A.L., Frumkin, H., Hess, J.J., Ebi, K.E., 2019, “Managed retreat as a strategy for climate change adaptation in small communities: public health implications”, *Climatic Change*, 153, 1 – 14. Doi.org/10.1007/s10584-019-02382-0

Eibl-Eibesfeldt, I., 2007, *Human Ethology (Foundation of Human Behavior)*. Routledge Editor.

Graumann, C.F., 2002, The phenomenological approach to people-environment studies. In: Bechtel, R.B., Churchman, A. (Eds.), *Handbook of Environmental Psychology*, Wiley & Sons, New York.

Gunnarsson, B., Knez I., Hedblom M., Sang, Å., 2016, “Effects of biodiversity and environment-related attitude on perception of urban green space”, *Urban Ecosystems*, 20, 1, 37 – 49. Doi.org/10.1007/s11252-016-0581-x.

Guo, Y., Zhang, J., Zhang, Y., Zheng, C., 2018, “Catalyst or Barrier? The influence of Place Attachment on Perceived Community Resilience in Tourism Destinations”, *Sustainability*, 10, 2347. Doi:10.3390/su10072347.

Haney, T.J., 2019, “Move on or dig in? Risk awareness and mobility plans in disaster-affected communities”. *Journal of Contingencies and Crisis Management*, 27, 224 – 236. Doi: 10.1111/1468-5973.12253

<https://ugeo.urbistat.com>. Last access 10/11/2019

<https://www.earthquake.usgs.gov>. Last access 10/11/2019.

Hulme, M., 2008, “Geographical work at the boundaries of climate change”, *Transactions of the Institute of British Geographers*, 33, 5 – 11.

Khanian, M., Serpush, B., Gheitarani, N., 2019, “Balance between place attachment and migration based on subjective adaptive capacity in response to climate change: the case of Famenin County in western Iran”, *Climate and Development*, 11, 1, 69 – 82. Doi.org/10.1080/17565529.2017.1374238.

Knez, I., 2005, “Attachment and identity as related to a place and its perceived climate”, *Journal of Environmental Psychology*, 25, 207–218. Doi: 10.1016/j.socscimed.2017.01.009.

Knez, I., 2006, “Autobiographical memories for places”, *Memory*, 14, 359–377. Doi: 10.1080/09658210500365698.

Knez, I., 2013, “How concerned, afraid and hopeful are we? Effects of egoism and altruism on climate change related issues”, *Psychology*, 10, 744–752. Doi: 10.4236/psych.2013.410106.

Knez, I., 2014, “Place and the self: an autobiographical memory synthesis”, *Philosophical Psychology*, 2, 164–192. Doi.org/10.1080/09515089.2012.728124.



Earthquake risk perception, communication and mitigation strategies across Europe

Piero Farabollini, Francesca Romana Lugerì, Silvia Mugnano (Eds.)

Knez, I., 2016, "Is climate change a moral issue? Effects of egoism and altruism on pro-environmental behavior", *Current Urban Studies*, 4, 157–174. Doi: 10.4236/cus.2016.42012.

Knez, I., Eliasson I., 2017, "Relationships between Personal and Collective Place Identity and Well-Being in Mountain Communities", *Frontiers in Psychology*, 8, 79. Doi: 10.3389/fpsyg.2017.00079.

Knez, I., Thorsson, S., 2008, "Thermal, emotional and perceptual evaluations of a park: cross-cultural, and environmental attitude comparisons", *Building and Environment*, 43, 1483–1490. Doi: 10.1016/j.buildenv.2007.08.002.

Knez, I., Thorsson, S., Eliasson, I., 2013, "Climate change: concerns, beliefs, and emotions in residents, experts, decision makers, tourists, and tourist industry", *American Journal of Climate Change*, 2, 254–269. Doi: 10.4236/ajcc.2013.24025.

Knez, I., Thorsson, S., Eliasson, I., Lindberg, F., 2009, "Psychological mechanisms in outdoor place and weather assessment: towards a conceptual model", *International Journal of Biometeorology*, 53, 101–111. Doi: 10.1007/s00484-008-0194-z.

Lachowycz, K., Jones, A.P., 2013, "Towards a better understanding of the relationship between green space and health: development of a theoretical framework", *Landscape and Urban Planning*, 118, 62–69. Doi: 10.1016/j.landurbplan.2012.10.012.

Lemée, C., Fleury-Bahi, G., Navarro, O., 2019, "Impact of Place Identity, Self-efficacy and Anxiety State on the Relationship Between Coastal Flooding Risk Perception and the Willingness to Cope", *Frontiers in Psychology*, 10, 499. Doi: 10.3389/fpsyg.2019.00499.

Lewicka, M., 2008, "Place attachment, place identity, and place memory: restoring forgotten city past", *Journal of Environmental Psychology*, 28, 209–231. Doi: 10.1016/j.jenvp.2008.02.001.

Manzo, L., Perkins, D., 2006, "Finding common ground: The importance of place attachment to community participation and planning", *Journal of Planning Literature*, 20, 335–350. Doi.org/10.1177/0885412205286160.

MillenniumEcosystemAssessment [MA], 2005, *Ecosystems and Human Well-Being: Synthesis*. Washington, DC: Island Press.

Ode Sang, Å., Knez I., Gunnarsson, B., Hedblom, M., 2016, "The effects of naturalness, gender, and age on how urban green space is perceived and used", *Urban Forestry & Urban Greening*, 18, 268–276. Doi: 10.1016/j.ufug.2016.06.008.

Reser, J.P., Morrissey, S.A., Ellul, M., 2011, The threat of climate change: Psychological response, adaptations, and impacts. In: Weisbecker, I. (Ed.), *Climate change and human well-being*, Springer.

Rubinstein, P. L., Parmelee, P.A., 1992, Attachment to place and the representation of the life course by the elderly. In: Altman I., Low, S.M. (Eds.), *Place Attachment*, New York: Plenum Press. Doi: 10.1007/978-1-4684-8753-4_13.

Stobbelaar, D.J., Pedroli, B., 2011, "Perspectives on landscape identity: a conceptual challenge", *Landscape Research*, 3, 321–339. Doi: 10.1080/01426397.2011.564860.

Tartaglia, S., 2006, "A preliminary study for a new model of sense of community", *Journal of Community Psychology*, 34, 25–36. Doi.org/10.1002/jcop.20081.

Turner, M.G., 1989, "Landscape ecology: the effect of pattern on process", *Annual Review of Ecology, Evolution, and Systematics*, 20, 171–197. Doi: 10.1146/annurev.ecolsys.20.1.171.

UNISDR. *Terminology on Disaster Risk Reduction*. Geneva; 2009.

Verbrugge, L., van den Born, R., 2018, "The role of place attachment in public perceptions of a re-landscaping intervention in the river Waal (the Netherlands)", *Landscape and Urban Planning*, 177, 241 – 250. Doi.org/10.1016/j.landurbplan.2018.05.011.

Zwiers, S., Markantoni, M., Strijker, D., 2016, "The role of change-and stability-oriented place



Geographies
of the
Anthropocene

OPEN
ACCESS
PEER-REVIEWED
SERIES
ISSN 2011-3171

IL Sileno
Edizioni

Earthquake risk perception, communication and mitigation strategies across Europe

Piero Farabollini, Francesca Romana Lugeri, Silvia Mugnano (Eds.)

attachment in rural community resilience: a case study in south-west Scotland”, *Community Development Journal*, 53, 2, 281 – 300. Doi:10.1093/cdj/bsw020.