

PERCEPTIONS OF URBAN ENVIRONMENT AND PHYSICAL ACTIVITY

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DIPARTIMENTO DI PSICOLOGIA
DEI PROCESSI DI SVILUPPO
E SOCIALIZZAZIONE

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- Health Enhancing Physical Activity - European network -

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Summary of the presentation

- A. General introduction: the Environmental Psychology perspective on the relationship among **urban spaces**, **environmental perceptions** and **people's physical activity**
- B. Environmental **affordances** of urban and green spaces for physical activity
- C. Some research lines on inhabitants' **urban environmental perceptions** and **green areas**

A.

ECOLOGICAL TURN OF PSYCHOLOGY

- Transactional-contextual approach

DEMANDS FROM ARCHITECTURAL DESIGN (50s - '60s)

•Social Psychology

DEMANDS FROM NATURAL BIO-ECOLOGICAL SCIENCES (70s - '80s)

ENVIRONMENTAL PSYCHOLOGY: NEW FIELD OF PSYCHOLOGY

FOCUS ON PHYSICAL-SPATIAL DIMENSION OF PSYCHOLOGICAL PROCESSES

ARCHITECTURAL PSYCHOLOGY

"place specific" environmental psychology

ENVIRONMENTAL PSYCHOLOGY OF SUSTAINABILITY

- Environmental concern
- Pro-environmental behaviors
- Conservation psychology

ENVIRONMENTAL PSYCHOLOGY: A DEFINITION

(Bonnes, Carrus, 2004. Environmental Psychology, Overview. Encyclopedia of Applied Psychology, Vol.I (801-814))

"Environmental psychology is that branch of psychology that studies the relationship between people psychological processes and socio-physical features of the built and natural environment, in order to enhance human well-being and to improve people-environment relations".

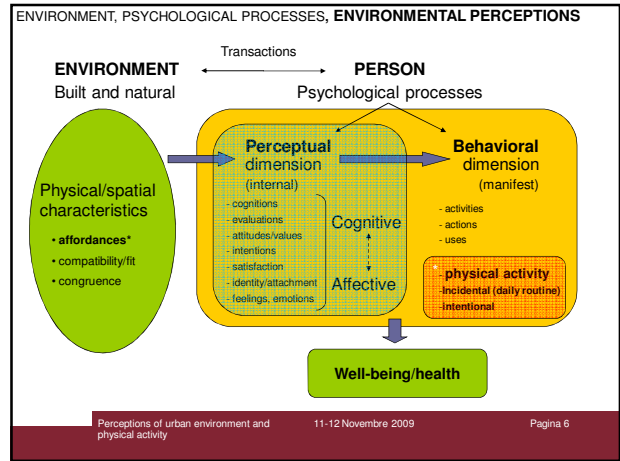
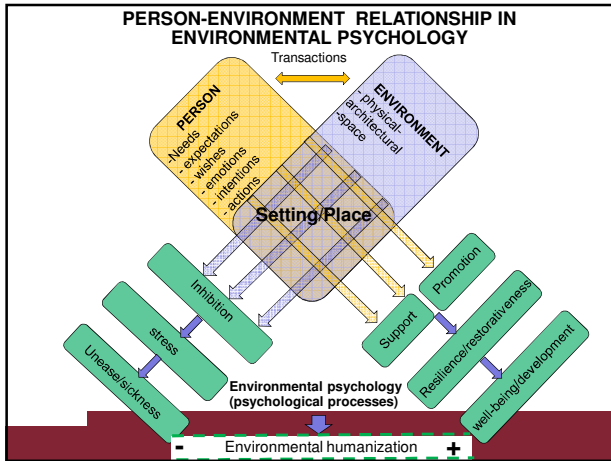
People (Person) - environment relations

psychological processes

socio-physical environment

built and natural environment

human well-being



B. Physical activity and ENVIRONMENTAL AFFORDANCES (Gibson, J.J., 1979; 1986; Greeno, J. G. 1994)

Affordances are the perceivable possibilities for action

↓

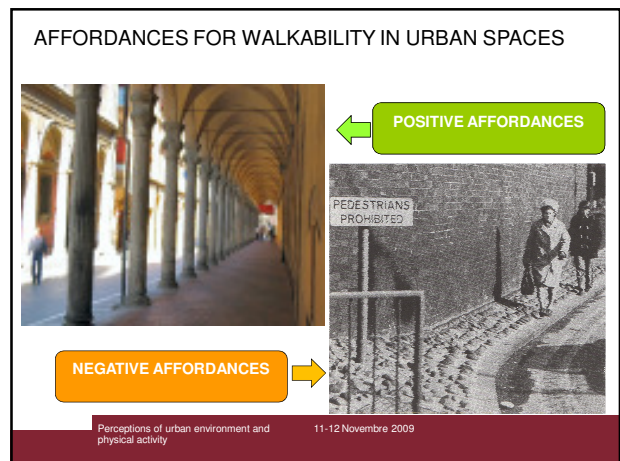
Things tell us what to do with them

We perceive properties of the environment in a **direct and immediate way**

We do not perceive single characteristics of the environment but environmental complexity and available **cues** (for possible specific actions) that can :

- Support → **Positive affordances** for a specific action (i.e. walking)
- Promote → **Positive affordances** for a specific action (i.e. walking)
- Inhibit → **Negative affordances** for specific actions

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AFFORDANCES FOR WALKABILITY IN GREEN AREAS



C. Three main research lines (CIRPA) on environmental perceptions in urban environment and green areas

GENERAL AIMS

Understanding and monitoring residents perceptions, attitudes and behaviours towards the diverse aspects of the daily **urban environment**.

Particular attention to the **"natural/green component"** of daily urban environment (neighborhood)

Environmental psychological research have widely documented a **positive effect of the individual experience of nature/green spaces**

- **preference** for natural scenes (Kaplan & Kaplan, 1989)
- **restorative/healthy** effects of exposure to nature (Hartig, Mang & Evans, 1991; Ulrich, 1968)
- development of individual and shared **environmental concern** (Fransson & Garling, 1999)
- positive affordances of urban green areas for **physical activity?**

Fig.1 - Natural Reserves in the city of Rome



C. Three main research lines (CIRPA) on environmental perceptions in urban environment and green areas

1. Expert vs. inhabitants evaluations of urban environmental quality

(cf. Bonnes & Bonaiuto 1995; Bonnes, Uzzell, Carrus, Kelay, 2007)

2. Developing Indicators of Perceived Residential Environment Quality

for Assessing Inhabitants' Residential Satisfaction - cf. Bonaiuto et al., 1999; Bonaiuto & Bonnes, 2002; Bonnes et al. 2005)

3. Resident's perceptions, attitudes and behaviours related to urban green areas

(cf. Bonnes, et al., 1999; Carrus, et al. 2003; Carrus et al., 2005, Laforzezza et al. 2009)

METHOD

Multi-disciplinary and inter-disciplinary collaboration with other research groups: *biologists (plant & animal ecologists), architects, urban planners*

Support of local authorities: e.g., *Rome Municipality, Lazio Region, etc.* Collaboration with Unesco-MAB Project n. 11 on **urban ecosystems** (MAB-Rome Project, since 80's)

1) Expert vs. inhabitants evaluations of urban environmental quality (cf. Bonnes & Bonaiuto 1995; Bonnes, Uzzell, Carrus, Kelay, 2007)

• The **congruence** between inhabitants' and experts' evaluations of the "quality" of **built** and **natural** urban environment can be **problematic** (Tab.1).

* For the **green features** of the residential environment congruence is particularly **weak** (even negative correlations).

* **Natural scientists** assign particular value to the **bio-physical naturalness** of urban green, while **inhabitants** assign particular value to its **maintenance, accessibility** and **stability** through the time

Tab.1 Rank correlation coefficients between **expert's** and **inhabitants'** evaluations of the **quality** of the residential environment (N = 461) in a specific neighbourhood of Rome (Bonnes, Bonaiuto, 1995)

Features of the urban environment	Spearman r_s coefficient
Built environment	
<i>Spatial density</i>	.543 (n.s.)
<i>Population density</i>	.600 (n.s.)
<i>Tertiarisation</i>	.090 (n.s.)
<i>Functional centrality</i>	.771 (n.s.)
Natural environment	
<i>Flora and vegetation quality</i>	-.429 (n.s.)
<i>Endowment of green areas</i>	-.429 (n.s.)
<i>Accessibility to urban public green areas</i>	-.660 (n.s.)

2) Developing Indicators of Perceived Residential Environment Quality for Assessing Inhabitants' Residential Satisfaction - cf. Bonaiuto *et al.*, 1999; Bonaiuto & Bonnes, 2002, Bonaiuto, Fornara & Bonnes, 2006)

• Inhabitants' satisfaction/dissatisfaction with the urban residential (neighborhood) environment have a **multidimensional character**

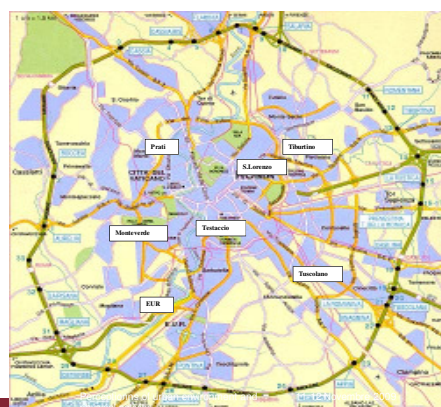
• Development of **standard** subjective indicators of **perceived residential environment quality** (PREQ), which can be reliably measured, covering all main features of the residential environment: spatial-architectural features, social, functional, contextual (Fig. 3; Tab. 2)

• The presence of green areas in the neighbourhood is a **significant positive predictor** of people's residential satisfaction and neighbourhood attachment (Tab. 3)

• Assessing inhabitant's residential satisfaction with related residential experiences (i.e. residential attachment, multiplace activities, ecc.)...

• ... and related physical activity ?

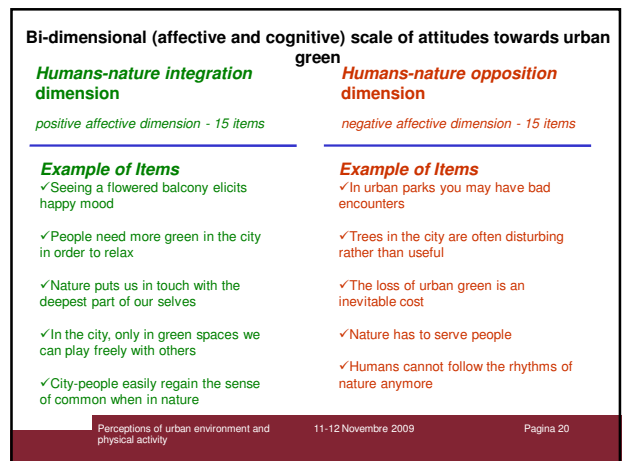
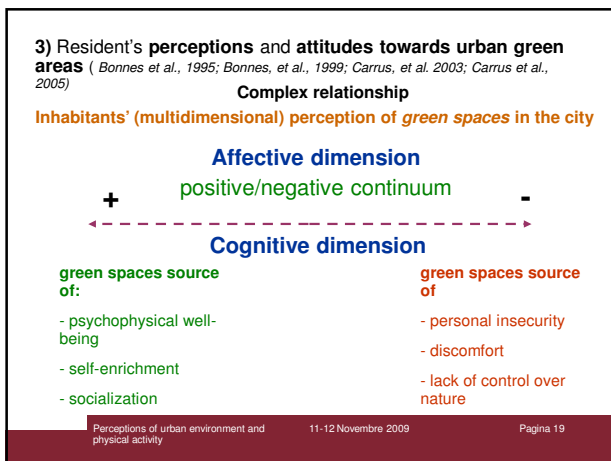
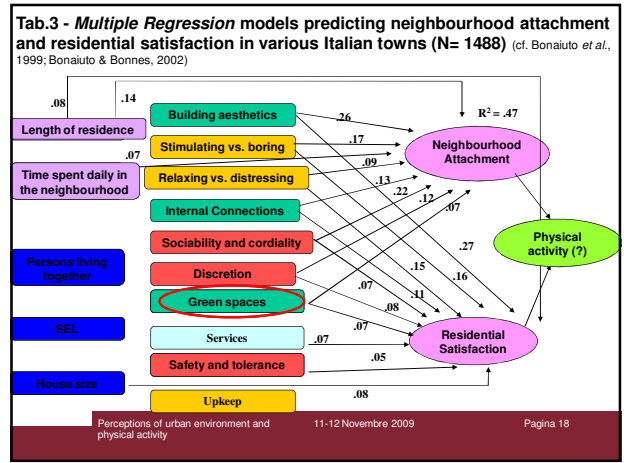
Fig. 3 - The 7 diverse districts considered for tool validation



Bonaiuto *et al.*, (2003)

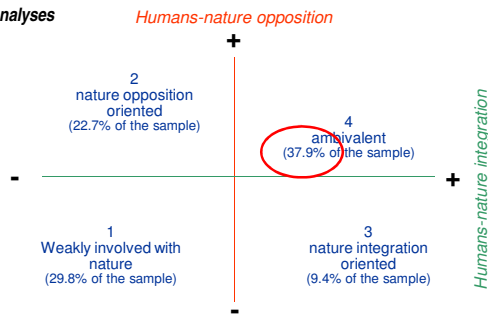
Tab 2 - dimensions (11 scales) of Perception of Residential Environmental Quality

Generative criterion	Scale	Factor	N Items	Alfa	
Architectural/ town-planning features	1 Architectural and town-planning spaces	1.1 Building aesthetics	8	.92	
		2.1 Building density	8	.92	
		3.1 Building volume	6	.89	
SPACE	Practice Visual space	2 Organization of accessibility and roads	8	.80	
		5.2 External connections	6	.78	
		3 Green spaces	10	.80	
Social relations features PEOPLE	4 People and social relations	7.4 Discretion	8	.81	
		8.4 Safety and tolerance	8	.82	
		9.4 Sociability and cordiality	8	.80	
Punctual and In-network Services SERVICES	5 Welfare services	10.5 Social-health services	6	.81	
		11.5 Education services	6	.73	
		6 Cultural-recreational services	12.6 Sport services	8	.87
		13.6 Socio-cultural activities	8	.81	
Context Features CONTEXT	7 Commercial services	14.7 Commercial services	8	.86	
		8 Transport services	15.8 Public transport	8	.82
		9 Pace of life	16.9 Relaxing vs. distressing	8	.88
CONTEXT	10 Environmental health	17.9 Stimulating vs. boring	8	.84	
		18.10 Cleanliness	8	.92	
		11 Maintenance & care	19.11 Macro- & micro-upkeep	12	.85
Place Attachment	Neighbourhood attachment	1. Neighbourhood attachment	8	.85	



Affective bi-dimensionality and ambivalence of nature in the city for urban dwellers – (from Bonnes et al., 1995)

Cluster analyses
N = 519



RESULTS AND IMPLICATIONS

✓ Inhabitants' relationship with urban green areas is tendentially complex and often **ambivalent**

✓ Designing and managing urban green spaces should carefully take into account the possible **negative affects/perceptions** of inhabitants toward these spaces (according to their residential needs) such as:

- ❖ personal insecurity vs **security**
- ❖ personal un-comfort vs **comfort**
- ❖ personal lack of environmental control vs **control**

✓ Each urban green area should be carefully **designed, managed and assessed**, also according to these **inhabitants' needs and perceptions**

✓ **green areas and physical activity?**

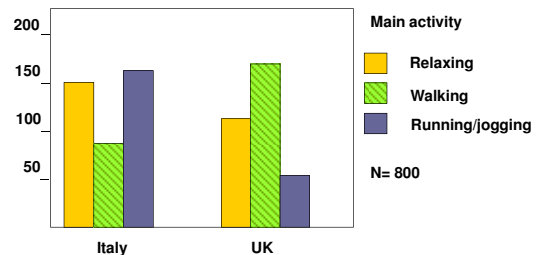
Some recent research findings on self-reported well-being, frequency of visit and physical activity in urban green areas

(Lafortezza, Carrus, Sanesi, Davies, 2009)

- **General goal:** investigate the perceived personal well being related to urban green areas frequentation (during hot season)
- Comparative study in different geographical regions: Northern (U.K.) and Mediterranean (Italy)
- **Focus on** frequency of visit and amount of physical activities in urban green areas
- N=800 (400 in Italy, 400 in UK), distributed in three cities (Milan, Bari and Gateshead)

Type of activity and self-reported well-being during and after the visit in green areas (differences between Italy and UK) (Lafortezza et al., 2009)

Clustered bar chart related to the main activity in green areas



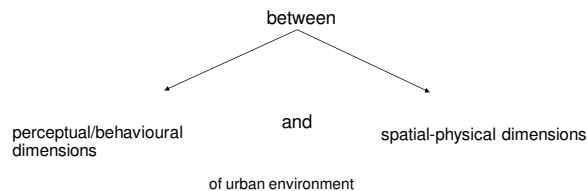
Well-being during the visit Italy: 2.78(0.41); UK: 2.65(0.52) p<0.001 (range 1–3)
Well-being after the visit Italy: 2.54(0.53); UK: 2.54(0.58) p:ns (range 1–3)

CONCLUSIONS

- Inhabitants' **environmental perceptions** about urban areas can be reliably and validly measured through **psychological standardized tools** covering different features of people-environment relations
- These tools and methods can be **used as a support**, within a **multi-disciplinary collaboration** context, for urban design and decision making (e.g. Bonaiuto, Fornara Bonnes, 2002)

CONCLUSIONS

Systematic links can be found out, assessed and monitored



In order to improve design and management of urban spaces for inhabitants' benefits and well-being

including their physical activity

Main references

- Bechtel R.B. & Churchmann A., 2002. *Handbook of Environmental Psychology*. New York: Wiley.
- Bonaiuto, M., Fornara, F., Bonnes, M. (2006). Perceived residential environment quality in middle- and low-extension Italian cities. *Revue Européenne de Psychologie Appliquée*, 56, 23-34.
- Bonnes & Bonaiuto 1995: Expert and layperson evaluation of urban environmental quality: the "natural" versus the "built" environment. In Y. Guerrier, N. Alexander, J. Chase, M. O'Brien (Eds.), *Values and the Environment: A Social Science Perspective* (pp. 151-165). New York: Wiley.
- Bonnes M., Carrus G., 2004. Environmental Psychology, Overview. *Encyclopedia of Applied Psychology, Vol.1* (801-814)
- Bonnes, M., Bonaiuto, M., Aiello, A., Carrus, G. (1999). Scientists' and Local Residents' Evaluation of Natural features of the Environment in the Rome Area. In I. Eisto, T. Hokkanen, M. Ohman, A. Reppia (Eds.), *Local Involvement and Economic Dimension in Biosphere Reserve Activities*. Helsinki: Academy of Finland.
- Bonnes, M., Carrus, G., Fornara, F., Passafaro, P., Bonaiuto, M. (2005). Percezioni ambientali e biodiversità a Roma, nell'ambito del Programma MAB dell'Unesco. In *Atti dei Convegni Lincei, 218, Convegno "Ecosistema Roma", Roma, 14-16 aprile 2004* (pp. 459-478). Roma: Bari.
- Bonnes M., Uzzell D., Carrus G., Kelly T., 2007. Inhabitants' versus experts' assessment of environmental quality for urban sustainability. *Journal of Social Issues*, 63, 59-78
- Carrus G., Fornara F., Bonaiuto M., & Bonnes M., 2003. Percezione e valutazione delle aree verdi nella città di Roma. In R. Baroni, S. Falchero (a cura di), *Psicologia Ambientale e dintorni: ricordo di Mimma Peron* (pp. 265-270). Padova: CLUEP.
- Gibson, J.J., 1979: *The Ecological Approach to Visual Perception*. Hillsdale (NJ): Lawrence Erlbaum.
- Laforzetta R., Carrus G., Sanesi G., Davies C., 2009. Benefits and well-being perceived by people visiting green spaces in periods of heat stress. *Urban forestry & urban greening*, 8(2009):97-108