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Using a Social-Ecological Model in Development of Treatment Programs that Target Behavior Change

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Abstract

Horticultural therapy and therapeutic horticulture programs often lack a clearly specified theoretical foundation or conceptual model, thus it is difficult to clearly articulate the outcomes a patient or client may experience from the program. One approach that may help with this challenge is to use a social-ecological model in horticultural therapy programming. Social ecology is the study of the influence of the social context on behavior, including institutional and cultural variables and is used to develop practical guidelines for designing, implementing, and evaluating health promotion programs. The most common models to describe this approach are 5-level (individual, interpersonal, organizational, community, and public policy) or 4-level (individual, relationship, community, and societal) and can be represented by an onion, with one level wrapping around another. For an intervention to be effective it must address multiple levels since, through research, we know that factors at multiple levels affect human behavior. This paper will explain the social-ecological model and provide an example of how it can be used to develop an intervention.

SOCIAL-ECOLOGICAL MODEL

Social-ecological models are well-accepted health-promotion models that have been shown to effectively influence behavior. This paper will provide an overview of the model and then apply it in a horticultural therapy setting.

The Ecological model, the major proponent of which is Urie Bronfenbrenner (Fig. 1), seeks to explain individual knowledge, development, and competencies in terms of the environmental influences over time on the individual. According to Bronfenbrenner (Bronfenbrenner, 1979; Bronfenbrenner and Morris, 1998), each person is significantly affected by interactions among a number of overlapping ecosystems. At the center of the model is the individual. Microsystems are the systems that intimately and immediately shape human development. The primary microsystems for children include the family, peer group, classroom, neighborhood, and sometimes a church, temple, or mosque as well. Interactions among the microsystems, as when parents and teachers coordinate their efforts to educate the child, take place through the mesosystem. Surrounding the microsystems is the exosystem, which includes all the external networks, such as community structures and local educational, medical, employment, and communications systems that influence the microsystems. And influencing all other systems is the macrosystem, which includes cultural values, political philosophies, economic patterns,

and social conditions. Together, these systems are termed the social context of human development.

Social ecology is an ecological model with a focus on social factors. The Social Ecological Model (SEM) provides an overarching framework, or set of theoretical principles, for understanding the interrelations among diverse personal and environmental factors in human health and illness and is often used to develop practical guidelines for designing, implementing, and evaluating health promotion programs (Stokols, 1996). SEM explains that behaviors are influenced by intrapersonal, social, cultural, and physical environment variables and the variables are likely to interact. In addition to understanding how these variables influence behavior, it is essential to understand and address barriers and constraints to behavior change at multiple levels. There are multiple levels of influence ranging from individual to public policy so interventions should address multiple levels to understand and change health behaviors. Most models consider four or five levels (Table 1). A five-level SEM will be used for purposes of this paper (Fig. 2).

Individual

At the center of the model is the individual. At this level the internal determinants of behavior, such as knowledge, attitudes, beliefs, and skills, are considered. An individual may also be influenced by demographic characteristics such as age, income, and education. This is the foundational level, but the model recognizes that many external forces influence these individual determinants. In order to facilitate behavior change it is important to address these external forces.

Interpersonal

The next level is the first of these external forces, interpersonal processes. In this level, the individual's primary groups of social interaction such as family and friends influence their behavior and contribute to their range of experience. This is the level where social norms operate, although they are generated at the institutional and community levels. These primary interactions represent the associations that provide social identity and role definition

Institutional/Organizational

Institutions and organizations is the third level of the model and include places such as the workplace, churches, and volunteer organizations. Small groups typically develop within these places, however, all operate under a common set of rules and policies that guide behavior. The institutional/organization level considers these rules and policies. Interventions at this level can have tremendous influence over individuals. Workplace interventions, faith-based programs, and school-based programs are examples of programming at this level.

Community

Community is the next level of the model and includes all those individuals, businesses, institutions, and organizations, which collectively comprise the larger societal fabric. These larger social constructs can be defined in many ways, such as by geographic location, membership in a particular group, or possession of certain beliefs that produce affiliations. For instance, there can be a community defined by a neighborhood, or culturally, or by your profession. It is at this level that many social norms and standards are generated. This is also an important level for setting the public agenda and developing

partnerships. Examples of interventions at this level might include aggressive public relations and promotions aimed at setting the local media agenda, or the development of strong, functional partnerships with other organizations involved in promoting healthy lifestyle choices.

Public Policy

Finally, the outermost level is the social structure/public policy level. Public policy is defined as an authoritative decision made by a local, state, or federal governing body (California Department of Public Health, 2008). Environmental change would be included in this level, as it is often achieved through policy decisions. Environmental change often involves a tangible change in a community or organization, whereas social structural changes involve more normative or conceptual changes. This is the broadest level of the model and can influence all the other levels.

SOCIAL-ECOLOGICAL MODEL APPLIED

Horticulture and gardening offer a continuum of health and well-being benefits (Shoemaker and Lin, 2008) that have been reported to target physical, psychological, and social behaviors (Simson and Straus, 1998). Thus, for purposes of this paper we will assume that gardening is an effective tool for health behavior change. The following scenario will be used to demonstrate the application of the social-ecological model in development of treatment programs that target behavior change.

Scenario: A continuing care retirement community has an increasing number of overweight and obese residents. All service and care units, including horticulture, are asked to recommend strategies to address this community health issue.

Strategies for targeting health behaviors that influence weight status can be identified at all levels of the SEM so identifying the target level of the intervention is a good place to start. Individual-level influences on weight status are biological and include personal history factors that increase the likelihood of overweight and obesity. For example, being overweight or obese as a child or having overweight or obese parents are predictors of individual weight status. Interpersonal relationship-level influences are factors that increase risk as a result of relationships with peers, intimate partners, and family members. A person's closest social circle – peers, partners, and family members – can shape the individual's behavior and range of experience. Community-level influences are factors that increase risk based on community and social environments and include an individual's experiences and relationships with schools, workplaces, and neighborhoods. For example, lack of safe and accessible places to be physically active throughout the retirement community sends a message of promoting a sedentary life. Societal-level influences are larger, macro-level factors that influence eating behaviors, physical activity levels, and sedentary behaviors such as cultural systems, societal norms, and economic or social policies. For example, are all community-level gatherings based around food? Policy focused interventions typically involve collaborations by multiple partners to change laws and policies.

Given that weight status is influenced at all levels of the SEM, interventions can be targeted at all levels (Fig. 3). Interventions for individual-level influences are often designed to target social and cognitive skills and behavior and include approaches such as educational programs, counseling, and therapy. Interventions for interpersonal

relationship-level influences could include family therapy. Interventions for community-level influences are typically designed to impact the climate, systems, and policies in a given setting. Social norm focused intervention would be to determine societal norms that accept overweight and obesity and to identify strategies for changing those norms.

Gardening interventions can be developed to target all levels (Fig. 3). Development and delivery of the interventions will be influenced by the mediators that influence each level. For example, a gardening educational program can be developed to target the individual. In delivering the program, gardening will be used as a means to affect self-efficacy for a healthy lifestyle through eating more vegetables and being more physically active. Gardening lessons could also target the relationship and community levels. For example, at the community level the program would target those groups that set policies regarding planting and plant care. Are there community policies that prevent or hinder the ability of the residents to garden? A program targeting the barriers and facilitators for the residents to garden could be developed and delivered. As a final example, the horticulture department could propose the establishment of a community farmers market as an example of targeting the community and/or societal level.

CONCLUSIONS

Strategies for designing horticultural therapy and therapeutic horticulture programs are rarely explained when reporting on the effectiveness of a program thus the question of what is affecting the outcome is a valid one. There are many health-behavior models that are used in health behavior interventions such as the health belief model (Rosenstock, 1990), the transtheoretical model (Prochaska and DiClemente, 1984), theory of reasoned action (Fishbein and Ajzen, 1975), and ecological models.

This paper explained the social-ecological model and demonstrated how it could be applied in a horticultural context. As Redding et al. (2000) explained “As a metaphor, each model or theory provides a different roadmap of the health behavior territory....when we enter new territory, we still need a map. Even a roughly drawn or poorly scaled map is much better than none at all” (p. 181). Using a health-behavior model when designing and delivering horticultural therapy and therapeutic horticulture programs that are targeting changes in health behavior will help build an understanding of the resulting outcomes.

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Tables

Table 1. Common levels of influence applied in the social ecological model.

Five Levels	Four Levels
Individual <i>Intrapersonal factors</i>	Individual <i>Intrapersonal factors</i>
Relationship <i>Interpersonal factors</i>	Relationship <i>Interpersonal factors</i>
Institutional <i>Organizational factors</i>	Community factors
Community factors	Societal/Public Policy
Societal/Public Policy	

Figures

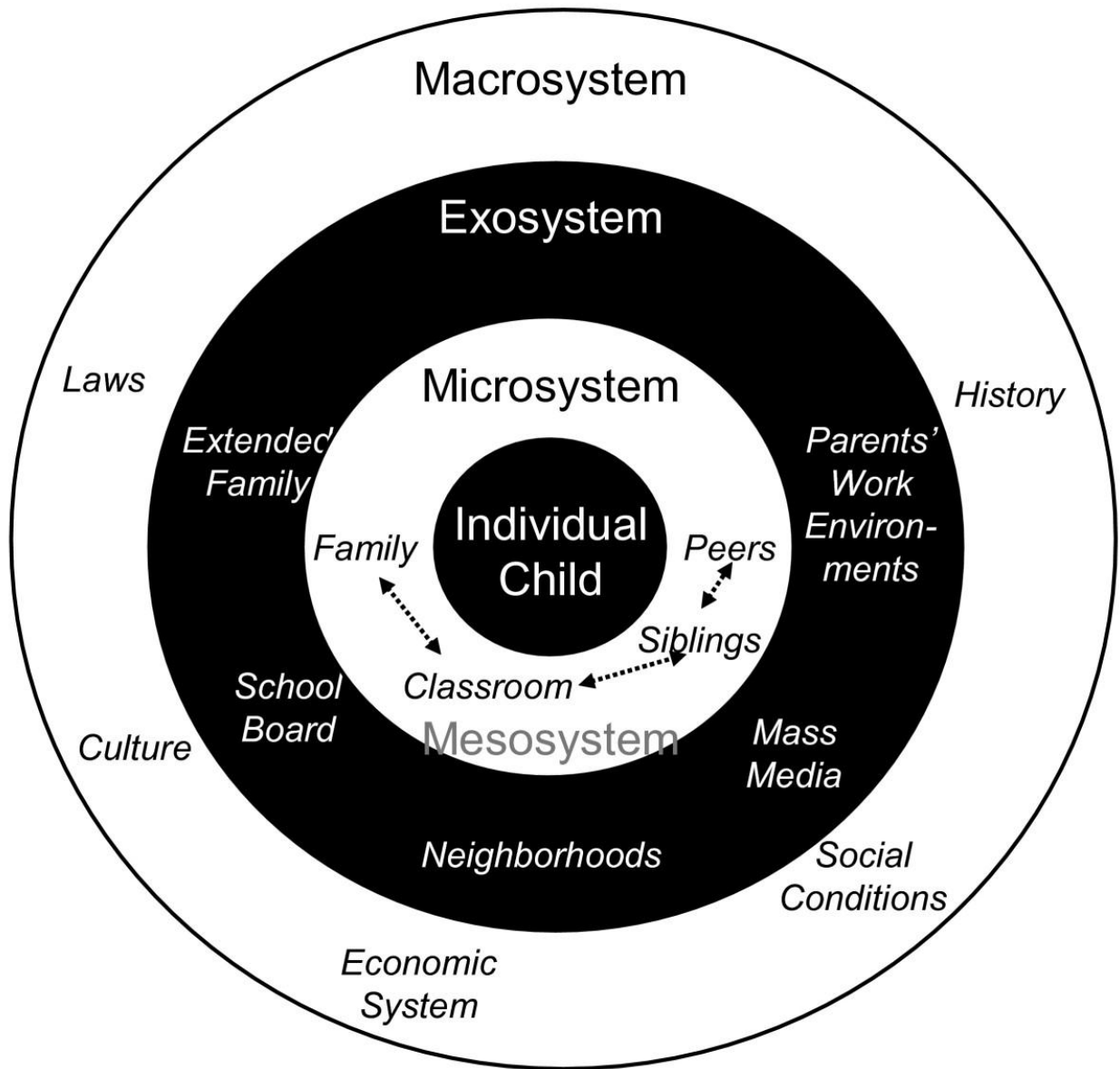
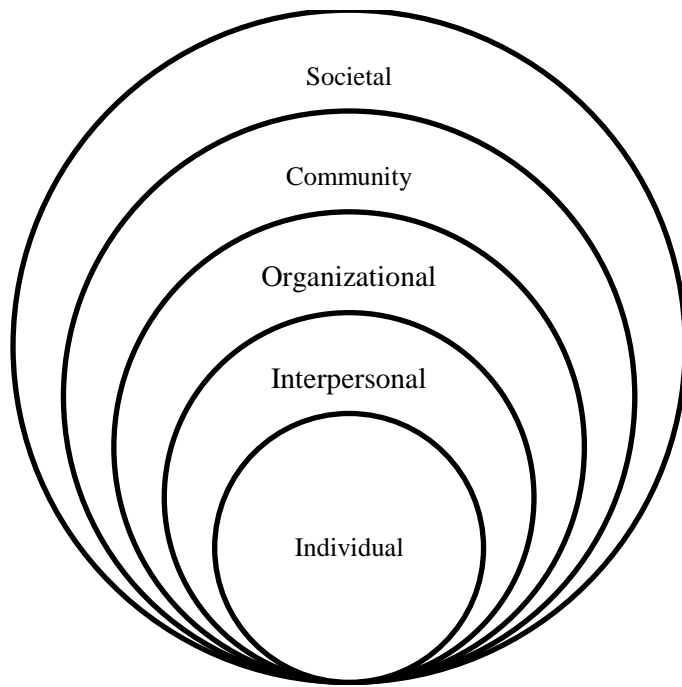


Fig. 1. Bronfenbrenner's Ecological Model (Image Source: Eisenmann et al. BMC Public Health 2008 8:223)



Societal (Social Structure, Public Policy)

Local, state, and federal policies and laws that regulate or support health actions

Community

Social networks, norms, or standards (e.g., public agenda, media agenda)

Organizational (Institutional)

Rules, regulations, policies and informal structures (worksites, schools, religious groups)

Interpersonal

Interpersonal processes and primary groups (family, peers, social networks, associations), that provide social identity and role definition

Individual

Individual characteristics that influence behaviors such as knowledge, attitudes, beliefs, and personality traits

Fig. 2. Social-Ecological Model Spheres of Influence

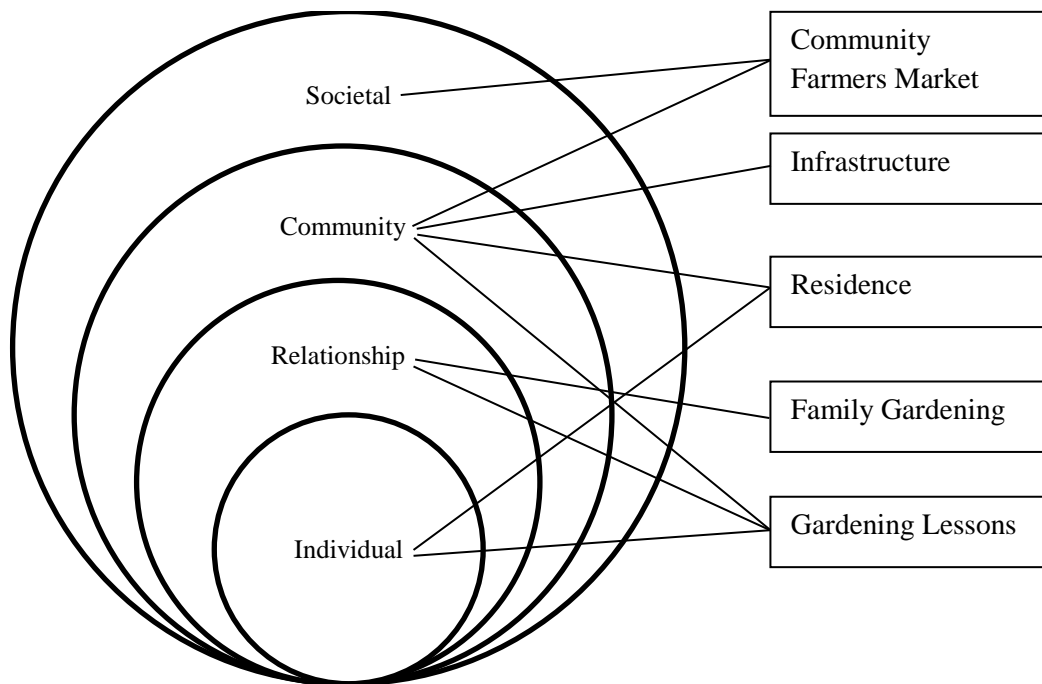


Fig. 3. Gardening strategies for overweight prevention