

## *D17 - Transform Places with People and the Environment: Health I*

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# Farmers Markets As Restorative Environments

***Kelsea Dombrovski (University of California Davis); Angela Sanguinetti (University of California Davis); Stephen Wheeler (University of California Davis)***

### 1. ABSTRACT

Restorative environments provide stress relief and renewed attention capacity. Pristine natural environments are most commonly considered restorative, however a growing body of work has been extending the concept to built settings. This study explores farmers markets' potential as restorative environments. We analyzed site features at two farmers markets and surveyed patrons to assess perceived restorativeness and market features' influence on perceived restorativeness. Results indicated farmers markets can function as restorative environments. Site features related to restorative qualities were Market Activities, Sensory Elements, Market Structure, Patron Characteristics, and Groups and Density. Perceived restorativeness did not differ between a market in a park or in a hardscaped setting, implying that markets do not need to be in park-like settings to provide respite from urban living. Results highlighted social interaction and sense of community as important features contributing to restorative farmers market experiences. Social aspects of restorative environments are ripe for further study.

#### 1.1. Keywords

Attention Restoration Theory, farmers markets, restorativeness, restorative environments

### 2. INTRODUCTION

#### 2.1. Farmers Markets as Restorative Environments

Restorative environments are sites that provide relief from stress and accumulated strains on attention (Kaplan, 1995; Ulrich et al., 1991). Traditional conceptualizations of restorative environments and most empirical research on the topic focus on pristine nature (wild or manicured) as the iconic setting for restoration.

For example, parks, nature preserves, and gardens have been widely studied as restorative sites (Berto, 2005; Han, 2003; Hartig, Kaiser, & Bowler, 1997; Hartig, Korpela, Evans, & Gärling, 1997; Korpela, Ylén, Tyrväinen, & Silvennoinen, 2008; Laumann, Gärling, & Stormark, 2001; Ulrich et al., 1991). However, a growing body of work is extending the concept of restorative environments, for example, to built spaces like monasteries, museums, and plazas (Abdulkarim & Nasar, 2014; S. Kaplan, Bardwell, & Slakter, 1993; Ouellette, R. Kaplan, & S. Kaplan, 2005).

This study explores the potential for farmers markets to function as restorative environments. Identifying and promoting spaces that can restore mental fatigue is increasingly important as citizens become more harried in an unpredictable society. Investigation of new types of restorative environments, the features that make them restorative, and how to increase their restorativeness are research topics that could help inform placemaking efforts in cities worldwide. make restoration more accessible to more people. This research adds to that effort.

#### 2.2. Theories of Restorative Environments

Two prominent theories describe the mechanisms underlying restorative environments: psychophysiological stress recovery theory (Ulrich et al., 1991) and attention restoration theory (ART; R. Kaplan, S. Kaplan, & Ryan, 1998). The former describes the role of restorative environments in recovery from stress and illness via impacts on the parasympathetic nervous system. ART describes the role of restorative environments in renewing capacity to direct attention via cognitive processes.

A theme in empirical research approaching restorative environments from either of the above theoretical approaches is that vegetated natural environments (especially wild nature, but also cultivated nature) are more restorative than hardscaped urban environments (Han, 2003; Hartig, Kaiser, et al., 1997; Hartig, Korpela, et al., 1997; Korpela et al., 2008; Laumann et al., 2001). Korpela and Ylén (2007) noted that it may be specific elements within a setting, not the natural setting per se, that contribute to restorative effects. Hunter and Askarinejad (2015) identified three categories of physical environment attributes (structure, content, and landscape) that influence restorativeness, based on environmental psychology theory and empirical research; for example, horizontal line position, framing tree count, and circulation boundary, among other features, contribute to Coherence.

These objective environmental features correspond to subjective qualities underlying the

restorative experience. ART specifies four such qualities: Being Away, Fascination, Extent, and Compatibility (R. Kaplan, S. Kaplan, & Ryan, 1998; S. Kaplan, 1995). Being Away refers to physical or mental distance from daily stressors. Extent refers to the range of the site and the degree to which components of the environment make sense together (sometimes called out as a related aspect called Coherence, and containing the concept of Legibility, or the extent to which the environment is understandable and interpretable; Hartig, 1997b). Compatibility refers to the degree to which the environment matches the user's needs. Fascination, or Soft Fascination, gives people the opportunity to focus their attention with little effort, allowing their mind to wander and relax.

### 2.3. Restorative Built Settings

Objective environmental attributes and subjective restorativeness qualities can apply to built settings as well as natural ones, but relatively few studies have considered built settings as restorative environments. Built settings that have been studied as potential restorative environments include museums (S. Kaplan et al., 1993), monasteries (Ouellette et al., 2005), and public plazas (Abdulkarim & Nasar, 2014). For example, Abdulkarim and Nasar (2014) explored perceived restorativeness of a public plaza in relation to three of William Whyte's (1980) elements of successful urban spaces: seating, food, and a triangulating feature promoting interaction between passersby (e.g., a sculpture). Presence of a triangulating feature or a triangulating feature and seating were associated with greater perceived restorativeness.

Kaplan et al. (1993) studied museum visitors. They found that individuals who had little experience with museums felt restored after visiting the space, but not as restored as those more familiar with museums. This suggests that the restoration benefit of some settings, perhaps built settings in particular, may require experience with the setting.

Ouellette et al. (2005) surveyed over 500 retreat attendees at a Benedictine monastery. Attendees' motivations mapped onto ART's four perceived qualities of restorative environments. However, an additional factor, spirituality, was also apparent.

Similarly, Runnerstrom (2008) suggested self-actualization via experiences in symbolic environments as another path to restoration in built settings. Altaher and Runnerstrom (2018) also connected restoration to the positive psychology concept of flow, which involves participating in an engaging activity (e.g., sports, socializing, art; Csikszentmihalyi, 1990). Most respondents in their study, which examined the practices and environments sought out by college students during

stressful times, indicated that they pursued restoration by participating in a leisure activity in a built environment - most often being with friends - even though there were natural areas nearby. During such social and leisure activities, attention is diverted from daily demands and stressors.

Other studies have highlighted the role of activities in restoration, particularly in urban settings. For example, Laumann et al. (2001) found that the ART quality of Fascination in urban settings pertained more to the activities occurring rather than physical characteristics of the environment, as was the case in more natural settings they studied. Scopelliti and Giuliani (2004) found that socializing, especially for middle-aged adults (mean age 42) more than young adults (mean age 28) or older retired adults (mean age 68), was an important component of a restorative environment.

The role of social components in perceived restoration has been found by other researchers as well, despite the lack of a specific social component in the original conception of ART. Peschardt and Stigsdotter (2013) defined and then assessed human-perceived dimensions of environments. They found that the 'social' perceived sensory dimension (PSD) was significantly associated with the perceived restorativeness among average urban greenspace users, with more stressed users finding the 'nature' PSD to be very important. The authors advocate for the use of their findings in design and creation of new urban greenspaces, which could easily include farmers markets.

Thus, the subjective qualities of restorative environments may differ or manifest differently in built settings compared to natural settings, and more research is needed to expand theories of restoration to be inclusive of these experiences. The role of spirituality (Ouellette et al., 2005), self-actualization (Runnerstrom, 2008), and flow (Altaher & Runnerstrom, 2018) in restoration via built settings seem related to the concepts of awe and transcendence as discussed in the context of experiences in wild natural environments (Davis & Gatersleben, 2013), which have also not been clearly tied to the dominant theories of restorative environments. Psychophysiological stress recovery theory focuses on the body, ART on the "mind", and perhaps a third level is needed describing higher-level restoration of the "spirit".

Another possibly complementary theory is that of connectedness to nature (Mayer & Frantz, 2004) and to others/community (Aron, Aron, & Smollan, 1992). Connectedness to nature may be a path to restoration in natural settings, whereas built settings that enable socializing and more complex experiences like self-actualization and flow could lead to restoration through

social connectedness, with oneself or community. This theory is particularly relevant to the current research, which explores the potential for farmers markets, urban settings with lots of social opportunities, to function as restorative environments.

#### **2.4. Restorative Potential of Farmers Markets**

While the restorative potential of farmers markets has not been previously studied, other research on farmers markets has relevant implications. For example, markets may often provide a sense of Being Away, per ART. Although markets are typically located in the neighborhoods they serve (Brown, 2002), patrons' familiarity with the market sites' use when the market is not occurring (such as streets or parking lots) may heighten the sense of Being Away. Temporary spaces like this are called urban ephemera (Colomb, 2013; Schuster, 2001).

Farmers markets may also provide Soft Fascination via rich sensory experiences, such as colors, odors, sights, smells, and, sounds. Ng (2003) and Sommer (1980) discuss international differences in farmers markets' sensory stimuli. Smithers and Joseph (2009) argue that patrons use such sensory factors plus localness of producers to determine authenticity of markets.

ART qualities of Extent may be supported by the open-air setting of most farmers markets, creating a connection to the local natural environment as the source of the produce being sold (Ng, 2003). Further emphasizing this connection is the fact that market booths and overall layout are influenced by "the scale and requirements of the pickup truck" (Sommer, 1980, 15; Stephenson, 2008). This also relates to the idea of connectedness to nature. Extent in time can also be relevant for restoration (S. Kaplan, et al., 1993). McGrath, Sherry, and Heisley et al. (1993) described the felt authenticity of markets as a deliberate re-creation of a past, more simple time, with stronger human connections and less omnipresent capitalistic controls. This manifestation of extent relates to connectedness to community.

In terms of Compatibility, farmers markets provide opportunities for socializing and enabling patrons to express their values. For example, McGrath, et al. (1993) described how people are drawn to farmers markets to enjoy social connections. Sommer (1980, 1989) described aspects of these social connections, which include interactions with the 'real' farmers and a wide range of ages and backgrounds of people at the market, all contributing also to a fun experience. Sommer et al. (1981) compared behavior at farmers markets and supermarkets and found 2.5 times as many social interactions at farmers markets, with 75% of customers

arriving in groups. Furthermore, markets enable patrons to demonstrate their political and social values (McGrath, et al., 1993), most notably supporting local growers. For example, Alkon (2008) compared patrons' motivations at two California Bay Area farmers markets with different representations of the environment: patrons of a North Berkeley market with an ecological sustainability focus concentrated on supporting local agriculture as a means to preserve pristine wilderness, whereas patrons of a West Oakland market with an environmental justice and equality focus emphasized the goal of enriching urban spaces.

### **3. METHOD AND RESULTS**

To explore the potential for farmers markets to function as restorative environments, we analyzed site features and surveyed patrons at two farmers markets in Central California. This study was approved by the institutional review board of the authors' university. We wanted to know if patrons found these markets restorative, and what specific features were associated with restorativeness. The study proceeded in two stages: site selection and analysis, and market patron survey. Method and results for each of these stages is presented in turn; results of the site analysis are used in analysis of patron survey data.

#### **3.1. Site Selection and Analysis**

We chose the Davis Farmers Market and the Sacramento Central Farmers Market to represent a range of market features as these markets are quite different (Figure 1). These markets were also selected to compare restorativeness of a market setting high in natural elements versus a less vegetated, more hardscaped market setting. The Davis Farmers Market is in that city's Central Park, and the Sacramento Central Farmers Market is located beneath a concrete freeway overpass and bordered by busy city roads.

##### *Site Analysis Method*

We assessed market features at each site to aid hypothesis formation regarding relationships between site features and restorative potential, thus informing our market patron survey design and analysis. This site analysis used objective, observational post-occupancy evaluation methods as outlined by Cooper Marcus and Francis (1997), such as initial exploration and assessment of sub-areas, behavior mapping, and use-analysis. The lead researcher spent at least one hour at each site on two separate occasions. The assessment focused on objective site features, including physical environment attributes as well as occupant characteristics and activity observations. Physical features analyzed included site



Figure 1. Davis (left) and Sacramento (right) farmers markets (2016). Photos by the author.

layout (vendor orientation, booth setup, congregation sites, location, amenities, and layout), music, weather, crowd density, and noise. Activity observations consisted of noting how patrons moved around the setting and what they did in different spaces. Occupant observation focused on the users of the space themselves, e.g. their physical characteristics and demeanor.

#### *Site Analysis Results*

We identified nine site feature types present in both farmers markets. These categories, which represent components common to most farmers markets, were distilled by grouping similar site features within and across the two markets. The sections below define each feature type, characterize each of our farmers markets in terms of the features, and consider hypotheses about how the feature types related to the four ART qualities: Being Away, Fascination, Coherence/Extent, and Compatibility.

**1) Market Structure.** Market structure features pertain to the path dictated by the market layout and the physical structural features defining and delimiting the market. The Davis market is structured along a central corridor with flexible open space at both ends. The Sacramento market has a wider main aisle that wraps around the market location. We hypothesized that Market Structure features that help patrons navigate the space (e.g., walkways, landmarks, demarcations) would have implications for Coherence and Compatibility--particularly legibility. Shopping in and experiencing the open-air structure could also support a feeling of Being Away.

**2) Programming.** Programming features demonstrate control and planning by a person or team, for example, the presence of ATM machines and attractions other than produce stalls. Both markets had such features. Programming at Davis was more extensive, including park features and market-specific activities, such as a bicycle-powered merry-go-round. Attractions

could potentially contribute to a sense of Being Away or Compatibility, but we did not have strong hypotheses about these relationships.

**3) Stall Characteristics.** These features characterize the appearance, setup, size, and produce/product inventory of market stalls. Sacramento had more stalls overall and fewer stalls with elaborate décor compared to Davis, but otherwise Stall Characteristics were similar at both markets. Stall Characteristics could potentially impact Fascination or Compatibility by appealing to the style and interests of different patrons.

**4) External Infrastructure.** These features affect patrons' access to the market and amenities available but are not part of the market grounds or structure. They include parking, transit lines, and restrooms unmanaged by the market. The Davis market is near multiple sets of public restrooms but lacks parking; the Sacramento market has plentiful parking but there are few restrooms. External infrastructure (or lack thereof) might have implications for Being Away and Coherence, but we did not anticipate a strong role in perceived restorativeness.

**5) Market Activities.** Market activities always include produce shopping, but may also include eating, shopping for other goods, and entertainment. The Davis market had more activities related to entertainment, including jugglers, musicians, and a carousel. Market Activities has clear implications for Compatibility via opportunities for person-environment fit.

**6) Sensory Elements.** Those features sensed using one or more of the five senses, e.g. cool temperature under the market structure vs. warmth on the lawn, sounds of music or sounds of traffic. Davis market's park location and Sacramento market's underpass location engage different senses in positive and negative ways. We hypothesized that Sensory Elements would contribute to Fascination via positive sensory distractions, as well as Being Away via out of the ordinary or new sensory experiences.

**7) Uncoordinated Features.** Those features that organically arise and/or are not planned by market management, e.g., concrete berms at the Sacramento market used by street musicians, and the lawn edges at the Davis market where patrons set up personal areas (usually blankets) for picnicking, lounging, and socializing. Such features might have implications for Compatibility by providing flexibility for more activity preferences, but we did not have strong hypotheses about this.

**8) Patron Characteristics.** Patron characteristics include demographics like age and ethnicity, and attributes like preparedness for market (measured as having carts, bags, baskets). Market demographics may or may not represent the diversity of the host city. Sacramento patrons came fully prepared for large shopping trips - many patrons had wheeled carts, large woven baskets, and reusable grocery bags - whereas Davis patrons seemed more prepared for browsing or small purchases. We hypothesized that Patron Characteristics would contribute to Fascination via people-watching and to Compatibility via social opportunities.

**9) Groups and Density.** Groups and Density features include crowd size (number of patrons in relation to spaces they occupy), as well as the tendency for patrons to attend in groups. These features vary based on time of day, with fewer groups and smaller crowds early in the morning, and larger groups and crowds later in the day. We hypothesized that Groups and Density would contribute to Fascination via people-watching and to Compatibility via social opportunities.

In sum, we hypothesized that Sensory Elements and Market Structure would relate to Being Away, as might Programming and External Infrastructure to a lesser extent. Stall Characteristics, Sensory Elements, Patron Characteristics, and Groups and Density would relate to Fascination; Coherence would be affected by Market Structure, and to a lesser extent, External Infrastructure. Market Structure, Stall Characteristics, Market Activities, Patron Characteristics, and Groups and Density, would relate to Compatibility, as might Programming and Uncoordinated features, to a lesser extent.

### 3.2. Market Patron Survey

We conducted a survey of market patrons at each site to assess perceived restorativeness and explore how the objective site features outlined above influence perceptions of the four environmental qualities described in ART. The lead researcher visited the markets on three successive spring weekends, surveying patrons from opening until closing. She intercepted patrons on their way into the market near entrances, approaching every patron or group during low traffic times and every third

patron or group during high traffic times. Approaching patrons as they arrived rather than as they left encouraged them to reflect on all previous visits collectively rather than only the current visit, to capture more experiences and in case their current visit was anomalous in some way relative to other visits. Rigorous data on response rate were not collected, but approximately one quarter of patrons approached agreed to participate.

After introducing herself, the researcher asked patrons if they had visited the market at least five times previously. Only those who answered in the affirmative were recruited to take the survey. Kaplan et al. (1993) noted that it is rare to experience meaningful restoration during initial visits to a museum setting, likely because becoming oriented to a new place is intensive in terms of cognitive resources. We anticipated a similar first-time experience for farmers market patrons, and thus only included relatively experienced patrons.

We used an augmented version of Hartig et al.'s Perceived Restorativeness Scale (PRS; 1997b), which consists of a series of statements corresponding to the four qualities of restorative environments per ART. The Extent subscale is labeled Extent/Coherence in the instrument, but hereafter is referred to as Extent. Participants indicate their agreement with each statement on a seven-point scale (Table 1 shows the items that comprise the PRS). We augmented the PRS by appending an open-ended question at the end of each subscale (When responding to the above, what specific features of the farmers market came to mind?). These open-ended questions were intended to tease out narratives of how site features contribute to or detract from perceived restorativeness.

To identify aspects of the social and experiential dimensions of farmers markets not covered by the PRS, we added an open-ended question assessing the effect of people and crowds (In what ways, if any, does the amount of people at the market affect your experience?), as well as three additional questions asking patrons their likes and dislikes about the market as well as why they visit. Additional closed-ended questions assessed regularity of visit, group size, gender, age, race, socioeconomic status, and distance traveled. The researcher recorded weather and time.

Across the two markets, a total of 71 patrons completed the survey. Participants were relatively similar at both markets in terms of gender balance, ethnic mix, visit frequency, age, and approximate income (Table 2). However, several Sacramento patrons declined to participate because of a language restriction, so a more complete sample at that location might have shown greater diversity, and results of this study should be

Table 1. Items comprising the PRS as developed by Hartig et al. 1997b.

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Being Away

- Being here is an escape experience.
- Spending time here gives me a break from my day-to-day routine.
- It is a place to get away from it all.
- Being here helps me to relax my focus on getting things done.
- Coming here helps me to get relief from unwanted demands on my attention.

Fascination

- This place has fascinating qualities.
- My attention is drawn to many interesting things.
- I want to get to know this place better.
- There is much to explore and discover here.
- I want to spend more time looking at the surroundings.
- This place is boring.
- The setting is fascinating.
- There is nothing worth looking at here.

Coherence/Extent

- There is too much going on.
- It is a confusing place.
- There is a great deal of distraction.
- It is chaotic here.

Compatibility

- Being here suits my personality.
  - I can do things I like here.
  - I have a sense that I belong here.
  - I can find ways to enjoy myself here.
  - I have a sense of oneness with this setting.
  - There are landmarks to help me get around.
  - I could easily form a mental map of this place.
  - It is easy to find my way around here.
  - It is easy to see how things are organized.
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viewed as limited to English-speaking market patrons.

We conducted descriptive analysis of the PRS to explore the degree to which patrons perceived farmers markets to be restorative, and a one-way MANOVA to identify any significant differences between the Davis and Sacramento markets in terms of overall PRS score and each subscale: Being Away, Fascination, Extent, and Compatibility. Content analysis of open-ended survey data involved coding responses by relevant site feature category and perceived restorativeness subscale, as well as inductive coding for other emergent themes.

In line with our overall hypothesis, patrons perceived farmers markets as somewhat restorative. Overall and subscale mean PRS scores were in the restorative range, indicating that, on average, patrons at both locations experience, to some degree, the four main elements associated with restorativeness according to ART (See Figure 2). The sense of Being Away was not as frequently perceived as the other ART qualities.

We hypothesized that due to its park setting the Davis Farmers Market would be perceived as more restorative. However, there were no significant differences between market locations in terms of the PRS overall [ $F(4, 52) = 0.46, p = .765$ ; Wilk's  $\Lambda = 0.966$ , partial  $\eta^2 = .03$ .] or any subscale, including Being Away:  $t(67) = 1.34, p = 0.18$ ; Compatibility:  $t(64) = 0.11, p = .92$ ; Fascination:  $t(61) = -0.87, p = 0.39$ ; Extent:  $t(64) = -0.31, p = 0.76$ . Open-ended responses following each PRS subscale revealed more insight into patrons' experiences and indicated relationships between restorativeness and our identified site feature categories.

**1) Fascination.** Open-ended responses following the Fascination subscale indicated that site features in the categories of Market Activities, Patron Characteristics, Stall Characteristics, and Sensory Elements strongly contributed to a sense of Fascination, with a meta-theme of diversity, as these selected quotes illustrate:

*"The beauty of the flowers, the lavender, wonderful taste of cheese; all of the different languages spoken."*

*"I love the mixture of cultures, socio-economic communities. Hustle and bustle."*

*"Variety of produce, flowers, people."*

*"The variety of products - so many different kinds. Farmers/sellers to interact with, shoppers to see and interact with, [and the] new mural!!!"*

*"Live music, people watching, playing kids, Lots of different people!"*

**2) Being Away.** As previously mentioned, patrons overall did not express a strong sense of Being Away. In particular, many Sacramento market patrons explicitly noted here that the market is routine for them and not an escape. e.g., The experience of the market is great but more a part of our weekly life than an escape; and Part of my routine. Not relaxing, but I don't come here to relax. Davis market patrons' responses were more expressive of a sense of Being Away (e.g., Not having it be part of my weekly routine makes it more special). A role for Sensory Elements was again implied, e.g.: Open air, music, smell of good food; Fresh air away from traffic.

Market Activities, Patron Characteristics, and Groups and Density were also evident in responses, contributing to an overarching theme of social connection. In this sense, Being Away may represent a contrast to more socially isolated daily routines, as the following quotes illustrate:

*"I get a sense of community at the market, and it is nice to feel like I am a part of the community."*

*"Different people that you don't see everyday and don't know everything about you."*

*"People are friendly, vendors. Beautiful garden. People are not just buying but come with family to just hang out or have breakfast."*

*"Sitting with friends. Grass, beer, blankets, conversations, fresh fruit"*

*"Kids running around, old people having picnics, the park, the vibe."*

**3) Extent.** Open-ended responses following the Extent subscale indicated relevant site features in the categories Market Structure and Groups and Density. Specifically, the paths and layout were generally perceived as organized, contributing to Extent, e.g. Easy layout. One participant alluded to the importance of experience with the setting for perceived Extent: I would've agreed with these statements [Extent subscale] when I first came to this market, but I know my way around now.

Crowding was sometimes perceived as inhibiting Extent, e.g., Many, many people! In the park it's fine, but between the stalls is difficult to navigate; and Mostly just that it can be very crowded and hard to get through, particularly in the summer. Crowding was also the most common theme in responses to the open-ended question about general dislikes, particularly in Davis. However, in

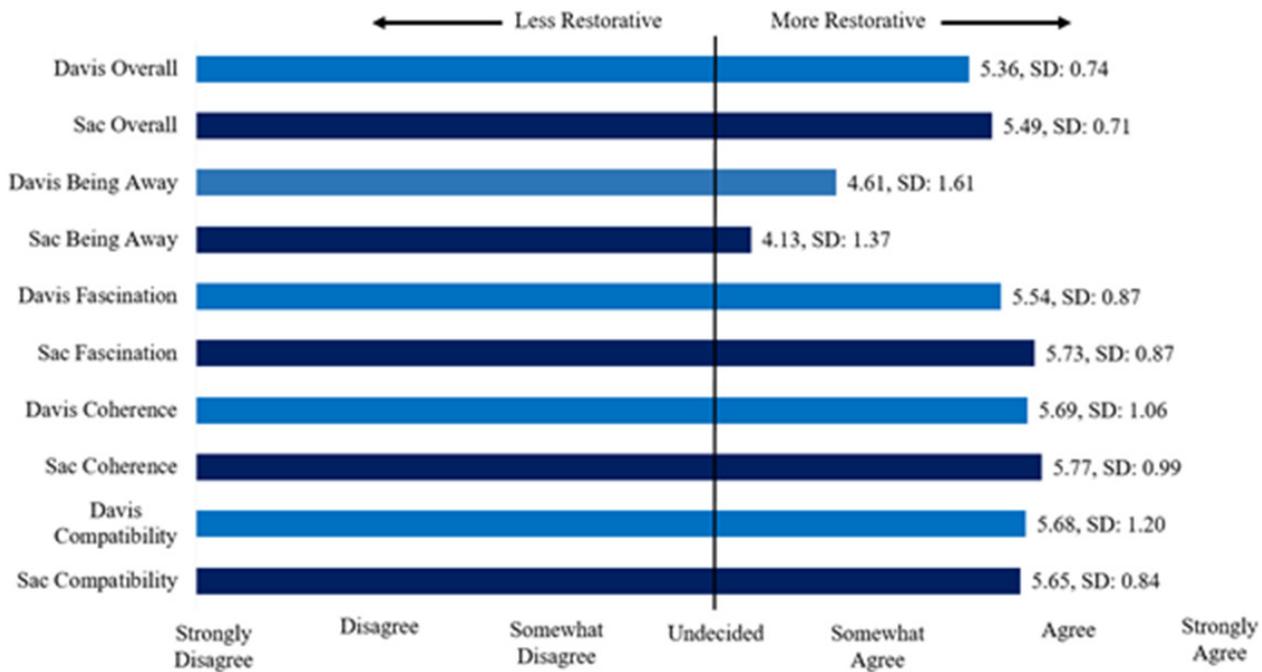


Figure 2. Response means and standard deviations of overall Perceived Restorativeness Scale (PRS) scores and subscale scores per market (2016). Diagram by the authors, inspired by Tengart Ivarsson & Hagerhall (2008).

the context of the Extent scale crowding was much more often perceived as positive, and comments implied a synergy between crowds, structure, and activities that perhaps actually contributed to Extent, e.g.:

*“It’s structured chaos.”*

*“There is a bit of distraction, but it’s a good thing - the fact that there is so much good stuff!”*

*“It is how a good city functions”.*

*“Very organized, method to the madness.”*

*“Being chaotic is what makes it. You get to see your city come alive.”*

**4) Compatibility.** Open-ended responses following the Compatibility subscale also highlighted Market Structure features, including more mentions of experience with the setting as an important factor:

*“I’m familiar with this market, so I have a good sense of the layout. It does feel overwhelming at times, nonetheless.”*

*“It was intimidating the first few times but I am much more comfortable after 4 years.”*

*“There’s tape on the ground to distinguish different stalls.”*

*“I thought about how the entire market is structured. The food up front and everything else in the back part of the market.”*

*“How the tables are all set up, starting with fruits and vegetables, to food, then accessory items.”*

*“Large tree, jungle gym, playground, loud, sea of people.”*

*“There is the park as an easy way to help with a mental map.”*

Since the last four questions of this subscale measure environmental legibility rather than broader conceptions of person-environment fit, participants may have been primed to consider objective Market Structure features in their subsequent open-ended response more so than subjective experiences of social connection or conduciveness of the market setting to actualize their values and engage in preferred activities. Nevertheless, there were some mentions of these topics, e.g.:

*“I feel a part of the Davis community when at the market.”*

*“For me, liking and belonging are pretty separate; feel*

Table 2. Respondent demographics.

	Davis	Sacramento
sample size	32	38
<i>gender</i>		
Female	69%	63%
male	31%	34%
non-binary	0%	3%
<i>median frequency of visits</i>		
every week	25%	32%
2-3 times per month	44%	37%
about once per month	28%	13%
less than once per month	3%	18%
<i>distance traveled</i>		
1-2 miles	62%	34%
3-5 miles	31%	37%
6 or more miles	6%	29%
mean age (standard deviation)	44 (18)	45 (15)
<i>household income</i>		
< \$20,000	25%	6%
\$20,000-49,999	14%	39%
\$50,000-99,999	22%	42%
\$100,000-199,999	21%	14%
\$200,000 or more	18%	0%
<i>race/ethnicity</i>		
White	61%	63%
Latino/a	16%	18%
Asian	10%	0%
African American	0%	8%

*like to belong would have to make more conversation or know people.”*

*“I love farmers markets! They always make me feel happy :)”*

Responses from the open-ended questions What do you like about the farmers market? and Why do you visit the farmers market? provided more insight into these more subjective aspects of Compatibility. Notions of community and social atmosphere were the strongest theme across these responses with the exception of themes related to the food (fresh, local, and variety). On the other hand, a theme in general dislikes was not being able to bring dogs to the market, which points to an aspect of incompatibility for some people.

**5) Participant Characteristics.** Finally, we explored correlations between PRS or subscale scores and each participant variable in Table 2. Only one relationship was found, which was a significant negative correlation between age and Being Away:  $r(67) = -0.29$ ,  $p = 0.02$ , and age and overall perceived restorativeness:  $r(56) = -0.29$ ,  $p = 0.03$ . Reasons for this are unclear, but perhaps older patrons have grown habituated to the markets, and perhaps they use the markets in different ways.

## 4. DISCUSSION

Results support the hypothesis that farmers markets can function as restorative environments. However, there were no statistically significant differences in overall PRS or subscale scores between patrons at the two markets we compared - one located in a park, the other under an overpass. This suggests that the quality and quantity of natural scenery at farmers markets is not a significant factor for restorative outcomes. Rather, it appears that it is the social and functional elements of a farmers market that contribute most to restoration. Measurable site feature types mentioned by survey respondents in relation to restorative qualities were Market Activities, Sensory Elements, Market Structure, Patron Characteristics, and Groups and Density. Regarding the latter, it is important to note that although many patrons felt crowd density had a positive impact on the experience, others noted that crowding can also interfere, particularly with Compatibility (i.e., legibility and being able to shop easily).

The themes of civic engagement and sense of community in farmers market patrons' discussions of restorativeness align with Runnerstrom and colleague's suggestions that restoration can occur via socializing and leisure, as well as self-actualization in symbolic urban

environments (2008; Altaher & Runnerstrom, 2018). There was evidence that patrons perceive farmers markets as symbolic of many ideals, e.g., support of small farmers, local foods, community, alternative economies. Patrons also highlighted the importance of various types of socializing at markets in the context of perceived restorativeness.

Theories and measures of restorative environments require further development to provide a better account of social and activity-based factors. There have been systematic assessments of physical and perceived features that relate to restorativeness (Hunter & Askarinejad, 2015; Peschardt & Stigsdotter, 2013), but no similar attempts for social and activity-based features. As a start, this study suggests diverse crowds can contribute to a sense of Being Away and Fascination. Opportunities for socializing and a sense of community are clearly related to Compatibility. A better understanding of non-physical environmental features contributing to perceived restoration holds implications for new approaches to designing for health-promoting environments, perhaps along the line of Francis and Griffith's (2011) view of farmers markets as centers of social life and contributors to healthy cities. These authors note that markets help satisfy a need for lively civic spaces, and potentially promote mental health and well-being. This conceptualization ties in with the notion of third places (Oldenburg, 1989; Rosenbaum, 2006). Farmers markets meet the definition of third places – alternative community gathering spaces where people can engage in less formalized city life. Future research and theory could better tie together theories of restorative environments with third spaces.

Rather than seeking a green or pastoral site, managers can locate markets in neighborhoods that lack third places and enhance restorative potential via market features that increase diversity of produce, patrons, and activities. These social and functional aspects contribute to all four qualities of restorative environments.

Although our participants emphasized specific market characteristics, results could be different in other market settings. Managers of existing markets should engage their patrons to determine motivations for visiting and experiences related to restoration, and then consider incorporating or enhancing features identified in this research as promoting restoration. Future research should replicate this study at markets of varying sizes, locations, and specialties. The opinions and experiences of market managers, volunteers, and vendors could also be explored to more fully understand how and for whom farmers markets provide restorative benefits. Social and lively environments not focused on commerce should

be investigated as well, to determine the extent to which the market environment itself plays a role. Finally, within all proposed topics it is important to obtain truly representative samples, and care should be taken to have translation services available for those participants who do not speak or read English.

## 5. CONCLUSION

This study was an initial look into the potential for farmers markets to function as restorative environments. It provides evidence that farmers markets can indeed provide restoration. Farmers market patrons were surveyed, using the PRS, with supplemental open-ended questions, and the PRS measured patrons' experience of the four environmental qualities articulated in ART. Compatibility and Fascination were expressed most saliently, and open-ended responses revealed relationships between these qualities and a variety of objective physical market site features, especially Market Activities, Sensory Elements, Market Structure, Patron Characteristics, and Groups and Density.

Farmers markets have spread rapidly across North America in the past several decades and form an important economic outlet for local farmers as well as an important restorative and social space for citizens. Given the lack of many other human-scale, informal civic spaces within our communities that are not dominated by corporate culture, these markets appear to be fulfilling an important niche in postmodern society and an important restorative role for individuals. Better understanding of how they do these things can help maximize their potential as well as inform creation of other such spaces.

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