

Understanding Places Using a Mixed Method Approach

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ABSTRACT

With the increased application of the activity based approach comes the inherent need to incorporate more detail regarding behavior. This need for detail has in turn created a need for both a deeper understanding and theoretical basis for behavior, and the incorporation of data collection and analysis methods to handle more behavioral detail. Because of this, the use of qualitative and mixed method approaches in travel behavior has received increased attention over the last few decades. In this paper, quantitative and qualitative methodologies are discussed and applied to data collected in Santa Barbara, California, measuring peoples' attitudes about places (sense of place). Both quantitative and qualitative methods are applied using first a factor analysis and complementing this with a qualitative analysis of text from an open-ended question. The findings of these analyses are compared and incorporated to contribute to a greater understanding of both sense of place and behavior. Theoretical developments and implications for future research are discussed in light of analysis findings.

1 INTRODUCTION

2 With the increased use of the activity-based approach, travel behavior researchers have become
3 more and more reliant on the task of understanding how people make decisions and organize
4 their life, which in turn requires travel. With this task is the need and desire to represent human
5 behavior and decision making with as much accuracy and realism as possible. Often times, this
6 requires researchers to know the aspects that are important to understanding and modeling
7 behavior, and measure these aspects and apply them in a meaningful statistical manner. Many
8 times, researchers find themselves acknowledging the contribution of latent, complex or at times
9 seemingly unmeasurable dimensions of human agency. Measuring and applying these facets of
10 human life to models is, at bare minimum, challenging. As Goulias (*1*) mentions, travel behavior
11 researchers attempt to understand human behavior and foster positive change. In order to do
12 this, we must strive towards behavioral realism to identify key facets of behavior, which needs to
13 be done without forcing restrictive analytical methods to work and therefore run the risk of
14 masking differences that exist.

15 Researchers have approached these difficulties using differing approaches, all of which have
16 contributed to increasing the sophistication of the state of the art in travel behavior. From a
17 purely quantitative perspective, several advancements have been made in statistical modeling,
18 allowing for increased flexibility and detail. One notable example, the multiple discrete
19 continuous extreme value models developed by Bhat et. al. (*2*) allows for the simultaneous
20 modeling of multiple interdependent decisions and is indicative of the type of advancements we
21 experience that allow complex decision making modeling and simulation. In addition to this,
22 several latent variable models have become primed for travel behavior analysis, including
23 models that tease out random explained variance from the error term such as random coefficient
24 regression or error component models, or models incorporating latent attributes such as latent
25 factor, and latent class models. Structural equation modeling has also become a widely used
26 tool, incorporating latent and observed variables and providing a method for analyzing the paths
27 between these variables in describing the observed traits. All of these statistical advances allow
28 for the development of models of complex behavior with increased detail regarding the
29 behavioral process and decisions being made and those who are making the decision.

30 Another approach currently being advanced and enriched is the attention given to the type of
31 data collected and used, and the methods by which the data is obtained. Many have
32 acknowledged that the use of the activity-based approach requires a new frame of reference for
33 data needs in order to build successful models. The potential use of qualitative methods and
34 mixed methods approaches have become more prevalent in discussions related to understanding
35 behavior and tapping into nontraditional methods. Discussions however have also centered on
36 the necessity to maintain an awareness of the philosophical underpinnings of such methods, and
37 to proceed with caution in combining quantitative and qualitative methods. Goulias (*1*) presents
38 an overview of research methodologies and strategies used within different philosophical
39 positions, and suggestions on how to conduct research while staying consistent within positivist

1 theoretical framework, which is the predominant travel behavior framework. He goes on to say
2 that “many of the methods under this [qualitative methods] label offer the dynamic flexible tools
3 needed in travel behavior to, on the one hand, extract this ‘insider story’, (behavior from the
4 viewpoint of the agent) and, on the other, understand the ‘emergence’ of behavior and internal
5 cause(s) that are characteristic of complex systems. Similarly, Clifton and Handy (3) state that
6 the more we understand about peoples travel behavior, the more we realize we don’t understand,
7 and qualitative methods offer powerful tools to obtain a deeper understanding of the complexity
8 of behavior (4).

9 Several researchers have recognized the benefit of qualitative methods in travel behavior.
10 Clifton and Handy discuss the use of qualitative methods in conjunction with or independently
11 from quantitative methods, and Goulias remarks that, “some techniques that are often used in
12 qualitative methods can be used within the positivist and probabilistic paradigm as secondary
13 aids of the primary data provision mechanism which is quantitative survey methods.” Carr,
14 likewise states: “although qualitative techniques do not yield significant results, they are ideally
15 suited for exploratory research such as identifying influential factors of travel behavior” (5). It is
16 clear that research attempting to understand decision-making behavior is prime for this
17 combination of methodological approaches due to both our limited understanding of the decision
18 process, and insufficiencies in capturing data to explain observed behaviors. The nature of these
19 topics can be both quantitative and qualitative in nature. It must be noted, that there are many
20 instances where qualitative methods (such as ethnographic studies) are not compatible with
21 concurrent quantitative methods such as questionnaires, due to conflicting theoretical and
22 methodological assumptions (for instance observation without interference). However, proper
23 implementation of some qualitative methods can be useful in the positivistic paradigm and can
24 be used to measure more subjective topics. Additionally, theoretical developments of these
25 concepts provide a solid foundation upon which investigation of the details in decision making
26 can be conducted. Sense of place theory, for instance, provides a strong framework for research
27 attempting to understand the connections between people and places. This theory focuses on the
28 emotional and psychological interactions between a person and the environment. This can occur
29 at different geographic scales and with different intensities. A full discussion of the theoretical
30 framework of sense of place is discussed in the review of literature in the following section.

31 In this paper, a mixed method approach is used to explore the application of both quantitative
32 and qualitative methods in understanding sense of place. The authors have previously explored
33 the quantification of sense of place, and the application of this type of data in behavioral models
34 (5, 6), but have not examined these constructs in comparison to qualitative data collected. The
35 use of qualitative methods allows for comparison of the meaning of place extracted by
36 quantitative methods. In addition, the usefulness of mixed method approaches in informing
37 research involving latent constructs such as sense of place will be discussed.

38

1 CONCEPTUAL FRAMEWORK

2 Discussions about qualitative methods in travel behavior have mostly taken place within the last
3 two decades. In this time several researchers have discussed possible methodologies that can be
4 used for data collection (1, 3), and examples of applications of qualitative analyses in travel
5 behavior (7, 8, 4). The application of such methods first requires an understanding of the
6 different strategies in both data collection and data analysis that exist within qualitative, and
7 mixed method approaches.

8 *Data collection and analysis strategies*

9 In order to understand behavior and apply our knowledge to models and policies, one must
10 collect data. Tashakkori and Teddlie (9) present four main categories of methods for data
11 collection used both in quantitative and qualitative research: 1) Asking people information (self
12 reporting, interviews, questionnaires, personality questionnaires, inventories and checklists,
13 attitude scales, indirect self reports), 2) seeing what people do- observational methods
14 (participant observation, nonparticipant observation), 3) asking people about their relationship
15 with others (sociometry), and 4) using data collected and or documented by others (archival data
16 and meta-analysis).

17 In addition, they also present several data analysis strategies used when examining quantitative
18 and qualitative data. Traditional quantitative data analysis methods include descriptive analysis,
19 inferential, univariate and multivariate methods. Traditional qualitative methods include simple
20 valence analysis manifest content analysis, latent content analysis, constant comparative
21 analysis, effects matrices and developmental research sequence. Mixed method approaches
22 enable the researcher to utilize both quantitative and qualitative methods in analysis. Tashakkori
23 and Teddlie present three strategies for mixed method data collection and analyses processes:
24 concurrent mixed analysis, sequential qualitative-quantitative analysis and sequential
25 quantitative-qualitative analysis, which will be discussed in more depth.

26 *Concurrent mixed analysis:*

27 Within this strategy, sub-strategies are suggested. First, researchers can conduct a concurrent
28 analysis of different data—that is to conduct a parallel mixed analysis using both quantitative
29 and qualitative methods on data collected in the same study. Alternatively, one could choose to
30 either conduct a concurrent analysis on the same data in which the researchers have converted
31 quantitative data to qualitative data (such as converting the quantitative data into categories or
32 narratives), or vice versa (convert qualitative data to quantitative data- for instance frequencies of
33 themes or rating of the strength of themes). For more on discussion on the method of conversion
34 see Tashakkori and Teddlie (9).

35 *Sequential Qualitative-Quantitative analysis:*

1 In this type of analysis, the researcher collects data to conduct a qualitative analysis, and follows
2 this with a confirmatory quantitative data analysis on existing data, or quantitative data collection
3 and analysis. In the first stage, qualitative data is used to form groups (of people, themes,
4 attributes or settings) or to establish order or causality, followed up by analysis using quantitative
5 methods (ex. cluster analysis, factor analysis, structural equation modeling etc.) to further
6 compare or confirm qualitative findings.

7 *Sequential Quantitative-Qualitative analysis:*

8 Similar to the previous example, this two-part method involves first a quantitative analysis,
9 which is followed up with a qualitative data collection and/or analysis. Groups of people (using
10 for example cluster analysis), attributes or themes (using factor analysis or multidimensional
11 scaling), or relationships (using path analysis or structural equation modeling) are developed and
12 a comparison or confirmation of these results is made with qualitative data and analysis
13 techniques such as constant comparative analysis, observations or interviews. In this type of
14 analysis, the qualitative data is usually collected to explain the manifestation of the themes or
15 groups observed in the quantitative analysis.

16 These approaches each have advantages and disadvantages. Concurrent analysis allows
17 researchers to gain a better understanding of the variables extracted from analysis and the
18 relationship between them using one dataset. Sequential analysis uses a stepwise procedure of
19 an initial analysis to inform following data collection and analysis. An example of this is the use
20 of focus groups to inform quantitative data collection. In this paper, a concurrent analysis is
21 conducted using data collected from one time period at two different outdoor shopping malls. A
22 quantitative factor analysis is conducted, followed by a qualitative analysis of an open-ended
23 question, allowing for comparison of the places and the factors derived using quantitative
24 methods. Although this analysis follows a concurrent approach, the use of these methods
25 illustrate both the power in comparative mixed methods on the same dataset, as well future
26 sequential analysis when preparing data collection methods for subjective or latent constructs.

27 *Sense of Place*

28 The early roots of sense of place were based on phenomenology beginning with theorists such
29 as Yi Fu Tuan and Edward Relph. Tuan defines sense of place as a person's "affective ties with
30 the material environment" (10). However, in the 1980's and 90's, researchers in the positivist
31 traditions within geography, environmental psychology and economics argued that sense of place
32 can be quantified, and applied to research, and that it should be explored for the valuable
33 information it can provide about human behavior (11). For instance Canter (12) "converts the
34 perspective into a form that is amenable to empirical examination." Though these later
35 researchers contributed to the amassing movement, the applications were still scarce. Sense of
36 place has since been quantified and applied to topics such as home (13,14), neighborhoods (15),
37 natural areas (16, 17), and even historical places (18). Sense of place has been studied in

1 conjunction with physical attributes of the place (19), at different geographic scales (20), and
2 with different applications including ecosystem management (21), tourism (15), and place based
3 teaching (22). This has progressed sense of place research, however the operationalizing of
4 sense of place is still limited, which is especially true in the case of everyday activities such as
5 daily travel behavior modeling and subsequent simulation. Traditionally, models explaining
6 travel behavior such as destination choice have not included affective attributes that attract
7 individuals to places. In order to meld the theory of sense of place and its limited measurement
8 attempts with behavioral modeling in transportation, the structure of sense of place must be
9 further examined. Because of the limited nature of quantitative research of sense of place, a
10 uniform or standard metric of measurement has not been developed.

11 DATA DESCRIPTION

12 To examine sense of place, an intercept style survey was conducted at two outdoor shopping
13 centers, Paseo Nuevo and La Cumbre, in Santa Barbara, California. A paper survey was given to
14 patrons of each location willing to participate, containing questions pertaining to sense of place
15 attitudes, travel behavior, and socio demographics. The sense of place portion of the survey
16 included 34 questions about each of the locations as well as one open-ended question. A list of
17 questions is provided in Table 1. A more detailed description of the data collection efforts can
18 be found in previous work (23).

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1 **TABLE 1: Sense of Place Question Content and Answer Type**

Question (Paseo Nuevo or La Cumbre...)
I am satisfied with the food options (at PN or LC)
I am satisfied with the products offered (at PN or LC)
I am satisfied with the parking (at PN or LC)
I am satisfied with the level of services (at PN or LC)
I am satisfied with the entertainment options (at PN or LC)
I am satisfied with the amount of people (at PN or LC)
has visually appealing architecture
has a peaceful and relaxing atmosphere
is a beautiful mall
has a good balance of decorative features and businesses
has artistic value
has a definite social atmosphere
is a great family friendly place to be
is a kid friendly place to be
has generally friendly people around
reflects the culture of Santa Barbara
involves a risk of unpleasant encounters when traveling to it
is always overcrowded
has too much going on at it
makes me afraid to walk around
makes me feel relaxed
makes me feel happy
I would be disappointed if it did not exist*
is one of my favorite places in Santa Barbara
meets my needs better than any other location in Santa Barbara
has better diversity in activities than any other place in Santa Barbara
has stores that lack specific things*
reflects the type of person I am
makes me feel comfortable because I identify with the atmosphere
makes me feel too self-conscious*
says very little about me*
makes me feel like I can be myself*
is a good reflection of my identity
I only come when I have specific reasons in mind*
Please describe the differences that you believe exist between Paseo Nuevo and La Cumbre**

2 *reverse coded questions **all answers were 7-point likert scale except the last (open ended)

3 Patrons were intercepted at one of the two survey sites, and asked to complete the questionnaire
 4 about each mall. If respondents were unfamiliar with a location (for instance tourists), those
 5 questions were not answered. The sample used in this analysis included only those respondents
 6 who answered sense of place questions about each place and completed the open-ended portion

1 of the questionnaire, resulting in a sample size of 509 persons. Sample descriptive statistics can
 2 be seen in Table 2.

3 **TABLE 2: Sample Descriptive Statistics**

Variable	
<i>Gender</i>	42.8% Male
<i>Residency</i>	86.6% Santa Barbara
<i>Location surveyed</i>	28.9% Paseo Nuevo
<i>Mode taken to location</i>	79.2% Car, 12.1% Walk 2.2% Bike, 6.5% Other
<i>Age</i>	Mean: 37.65 Max= 88 Min=18

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5 **ANALYSIS**

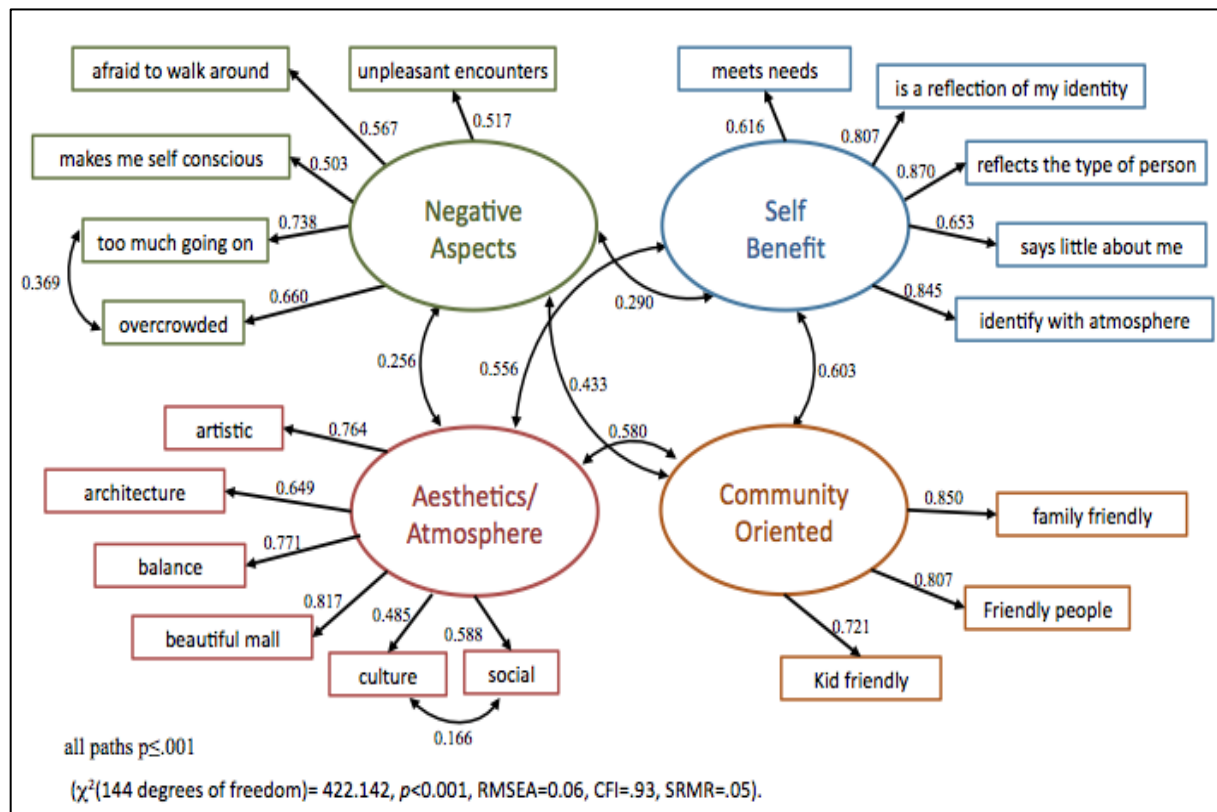
6 To analyze sense of place, a mixed method approach was used. In this way, important aspects
 7 influencing positively or negatively and attracting people to these places can be identified using
 8 two different techniques. A comparison between the two can be used to confirm validity of
 9 findings and to identify potentially important aspects for more in depth scrutiny. Ordered
 10 questions were included in a factor analysis, and open-ended answers to the question “please
 11 describe the differences that you believe exist between Paseo Nuevo and La Cumbre” were
 12 analyzed using qualitative methods of content analysis. Previous work presents descriptive
 13 statistics of each of the questions included in the survey, and a more in depth analysis of several
 14 questions (23)

15 ***Factor Analysis***

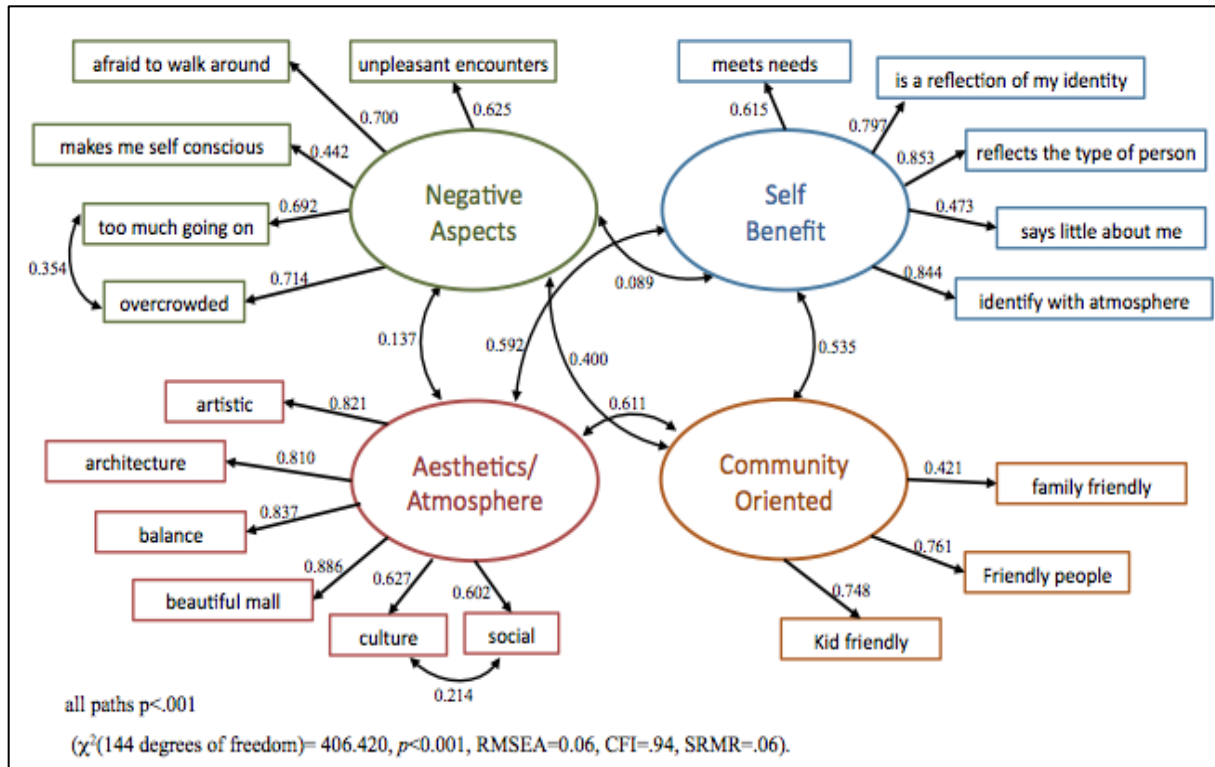
16 In order to understand the latent factors that exist in the data, an exploratory factor analysis was
 17 conducted using responses of respondents for the location of patronage. A full explanation of the
 18 exploratory factor analysis (EFA) conducted can be found in (24). Initial analysis involved all
 19 thirty four questions, which were reduced to nineteen questions loading into four salient factors.
 20 The four factors extracted using EFA consisted of: aesthetics and atmosphere, family and
 21 community oriented nature of the place, negative aspects of the place, and the self benefit of the
 22 patronage. This four factor structure was then imposed on two separate confirmatory factor
 23 analyses of each place, with all patrons of both Paseo Nuevo and of La Cumbre included in the
 24 analysis regardless of place surveyed. The goodness-of-fit statistics in Figures 1 and 2 show that
 25 both are well fitting models.

26 Results of the two CFA models can be seen in Figure 1 (Paseo Nuevo) and Figure 2 (La
 27 Cumbre). The resulting factor loadings of the two analyses indicate some similarities and
 28 differences between places in the composition of factors and their contribution to explaining

1 observed attitudes. For instance, the factor loadings within the community-oriented factor
 2 indicate that the contribution of the factor to the question “Paseo Nuevo (or La Cumbre) is a
 3 family friendly place to be” is much stronger in the Paseo Nuevo factor analysis. Similarly, the
 4 factor highlighting the aesthetics and atmosphere contains some differences worth noting. For
 5 instance, the question regarding the architecture of the places (“[location] has visually appealing
 6 architecture” has a lower factor loading for Paseo Nuevo than La Cumbre. Upon further
 7 examination, it is clear that the question elicits very different responses at each location (mean
 8 response at Paseo Nuevo is 6.01 with a standard deviation of 0.922, mean response at La Cumbre
 9 is 4.70 with a standard deviation of 1.581. The responses to the question, as indicated by the
 10 descriptive statistics were stronger in the positive direction for Paseo Nuevo, with less variation
 11 among responses. Therefore this latent construct could not contribute as much in describing
 12 differences observed. This is opposite for the question “[location] says little about me,” where
 13 more of the observed data is explained by the latent factor in the case of Paseo Nuevo than La
 14 Cumbre.



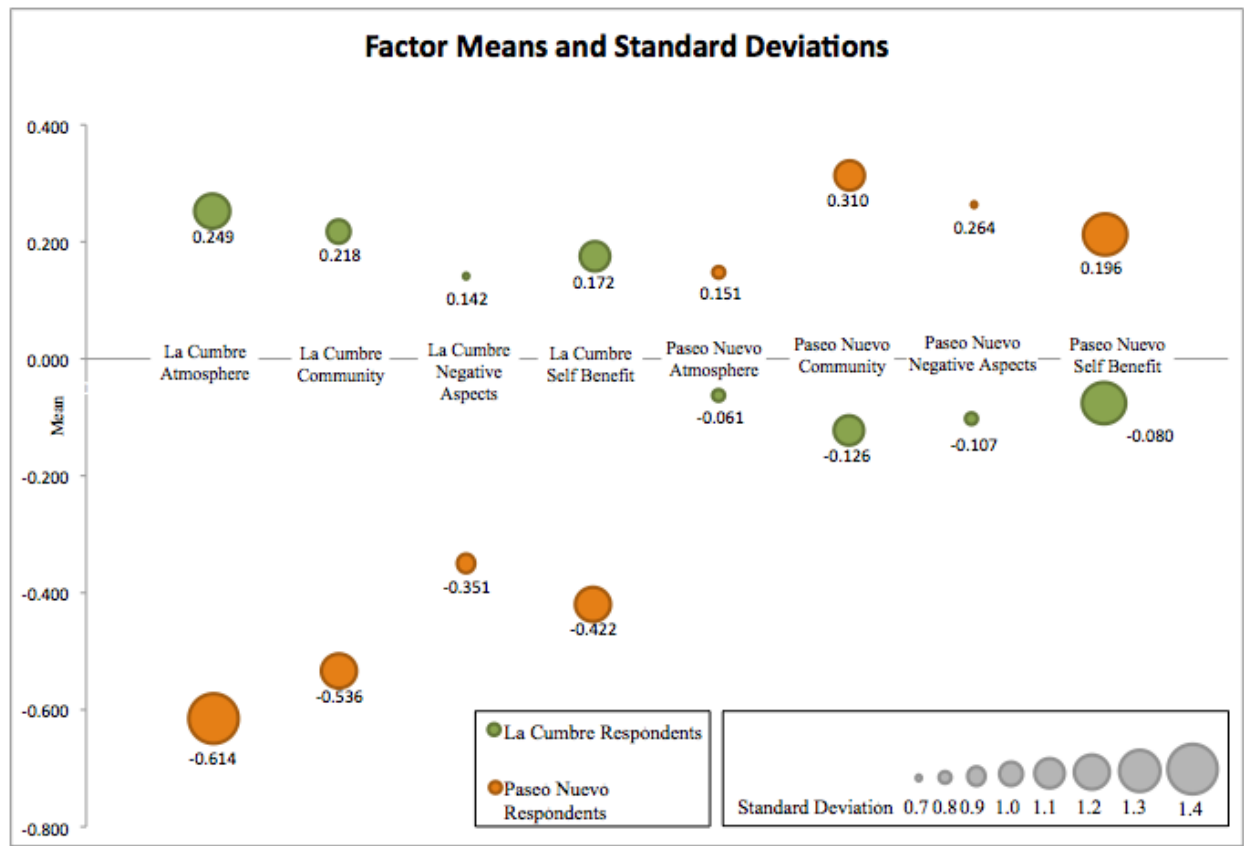
15
 16 **FIGURE 1: Paseo Nuevo Factor Structure**



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2 **FIGURE 2: La Cumbre Factor Structure**

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4 In addition to analyzing the factor structure of each location, the factor scores were obtained for
5 each individual respondent. While the mean score for all respondents should be equal to zero
6 (due to standardization during the factor analytic procedures), an analysis of the respondents
7 based on survey location was conducted. Analysis of the means and standard deviations of each
8 group of respondents (those surveyed at Paseo Nuevo and those surveyed at La Cumbre)
9 indicated that there are notable differences between both the groups of respondents and the
10 places. First, those at Paseo Nuevo had a positive mean for all Paseo Nuevo factor scores and a
11 negative for all La Cumbre scores. Conversely, those at La Cumbre had a negative mean for
12 Paseo Nuevo factors and a positive mean for La Cumbre factors. In addition to this, it is
13 interesting to note the distance between the averages of the La Cumbre factor are much greater
14 than those of the Paseo Nuevo factor. This can be interpreted by saying that those at La Cumbre
15 have lower negative factor scores (and therefore attitudes) about Paseo Nuevo than their
16 counterparts at Paseo Nuevo have regarding La Cumbre. In both cases, people have higher
17 factor averages for the shopping center, which they are visiting. This finding can be viewed as
18 either 1) the justification for their revealed choice, or 2) the attraction of the place and therefore
19 the reason they chose to visit the place. That is to say, it is unknown whether the responses for
20 people were conditioned by the fact that they were surveyed at a specific mall. Determining this
21 would require further investigation out of the scope of this paper. The standard deviations of
22 each factor indicate that more variation is present in factor scores of La Cumbre atmosphere and

- 1 aesthetics, as well as La Cumbre self benefit, and Paseo Nuevo community and self benefit
- 2 factors.



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4 **FIGURE 3: Factor Means and Standard Deviations**

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6 ***Qualitative Analysis***

7 Although factor analysis is a rich technique and contributes to understanding of both the
8 measurement of sense of place theory and the attitudes regarding specific locations, an additional
9 qualitative analysis was conducted. Responses to the open-ended question “Please describe the
10 differences that you believe exist between Paseo Nuevo and La Cumbre” were divided into
11 content describing Paseo Nuevo and content describing La Cumbre for content analysis. The
12 responses for each were then analyzed using Wordle, a tool for semantic frequency analysis.
13 This allows us to determine whether common themes exist in the open-ended responses that can
14 be compared and contrasted to the outcome of the factor analysis. The analysis employs a
15 Boolean technique in which after eliminating common words (is, and, that), provides frequency
16 of occurrence. There are other techniques in the field of information retrieval for latent semantic
17 analysis and indexing (25, 26) and web crawler techniques (27) that have the potential for added
18 value in text analysis but were not used. Results can be seen in Figures 4 (Paseo Nuevo) and 5
19 (La Cumbre), with frequencies for the top twenty words in Table 3. This analytical method
20 provided several important comparisons, contributing to the overall understanding of important

1 aspects of sense of place. For instance, parking is discussed in comments about both locations
 2 (Paseo Nuevo 41 times, and La Cumbre 53 times). However, the context of the word is quite
 3 different for each locations. To further analyze the nature of some words, each instance of the
 4 word was recorded as being positive, negative or neutral in tone. One comment out of 53
 5 comments about parking at La Cumbre was negative, and one was discussing a parking lot,
 6 which had a neutral tone. The remaining 51 comments were positive toward the parking at La
 7 Cumbre, which is in the form of surface lots surrounding the shopping center. Comments about
 8 parking with respect to Paseo Nuevo however were largely opposite, with 30 out of 41 comments
 9 focusing on the negative aspects of parking (not enough, payment required, inconvenience and
 10 general dislike). Paseo Nuevo parking is mostly structured parking, with very few on street
 11 parking. Parking is free for the first 75 minutes, but a rate of \$1.50/hour after.

12

13 **TABLE 3: Top Twenty Words and Frequencies**

La Cumbre	count	Paseo Nuevo	count
stores	62	crowded	48
shopping	30	downtown	48
shop	21	stores	42
seems	16	parking	41
quiet	24	better	40
place	25	people	39
people	30	tourists	28
parking	53	shopping	28
much	21	much	26
mall	40	go	25
locals	17	like	22
like	35	location	20
less	43	state	20
good	18	atmosphere	18
friendly	15	mall	18
easier	18	around	17
crowded	20	restaurants	16
come	16	street	15
better	36	upscale	15
atmosphere	18	options	15

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2 **FIGURE 4: Paseo Nuevo Content Analysis**

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5 **FIGURE 5: La Cumbre Content Analysis**

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7 Similar analysis was conducted on the other top appearing words. Many comments in both texts
8 also discussed the locations based on the stores at each. The word stores appeared 42 times in

1 text about Paseo Nuevo (with 37 of these comments being positive, and 5 being neutral), and 62
2 times in text about La Cumbre (with 20 positive comments, 36 negative, and 6 neutral). Many of
3 the comments regarding stores at each place consisted of satisfaction with the stores and the
4 diversity offered, or dissatisfaction with the diversity, cost, high end nature, and products (mostly
5 at La Cumbre). Additionally, the themes of downtown (appearing 48 times, 39 of which were
6 positive toned) and crowded (appearing 48 times, 6 of which were positive, 25 negative and 17
7 neutral or indiscernible tone) appeared in analysis of the text about Paseo Nuevo. Many
8 comments framed the downtown location of Paseo Nuevo in a positive light, noting that it was
9 lively, active, had diverse options, great accessibility and positive atmosphere. However,
10 comments regarding the crowded nature of the Paseo Nuevo area were mostly negative, with a
11 few people commenting that they liked it for people watching or other activities. Many
12 comments also centered on the tourist nature of Paseo Nuevo (tourist or tourists appearing 47
13 times and touristy appearing 11 times), given its downtown location. La Cumbre on the other
14 hand had many comments regarding the design looking like a typical suburban mall. Many of
15 these comments continued to describe this design as boring, drab, unexciting or depressing. This
16 initial analysis of the open ended comments of the qualitative comments indicate that several
17 sentiments and tones are apparent and provide grounds for larger data collection and more
18 sophisticated qualitative analysis tools. Due to the pilot nature of the qualitative portion of this
19 analysis, no intercoder reliability tests have been conducted, but are certainly necessary for more
20 sophisticated and more in depth analysis.

21 DISCUSSION

22 Through the use of factor analytic techniques, differences between places and people at those
23 places are evident. Factor analysis provides a strong technique for analyzing data and extracting
24 latent themes or factors that can be used to explain the occurrence of the observed data.
25 However, there are limitations in the ability of factor analysis to capture the complete story of a
26 phenomenon. This might be the result of insufficient questions, poorly worded or designed
27 questions, or lack of theory or previous examples used to capture the processes of interest. The
28 use of qualitative methods can help to inform researchers to tell a more complete story, or design
29 more complete data collection methods. In the instance of this research, several themes were
30 apparent in a qualitative analysis that did not become manifest using quantitative methods.
31 Parking for instance, was discussed at large in text about both locations, one with a more positive
32 tone (La Cumbre) and the other with a more negative (Paseo Nuevo). It is important to note also
33 that a quantitative question regarding satisfaction with parking was included in the original
34 exploratory factor analysis and did not load in a salient factor. Given the combination of
35 analysis methods, perhaps the lack of presence of the parking question is due to the unique
36 nature of parking, that is to say it would potentially need a factor by itself. Within the confines
37 of factor analytic methods a factor containing a single indicator would not be retained, thus
38 eliminating this attribute from the analysis. Another theme emerging from the qualitative
39 analysis was focused on the stores and products offered at the location. This topic was also

1 included through several measured questions, including “I am satisfied with the products
2 offered” and “Paseo Nuevo (or La Cumbre) lacks certain things”, and “meets my needs better
3 than any other location in Santa Barbara” of which only one question (needs) loaded onto a
4 factor. Many themes emerging from the qualitative analysis also mirror the factors that were
5 apparent in the factor analysis. For instance, atmosphere and people are a common element in
6 text from La Cumbre, while crowded, downtown, tourist and people are all elements of Paseo
7 Nuevo which similarly can be found in the overall composition of the factor structure.

8 CONCLUSIONS

9 Understanding the detail and complexity of human behavior is an endeavor that transportation
10 researchers should examine more closely. Although the quantitative tools that we use in
11 modeling are well developed and have become increasingly flexible, we must consider the
12 additional detail that we are failing to capture and explain sufficiently, otherwise we risk to
13 misunderstand preferences and choices. It is for this reason that incorporating qualitative
14 methods of both data collection and data analysis should be considered and applied. The
15 findings of the research presented in this paper make a strong case for the use of a mixed method
16 approach to understand behavior. Place attitudes, incorporated in the theoretical framework of
17 sense of place, provide a well-developed foundation for this type of analysis. Using theory
18 developments, a survey was developed incorporating both ordered, closed-ended, as well as
19 open-ended questions. Analysis of these questions using both quantitative and qualitative
20 methods produced an interesting comparison and complementation of findings. This is one kind
21 of triangulation one can create to identify common themes emerging from two (or more) analysis
22 methods and them that emerge uniquely from each method.

23 Results of the qualitative analysis identify several aspects of the places that were not significant
24 in the factor structure. In this paper we conduct a concurrent analysis; however the findings of
25 the analysis can be used both to further our knowledge of place as well as make contributions to
26 the development of measurement tools thus utilizing a sequential approach to mixed methods.
27 Additionally, further analysis of these qualitative themes can be conducted that would allow for
28 some level of quantification. For instance, physical attributes of place (such as parking
29 availability, size of parking spots or cost of parking) can be used to compare places and capture
30 some of the differences that cause the differences in sentiment. Similarly, attributes such as the
31 type and cost of products, volumes of vehicle and foot traffic, ambient noise levels or
32 accessibility to types of activities can capture additional differences between places in a
33 quantifiable sense to describe the existence of these themes. It is also important to note that
34 while the differences between places are perhaps exaggerated due to the specific open-ended
35 question “please describe the differences that you believe exist between Paseo Nuevo and La
36 Cumbre,” the similarities of sense of place for each location can be captured in the fact that the
37 imposed factor structure had good fit statistics for both places. This relates to the geographic
38 scaling of sense of place, in that at one aggregation shopping centers elicit certain similarities
39 and differences in sense of place attributes compared to different activity locations, but specific

1 points in space elicit another set of similarities and differences from each other. The findings
2 presented in this paper are used to also design a tracking survey using GPS that allow us to probe
3 participants for more in depth data. We are also developing a text mining method that allows for
4 a systematic classification of reports.

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