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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.

INTRODUCTION

With the increased use of the activity-based approach, travel behavior researchers have become more and more reliant on the task of understanding how people make decisions and organize their life, which in turn requires travel. With this task is the need and desire to represent human behavior and decision making with as much accuracy and realism as possible. Often times, this requires researchers to know the aspects that are important to understanding and modeling behavior, and measure these aspects and apply them in a meaningful statistical manner. Many times, researchers find themselves acknowledging the contribution of latent, complex or at times seemingly unmeasurable dimensions of human agency. Measuring and applying these facets of human life to models is, at bare minimum, challenging. As Goulias (2003) mentions, travel behavior researchers attempt to understand human behavior and foster positive change. In order to do this, we must strive towards behavioral realism to identify key facets of behavior, which needs to be done without forcing restrictive analytical methods to work and therefore run the risk of masking differences that exist.

Researchers have approached these difficulties using differing approaches, all of which have contributed to increasing the sophistication of the state of the art in travel behavior. From a purely quantitative perspective, several advancements have been made in statistical modeling, allowing for increased flexibility and detail. One notable example, the multiple discrete continuous extreme value models developed by Bhat et. al. (2005) allows for the simultaneous modeling of multiple interdependent decisions and is indicative of the type of advancements we experience that allow complex decision making modeling and simulation. In addition to this, several latent variable models have become primed for travel behavior analysis, including models that tease out random explained variance from the error term such as random coefficient regression or error component models, or models incorporating latent attributes such as latent factor, and latent class models. Structural equation modeling has also become a widely used tool, incorporating latent and observed variables and providing a method for analyzing the paths between these variables in describing the observed traits. All of these statistical advances allow to develop models of complex behavior with increased detail regarding the behavioral process and decisions being made and those who are making the decision.

Another approach currently being advanced and enriched is the attention given to the type of data collected and used, and the methods by which the data is obtained. Many have acknowledged that the use of the activity-based approach requires a new frame of reference for data needs in order to build successful models. The potential use of qualitative methods and mixed methods approaches have become more prevalent in discussions related to understanding behavior and tapping into nontraditional methods. Discussions however have also centered on the necessity to maintain an awareness of the philosophical underpinnings of such methods, and to proceed with caution in combining quantitative and qualitative methods. Goulias (2003) presents an overview of research methodologies and strategies used within different philosophical positions, and suggestions on how to conduct research while staying consistent

within positivist theoretical framework, which the predominant travel behavior framework. He goes on to say that "many of the methods under this [qualitative methods] label offer the dynamic flexible tools needed in travel behavior to, on the one hand, extract this 'insider story', (behavior from the viewpoint of the agent) and, on the other, understand the 'emergence' of behavior and internal cause(s) that are characteristic of complex systems. Similarly, Clifton and Handy (2003) state that the more we understand about peoples travel behavior, the more we realize we don't understand, and qualitative methods offer powerful tools to obtain a deeper understanding of the complexity of behavior (Clifton and Handy, 2003).

Several researchers have recognized the benefit of qualitative methods in travel behavior. Clifton and Handy discuss the use of qualitative methods in conjunction with or independently from quantitative methods, however Goulias in his concluding remarks says, "some techniques that are often used in qualitative methods can be used within the positivist and probabilistic paradigm as secondary aids of the primary data provision mechanism which is quantitative survey methods." Carr, likewise says that "although qualitative techniques do not yield significant results, they are ideally suited for exploratory research such as identifying influential factors of travel behavior" (Carr, 2008). It is clear through all discussions, that research attempting to understand decision-making behavior is prime for this combination of methodological approaches due to both our limited understanding of the decision process, and insufficiencies in capturing data to explain observed behaviors. Additionally, theoretical developments within the field of Geography and elsewhere provide a solid foundation upon which investigation into more detailed decision making attributes can be conducted. Sense of place theory, for instance, provides a strong framework for research attempting to understand the connections that exist between people and places, and will be discussed further below.

CONCEPTUAL FRAMEWORK

Discussions about qualitative methods in travel behavior have mostly taken place within the last two decades. In this time several researchers have discussed possible methodologies that can be used for data collection (Goulias, 2003, Clifton and Handy, 2003), and examples of applications of qualitative analyses in travel behavior (Gaber and Gaber, 1999; Mehndiratta et. al, 2003; Carr, 2008). The application of such methods first requires an understanding of the different strategies in both data collection and data analysis that exist within qualitative, and mixed method approaches.

Data collection and analysis strategies

In order to understand behavior and apply our knowledge to models and policies, one must collect data. Tashakkori and Teddlie (1998) present four main categories of methods for data collection used both in quantitative and qualitative research: 1) Asking people information (self reporting, interviews, questionnaires, personality questionnaires, inventories and checklists,

attitude scales, indirect self reports), 2) seeing what people do- observational methods (participant observation, nonparticipant observation), 3) asking people about their relationship with others (sociometry), and 4) using data collected and or documented by others (archival data and meta-analysis).

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

Concurrent mixed analysis:

Within this strategy, sub-strategies are suggested. First, researchers can conduct a concurrent analysis of different data—that is to conduct a parallel mixed analysis using different methods on the different datasets. Alternatively, one could choose to either conduct a concurrent analysis on the same data in which the researchers have converted quantitative data to qualitative data, or vice versa (convert qualitative data to quantitative data).

Sequential Qualitative-Quantitative analysis:

In this type of analysis, the researcher conducts a qualitative analysis, and follows this with a confirmatory quantitative data collection and analysis. This can be conducted by forming groups (of people, themes, attributes or settings), or establishing relationships using qualitative analysis, followed up with a either a comparison analysis (ex. MANOVA or cluster analysis), or a confirmatory analysis (ex. factor analysis, structural equation modeling or path analysis).

Sequential Quantitative-Qualitative analysis:

Similar to the previous, in this two-part method a quantitative analysis is conducted and followed up with a qualitative analysis. Groups of people (using for example cluster analysis), attributes or themes (using factor analysis or multidimensional scaling), or relationships (using path analysis or structural equation modeling) are developed and a comparison is made with qualitative data and analysis techniques such as constant comparative analysis.

Sense of Place

The early roots of sense of place were based on phenomenonology beginning with theorists such as Yi Fu Tuan and Edward Relph. Tuan defines sense of place as a persons "affective ties with the material environment" (Tuan, 1974). However, in the 1980's and 90's, researchers stemming

from the positivist traditions within geography, environmental psychology and economics argued that sense of place can be quantified, and applied to positivist rooted research, and that it should be explored for the valuable information it can provide about human behavior (Golledge and Stimson, 1996). For instance Canter (1983) "converts the perspective into a form that is amenable to empirical examination." Though these later researchers contributed to the amassing movement, the applications were still scarce. Sense of place has since been quantified and applied to topics such as home (Jorgensen and Stedman, 2001; Jorgensen and Stedman, 2006), neighborhoods (Brown and Werner, 2009), natural areas (Davenport and Anderson, 2005; Smaldone et. al., 2005), and even historical places (Lewicka, 2008). Sense of place has been studied in conjunction with physical attributes of the place (Stedman, 2003), at different geographic scales (Shamai, 1991), and with different applications including ecosystem management (Williams and Stewart, 1998), tourism (Brown, 1999), and place based teaching (Semken and Freeman, 2008). The inclusion of sense of place into these areas of research has been a positive movement, however the research literature of operationalizing sense of place is still scarce. This is especially true with research and applications integrating sense of place theory into everyday activities such as daily travel behavior modeling and subsequent simulation. Traditionally, models explaining travel behavior such as destination choice have not included affective attributes that attract individuals to places. In order to meld the theory of sense of place and its limited measurement attempts with behavioral modeling in transportation, the structure of sense of place must be further examined. Because of the limited nature of quantitative research of sense of place, a uniform or standard metric of measurement has not been developed.

DATA DESCRIPTION

To examine sense of place, and intercept style survey was conducted at two outdoor shopping centers, Paseo Nuevo and La Cumbre, in Santa Barbara, California. A paper survey was given to patrons of each location willing to participate, containing questions pertaining to sense of place attitudes, travel behavior, and socio demographics. The sense of place portion of the survey included 34 questions about each of the locations as well as one open-ended question. A list of questions is provided in Table 1. A more detailed description of the data collection efforts can be found in Deutsch and Goulias, 2009.

TABLE 1: Sense of Place Question Content and Answer Type

Question (Paseo Nuevo or La Cumbre…)	**Question Type**
I am satisfied with the food options (at PN or LC)	7- point likert
I am satisfied with the products offered (at PN or LC)	7- point likert
I am satisfied with the parking (at PN or LC)	7- point likert
I am satisfied with the level of services (at PN or LC)	7- point likert
I am satisfied with the entertainment options (at PN or LC)	7- point likert
I am satisfied with the amount of people (at PN or LC)	7- point likert
has visually appealing architecture	7- point likert
has a peaceful and relaxing atmosphere	7- point likert
is a beautiful mall	7- point likert
has a good balance of decorative features and businesses	7- point likert
has artistic value	7- point likert
has a definite social atmosphere	7- point likert
is a great family friendly place to be	7- point likert
is a kid friendly place to be	7- point likert
has generally friendly people around	7- point likert
reflects the culture of Santa Barbara	7- point likert
involves a risk of unpleasant encounters when traveling to it	7- point likert
is always overcrowded	7- point likert
has too much going on at it	7- point likert
makes me afraid to walk around	7- point likert
makes me feel relaxed	7- point likert
makes me feel happy	7- point likert
I would be disappointed if it did not exist*	7- point likert
is one of my favorite places in Santa Barbara	7- point likert
meets my needs better than any other location in Santa Barbara	7- point likert
has better diversity in activities than any other place in Santa Barbara	7- point likert
has stores that lack specific things*	7- point likert
reflects the type of person I am	7- point likert
makes me feel comfortable because I identify with the atmosphere	7- point likert
makes me feel too self-conscious*	7- point likert
says very little about me*	7- point likert
makes me feel like I can be myself*	7- point likert
is a good reflection of my identity	7- point likert
I only come when I have specific reasons in mind*	7- point likert
Please describe the differences that you believe exist between Paseo Nuevo and La Cumbre	Open ended

The sample used in this analysis included 509 respondents, who answered sense of place questions about each place and completed the open-ended portion of the questionnaire. A table of sample descriptive statistics can be seen in Table 2.

TABLE 2: Sample Descriptive Statistics

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

ANALYSIS

To analyze sense of place, a mixed method approach was used. In this way, important aspects influencing positively or negatively and attracting people to these places can be identified using two different techniques. A comparison between the two can be used to confirm validity of findings and to identify potentially important aspects for more in depth scrutiny. Ordered questions were included in a factor analysis, and open-ended answers were analyzed using qualitative methods of content analysis.

Factor Analysis

In order to understand the latent factors that exist in the data, an exploratory factor analysis was conducted using responses of respondents for the location of patronage. A full explanation of the exploratory factor analysis (EFA) conducted can be found in Deutsch et. al, 2011. Initial analysis involved all thirty four questions, which were reduced to nineteen questions loading into four salient factors. The four factors extracted using EFA consisted of: aesthetics and atmosphere, family and community oriented nature of the place, negative aspects of the place, and the self benefit of the patronage. This four factor structure was then imposed on two separate confirmatory factor analyses of each place, with all patrons of both Paseo Nuevo and of La Cumbre included in the analysis regardless of place surveyed. Because of this, individuals who only answered survey questions about one place were excluded from the sample. The goodness-of-fit statistics in Figures 1 and 2 show that both are well fitting models.

Results of the two CFA models can be seen in Figure 1 (Paseo Nuevo) and Figure 2 (La Cumbre). The resulting factor loadings of the two analyses indicate some similarities and differences between places in the composition of factors and their contribution to explaining observed attitudes. For instance, the factor loadings within the community-oriented factor indicate that the contribution of the factor to the question "Paseo Nuevo (or La Cumbre) is a

family friendly place to be" is much stronger in the Paseo Nuevo factor analysis. Similarly, the factor highlighting the aesthetics and atmosphere contains some differences worth noting. For instance, the question regarding the architecture of the places ("[location] has visually appealing architecture" has a lower factor loading for Paseo Nuevo than La Cumbre. Upon further examination, it is clear that the question elicits very different responses at each location (mean response at Paseo Nuevo is 6.01 with a standard deviation of 0.922, mean response at La Cumbre is 4.70 with a standard deviation of 1.581. The responses to the question, as indicated by the descriptive statistics were stronger in the positive direction for Paseo Nuevo, with less variation among responses. Therefore this latent construct could not contribute as much in describing differences observed. This is opposite for the question "[location] says little about me," where more of the observed data is explained by the latent factor in the case of Paseo Nuevo than La Cumbre.

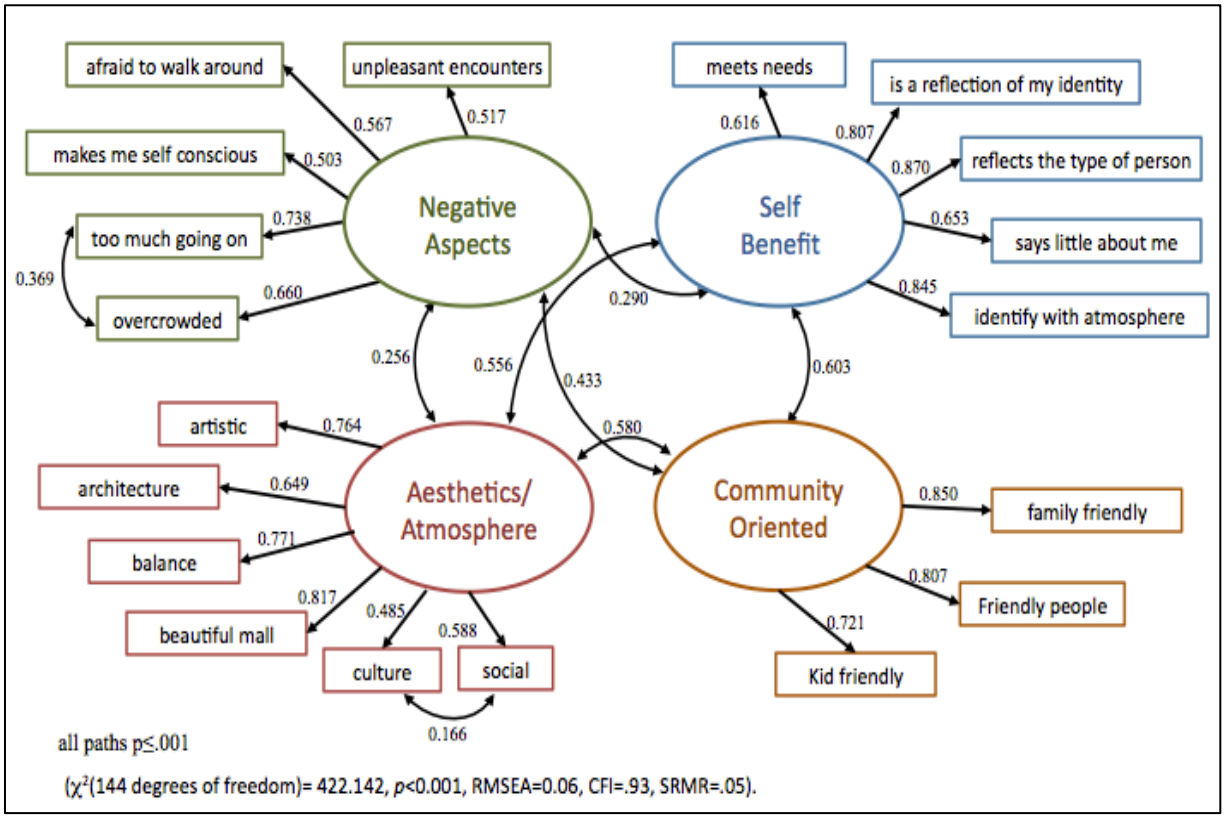

FIGURE 1: Paseo Nuevo Factor Structure

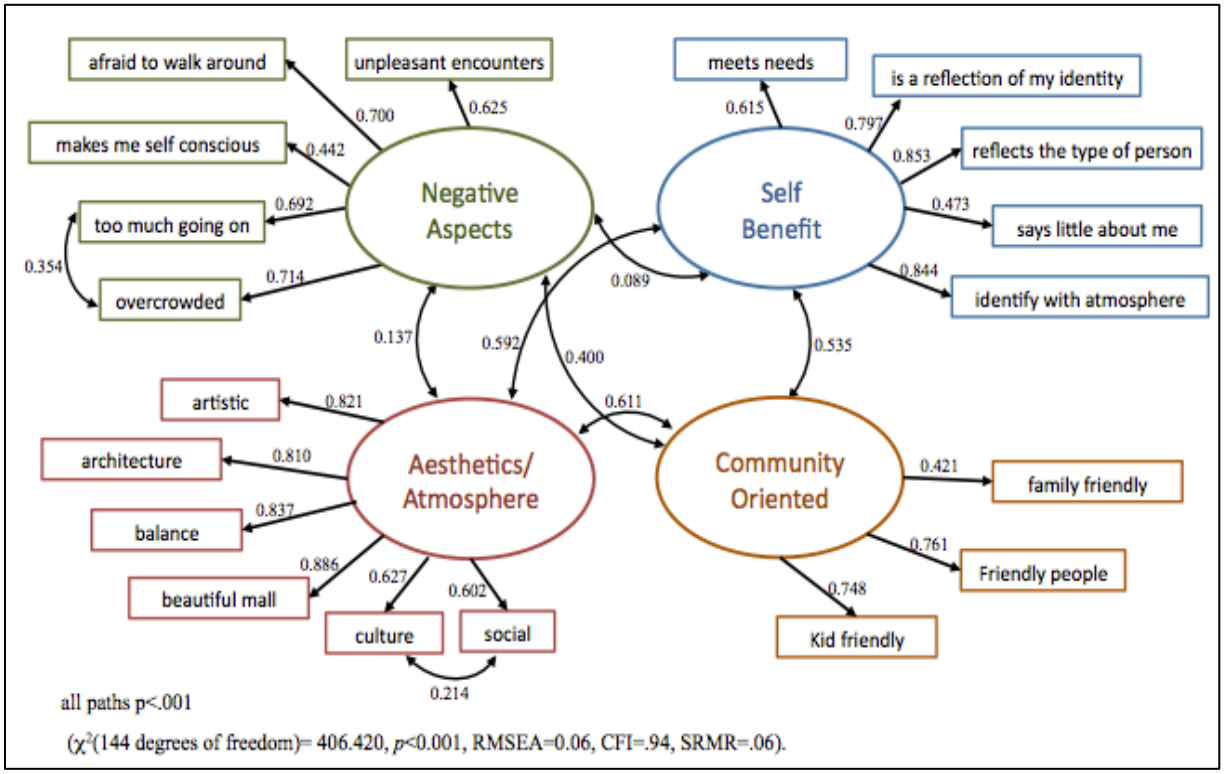

FIGURE 2: La Cumbre Factor Structure

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

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

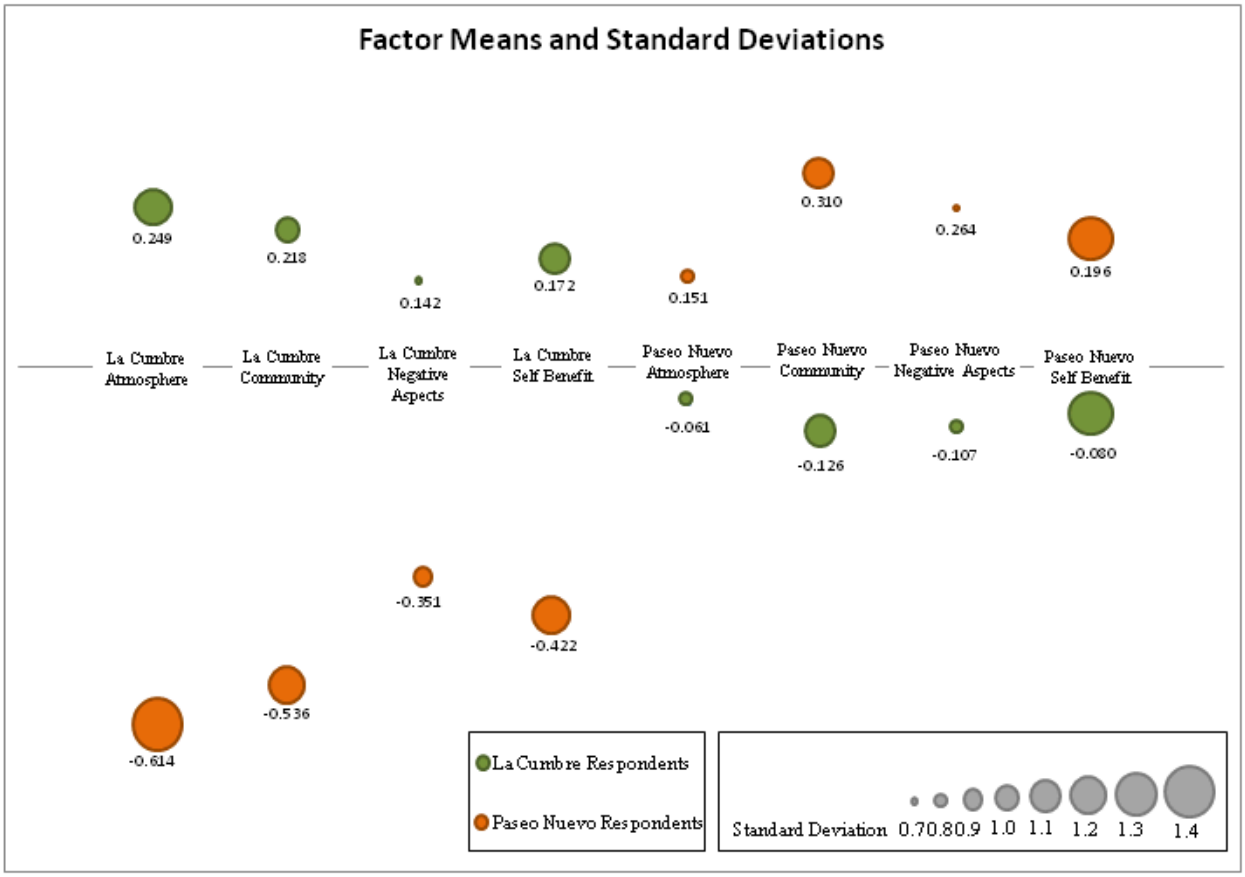

FIGURE 3: Factor Means and Standard Deviations

Qualitative Analysis

Although the factor analytic procedure provides a rich analysis and contributes to understanding of both the measurement of sense of place theory and the attitudes regarding specific locations, an additional qualitative analysis was conducted. Responses to the open-ended question "Please describe the differences that you believe exist between Paseo Nuevo and La Cumbre" were divided into content describing Paseo Nuevo and content describing La Cumbre to conduct a content analysis. The content of these two groups of responses were then analyzed using Wordle, an online tool for semantic frequency analysis. This analytical tool was utilized in order to determine whether common themes exist in the open-ended responses that can be compared and contrasted to the outcome of the factor analysis. The analysis employs a Boolean technique in which after eliminating words such as is, and, that, provides counts of frequency of occurrence. There are other techniques in the field of information retrieval for latent semantic analysis and indexing (Berry et al., 1999, Kontostathis and Pottenger, 2006) and web crawler techniques (Srinivasan, et al., 2005) that have the potential for added value in text analysis but not suitable for this application. Results of these analyses can be seen in Figures 4 (Paseo

Nuevo) and 5 (La Cumbre). This analytical method provided several important comparisons, contributing to the overall understanding of important aspects of sense of place. For instance, parking is discussed in comments about both locations (Paseo Nuevo 41 times, and La Cumbre 53 times). However, the context in which the word is found is quite different for each of the locations. One comment out of 53 comments about parking at La Cumbre was negative, and one was discussing a parking lot, which had a neutral tone. The remaining 51 comments were positive toward the parking at La Cumbre, which is in the form of surface lots surrounding the entire shopping center. The comments about parking with respect to Paseo Nuevo however were largely opposite, with 30 out of 41 comments focusing on the negative aspects of parking (not enough, payment required, inconvenience and general dislike). Paseo Nuevo parking is mostly structured parking, with very few on street parking. Parking is free for the first 75 minutes, but a rate of $1.50/hour after the free allotment is charged.

FIGURE 4: Paseo Nuevo Content Analysis

FIGURE 5: La Cumbre Content Analysis

Similar analysis was conducted on the other top appearing words. Many comments in both texts also discussed the locations based on the stores at each. The word stores appeared 42 times in text about Paseo Nuevo (with 37 of these comments being positive, and 5 being neutral), and 62 times in text about La Cumbre (with 20 positive comments, 36 negative, and 6 neutral). Many of the comments regarding stores at each place consisted of satisfaction with the stores and the diversity offered, or dissatisfaction with the diversity, cost, high end nature, and products (mostly at La Cumbre). Additionally, the themes of downtown (appearing 48 times, 39 of which were positive toned) and crowded (appearing 48 times, 6 of which were positive, 25 negative and 17 neutral or indiscernible tone) appeared in analysis of the text about Paseo Nuevo. Many comments framed the downtown location of Paseo Nuevo in a positive light, noting that it was lively, active, had diverse options, great accessibility and positive atmosphere. However, comments regarding the crowded nature of the Paseo Nuevo area were mostly negative, with a few people commenting that they liked it for people watching or other activities. Many comments also centered on the tourist nature of Paseo Nuevo (tourist appearing 47 times and touristy appearing 11 times), given its downtown location. La Cumbre on the other hand had many comments regarding the design looking like a typical suburban mall. Many of these comments continued to describe this design as boring, drab, unexciting or depressing.

DISCUSSION

Through the use of factor analytic techniques, differences between places and people at those places are evident. Factor analysis provides a strong technique for analyzing data and extracting

latent themes or factors that can be used to explain the occurrence of the observed data. However, there are limitations in the ability of factor analysis to capture the complete story of a phenomenon. This might be the result of insufficient questions, poorly worded or designed questions, or lack of theory or previous examples used to capture the processes of interest. The use of qualitative methods can help to inform researchers to tell a more complete story, or design more complete data collection methods. In the instance of this research, several themes were apparent in a qualitative analysis that did not become manifest using quantitative methods. Parking for instance, was discussed at large in text about both locations, one with a more positive tone (La Cumbre) and the other with a more negative (Paseo Nuevo). It is important to note also that a quantitative question regarding satisfaction with parking was included in the original exploratory factor analysis and did not load in a salient factor. Given the combination of analysis methods, perhaps the lack of presence of the parking question is due to the unique nature of parking, that is to say it would potentially need a factor by itself. Within the confines of factor analytic methods a factor containing a single indicator would not be retained, thus eliminating this attribute from the analysis. Another theme emerging from the qualitative analysis was focused on the stores and products offered at the location. This topic was also included through several measured questions, including "I am satisfied with the products offered" and "Paseo Nuevo (or La Cumbre) lacks certain things", and "meets my needs better than any other location in Santa Barbara" of which only one question (needs) loaded onto a factor. Many themes emerging from the qualitative analysis also mirror the factors that were apparent in the factor analysis. For instance, atmosphere and people are a common element in text from La Cumbre, while crowded, downtown, tourist and people are all elements of Paseo Nuevo which similarly can be found in the overall composition of the factor structure.

CONCLUSIONS

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

Results of the qualitative analysis identify several aspects of the places that were not significant in the factor structure. The use of these qualitative methods to further our knowledge of place contributes to the development of measurement tools. Additionally, further analysis of these qualitative themes can be conducted that would allow for some level of quantification. For instance, physical attributes of place (such as parking availability, size of parking spots or cost of parking) can be used to compare places and capture some of the differences that cause the differences in sentiment. Similarly, attributes such as the type and cost of products, volumes of vehicle and foot traffic, ambient noise levels or accessibility to types of activities can capture additional differences between places in a quantifiable sense to describe the existence of these themes. It is also important to note that while the differences between places are perhaps exaggerated due to the specific open-ended question "please describe the differences that you believe exist between Paseo Nuevo and La Cumbre," the similarities of sense of place for each location can be captured in the fact that the imposed factor structure had good fit statistics for both places. This relates to the geographic scaling of sense of place, in that at one aggregation shopping centers elicit certain similarities and differences in sense of place attributes compared to different activity locations, but specific points in space elicit another set of similarities and differences from each other. The findings presented in this paper are used to also design a tracking survey using GPS that allow us to probe participants for more in depth data. We are also developing a text mining method that allows for a systematic classification of reports.

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REFERENCES

Berry, M. W.. Zlatko D. and E. R. Jessup, (1999) Matrices, Vector Spaces, and Information Retrieval, SIAM Review, Vol. 41, No. 2, pp. 335-362.

Bhat, C.R. 2005. "A Multiple Discrete-Continuous Extreme Value Model: Formulation and Application to Discretionary Time-Use Decisions," *Transportation Research Part B*, Vol. 39, No. 8, pp. 679-707.

Brown, B. B., & Werner, C. M. (2009). Before and After a New Light Rail Stop: Resident Attitudes, Travel Behavior, and Obesity. *Journal of the American Planning Association, 75*(1), 5-12.

Canter, D. (Ed.). (1991). *Understanding, Assessing, and Acting in Places: Is an Integrative Framework Possible*: Oxford University Press.

Carr, K. 2008. Qualitative Research to Assess Interest in Public Transportation for Work Commute, In *Journal of Public Transportation*, Vol. 11, No. 1.

Clifton, K. J., and S. L. Handy. 2003. Qualitative methods in travel behaviour research. In Stopher, P. and P. Jones, eds., *Transport Survey Quality and Innovation*. New York: Pergamon: 83–301.

Davenport, M. A., & Anderson, D. H. (2005). Getting From Sense of Place to Place-Based Management: An Interpretive Investigation of Place Meanings and Perceptions of Landscape Change. *Society & Natural Resources, 18*(7), 625 - 641-625 - 641.

Deutsch, K. and Goulias, K. (2009). Investigating the Impact of Sense of Place on Travel Behavior Using an Intercept Survey Methodology. *Paper presented at the 88th Annual Meeting of the Transportation Research Board,* Washington D.C.

Golledge, R. G., & Stimson, R. J. (1997). *Spatial behavior : a geographic perspective*. New York: Guilford Press.

Goulias, K. G. _2003. On the role of qualitative methods in travel surveys. In Stopher, P. and P. Jones, eds., *Transport Survey Quality and Innovation*. Boston: Pergamon: 319–330.

Jorgensen, B. S., & Stedman, R. C. (2001). Sense of place as an attitude: Lakeshore owners attitudes toward their properties. *Journal of Environmental Psychology, 21*(3), 233-248.

Jorgensen, B. S., & Stedman, R. C. (2006). A comparative analysis of predictors of sense of place dimensions: Attachment to, dependence on, and identification with lakeshore properties. *Journal of Environmental Management, 79*(3), 316-327.

Kontostathis A. and W. M. Pottenger (2006) A framework for understanding Latent Semantic Indexing (LSI) performance, *Information Processing & Management*, Volume 42, Issue 1, Pages 56-73.

Lewicka, M. Place Attachment, Place Identity and Place Memory: Restoring The Forgotten City Past. In *Journal of Environmental Psychology*, 2008 vol. 28 209-231.

Mehndiratta, S, Picado, R. and Venter, C. A Qualitative Survey Technique to Explore Decision Making Behavior in New Contexts In Stopher, P. and P. Jones, eds., *Transport Survey Quality and Innovation*. Boston: Pergamon: 303–329.

Tashakkori, A. and C. Teddlie. 1998. Mixed Methodology, Sage Publications, Thousand Oaks, CA.

Tuan, Y.-f. (1974). *Topophilia: a study of environmental perception, attitudes, and values*. Englewood Cliffs, N.J.: Prentice-Hall.

Semken, S., and Freeman, C. Sense of Place in the Practice and Assessment of Place-Based Science Teaching. In *Wiley Periodicals*, 2008 vol. 92 no. 6 1042-1057

Shamai, Shmuel. Sense of Place: an Empirical Measurement. In *Geoforum*, 1991 vol. 22 no. 3 347- 358.

Smaldone, D., Harris, C., and Sanyal, N. An Exploration of Place As A Process: The Case of Jackson Hole, WY. In *Journal of Environmental Psychology*, 2005 vol. 25 397-414.

Srinivasan, P., Menczer, F. and G. Pant, (2005) A General Evaluation Framework for Topical Crawlers. *Information Retrieval, Volume: 8(3)*, pp.417-447.

Williams, D. and Stewart, S. Sense of Place: An Elusive Concept That Is Finding a Home In Ecosystem Management. In *Journal of Forestry*, 1998 vol. 96 no. 5 18-23.