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DIMENSIONS OF PERSON-ENVIRONMENT RELATIONSHIPS IN SHELTERS FOR VICTIMS OF DOMESTIC VIOLENCE

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The plight of battered women and their children has drawn increasing attention in recent years. It is estimated that in the United States, a violent act is committed against a woman every 18 seconds, and it is estimated that child abuse occurs even more frequently. Raised social awareness of the problem has led to the establishment of environments specifically created as refuges for persons in flight from a violent home environment. At present, approximately 880 shelters for victims of domestic violence are in operation in the United States. In response to the need to explore person-environment transactions in shelters, an empirical investigation was developed. A photo-questionnaire was completed by 101 respondents (staff and residents) in shelters in Los Angeles and in New Orleans. This yielded nine factor-analytic dimensions addressing preferred shelter exterior architectural imagery and amenities, five factors which address one's satisfaction with one's shelter setting, and five factors on one's psycho-emotional status and patterns of shelter use. A number of staff-resident differences were identified. Few regional differences were detected. Parallels are drawn between these data, the battering experience, and the potential for the shelter environment to function as a source of therapeutic support.

INTRODUCTION

The problem of domestic violence against women and children in the United States has risen to alarming rates in recent years. The National Coalition Against Domestic Violence reports that a woman in the United States is battered every eighteen seconds (U.S. Attorney General, 1984; NCADV, 1986). Incidents of child abuse may be even more frequent, with more cases reported in 1986 than ever before. Domestic violence against women and children has occurred throughout the centuries, however (Pleck, 1982; Beaudry, 1985). The support network of services which has arisen in recent years to offer counseling and shelter to these victims has grown considerably, but still lags behind the demand for services at the community level (Carson, 1977; Gelles, 1980). Numerous books have appeared which describe the life-threatening conditions faced by the battered women (Martin, 1977; Labell, 1979; Straus, et al., 1980; and Hofeller, 1982).

Approximately 880 shelters currently operate in the United States (Warrior, 1985) and this number fluctuates as some shelters fail while others open. Residents typically stay at a shelter approximately 30 days. Robinson, et al., (1982) studied a shelter in Minneapolis to identify user needs and design issues. Bustamante (1983) selected a shelter as the subject of her graduate thesis project in architecture at U. C. Berkeley. More recently Greer (1986) has written a series of case studies of shelters, including some devoted exclusively to battered women and their children. And yet little systematic information is known about staff and resident responses to the exterior and interior environments of shelters in terms of functional and symbolic factors. This discussion is extracted from a two-year study, whose findings include 149 site planning and architectural design guidelines for shelters (Refuerzo and Verderber, 1988a; 1988b).

Kaplan and Kaplan (1982) argue that humans evolved across the millennium in an uncertain, dangerous environment, and one's survival depended on the ability to acquire and retain control over our environment in order to cope--to minimize uncertainty. This depends in large part on one's *ability*, or predisposition, to cope with uncertainty. The battered woman typically is stripped of control of her life by an overbearing, violent spouse or lover (Finn, 1985). This psycho-social loss is exacerbated by a corresponding loss of control over one's immediate spatial environment. One eventually feels threatened and insecure both outside and inside the home and the situation eventually becomes unbearable. It is at this point that one flees to a shelter, after exhausting the other available options (Snell, et al., 1964; Aguirre, 1985).

The shelter itself is an unfamiliar, potentially threatening, stressful setting. Many shelters are chronically overcrowded, understaffed, and under-funded (Vapnar, 1980). Presumably, a successfully designed and administered shelter is one that provides a therapeutic support mechanism for women and their children; it is a safe, secure refuge where uncertainty about the environment is at a minimum. Further, it is an imminently controllable environment. It is predictable, and environmental sources of stress are minimal. Conversely, although this has not been supported empirically to date, a stressful shelter environment may be characterized by the opposite conditions: unpredictability, lack of privacy and sustained control over one's immediate personal space, lack of safety, and lack of refuge. A therapeutic health care setting should be supportive of the counseling and treatment provided within (Canter and Canter, 1979) and should reflect the importance of privacy to human well-being (Altman, 1975). However, in the case of the battered woman, one may need to rely on others to care for one's children and to care for the appearance and upkeep of the environment. To have to coordinate these aspects at once with one's own needs could actually increase stress.

Shelter staff and residents' appraisal of the architectural imagery of women's shelters as a building type has not been empirically addressed in the literature. Human response to real and representational architectural settings, interior and exterior, has however been a key component of environment-behavior studies of other building issues and types, including work in architectural meaning by Groat and Canter (1981), Verderber and Moore (1977), Verderber (1982; 1983; 1986; 1987), and Weisman (1981, 1987).

Yet, the issue of the validity of simulation techniques has been the subject of some debate over the past fifteen years. The utility of photographs of environments as a tool for conveying the attributes of their real counterpart has been tested directly. Danford and Williams (1974) reported that the validity and reliability of the use of photographs as opposed to real environments are somewhat questionable and this issue warrants further study across a variety of settings. In a study of first-time visitors' response to a university campus, Seaton and Collins (1972) studied the value of three different methods of providing directional wayfinding information for campus visitors and concluded that among three types of simulations (models, black and white photos, and color photos) results that most closely resembled those elicited by the real buildings were based on the color photograph mode. Outcome was measured as the ability of visitors to navigate through the campus to their destination based on the information provided to them. Howard, et al., (1972) in a study of three groups of 50 university students each, compared responses to four buildings and six internal spaces (Group A), to responses to color slides (Group B) and to responses to black and white slides (Group C) of the same settings. They concluded that the color photo is the next best vehicle to the actual site visit.

Rachael Kaplan (1979) states that the color photograph is a practical and conceptually vivid tool because people like looking at pictures: they can project into the scene if the photo is legible, comprehensible, and of at least some intrinsic amenity to the perceiver. Kaplan also argues that many settings can be evaluated quickly and without great effort on behalf of the respondent. John Collier (1967), an anthropologist writing on the use of photographs as a useful data collection tool, concluded that color photos are concrete and information-rich, and record, objectively, information that may be overlooked through non-photographic data gathering techniques such as personal observation alone. It was decided that for the present study a set of photographs that depict a wide range of "shelters" yields the most information with the least intrusion into the lives of the respondents. This technique has proven quite effective because it enables many settings to be brought to the respondent and each subsequently responded to on only one or a few scales as opposed to what would otherwise have been the unwieldy, difficult proposition of bringing respondents to the actual settings (Collier, 1967) or the tedious nature of asking people to rate a single item on many scales such as is necessary with the semantic differential technique (R. Kaplan, 1979).

The present study explored: (a) perceptions of women's shelters as an architectural building type and (b) staff-resident responses to their immediate shelter environment. Restated, the purpose was to comparatively explore preference, satisfaction, and functional patterns of use in a number of shelters. A multi-regional design was adopted because: 1. different shelter types exist in different parts of the United States and while the vast majority are housed in adapted buildings, most shelters in current operation are the direct result of what is most immediately available in a particular place at a particular time; 2. the socio-economic and racial composition of staff and residents varies by location; and 3. public awareness and support varies significantly by location. Consequently, shelters in some parts of the United States are more sup-

portive, architecturally, than others. Shelters are located in urban, suburban and rural settings. And yet many shelters are remarkably alike in terms of site, programs offered, philosophy, length of stay, scarce funding, and the need for locational secrecy.

It was hypothesized that: (a) shelters whose exteriors are perceived as affording a combination of anonymity, safety, and a residential appearance would be most preferred. This would be evidenced by a quiet locational presence, fences and other types of protective buffers, and a homelike image. Conversely, shelters which did not support these behaviors would be least preferred; and, (b) staff and residents who occupy the same shelter environment experience it in quite different ways. It was assumed that some regional differences exist between the shelters studied, although this aspect would be of relatively minor importance to the major thrust of the study.

RESPONDENTS

Participants in the study numbered 101 (51 residents and 50 staff) in shelters in Los Angeles (L.A.) and in New Orleans (N.O.). A team of researchers in each location documented each shelter environment. Through drawings, photographs, interviews, observation, and a survey, a post-occupancy evaluation was conducted of the facility, and a detailed profile was written of each shelter addressing its organizational structure, community and neighborhood context, the range of services offered, residents' characteristics, staff characteristics, and its plans for the future. As mentioned, data reported below were collected in four shelters in the Los Angeles area (out of eleven) and in the two shelters that operate at present in New Orleans. The average age of residents was 30.6 years. The average length of one's residence was 2.6 weeks (2.4 weeks in L.A. and 2.8 weeks in N.O.). A total of fourteen women had previously stayed in their present shelter or in another shelter (10 in L.A. and 4 in N.O.). For those who had, the average length of stay was 4.1 weeks (4.4 in L.A. and 3.8 in N.O.).

The average age of staff persons in the shelters studied was 33.8 (36.2 in L.A.: N = 29, and 31.4 in N.O.: N = 21). The average length of employment at the shelter was 1.79 years (2.58 in L.A. and 1.01 in N.O.). Fifteen (33%) had worked in other shelters for an average length of time of 2.90 years (2.75 in L.A. and 3.10 in N.O.). Twenty-eight staff persons (56%) indicated that their shelter does not presently but should operate an income-generating business, i.e., a day care program on-site or nearby.

METHODS AND PROCEDURE

A photo-questionnaire was developed for use in data collection (Kaplan, 1979). Part A contained color exterior environmental representations of "shelters," which were presented to respondents in a black 8-1/2" x 11" binder. Prior to the pretest, over 100 photos were assembled; these were later edited to a tighter set of 48, via a panel of eleven judges (six shelter staff and five residents who did not participate in the full-scale study) who rated each item for its legibility, its potential to be taken seriously as a shelter, and format consistency across photos relative to the criteria established at the outset for the sampling of 100 architectural settings.[1]

In the pretest and full-scale survey, respondent assessments of each item were recorded on a survey response form. Each item was presented as a color 3" x 5" photograph (items 1A-12D). The instructions were to rate each photograph in terms of "how much would you prefer this building as a shelter?" In actuality, none of the photos were of shelters; the forty-eight examples were expressly assembled to represent a realistic array of potential shelter sites and buildings representative of the gulf coast region of the southern United States and of Southern California. Each photo was accompanied by a five-point preference rating scale ("not at all" preferred to "very much" preferred).[2]

Concurrent to the photo-sampling and editing task, a series of three lengthy focus group meetings were held with staff and residents in New Orleans and a similar meeting in Los Angeles to pinpoint key issues to address in the written section of the questionnaire. From this, an array of 52 written response items were developed that constituted Part B of the survey instrument. A number of questions addressed the extent of one's satisfaction with the shelter environment e.g., "How satisfied are you with the following aspects of your shelter?" An additional set of questions addressed the frequency with which one engages in certain activities and behaviors in the shelter and one's personal psycho-emotional health status: "How often do you do the following...?" or "How often do you experience the following...?" These 52 items were each rated on a five-point response scale as well. The five columns were labeled from column 1 (low) to 5 (high): "not at all," "a little," "somewhat," "quite a bit" (or "quite often"), and "very much" (or "very often"). Part C of the instrument contained a set of nine background questions on age, sex, degree of familiarity with one's shelter and with other shelters, and suggestions for improvement in one's shelter.

Data were gathered over a seven month period in 1986-87. It was quite difficult to gain access to some shelters, and impossible to gain access to others. The shelters which did agree to participate were at first somewhat skeptical but soon became rather supportive of the project. The research team introduced the project and procedure to staff, who after completing the survey themselves, helped solicit residents and other staff participants. Data were gathered during weekdays, evenings, and on weekends. All responses remained confidential. The researchers signed affidavits stating not to reveal the identity or location of the shelter. Respondents were instructed to work individually and not in groups, as this could have a biasing effect. Also, counterbalancing was utilized whereby many persons completed Part A before Part B, and vice versa (Zeisel, 1981). The post-occupancy evaluations (POE) of each shelter are reported in detail elsewhere (Refuerzo and Verderber, 1988a; 1988b; 1989).

ANALYSIS AND RESULTS

The responses to the 48 photographs and the 52 written items were subjected to data reduction analyses in order to reduce the initial large number of variables to a smaller number of salient content groupings. Factor analysis with a principal components procedure and varimax rotation was utilized for the statistical analysis of these data (Horst, 1965). Staff-resident differences and regional differences were analyzed each via a t-test of significance using each of the resultant factors. The photographs were factor analyzed separately from the written questions. The criterion for retaining a variable within a given factor was a loading of $> .40$. A test of its internal strength and coherence, Cronbach's alpha coefficient of index reliability, is reported for each factor (Tables 1, 2 and 3).

TABLE 1. Preference factors.

Factor[a]	Number of items	Chronbach's alpha	Staff (N=51) mean	Staff (N=51) S.D.	Residents (N=50) mean	Residents (N=50) S.D.
1. Shelter as Adapted Private Residence (3.99)[b]	4	.82	3.64	1.01	3.58	1.12
2. Walls and Fences (3.72)[c]	3	.76	3.23	1.12	3.24	1.30
3. Nature Screens (6.66)[c]	6	.81	3.42	1.18	3.19	1.28
4. Suburban Residential Complex (9.22)[c,e]	10	.83	2.37	1.08	2.85	1.33
5. Accessible Parking (6.81)[f]	3	.76	1.93	.99	2.67	1.19
6. Shelter as Urban Enclave (6.91)[c,d]	4	.73	2.40	1.06	2.60	1.27
7. Raised Entry (1.98)	2	.72	2.45	1.13	2.33	1.34
8. Shelter as Institution (8.44)[c,e]	8	.84	1.81	1.04	2.27	1.20
9. Storefront Shelter (4.83)	2	.69	1.74	.96	1.83	1.01

NOTES
a. Six items did not load among factors 1-9.
b. Total variance explained by that factor.
c. Significant regional difference for item within factor (p .05)
d. Significant regional difference for two items within factor (p .01)
e. Significant difference between respondent groups (p .05)
f. Significant difference between respondent groups (p .01)

VISUAL ITEMS

The analysis of photograph items 1 through 48 yielded nine factors. Five items did not load among them. These content groupings constitute a typology of architectural interpretations of shelters as a building type. These indices are reported in Table 1, according to the mean ratings of residents, and representative examples of these "shelters" are shown in Figure 1.

Factor 1, Shelter as Adapted Private Residence, contains four items showing "shelters' that presumably were interpreted as having been built and used as a single family residence. The houses were built thirty to fifty years ago and are in relatively good condition; surrounding lawns and trees were generally well kept.

Factor 2, Walls and Fences, was labeled as such because each of these three items showed either a wall or fence in front of the "shelter." One of the scenes was of a dense urban building with a narrow door onto the street with a structure sequestered behind this barrier. The two other scenes depicted a wrought iron fence and a wood fence.

Factor 3, Nature Screens, contains six items where each building was shown with landscaping that either partly or completely shrouds the structure itself. These conditions range from partial screening created by the trees and vegetation to nearly total screening of the building.

Factor 4, Suburban Residential Complex, contains ten items. Here, the buildings shown were actually residential apartment complexes, mostly in suburban contexts. Most were two-level structures with adjacent parking areas and minimal landscaping.

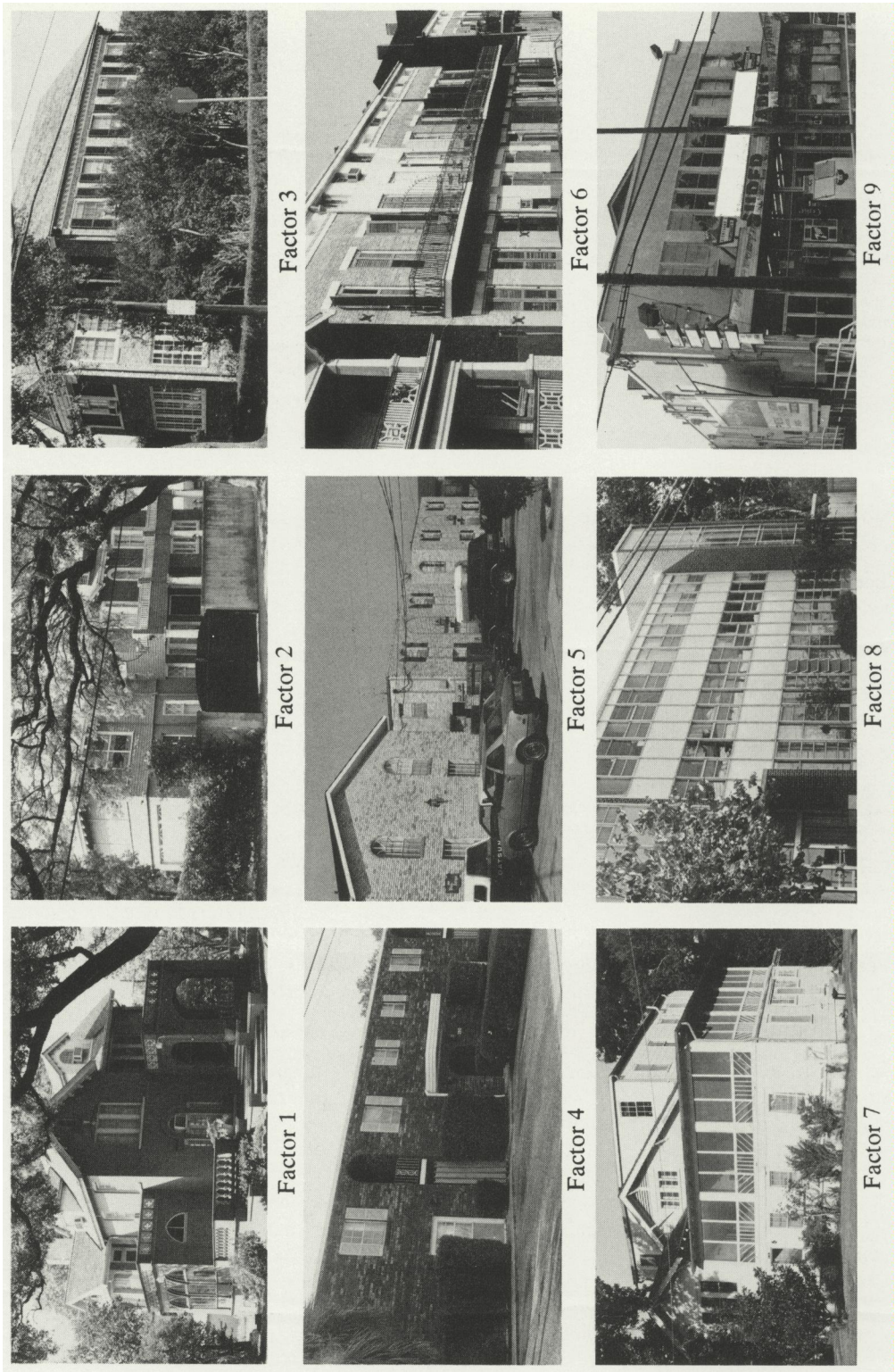

Figure 1. Visual preference factors (representative examples).

TABLE 2. Satisfaction factors.

Factor/Item[a]	Loading	Staff (N=51) Mean	Staff (N=51) S.D.	Residents (N=50) Mean	Residents (N=50) S.D.
1. Overcrowded Conditions 7.41[a] (.89)[b]					
a. Bedroom	.80	2.84	1.25	3.28	1.26
b. Laundry Room[d]	.79	2.51	1.28	2.82	1.09
c. Bathroom	-.79	2.64	1.38	3.12	1.33
d. Staff Offices	.72	2.68	1.31	3.00	1.16
e. Kitchen & Dining Areas[c]	.70	3.12	1.23	3.42	1.36
f. Storage Areas	-.68	2.25	1.15	2.66	1.29
g. Overall Privacy	.66	2.39	1.25	2.64	1.37
h. Privacy While on Telephone	.57	2.47	1.25	2.54	1.31
i. Main Social Rooms[e]	.50	3.45	1.04	3.52	1.33
j. Amount of Natural Daylight	.41	2.78	1.24	3.66	1.08
2. Safety and Security Needs 5.96[f] (8.3)					
a. Shelter as a Temporary Home	.70	3.09	.94	3.64	1.27
b. Sense of Safety and Security in Neighborhood	-.70	3.14	1.20	3.94	1.09
c. Overall Condition of Shelter[c]	.69	2.82	.99	3.40	1.10
d. Ability fo Protect Personal Belongings	.69	2.84	1.02	3.52	1.28
e. Able to Control One's Personal Space	.62	2.98	1.00	3.26	1.22
f. Sense of Safety and Security in Shelter	.60	3.01	1.07	3.98	1.17
g. Type and Amount of Artificial Lighting	.44	2.69	1.08	3.36	1.08
3. Appearance of Shelter and Environs 4.23 (.76)					
a. Amount of Trees and Vegetation[e]	.74	2.96	1.37	3.46	1.29
b. Exterior Appearance of Shelter	.66	2.33	1.19	3.20	1.26
c. Architectural Style of Shelter	-.62	2.70	1.31	3.50	1.28
d. Appearance of Nearby Buildings	.49	2.96	1.45	3.42	1.19
e. Outdoor Play Area	.44	3.27	1.25	3.92	1.17
f. Size of Shelter	.43	2.63	1.29	3.00	1.41
g. Windows and Views	-.42	2.64	1.28	3.54	1.29
4. Neighborhood Context 3.86 (.79)					
a. Closeness to Major Streets	.83	4.18	1.01	4.14	1.08
b. Access to Public Bus Routes[d]	.81	4.06	1.15	4.06	1.22
c. Closeness to Stores	.65	3.88	1.03	3.98	1.12
d. Distance from Home	.47	3.23	1.27	3.54	1.29
e. Location within City	.43	3.74	1.14	3.94	1.22
5. Social and Emotional Support Needs 2.74 (.69)					
a. Treatment by Others	.52	3.70	1.31	3.44	1.14
b. Would Miss Others in Shelter	.48	3.57	1.37	3.60	1.14
c. Contact with Those Who Mean Most to Me	-.44	3.47	1.20	3.10	1.12

NOTES
a. Total variance explained by that factor.
b. Chronbach's Alpha Coefficient of Index Reliability.
c. Significant regional difference (p.001)
d. Significant regional difference (p.01)
e. Significant regional difference (p.05)
f. Significant difference between respondent groups (p.01)

TABLE 3. Associated Factors

Factor/Item	Loading	Staff (N=51) Mean	Staff (N=51) S.D.	Residents (N=50) Mean	Residents (N=50) S.D.
1.Adjustment to Shelter 4.01[a] (.74)[b]					
a.Relaxed Moods	.79	2.98	1.08	2.96	.94
b.A Good Night's Sleep	.75	2.84	1.15	3.28	1.14
c.Been Able to Reach My Goals	.55	3.27	1.20	3.12	1.13
d.Talk with Others	.48	4.05	1.03	4.12	1.02
2.Fatigue 3.06[d] (.67)					
a.Irritable Moods	.76	2.92	.93	3.14	1.06
b.Exhaustion and Fatigue	.72	3.11	1.12	3.26	1.17
c.Would Miss Sense of Safety & Security in Shelter	.53	2.63	1.15	3.66	1.27
3.Social Contact Mechanisms 2.64 (.52)					
a.Talking on Telephone[c]	.77	3.37	.99	3.48	1.25
b.Group Discussion Sessions	.53	3.72	.98	3.81	1.02
c.Television Viewing	.48	2.58	.98	3.26	1.04
d. Housekeeping Duties	.41	2.90	.92	3.52	1.31
4.Uncertainty and Depression 2.12 (.73)					
a.Afraid to Take Chances	.85	2.49	.96	2.60	1.38
b.Periods of Depression	.65	2.60	1.05	3.02	1.11
5.Childcare and Reading 2.04[d] (.70)					
a.Time with Children	.80	3.29	1.11	3.80	1.38
b.Reading Books & Newspapers	.46	2.82	.97	3.36	1.19

NOTES
a. Total variance explained by that factor.
b. Chronbach's Alpha Coefficient of index reliability.
c. Significant regional differences (p.01)
d. Significant difference between respondent groups (p.05)

Factor 5, Accessible Parking, contains three items where the cars are shown parked immediately next to the buildings. The autos are the dominant features in each scene and are in close proximity to the "shelter."

Factor 6, Shelter as Urban Enclave, contains four items depicting older three-to-four level buildings on dense urban sites in a zero lot line condition.

Factor 7, Raised Entry, contains two items, each showing a building with an entry raised above the level of the street, separated by stairs (interior and exterior). The perceived separation between street and building is the single most unifying feature across these three buildings.

Factor 8, Shelter as Institution, contains eight items that are noticeably non-residential in their exterior appearance and imagery. These were actually schools, a hospital, and an office building. The buildings range in age from ten years to approximately 40 years.

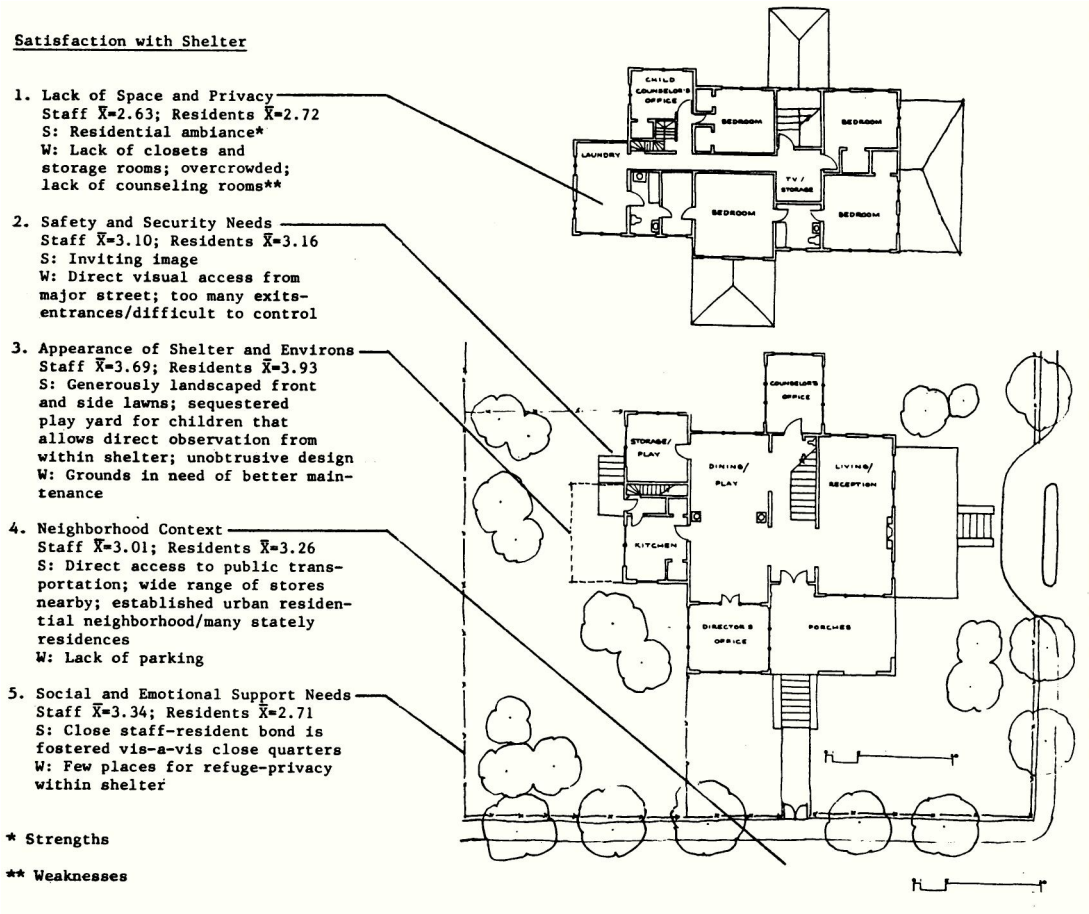

FIGURE 2. Synthesis of survey results and observational data: shelter adapted from private residence.

Factor 9, Storefront Shelters, contains two "shelters" located above a commercial establishment, in urban contexts. These buildings date from the 1930's.

Perusal of the mean ratings of the nine factors show that for staff, Factor 9, Storefront Shelters (mean = 1.73), Factor 5, Accessible Parking (mean = 1.93) and Factor 8, Shelter as Institution (mean = 1.80) were preferred least. By contrast, Factor 1, Shelter as Adapted Private Residence (mean = 3.64), Factor 3, Nature Screens (mean = 3.42), and Factor 2, Walls and Fences (mean = 3.23) were the three most preferred content groupings.

For shelter residents, the least preferred factors were the same as for staff, but in slightly different order: Factor 9, Storefront Shelters (mean = 1.83), Factor 8, Shelter as Institution (mean = 2.27), and Factor 7, Raised Entry (mean = 2.33). The three most preferred shelter types or features were Factor 1, Shelter as Adapted Private Residence (mean = 3.58), Factor 2, Walls and Fences (mean = 3.24), and Factor 3, Nature Screens (mean = 3.19).

For three factors, t-test results between staff and residents' mean ratings shows disagreement (Factors 4, 5, and 8) on issues of the appropriateness of a suburban residential apartment complex-cum-shelter imagery (df = 89, t = -2.07, p .05), an "institutional" shelter (df = 89, t = 2.05,

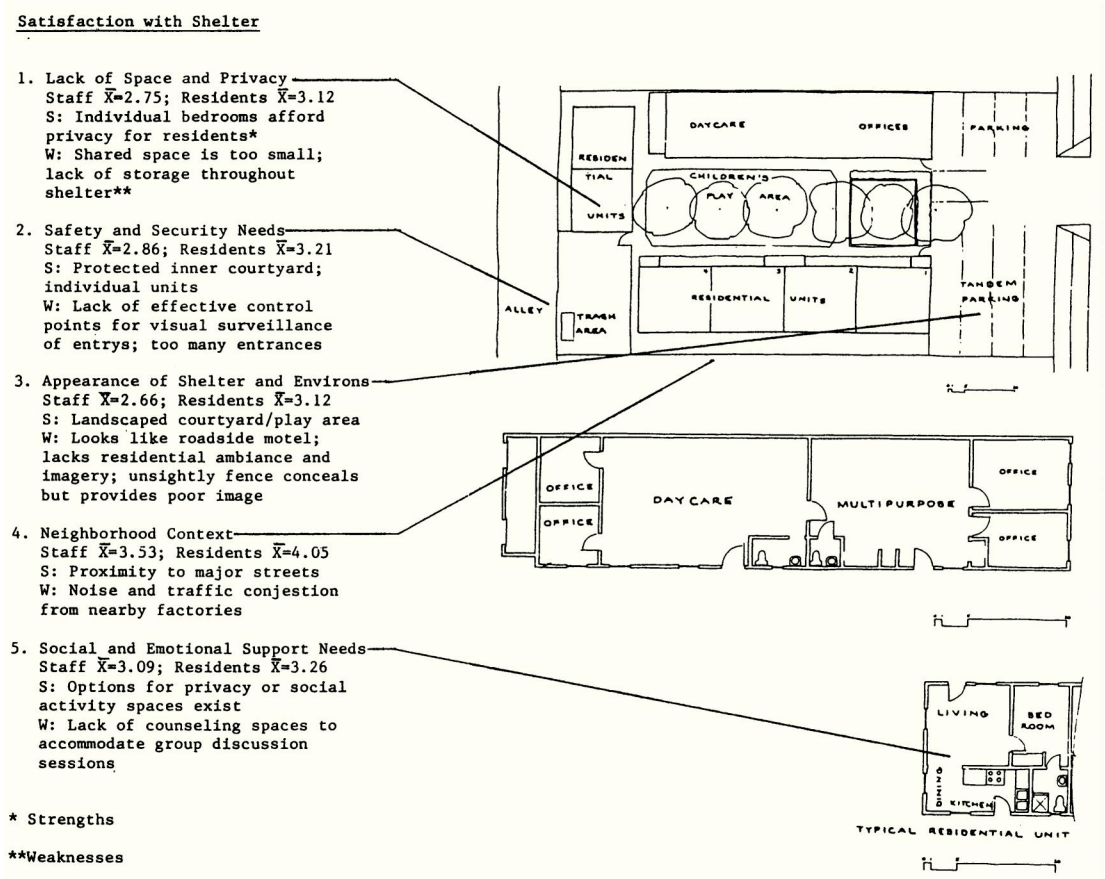

FIGURE 3. Synthesis of survey results and observational data: courtyard shelter adapted from apartments.

p.05), and whether the parking lot should be right next to the shelter, clearly visible from the street (df = 92, t = -2.69, p .01). Staff persons prefer the autos to be concealed from view. Staff and residents were in general consensus, however, regarding the other six factors.[3]

The nine factorial t-tests performed on these data to explore regional differences (Table 1) did not yield any significant differences. However, on the individual item level of analysis, a few scattered differences were identified (Table 1). Similarly, the ten factorial t-test and individual item t-tests reported below and in Tables 2 and 3 on non-photographic data yielded very few staff-resident and regional differences, and are therefore only briefly discussed below.[4]

WRITTEN ITEMS

The 52 written items, when factor analyzed, yielded five factors (based on 47 of the 52 items because five items did not lead among these factors) associated with one's degree of satisfaction with one's shelter (Table 2), and five personal status and involvement factors (Table 3). Collectively, these ten person-environment factors may be viewed as a descriptive adjunct to the nine factors on shelter design and imagery.

Satisfaction with Shelter Facility

Each of the individual questions concerning satisfaction were prefaced with this question: "How satisfied are you with the following aspects of this shelter...?" The first satisfaction factor, Factor 1, Overcrowded Conditions, contains 10 items concerning the lack of space and privacy in one's shelter, and assessment of natural daylight in the shelter. Factor 2, Safety and Security Needs, contains seven items on the issue of safety and security in the shelter, the ability to protect one's turf, the shelter as a temporary home, and its appearance. Factor 3, Appearance of Shelter and Environs, contains appraisals of one's shelter in terms of exterior appearance, trees and vegetation, play areas and windows and views. Factor 4, Neighborhood Context, addresses one's satisfaction with the shelter in terms of its proximity to urban amenities and location in the city. Factor 5, Social and Emotional Support Needs, concerns one's sense of belonging to a group, and contact with others.

The lowest ranked factor was Factor 1, Overcrowded Conditions (mean = 2.71: staff; mean = 3.06: residents). Overcrowding is seen as a pervasive problem. However, residents were more satisfied than staff with the amount of personal space and personal safety and security in the shelter (Factor 1 and 2). Staff and residents appeared to be in relative accord with regard to most other questions on one's satisfaction or dissatisfaction with one's shelter. At the composite level, for the five t-tests performed on these data, only Factor 2 ($df = 97$, $t = 2.90$, p .01) and Factor 3 ($df = 96$, $t = -2.68$, p .01) yielded significant staff-resident differences.

Behavior While Residing Within Shelter Facility

The third set of factors is reported in Table 3. Here, the question was "How often do you engage in the following activities in the shelter...?" or "How often have you experienced the following during your stay at the shelter...?" The five factors are: Factor 1, Adjustment to Shelter, which addresses one's ability to interact with others and overall personal status; Factor 2, Fatigue, addressing one's overall mood and energy level since associated with the shelter; Factor 3, Social Contact Mechanisms, addressing one's activities and tasks of a communicative or informative nature; Factor 4, Uncertainty and Depression, expresses one's fear to take chances and whether one becomes depressed at times; and Factor 5, Child Care and Reading, addresses the amount of time one spends with one's children, and time spent reading aloud to children.

With regards to staff-resident differences (five t-tests), residents, predictably, experience significantly more fatigue--Factor 2, ($df = 97$, $t = -2.01$, p .05), i.e., irritability and exhaustion. Also, Factor 5, Child Care and Reading, yielded significant differences ($df = 84$, $t = -2.25$, p .05), since residents engage in these activities much more than staff. This was to be expected. With regards to regional variation none of the five t-tests yielded significant differences.[5] When asked, "What would you change about your shelter facility?" responses centered on the need to expand the shelter, more privacy, a more secure facility, additional storage space, outdoor lighting, better landscaping, better overall upkeep, more places for children, more parking, and a day care program. Thirteen residents said their shelter is fine as it is. Not a single staff person said that.

In research, one hopes that in the study of a given issue one type of data can either reinforce or dispute the interpretation of parallel data collected by a different method. To examine this further, Figure 2, drawn from the POE component of the research (Refuerzo and Verderber, 1988a; 1988b), shows the floor and site plans of one of the New Orleans shelters in relation to its assessed strengths and weaknesses vis-a-vis each of the five degree-of-satisfaction factors. The mean ratings of staff and residents for that factor in that particular shelter are reported in Figures 2 and 3. Figure 3 shows similar information for one of the L.A. shelters studied. Both shelters are overcrowded. The New Orleans shelter houses 28 residents, but at times must accommodate up to 35 persons. This is usually 6-8 families at any one time. The staff on-site numbers five, and one overnight counselor is on staff. The Los Angeles shelter houses 25 residents, but at times, up to 30 persons in six living units. The staff on-site totals seven, with one security person on-site 24 hours per day. The courtyard scheme of the Los Angeles shelter affords more separation and privacy between families than does the centralized communal scheme of the New Orleans shelter, which was formerly a single-family home. However, the landscaped side yard for children in the New Orleans shelter is more successful than the noisy central courtyard play area in the Los Angeles shelter. These examples reveal to some extent the different urban fabrics of the two cities, and represent an attempt to synthesize the overview provided by the factor-analytic structure with site-specific empirical (survey) data and qualitative (observational) data gathered in each shelter studied.

DISCUSSION

A cognitive dimensional structure of person-environment transactions in shelters for battered women and children has been identified. Shelter staff and residents' shelter-based evaluations and activities were comparatively studied on each of 19 factor analytic indices derived from an initial array of 48 photographs and 52 written questions. The first hypothesis outlined at the outset was confirmed: a residential image also affording anonymity and safety is most preferred and appears to be of paramount concern, particularly to residents. The data, however, do not strongly support hypothesis two because at the factorial level for the nineteen t-tests performed, only seven yielded significant staff-resident differences, and only slightly more than one third (38%) of the individual questionnaire items dealing with one's own shelter yielded significant differences between staff and residents, and very few regional differences existed. Therefore, these staff and residents experience their shelter in a similar way much more often than not with respect to the specific issues examined.

Patterns of response to the forty-eight photographs led to a number of architectural imagery dimensions of shelters. For these respondents in two major United States cities, the shelter setting may be a suburban residential complex, an "institutional" building adapted to use as a shelter, an urban enclave, or an adapted former private residence. However, former private residences are much preferred over other types of "shelters." The residence-cum-shelter may offer a homelike ambiance in a neighborhood setting. In fact, such a shelter may be much more appealing (at least from the outside) than from where one fled. And this image may be supportive of the larger goals of the shelter as it provides reassurance, safety, and may serve to amplify one's self esteem. On the other hand, the images associated with suburban apartment complexes and institutional structures were perceived to be especially non-supportive in this sense. This may be due to the function of perceived size, per se. Perhaps it is not the architectural imagery, but one's assumption of how many other residents would be in occupancy. In this sense, the appraisal of shelter exteriors may have little or nothing to do with whether the shelter is "homelike" or not. Parking is also an issue of concern to respondents. In interviews,

it became apparent that having one's car nearby may be a source of reassurance because one knows that she is free to come and go at will, and does not feel controlled, trapped, or isolated. However, the settings that depicted parking adjacent to the shelter were only mildly preferred.

When asked to assess one's own experience in a shelter for victims of domestic violence, the major "messages' interpreted from the survey questions on shelter satisfaction and behaviors engaged in while in the shelter tended to echo the fundamental need for more space and greater control of one's immediate environment. With respect to satisfaction, the exertion of control of one's turf as a means to cope with one's situation is at the root of a number of the cognitive factors identified above. Specifically, the need for safety and security, the need for adequate personal space and privacy, and the need for adequate social and emotional support while in the shelter stand out most clearly. The need to control one's own personal space translates directly into whether or not a family has a private or semi-private bedroom or bathroom, if children have a place to play, and if the kitchen and dining area is communal or if some flexibility exists in where and when one eats. Kaplan and Kaplan (1982) assert that the ability to make sense of one's surroundings in an unfamiliar environment hinges upon certain prerequisites: the setting must be designed to be legible, functionally supportive, and adaptable and must allow one to project into the setting in the short term and to generalize beyond the setting. A shelter facility that does not afford these qualities may likely pose a major hurdle to overcome in one's larger effort to cope during a period of transition from a violent home to what one hopes is a new beginning.

The other salient message interpreted from the findings on shelter satisfaction is that the exterior appearance of one's shelter is as important as is its neighborhood context. A shelter that is well maintained on the exterior and is located in an attractive neighborhood is a positive asset. Most of the respondents were pleased with their shelter in these respects, particularly in terms of their shelter's adjacency to stores and transportation linkages.

In terms of the immediate environs of a shelter it was found that those shelters that are protected by walls, fences and landscape "screens" of trees, bushes, and setbacks from roads afford a perceived buffer of safety from the outside world. These separations may help a woman feel protected and may in turn help her make sense of i.e., comprehend, the shelter and therefore be drawn to the facility. Landscaping, in particular, can be used effectively to buffer out unwanted visual elements, noise, and to create a calm, non-chaotic setting. Trees and urban green spaces have been found to be highly desirable amenities in research on environmental preference in landscapes (R. Kaplan, 1985; Talbot and Kaplan, 1984; Talbot, et al., 1987). The quality of views from within the shelter to the surrounding site and neighborhood and views that allow site surveillance are important design considerations. In the shelter POE field work (Refuerzo and Verderber, 1988a; 1988b) those with windows that allow a direct view to outside--particularly entry points--and that allow daylight to enter the shelter were preferred over facilities that have small, poorly located windows and little daylight.

The effects of environmental stress may play a role in the "messages" embedded in the five factors which address behaviors engaged in while in the shelter. These factors focus on one's adjustment to one's shelter from a violent home situation (sleep patterns and ability to rest), on the occurrence of fatigue (irritability, exhaustion), on social contact (private conversation and group discussions), on uncertainty and depression (fear) and on the care of one's children and private time. While no connections were empirically studied in these shelters between the cognitive factors and any specific architectural factors, i.e., window placement, size of rooms, color, these results suggest that the shelter facility is undoubtedly one of *many* sources of stress.

The most overcrowded and/or smallest shelters of those studied were assessed as stressful in the most general sense (vis-a-vis this limited set of survey questions). This was reinforced by the aforementioned post-occupancy evaluation findings in these shelters, which included direct observation and personal interviews.

In other words, when these data are layered and synthesized further, a picture emerges which suggests that the architectural setting may be a stressor that may help, in consort with other problems and stressors, to trigger a negative shelter experience for a woman and her children. These data do indeed suggest a causal relationship between the quality and size of a shelter setting, residential satisfaction, and what one does within it. This question was specifically addressed in a related series of analyses (Refuerzo and Verderber,1989). Related to this is the fact that residents and staff tended to evaluate their shelter facility in similar terms: as a potential source of stress.

Regional differences did not figure in the picture that emerged. Only a few sporadic regional differences occurred. Among these, the L.A. sample tended to respond rather favorably to the style of buildings typical of L.A., and the same was the case for the New Orleans sample. In terms of regional differences in occupant satisfaction with one's shelter, a pattern is not clearly visible. The few differences identified may be attributed as much to random effects as to any which are meaningful in a psycho-social context or that have architectural implications. A national study of a broad range of shelters is needed. This can lead to a typology based on architectural, programmatic and contextual concerns. How many shelters of a given type exist? In what ways do program and philosophy relate to the built environment? What has been successful, and why? What does the future hold for the shelter movement in relation to the design of a shelter? All shelter programs can benefit from such research.

At this point it is critical to discuss what conclusions can and cannot be drawn from the results. For the sake of brevity a number of issues are listed below; for a detailed discussion of shelter planning and design guidelines see Refuerzo and Verderber (1988a; 1988b). However, the following issues are the direct result of the survey. In terms of site planning and shelter site selection it is important to select a site that offers a quiet locational presence. The building should be set back from direct view from adjacent streets, and it should be located near stores and recreational areas. Provide accessible parking but screen parking areas from direct view from the street so as not to reveal the identity of residents' automobiles. Also, do not allow autos to be parked on lawns or otherwise in places that detract from a residential ambiance. Provide protected play areas for children that allow for mother's surveillance of her child. Provide landscaped spaces that serve as "outdoor rooms" maintained on a regular basis.

Architecturally, the shelter should convey the image of a residence, not an institution, a safe refuge. It should be unobtrusive within its neighborhood context, and its interior spaces should be flexible and expandable to meet high-activity uses. Provide a good security system--windows should provide views of the outside without sacrificing occupant safety. Provide adequate personal space for each family and individual. Create cheery interior spaces and a homelike atmosphere. Provide a variety of individual and group counseling spaces, spaces for the storage of personal belongings, including furniture if need be, and provide a commercial-grade kitchen space for informal as well as formal dining. Provide quiet alcoves for residents to talk on the phone. Entrances should be protected, but need not be raised per se. Beyond this, it is important to note that the dimensional structure identified only provides the initial parameters of the architectural component of the shelter experience; additional empirical work is needed combined with a measure of common sense.

Some limitations of the study warrant mention which could direct future research on shelters. First, the range of survey questions and photographs could have been more diverse and more in-depth to offer examples from more situations and varied building types in terms of their adaptive potential as shelters. Second, it is recommended that pretesting should ascertain whether confounds exist between the conceptual factors and characteristics of the data collection technique. Third, children could have been interviewed, although this would have necessitated a different procedure and perhaps a different tool for gathering data. Fourth, more shelters could have been studied, if access to them had been granted. And a longer period of observation-- periodic intervals across a period of one or two months--would perhaps yield a more coherent picture because these refuges for women and children are extremely volatile in their own right, and things can change quickly from day to day. And finally, it would have been useful to tie together the architectural attributes in each shelter with the cognitive dimensional structure. Specific features could then be correlated with specific factors. This would then have become an empirical link between the POE and survey data.

In summary, an initial attempt has been made to empirically explore the imagery and use of shelters for battered women and children, to compare staff and resident responses to the same shelter setting, to explore one's personal status while in the shelter, and to explore regional differences. The architectural environment of a shelter is a potential cause of stress and anxiety for battered women and their children at perhaps the most sensitive juncture in their lives. Architects and other design professionals must focus efforts on maximizing the *support* that a well planned and designed shelter can offer to its occupants.

NOTES

1. The following criteria were established as a guide to obtain an internally consistent yet representative set of photos:
Size of building (single-family, multi-family, adapted commercial), age of building (five years to 75 years), locational-site context (urban-suburban), angle and height of station point (frontal-30 view), weather conditions (clear), presence/non-presence of landscaping (trees only-trees and ground cover), walls and fences (blind, partial see-through, to completely see-through), parking provisions (on-site visible-off site), architectural style (1960's contemporary-1930's art deco residential-Victorian Revival- roadside "motel"-vernacular). No people were shown in the photos. Each judge rated the merit of each photo in terms of format consistency and its legibility using a five point scale. When the final set of 48 was determined, a thorough visual check against the aforementioned criteria was conducted and some minor adjustments made to achieve a balance of setting types, i.e., adapted commercial, residential, multi-family residential, and so on. Reliability scores on judges' ratings were not computed.

2. In the pretest the internal consistency of the photos was affirmed, in part, through selection of a subset (8) of the 48 photos. These were presented to five persons familiar with the eight buildings. Their responses and reasons for responding as they did were found to be similar to responses of five other persons who did not have any prior knowledge of these specific buildings. All ten respondents were not informed beforehand of the purpose of this particular task, in order to avoid skewed assessments.

3. As a means to cross-validate the nine factors derived, respondents hand wrote the feature that most impressed them for the most preferred item among each set of four (1A-D, 2A-D, and so on). These written responses were found to frequently echo the major themes and therefore aided in the subsequent interpretation (labeling) of the factor.

4. The L.A. respondents were far less satisfied with the size of their laundry facilities (mean = 2.28 to mean = 3.03), the kitchen and dining areas (mean = 2.86 to mean = 3.66) and main social spaces (mean = 3.22 to mean = 3.74), yet were more satisfied with the overall condition of their shelter than N.O. respondents (mean = 3.34 to mean = 2.88). L.A. respondents were also significantly more satisfied with the amount of green areas, trees, and vegetation at their shelter (mean = 3.48 to mean = 2.94), but less satisfied than N.O. respondents regarding access to public bus routes near their shelter (mean = 3.76 to mean = 4.35).

5. Only one t-test at the individual item level yielded a significant difference at or below p .05 and on a minor issue at that (phone usage: L.A.: mean = 3.20; N.O.: mean = 3.64).

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