

ILLUMINATION LEVEL AS AN INFLUENCE FACTOR ON PROXEMIC BEHAVIOR

by

Amy Louise Laughead

(ABSTRACT)

This study used Michelson's (1976) Intersystems Congruence Model and Hall's (1966) theories of proxemic zones to guide in the investigation of illumination level's influence on proxemic behavior. This study attempted to determine potential influence of the effect of bright or dim lighting conditions on the personal space requirements within the behavioral setting of waiting/reception areas. Both a quantitative approach and qualitative approach were taken with this investigation.

To control for various cultural, social, environmental and situational variables as possible, illuminated scale-models were constructed of three waiting/reception area scenarios and a homogenous sample of Americans participated in the study. Subjects interacted with these models by placing scale-figures within them, and answered a series of both quantitative and open-ended questions. Proxemic recordings of scale-figure placements were performed and statistically analyzed.

The quantitative results showed that under general ambient bright and dim lighting conditions, there were no significant differences in personal space requirements in the waiting/receptions area behavioral setting. Thus, lighting does not appear to be a determining factor in achieving adequate personal space. The qualitative analysis agreed with these results, noting other factors as being more important, such as, the proximity to others, presence of tables (assuming they hold reading materials), and a view of the entire space. This phenomenon means ambient illumination level does not play a large role in determining proxemic distances between individuals in waiting area settings.

ACKNOWLEDGMENTS

Without the support and expertise of Dr. Lennie Scott-Webber, the conception and development of this research would not have been possible. Her knowledge of interior design, proxemic research and qualitative research served to give a foundation and meaningful depth to this study. The time and genuine interest of the other committee members was also greatly appreciated; Dr. Bowker, through her critique of the literature review and experience with the research process and Mr. Parsons, through his vast knowledge of lighting design and positive encouragement. Appreciation is also owed to the other faculty and staff of the Department of Near Environments for their support in my research efforts.

I would like to acknowledge April Allen, without her help the construction of the scale-models for this study would not have been achievable. Her patience and friendship are a large part of the glue and tape that holds them together. Special thanks to Hubbell Lighting for donating the lighting fixtures used in the models. I would also like to acknowledge Michelle Marini and Megan Waterman with the Statistical Consulting Center for their contributions in helping me analyze the data.

Last but not least, I would like to thank my father, David Laughead and my aunt, Ruby Rogers for their love and support throughout the process of writing this manuscript.

TABLE OF CONTENTS

	PAGE
Abstract	ii
Acknowledgments	iii
Table of Contents	iv
List of Figures	vi
List of Tables	ix
I. INTRODUCTION	1
Statement of the Problem	1
Related Literature	2
Intersystems Congruence Model	2
Territoriality	7
Crowding	8
Privacy	9
Proxemics	11
Visual Perception	20
Lighting Variation Influence on Behavior	24
Waiting/Reception Area Design	25
Lighting Design of Waiting/Reception Areas	31
Simulation as a means of Behavioral Research	47
Rationale	53
Research Question	55
Hypotheses	55
Operalization of Variables	56
Significance of the Study	56
II. METHODOLOGY	57
Sample	57
Measures and Procedures	58
Descriptions of Models	60
Pilot Testing and Analysis	65

CONTENTS continued	PAGE
III. RESULTS AND ANALYSIS	74
Sample	74
Statistical Analysis	74
H1 ₀ Questionnaire Results	75
H1 ₀ Proxemic Measurements	78
H2 ₀ Questionnaire Results	84
H2 ₀ Proxemic Measurements	90
H3 ₀ Questionnaire Results	99
H3 ₀ Proxemic Measurements	102
Discussion - Quantitative Analysis	110
Qualitative Analysis	111
Questionnaire	111
Video and Audio Recordings	115
Discussion - Qualitative Analysis	117
IV. Conclusion	118
References	122
Glossary	125
Appendices	127
Appendix A	127
Appendix B	129
Appendix C	132
Appendix D	134
Appendix E	136
Appendix F	138
Appendix G	140
Appendix H	144
Appendix I	166
VITA	171

LIST OF FIGURES	PAGE
Figure 1. Intersystems Congruence Model (Michelson, 1976) as adapted by author.	4
Figure 2. Personal space zones as defined by Edward T. Hall (1966).	13
Figure 3. The process of visual perception (Lam, 1977) as adapted by author.	23
Figure 4. Seating Preferences. (Adapted from Deasy & Lasswell, 1985)	27
Figure 5. Utilize arms in ganged seating to define territory.	29
Figure 6. Optimum conversation distance. (Adapted from Deasy & Lasswell, 1985)	30
Figure 7. Sociofugal and sociopetal seating arrangements as depicted by author.	31
Figure 8. Typical seating arrangements. (Adapted from De Chiara, Panero & Zelnick, 1991)	33
Figure 9. Ambient lighting (Adapted by author from IESNA, 1995).	35
Figure 10. Accent lighting (Adapted by author from IESNA, 1995).	36
Figure 11. Task lighting (Adapted by author from IESNA, 1995).	37
Figure 12. Lighting can expand the appearance of space (Adapted by author from IESNA, 1995).	39
Figure 13. Grazing (Adapted by author from IESNA, 1995).	40
Figure 14. Washing (Adapted by author from IESNA, 1995).	41
Figure 15. Lighting can make a space appear smaller (Adapted by author from IESNA, 1995).	43
Figure 16. Illuminance Ratios (Adapted by author from IESNA, 1995).	46
Figure 17. Floorplan of model representing a typical hotel lobby waiting area, adapted from Janjigian (1995).	61

LIST OF FIGURES continued	PAGE
Figure 18. Floorplans of hotel waiting/reception lobby with foot-candle readings noted. Each number represents the foot-candle reading taken at that particular location in the model.	62
Figure 19. Photographs of hotel waiting/reception area scenarios. (Photographed by author).	63
Figure 20. Floorplan of model representing a typical physician's office waiting/reception area, adapted from Malkin (1982).	64
Figure 21. Floorplans of physician's office waiting/reception area with foot-candle readings noted. Each number represents the foot-candle reading taken at that particular location in the model.	66
Figure 22. Photographs of physician's office waiting/reception area scenarios. (Photographed by author).	67
Figure 23. Floorplan of model representing a typical service-oriented waiting area, adapted from Malkin (1982).	68
Figure 24. Floorplans of service-oriented waiting/reception area with foot-candle readings noted. Each number represents the foot-candle reading taken at that particular location in the model.	69
Figure 25. Photographs of service-oriented waiting/reception area scenarios. (Photographed by author).	70
Figure 26. Schematic layout of laboratory space where experiment was performed.	71
Figure 27. Composite map depicting seating selection under bright and dim lighting conditions for hotel lobby waiting/reception scenario. Drawing not to scale.	83
Figure 28. Recording of successive scale-figure placement for a typical subject in the hotel waiting/reception area scenario. Drawing not to scale.	85
Figure 29. Recording of successive scale-figure placement for a non-typical subject in the hotel waiting/reception area scenario. Drawing not to scale.	86
Figure 30. Composite map depicting seating selection under lighting conditions for physician's office waiting/reception scenario. Drawing not to scale.	95

LIST OF FIGURES continued	PAGE
Figure 31. Recording of successive scale-figure placement for a typical subject in the physician's office waiting/reception area scenario. Drawing not to scale.	97
Figure 32. Recording of successive scale-figure placement for a non-typical subject in the physician's office waiting/reception area scenario. Drawing not to scale.	98
Figure 33. Composite map depicting seating selection under bright and dim lighting conditions for service-oriented waiting/reception scenario. Drawing not to scale.	107
Figure 34. Recording of successive scale-figure placement for a typical subject in the service-oriented waiting/reception area scenario. Drawing not to scale.	108
Figure 35. Recording of successive scale-figure placement for a non-typical subject in the service-oriented waiting/reception area scenario. Drawing not to scale.	109

LIST TABLES	PAGE
Table 1. Two factor mixed model experiment in a randomized complete block design	73
Table 2. Semantic Differential Questionnaire, Hotel Waiting/Reception Area	76
Table 3. Contingency Table with Seating Choices within Six Proxemic Zones; Hotel Waiting/Reception Scenario	79
Table 4. Gender Comparison of Frequencies of Seating Choices within Proxemic Zones; Hotel Lobby Waiting/Reception Scenario - Bright Lighting Condition	81
Table 5. Gender Comparison of Frequencies of Seating Choices within Proxemic Zones; Hotel Lobby Waiting/Reception Scenario - Dim Lighting Condition	82
Table 6. Semantic Differential Questionnaire; Physician's Office Waiting/Reception Area	87
Table 7. Contingency Table with Seating Choices within Six Proxemic Zones; Physician's Office Waiting/Reception Area Scenario	91
Table 8 Gender Comparison of Frequencies of Seating Choices within Proxemic Zones; Physician's Office Waiting/Reception Area Scenario - Bright Lighting Condition	93
Table 9. Gender Comparison of Frequencies of Seating Choices within Proxemic Zones; Physician's Office Waiting/Reception Area Scenario - Dim Lighting Condition	94
Table 10. Semantic Differential Questionnaire; Service-Oriented Waiting/Reception Area	100
Table 11.. Contingency Table with Seating Choices within Six Proxemic Zones; Service-Oriented Waiting/Reception Area Scenario	103
Table 12. Gender Comparison of Frequencies of Seating Choices within Proxemic Zones; Service-Oriented Waiting/Reception Area Scenario - Bright Lighting Condition	104

LIST OF TABLES continued	PAGE
Table 13. Gender Comparison of Frequencies of Seating Choices within Proxemic Zones; Service-Oriented Waiting/Reception Area Scenario - Dim Lighting Condition	105
Table 14. Summary of Responses from Open-Ended Questionnaire	113