

COMPARING HUMAN AND SOCIAL RESOURCES
ACCUMULATED THROUGH PARTICIPATION WITH HABITAT FOR HUMANITY
IN SCATTERED SITES AND HABITAT NEIGHBORHOODS

By

YUN ZHU

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This document is dedicated to my family.

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TABLE OF CONTENTS

	<u>page</u>
ACKNOWLEDGMENTS	iv
LIST OF TABLES	ix
LIST OF FIGURES	x
ABSTRACT	xii
CHAPTER	
1 THE PROBLEM.....	1
Introduction.....	1
Statement of the Problem.....	2
Sweat Equity as Participation.....	5
Sweat Equity as a Learning Process.....	6
Sweat Equity as a Sharing Process.....	7
Habitat Neighborhoods versus Scattered Sites.....	9
Sweat Equity as Design Participation.....	11
Significance of the Study.....	13
Assumptions and Delimitations Underlying the Study	15
General Research Hypotheses	16
Definitions and Operational Terms	19
Summary.....	20
2 INTRODUCTION	22
Theoretical Background.....	22
Learning by Doing.....	22
Generalized Social Exchange.....	24
Conceptual Framework	27
General Background Information	29
Sweat Equity as Participation.....	30
Sweat Equity as Learning and Sharing.....	42
Physical Settings.....	49
Design participation.....	54
Variable Measures	56
Sweat Equity.....	57

	Human Resources.....	58
	Social Resources.....	60
	Design participation.....	62
	Summary.....	63
3	RESEARCH METHODOLOGY	65
	Case Study Paradigm.....	65
	Research Setting	66
	Sampling and Data Collection.....	71
	Operational Definitions and Measures	73
	Analytical Techniques.....	84
	Validity and Reliability.....	85
	Limitations of This Study	87
	Summary.....	88
4	RESULTS OF THE STUDY.....	90
	Characteristics of Sample	90
	Demographic Characteristics.....	90
	Sweat Equity.....	92
	Human and Social Resource Development	95
	Results of Statistical Analyses.....	100
	Results of Content Analyses.....	113
	Reasons to Participate in Sweat Equity	114
	Meanings of Sweat Equity.....	114
	Advantages and Disadvantages about Sweat Equity	115
	Neighborhood and Involvement.....	119
	Helping Behaviors	120
	Design Participation	123
	Summary.....	125
5	DISCUSSION.....	126
	Sweat Equity as Doing, Learning, and Sharing.....	126
	Habitat Neighborhoods versus Scattered Sites.....	141
	Design Participation.....	146
	Summary.....	155
6	CONCLUSIONS	156
	Summary of the Study	156
	Conclusions.....	159
	Sweat Equity as Participation, Learning, and Sharing	159
	Habitat Neighborhoods versus Scattered Sites.....	161
	Design Participation	162
	Implications	164
	Suggestions for Designers	164

Suggestions for Habitat	166
Suggestions for Further Research.....	169

APPENDIX

A SURVEY INSTRUMENTS	171
B INTERVIEW QUESTIONS.....	180
LIST OF REFERENCES	185
BIOGRAPHICAL SKETCH	198

LIST OF TABLES

<u>Table</u>	<u>page</u>
3-1 Distribution of Sweat Equity Hours in Three Habitat Affiliates.....	67
4-1 Demographic Characteristics of the Respondents.....	91
4-2 Factor Analysis: Rotated Component Matrix.....	101
4-3 Multivariate Analyses of Covariances Examining Dependent Variables after Controlling for Education.....	105
4-4 Significant Results from the Between-subjects Effects Examining Dependent Variables.....	105
4-5 Multivariate Model for Dependent Variable SKILLS.....	107
4-6 Multivariate Model for Dependent Variable ATT-H.....	107
4-7 Multivariate Model for Dependent Variable DESIGN.....	108
4-8 Multivariate Model for Dependent Variable SELF.....	108
4-9 Multivariate Model for Dependent Variable MAINT.....	108
4-10 Multivariate Model for Dependent Variable SEG-E.....	109
4-11 Multivariate Model for Dependent Variable SEG-R.....	110
4-12 Univariate Model for Dependent Variable SUP.....	110
4-13 Nonparametric Correlations Among Variables: Kendall's tau-b.....	111
4-14 Results of Two Multiple Regression Analyses Examining Human and Social Resource Developments.....	112

LIST OF FIGURES

<u>Figure</u>	<u>page</u>
2-1 Simplified model from Gifford's framework of conceptualizing person-environment relations in learning settings (2002).....	28
2-2 Simplified Gifford's model for urban environmental psychology (2002)	28
2-3 Conceptualized framework for sweat equity in a Habitat context	29
3-1 Conceptual framework for the doing, learning, and sharing process of sweat equity within the context of Habitat for Humanity International.....	74
4-1 Hierarchical cluster analysis: Dendrogram using Ward Method	100
4-2 Modified conceptual framework for statistical analyses.....	103
5-1 Simplified multivariate results	127
5-2 An inviting entrance was created by using landscaping and outdoor furniture	128
5-3 This was a living room with various decorations and displays. The homeowner tried to match the colors as well.....	129
5-4 The outside wooden handrails at the back entrance needed to be repaired.....	129
5-5 Simplified statistical results for human and social resources.....	133
5-6 The TV display in a living room illustrated the cultural preference of the homeowner	135
5-7 The color blue was used in this bedroom.....	136
5-8 The playful primary colors were used on the walls, curtains, and the ceiling fan in a kid's room.....	136
5-9 The decoration in a bathroom also was carefully considered	137
5-10 This front yard needed better landscaping	137
5-11 The new bathroom was built by the homeowner herself after she moved in.....	151

- 5-12 This was a multi-functional backyard. The backyard functioned as the garden, gym, picnic area, kid's playground, gathering place, and utility storage space.....152
- 5-13 This picture showed three Habitat houses. The exterior of these houses looked similar.....153

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By

Yun Zhu

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Habitat for Humanity uses sweat equity to help low- and very low-income families build affordable houses in both scattered sites and Habitat neighborhoods. Families participate in the construction of their *own* houses and *others' as well*. However, sweat equity has not been clearly defined within a Habitat context. Nor has the impact of sweat equity been systematically measured in terms of human and social resource development. It is unclear whether or not these resources are maintained differently in Habitat neighborhoods and scattered sites. Families make design choices about colors, finishes, and landscape for their houses. However, not all affiliates count this participation as sweat equity hours.

Dewey's learning-by-doing theory explains why participating in sweat equity builds human and social resources: the individual skills in relation to house construction and maintenance, and the community skills in relation to neighborhood maintenance, respectively. Levi-Strauss's generalized social exchange theory shows why helping and

being helped during sweat equity activities provide the premises of the continuum of reciprocity even after families move into their homes.

Since participation is context-specific, a case study explored the sweat equity process as participation, learning-by-doing, and sharing with African-American female heads of Habitat households. It was hypothesized that 1) sweat equity contributed to human and social resource development; 2) Habitat neighborhoods contributed to the maintenance of resources; and 3) design participation was associated with house satisfaction.

A pilot study with eight families tested the research instruments and procedures in a local Habitat affiliate. The principal study was conducted in three Southeast United States Habitat affiliates. Convenience sampling and volunteerism identified 49 respondents.

Significant quantitative and qualitative findings indicated that sweat equity and design participation have positive effects on human and social resource development in these settings. Also, Habitat neighborhoods helped eliminate the perception of economic segregation, compared to Habitat houses in scattered sites. These findings suggest that the learning-by-doing and sharing—sweat equity—are practical and efficient processes to create human and social resources with low-income families. These findings enrich the studies of learning-by-doing and generalized social exchange theories and address the gap between theory and design practice.

CHAPTER 1 THE PROBLEM

Introduction

Habitat for Humanity International is a private non-profit housing organization that helps low- and very-low income people to achieve the “American Dream” of a single-family house and livable environment. Habitat for Humanity (Habitat) helps individuals to achieve this goal through a distinctive “sweat equity” process that requires people to build their houses together. More specifically, partner families¹ commit hundreds of hours, consisting of various activities, to the construction of other families’ houses and in turn, receive help with their own houses (Vincent, 2002). During the sweat equity process, partner families may acquire human resources including house building and maintenance skills, budgeting skills for financial responsibility, and a sense of self-esteem. They also may build social resources related to mutual support, neighboring activities, sense of obligation, and trust among Habitat partner families.

However the persistence of human and social resources accumulated through sweat equity may vary in different types of Habitat settings. Some houses are located in scattered lots “where there are no other Habitat homes on the homeowner’s street.” Other houses are located in clusters “where the homeowner’s block includes other Habitat households but is not exclusively developed with Habitat homes” or subdivisions “where the homeowner is surrounded on the street only by homes built by Habitat” (Mitchell &

¹ The relationship between Habitat International affiliates and the families are partners, so the families are called “partner families” or “Habitat families” instead of homeowners in this study.

Warren, 1998, IV-27). The degree of segregation imposed by the Habitat context may make it easier for families to maintain the human and social resources they have acquired through sweat equity. Research has shown that Habitat families who live in clusters or subdivisions are more satisfied than families who live in scattered homes. Yet, a major objective of the U.S. Department of Housing and Urban Development's (HUD) Strategic Plan is to reduce geographic segregation (U.S. Department of Housing and Urban Development [HUD], 2000) for low-income and poor families.

This study serves four research purposes: 1) it defines "sweat equity" as a process that involves participation, experiential learning, and sharing in a Habitat context; 2) it explores the relationship between sweat equity and human and social resource developments; 3) it compares how human and social resources that are acquired through sweat equity may vary in relation to the Habitat context (i.e., subdivisions versus scattered Habitat houses); and 4) it explores the role of user participation in the house design process during sweat equity. Since a cluster consists of 2% to 99% of Habitat homeowners in one block, and this is a big range of variation, the term Habitat neighborhood will be used in this study to describe areas that are considered a larger cluster or a subdivision. The following section provides background information related to the objectives of the study and identified research hypotheses.

Statement of the Problem

Sweat equity is a self-help building process when an owner takes control in the planning, building, and managing of his or her own home. The activities of self-help building range from supervising the worksite to months of hard labor (Grindley, 1972). The first significant public self-help housing effort was conducted by the County Relief Board of Westmoreland County, Pennsylvania, in the 1930s. The participants of the

program were unemployed coal miners who built self-sufficient communities together. By 1940, participants completed approximately 250 homes (Spohn, 1972). In the 1960s, the Housing and Home Finance Agency, the predecessor of HUD, solicited proposals for new ways to improve low-income housing, particularly “the study of self-help in the construction, rehabilitation, and maintenance of housing for low income persons and families and the methods of selecting, involving, and directing such persons and families in self-help activities” (Spohn, 1972, pp. 23-24). In the 1970s, HUD provided less support for self-help projects and only the Mutual Self-Help Housing program retained the sweat equity requirement. Currently, Rural Housing and Community Development Services in the United States Department of Agriculture (USDA) provide technical support for the Mutual Self-Help Housing Program. Qualified families in a group of 5 to 12 complete 65% of the work on their own homes. Group members work on each other's homes and move in when all the homes are completed. The average price of a Mutual Self-Help house is about \$80,000 with a low-interest Single-Family Housing Direct Loan.

Federal efforts for self-help housing diminished after Eugene R. Gullledge was appointed as the Assistant Secretary for Production, HUD, in the 1960s. It is believed that the HUD structure of mass production also contributed to the low profile of HUD in self-help programs because the self-help housing production was only a fraction of the housing market (Spohn, 1972). However, non-profit organizations including Habitat realized that even if the housing production of self-help programs might not be significant to the housing market, each house built with sweat equity changed the lives of the homeowners significantly, especially low-income families. Established in 1976 by

Millard and Linda Fuller, Habitat for Humanity International currently has over 1,500 affiliates in all 50 states, the District of Columbia, Puerto Rico and the U.S. Virgin Islands and about 400 overseas groups in 83 countries. According to Habitat for Humanity International 2002 Fiscal Report (Habitat for Humanity [Habitat], 2002), Habitat has produced a total of 44,617 low-income homes in the United States and 133,641 homes worldwide. The average cost is \$46,000 per house nationwide and \$800 worldwide. Habitat affiliates are responsible for raising funds, obtaining planning and building permissions, selecting partner families, and coordinating volunteers and construction. Habitat is unique due to its use of sweat equity, interest-free loan, volunteerism, and donations from local resources. The Habitat homeowners have some control over the designing (e.g., choosing the site, colors, and finishes of their homes) and building processes of their houses and full control and responsibility for home maintenance and management. Former president Jimmy Carter (1977-1981) and Jack Kemp, former secretary of Housing and Urban Development (1989-1993), actively supported Habitat International and brought it both nationwide and international recognition. Former president Bill Clinton (1993-2001) praised it as the most successful community service project in the United States (Finn, 1994).

Since the establishment of Habitat, researchers and practitioners have developed increasing interests in many aspects of Habitat, such as building techniques (Florida Power & Light Company, 2000; Partnership for Advancing Technology in Housing, 2002; U.S. Department of Energy, 1999), impact of physical environment on mental conditions (Sanwu, Haberl, & Kim, 1999; Wells, N.M., 2000), financial assistance, religion and volunteerism (Baggett, 1998; Thurman, 1991), building social capital related

to Habitat organizations (Hays, 2002), and the impact of Habitat houses on property value (Habitat, 2003). Importantly, HUD funded the Applied Real Estate Analysis (AREA), Inc. to examine the general financial and social benefits of homeownership from the Habitat families' points of view (Mitchell & Warren, 1998). Finn (1994) detailed the Habitat experiences (including sweat equity) as a dynamic process of empowerment in one Habitat community. Using open-ended questions, she asked partner families to recall all their experiences with Habitat after living in the Habitat houses for one year. However, no studies have been found that explore sweat equity as a participatory process. How are human and social resources actually accumulated through the sweat equity process? In addition, previous studies have not compared Habitat families in scattered sites with those in neighborhoods to assess whether or not the human and social resources developed through the sweat equity process persist over time. No studies have examined the role of Habitat families' participation in the house design and planning process of their own houses.

This research examines sweat equity as a process of participation, learning by doing, and sharing. Sweat equity is a holistic and dynamic process that changes the lives of partner families. This study will examine the acquisition of human and social resources in scattered sites and Habitat neighborhoods. The role of user participation in the design process will also be explored.

Sweat Equity as Participation

The World Bank (2002) defines participation as “a process through which stakeholders influence and share control over development initiatives and the decisions and resources which affect them.” The definition of participation by the World Bank is close to the definition of sweat equity within the context of Habitat. First, sweat equity is

a process which usually takes months for the major stakeholders to accomplish. Second, during the sweat equity activities, partner families make some decisions about their houses. Finally, partner families take actions collectively to realize the dream of owning a home. Sweat equity in this study is the participation of partner families with Habitat.

Even though the World Bank's definition explains the social influences of participation, it does not provide empirical information about participation. For example, what process gives the most control to stakeholders and over which decisions? As a self-help participatory process, the definition of sweat equity in Habitat needs to address specific activities in which families take control of and are involved in planning and decision-making. What activities are included in sweat equity? What does sweat equity mean to Habitat families when they help others? What does sweat equity mean to them when they help themselves?

Sweat Equity as a Learning Process

According to Dewey (1913), the doing experiences often involve a learning process. He claims that learning experiences “cover all the doings that involve growth of power—especially of power to realize the meaning of what is done” (1913, p. 66). Interacting with one's physical or social environment is necessary in order to acquire new skills and knowledge (Roth, 1962). Once new skills are learned, they become a part of human resources. Human resources include human abilities, knowledge, skills, health, and appreciation that are accumulated either consciously by formal education and task training, or unconsciously through experiences (Green & Haines, 2002; Ostrom, 2000; Putnam, 2000). Human resources in this study refer to the knowledge and skills one acquires or sharpens through training and experiential learning at the individual level.

Is there a relationship between sweat equity (training, construction, and public activities) and human resources? Specifically, do they learn maintenance and financing skills? How do they perceive their skills? How often do they practice those skills on their own? Do Habitat families learn the appropriate skills during sweat equity to accomplish all the maintenance and repairs on their own houses? If the sweat equity experiences did not teach Habitat families all the skills to maintain their homes, will they be able to learn how to do it by themselves when there is a need? If the maintenance or repair is too complicated to be done by the family members, will they get physical or financial assistance from other Habitat neighbors rather than asking for help from Habitat? Is self-responsibility of maintaining one's home accumulated or increased during sweat equity in addition to necessary skills and social support?

Sweat Equity as a Sharing Process

As part of the Habitat agenda, partner families contribute hundreds of sweat equity hours to work on other Habitat houses. In turn, they receive the same help from volunteers and other partner families to build their own houses. During the giving and receiving interactions, sweat equity may build the social connections or the ties among partner families.

In the 1920s, L. Judson Hanifan coined the term *social capital* to describe the social relationships that “count for most in the daily lives of people: good will, fellowship, sympathy, and social intercourse among the individuals and families who make up a social unit” (cited in Putnam & Gross, 2002, p. 4). Social capital generally refers to connections among individuals, including social relationships and bonds that facilitate collective action in the community (Bourdieu, 1983; Coleman, 1988; Green & Haines, 2002; Hanifan, 1916; Jacobs, 1961; Putnam, 2000; Putnam & Gross, 2002). In

the course of achieving and maintaining collective actions, people build social networks, norms of reciprocity, and trustworthiness, which are necessary to the development of social resources (Putnam, 2000; World Bank, 2002). In this study, social resources refer to mutual support, neighboring activities, neighborhood attachment, sense of obligation, and trust among the Habitat partner families at the neighborhood level.

Turner (1977) believes that the real value of building and maintaining a house lies in the relationships developed among stakeholders. Turner's belief coincides with what Habitat believes: skills and relationships are the important result or outcome developed through building a physical shelter (Habitat, 2003).

One fundamental basis of social capital is the generalized reciprocity or generalized social exchange. Helping behaviors are categorized into two main streams: one advocates that helping behaviors are performed in order to achieve for one's own benefits (egoistic); and the other claims that behaviors aimed for the general benefits of all are possible (altruistic) (Allop, Fifield, & Seiter, 2002). Generalized reciprocity includes not only intra-group but also inter-group favoritism. Intra-group favoritism is the mutual commitment among participants within a group: I do it for you now, expecting you or others in the same group will do something similar in turn sometime. The inter-group favoritism includes mutual commitment between group members and members outside the group: I do it for your now, expecting you or others inside or outside the group will do something in turn sometime. The idea of generalized reciprocity supports the generalized social exchange theory. The generalized social exchange occurs when an individual feels obligated to give back—not directly rewarding his benefactors—but other actors in a chain of social exchange (Ekeh, 1974). In Habitat, partner families first

help other partner families and then receive direct help from other partner families, volunteers, and donors. The people a family helped to build their houses may not be the same who come to help the family later. Therefore, the sharing process of sweat equity is characterized by generalized social exchange. In this way, trust is built (Putnam & Gross, 2002). Frequent interactions tend to reinforce the norm of reciprocity. Therefore, social resources originate from doing something for someone else. Cohen and Prusak (2001) assert that a sense of equitable participation is embedded in the development of social capital, and as a result, a higher level of social capital invites genuine participation.

In Habitat, partner families help each other with house construction. Is there a relationship between sweat equity and social resources? Will this sharing process contribute to building social bonds among partner families? To what extent do partner families know their neighbors' names and have informal interactions? To what extent do they trust their neighbors? After they move into their new houses, will they continue the mutual support for each other when there is a need, such as lending a tool, giving a car ride, babysitting for a neighbor, or giving a hand for house repairs? Why do families help their neighbors and why do they receive help? Does sweat equity help partner families realize their obligation to their neighborhoods, such as attending activities to maintain and improve their neighborhoods in addition to their own houses? According to Mitchell and Warren (1998), the Habitat families do take pride in having helped to build their homes and feel a sense of belonging. Does the commitment of sweat equity help partner families build a sense of community?

Habitat Neighborhoods versus Scattered Sites

Habitat homes may be built in scattered lots or neighborhoods. Since most partner families have low- or very low- incomes, single-parent families with similar education

levels and ethnic backgrounds, greater segregation occurs in Habitat neighborhoods as compared with houses in scattered lots.

Many scholars (Denton, 1999; Martinez, 2000) criticized the segregation that occurred when low-income, and often minority, families were displaced in the urban renewal programs of the 1950s. The 1968 Housing and Urban Development Act addressed the fair accessibility and affordability of homeownership for minorities and low-income families in mobility programs and assisted housing programs. The Gautreaux Demonstration Project in the 1970s was the best-known mobility program, which relocated some low-income families into a racially balanced middle-class neighborhood. The participants in the demonstration showed higher satisfaction with their neighborhoods than residents with similar financial status in racially unbalanced low-income neighborhoods (Peroff, Davis, & Jones, 1979). Reducing segregation by race and income therefore has become a standard objective in HUD's Strategic Plan (HUD, 2000). However, the success of the relocation seemed only short-term because the integrated neighborhoods tended to re-segregate (Carr, 1999; Farley, Steeh, Jackson, Krysan, & Reeves, 1993; Stuart, 2002). Can housing problems be solved exclusively by better-looking physical environments or mixed-income neighborhoods?

In 1997, Habitat International and 19 affiliates collaborated with Applied Real Estate Analysis (AREA), Inc., a real estate and policy-planning corporation, to conduct a HUD study on the experiences of Habitat homeowners. Habitat families felt safe and secure when their neighbors were other Habitat families. Although no statistical significance was found, families who live in clusters or subdivisions expressed greater neighborhood satisfaction than those who live in scattered homes. Given that safety was a

major concern in recent Habitat projects, clusters or subdivisions were accepted development patterns (Mitchell & Warren, 1998). In other words, Habitat programs are building more segregated low- and very low-income neighborhoods when they have enough available land. Habitat families perceived clusters or subdivisions as a means to revitalize their neighborhoods, rather than as segregations (Mitchell & Warren, 1998). The high satisfaction rate of Habitat families raises suspicions about the significance of integrated race and income as appropriate for all groups in every context.

Do human and social resources accumulated through sweat equity differ in scattered sites and neighborhood settings? Are there differences between Habitat families in scattered lots and neighborhoods in how often they use the maintenance skills on their own houses? Will partner families in Habitat neighborhoods tend to help each other more often than families in scattered lots? In Habitat neighborhoods, will the homogeneous neighborhoods lead to segregation? Do homeowners perceive racial and economic segregation?

Sweat Equity as Design Participation

Design participation refers to the extent that a family participates in the design and planning activities of their houses and takes control over the design and planning features of their homes. The design and planning activities include but are not limited to: choosing the lot, selecting the exterior and interior colors, materials, and finishes, picking layout designs and elevations, and changing design details to satisfy users' needs. Design participation is assumed to promote control and the satisfaction of the end-users. However, normative statements rather than empirical research dominate the literature to advocate the necessity of user participation. The World Bank (1995) stated that participation in the planning and implementation stages of development efforts enhances

these efforts' impact and increases sustainability. Finn (1994) claimed that choosing colors and decorations by Habitat homeowners was empowering. Since she did not measure sweat equity or design participation empirically, the findings could not help Habitat to improve the design or design participation process. In 2000, Reis (2000) examined the relationship between user participation and satisfaction with mass housing design in Brazil. He claimed that low-income groups wished to participate in the design process and the participation was associated with user satisfaction. However, Reis excluded other physical and social factors (e.g., neighborhood quality, neighbors, trust, and safety) that may explain user satisfaction or other influences user participation has (e.g., pride, house maintenance, and neighborhood satisfaction).

Before the actual building of one's own house, Habitat allows partner families to select from a minimum of the architectural features (e.g., lot, layout, colors, and finishes of cabinets and walls). Not all Habitat affiliates count these activities as sweat equity hours. This study explores the relationship between user participation in the house design and planning and satisfaction with the results. What is the relationship between the number of types of design activities in which a family participates during sweat equity and design satisfaction, house satisfaction, and design participation satisfaction? Is design participation related to the maintenance of human and social resources? How important is design participation to Habitat families? How do partner families evaluate their concurrent houses in terms of interior, exterior, and landscape design of their houses? Should Habitat expand their theory of sweat equity and include the design participation in addition to the training, construction and management processes? What other activities should be included in sweat equity?

Significance of the Study

Habitat for Humanity provides decent, safe, and affordable low-income housing by organizing local resources and users' participation in the construction of their own houses as well as other families' houses. Empirically defining sweat equity in the Habitat context may encourage other housing programs such as HUD to reconsider their current policies and to emulate the participatory approach to solve low-income housing problems in the United States. This study contributes to a better understanding of the roles of the sweat equity process to the users. Although sweat equity is context specific, a general understanding of sweat equity can help local offices to improve the sweat equity process so that low-income families may benefit more from this unique experience.

Exploring the relationship between sweat equity and human and social resource development from a learning and sharing perspective helps Habitat to solve long-term maintenance problems. As a house ages, maintenance and repair contributes to the housing problem in the long run. In studying the phenomenon of Habitat empowerment, Finn (1994) found that house maintenance and responsibility were problematic. The AREA (Mitchell & Warren, 1998) study also showed that Habitat would encounter general maintenance problems in the near future. However, Habitat states that there is no maintenance problem because the maintenance should be the partner families' own responsibilities (Nimmo, B., personal communication, June 11, 2003). By examining the relationship between sweat equity and resource development, this study seeks solutions to the maintenance problems from a learning and sharing perspective of the sweat equity phase. As a learning process, it is theoretically interesting and pragmatically imperative to explore what families learn, how families share with their neighbors, and if and how these experiences influence their behaviors. As a sharing process, this study explores the

generalized social exchange theory as the basis for building and transferring social resources from sweat equity's mutual help into neighboring experiences after Habitat families move in their houses.

This study also contributes to Habitat strategies of house planning. No study has been found by this researcher to discuss the maintenance of resources within two settings: scattered sites and Habitat neighborhoods. Habitat neighborhoods are more likely to promote residential segregation. However, the generalized social exchange theory indicates that neighborhoods may better maintain and use social resources. By comparing the resource maintenance and the perception of segregation within different settings, the knowledge about the roles of physical settings may be useful for other low-income housing programs as well, such as HUD and USDA Rural Development housing programs.

Finally, this study aims to provide evidence of a sense of control and housing satisfaction when low-income users participate in their house designs within a Habitat context. Currently, Habitat families can change a minor part of the design, such as colors, finishes, and materials of certain elements. Exploring the relationship between design participation and satisfaction enables a better understanding of the roles of design participation and efficient ways to satisfy low-income users' needs. By exploring what improvements Habitat families want for their homes, this study will reveal imperative information for better and more satisfying house and neighborhood designs. The implementation of low-income user participation will also be discussed within a Habitat context.

Assumptions and Delimitations Underlying the Study

Several basic assumptions are made for the research design of sweat equity as a doing, learning, and sharing process. Theoretically, it is assumed that the strength of the relationships between sweat equity and the skills that Habitat families learn over the entire process of participation can be assessed. The reciprocal relationship between people and their social and physical surroundings can also be studied through individual perceptions and behaviors. Technically five assumptions are essential in this study. First, the sweat equity policies of the participating Habitat affiliates are representative of Habitat International. Second, participating partner families are representative among all local Habitat families. Third, research participants' self-report survey and open-ended questions are sufficient to measure the variables. Fourth, the partner families tell the truth. Fifth, the information obtained is accurate, valid, and reliable.

The strength of this case study is the quality of the detailed information revealed by individual participants. Paired with survey measures, the impacts of sweat equity can be quantified and then compared within two physical settings—Habitat neighborhoods and scattered sites. However, the sweat equity experiences are practically related to local Habitat policies, such as the number of required hours. The limitation in this study is that a large sample was outside the funding and time constraints of this researcher. Therefore, this study addresses only major aspects of sweat equity and its influences within three regional settings. However, with these findings in hand, opportunities for future research exist.

The delimitation is determined by the nature of the Habitat context. This study is supported by three Habitat affiliates in northern Florida. These affiliates differ in the amount of sweat equity hours, details of activities, and housing styles. But all affiliates

want to improve their design and sweat equity process, and respect the input from the families. The sample is delimited to those who are available and are willing to help during the research period. Because the majority of the partner families are female African American, only female householders are included. Race is not considered as a factor in the selection of the convenience sample. Instruments are designed specifically to measure sweat equity, human resource development, and social resource development within a Habitat context.

General Research Hypotheses

This study explores low-income users' participation in the process of building both their own and other families' Habitat houses. However, sweat equity needs to be redefined before testing any hypotheses. Habitat simply refers to sweat equity as the labor invested in building houses and time in self-improvement (Lassman-Eul, 2001). This definition gives only a vague idea about how to measure or operationalize sweat equity. Since house planning, construction, and maintenance are long-term processes, should activities related to the planning and maintenance phases be considered sweat equity? Should activities contributing to future neighborhood building be considered sweat equity as well? Although Habitat uses the amount of time to record sweat equity, there are no assigned amounts of time allocated among the various activities. In addition, Habitat's definition does not specify what activities are qualified as self-improvement in a Habitat context. Therefore, local sweat equity policies differ in the number of hours, the types of activities, and the proportion of hours distributed among different activities. Lacking more precise definitions, it is difficult to explain whether or not the Habitat sweat equity hours are reasonable, and what types of activities benefit families most in terms of house planning, building, and maintenance.

From a participation perspective, sweat equity is empirically defined as the number of hours Habitat families work during sweat equity and the number of types of activities included in sweat equity. Based on the new concept of sweat equity, learning by doing and generalized social exchange theories, three propositions are generated as following:

1. Sweat equity contributes to the human and social resource development.
2. A difference exists in the maintenance of human and social resources within two different physical environments—scattered sites and Habitat neighborhoods.
3. A relationship exists between users' participation in house design and the satisfaction with the results of their participation.

Hypothesis 1: Sweat equity contributes to resource building as learning and sharing

Because Habitat is a “hand up, not a hand out” (Fuller, 1993, p. 149) program, partner families must be actively engaged in the building process of their houses.

Building a house requires certain construction skills. For most partner families, they need to learn these skills in order to help themselves as well as others. These skills, knowledge, and perceptions one acquires or sharpens through training and learning are a part of ‘human resources.’ By participating in the learning-by-doing process, partner families may accumulate human resources at the individual level.

Habitat also requires partner families to contribute hundreds of hours to work on other Habitat houses during the sweat equity phase. In turn, these partner families receive the same help from volunteers and other partner families to build their own houses. During the giving and receiving interactions, partner families may build the social connections or ties at the community level. These are part of “social resources.”

Based on learning-by-doing theory, it is hypothesized that a) the number of sweat equity hours is associated with the amount of human and social resources accumulated through sweat equity; and b) the number of types of activities a family participates in

sweat equity is associated with the amount of human and social resources accumulated through sweat equity.

Hypothesis 2: Resource maintenance in two settings

Habitat families build houses in two types of settings: scattered lots and Habitat neighborhoods. Greater segregation occurs in Habitat neighborhoods than in scattered sites because it is likely that the percentage of very-low income families in Habitat neighborhoods is higher than that in scattered sites. However, the AREA study (Mitchell & Warren, 1998) reported that Habitat families who lived in clusters or subdivisions were more satisfied than families who lived in scattered homes. This finding indicates that the physical settings of the houses may contribute to the maintenance of human and social resources acquired through sweat equity. Since the sweat equity process is structured on generalized social exchange, it is hypothesized that a) a Habitat neighborhood, as opposed to houses in scattered sites, helps to build and preserve the human and social resources built through sweat equity; and b) families living in Habitat neighborhoods, as opposed to families living in scattered sites, do not feel segregated.

Hypothesis 3: Sweat equity as design participation

Habitat families do not have complete control over the design and planning phases. The design participation is limited to selection from a few design options. Without addressing design participation, it is unknown whether or not these selections meet and satisfy the needs of the families. Reis (2000) empirically related successful mass housing design to user participation. Accordingly, it is hypothesized that: a) there is an association between the number of design-related activities and satisfaction with the design solution; b) the number of types of design participation is associated with house satisfaction and

neighborhood satisfaction; and c) design participation is related to the maintenance of human and social resources.

Definitions and Operational Terms

A conceptual framework is developed to incorporate the doing, learning, and sharing experiences of sweat equity and the impact of sweat equity on Habitat families' lives. The framework (see Figure 2-3) is shown and further explained in Chapter 2. Detailed information about individual variables is available in Chapter 3. This framework is modified from Gifford's learning model (Gifford, 2002, p. 299) and community psychology model (2002, p. 265). In this conceptual framework, participation or sweat equity is positioned as the driving factor building human and social resources. This model provides theoretical guidance for exploring the reciprocal interactions between persons and their physical and social environments.

Sweat equity refers to the extent to which partner families invest in their houses, including the total number of sweat equity hours, the number of types of sweat equity activities (training, construction, public activities, and design participation), and the meanings of sweat equity.

Human resources refer to the skills and house-related behaviors and the perceptions about the individual's house itself. Human resources include house maintenance skills, financing skills, frequency of house maintenance, pride in skills, confidence in skills, pride in house, house attachment, self-responsibility, self-esteem, house satisfaction, design solution satisfaction, and design participation satisfaction.

Social resources refer to the social behaviors within the neighborhood and the perceptions of neighbors and the neighborhood. Social resources include neighboring, social support, neighborhood involvement, pride in neighborhood, satisfaction with

neighborhood, safety, neighborhood attachment, sense of community, trust in neighbors, reciprocity, sense of obligation, and segregation.

Scattered sites refer to the locations where there are no other Habitat homes on the same street, or where a few Habitat houses are on the same street but there are less than ten Habitat houses in the same block.

Habitat neighborhoods refer to the locations where ten or more Habitat houses are clustered, or where Habitat houses are surrounded only by homes built by Habitat in the same block.

Design participation is the extent to which Habitat families participate in the design and planning process of their houses. Design participation is measured by the number of types of activities related to design and planning of a house, including choosing interior colors, finishes, and layouts; exterior colors, finishes, and yard; selecting the lot and taking part in the neighborhood public space planning.

House satisfaction, design solution satisfaction, and neighborhood satisfaction refer to the fulfillment of the house, design, and neighborhood of Habitat families' desires or needs, respectively. See Appendix A: Survey Instruments and Appendix B: Interview Questions for detailed measures.

Summary

Habitat for Humanity has executed sweat equity to help low- and very low-income families build affordable houses in two different settings: scattered sites or Habitat neighborhoods. During the sweat equity phase families must participate in the construction of their own houses as well as the construction of other houses. This study first redefines sweat equity in the Habitat context. Then this study explores if and how this participation helps the families to build human resources to maintain their houses and

social resources to maintain their neighborhoods. Next, it compares which setting provides a more supporting environment for low-income families to maintain their human and social resources acquired during the sweat equity. Finally, it explores design implications from the low-income homeowners' point of view. Since participation is context-specific, a case study is appropriate to explore the participatory process and the impact of sweat equity in neighborhoods and scattered sites.

CHAPTER 2 INTRODUCTION

The study of sweat equity, human resources, and social resources is complex in nature and specific in context. There has been little attention in the literature to establish a comprehensive framework to study the links between sweat equity and resources built into the housing process. The dynamic and individualized sweat equity process requires an extensive literature review from multiple dimensions. This chapter introduces a new conceptualized framework built upon the theory of learning-by-doing and generalized social exchange. From the doing perspective, this chapter reviews the literature of sweat equity, participation in housing, and self-help. From the learning and sharing perspectives, this chapter investigates human and social resource developments. From the design perspective, this chapter examines the history of user participation in design process. Research approaches and instruments are discussed as well.

Theoretical Background

Habitat sweat equity provides low-income families a chance to change their lives. But why does Habitat help people to build a house through sweat equity instead of providing them with a house? How is sweat equity different? Dewey's "learning-by-doing" explains sweat equity from a learning perspective. And the generalized social exchange theory provides a theoretical basis for sweat equity from a sharing perspective.

Learning by Doing

According to Dewey (1980), human action was a transaction between the person and the environment, during which the person was not just a passive vessel but also an

actor who changed the environment. The experience connected the action with its consequences. To Dewey, learning experiences “cover all the doings that involve growth of power—especially of power to realize the meaning of what is done” (1939, p. 607). Dewey (1939) believed that the doing experiences contain the learning process when the experiences result in personal growth. The achievement of personal growth comes not only from the experience but also the meaning constructed from it (Miettinen, 2000). In accordance with this school of thought, Rodgers (2002) distinguished routine actions from educative actions, depending on whether or not one realizes the meanings of the action.

Deweyan learning by doing inspired multiple perspectives of learning experiences, such as adult learning (Marsick & Watkins, 2001), social interactions during learning (Nowotny, Scott, & Gibbons, 2001; Roschelle & Clancey, 1992), problem-based learning (Argyris, 1997; Savery & Duffy, 2001), and experience-based learning (Andersen, Boud, & Cohen, 2000). From examining the organizational development in social housing and tenant participation in Britain, Reid and Hickman (2002) pointed out that tenant participation transformed the housing organization into a learning organization. The top-down participation resulted in single-loop learning, but the bottom-up participation promoted mutual learning, which potentially improved the housing organization itself (Blantern & Belcher, 1994).

According to the learning-by-doing theory, sweat equity is a doing process that allows families to learn skills to build their houses. In Habitat, knowing how to build a house is the first task for most families who have never used a hammer. However, this know-how is not learned in a classroom. Learning is achieved through building a house

and working with other persons. The personal growth can refer to human resources (knowledge, technical skills, perceptions, and so forth) and social resources (social skills, trust, network, sense of community, and so forth). Since families help others first and receive help from volunteers in return, sweat equity may involve social learning through this mutual sharing process. All activities in sweat equity require Habitat families to partner with others to do something for other people as well as for themselves, such as working in a Habitat office, babysitting for other families' children, and building houses together. The families have a chance to learn and share something, and they can use these learned experiences for personal growth.

Dewey's pragmatic learning-by-doing theoretically guides this study of sweat equity as a learning process. The logic of these sharing experiences may be supported by the generalized social exchange theory.

Generalized Social Exchange

The learning-by-doing occurs when individuals interact with their physical and social environment. Proper social interactions or exchanges in a social environment will encourage the learning experiences (Dewey, 1939). The concept of social exchange is derived from the belief that people construct and maintain sufficient social interactions because "no man is an island" (Schroeder, Penner, Dovidio, & Piliavin, 1995, p. 219). People are interdependent rather than independent, and collaborative social exchange is necessary for human survival and self-advance. Two social exchange theories, the British individualistic and French collectivistic orientations, were developed based on whether behaviors were explained by self-interests or norms and obligations (Ekeh, 1974).

Homans used the cost and reward concepts to explain social exchange behaviors between two parties for both economic and psychological needs. His individualistic

social exchange theory was built upon the self-interest theory, that society resulted from the needs required by individuals or subgroups (Ekeh, 1974).

Levi-Strauss explained the collective social phenomena as the result of the *collective unconscious* of the human mind (Ekeh, 1974). Levi-Strauss coined the term *generalized exchange* to describe a social system that needed equality, partnerships, credit, and trust for the continuity of interactions. The generalized social exchange occurs when an individual feels obligated to give back to any actors in the chain of social exchange. Ekeh (1974) distinguished two forms of generalized exchange: group-generalized exchange and network-generalized exchange. In the group-generalized exchange, individuals pool their economic, physical, or human resources and receive benefits generated by the collaborative activities. In the network-generalized exchange, a person who helps others does not expect return benefits directly from the same person. Instead, an individual receives assistance or benefits from the others whom he or she may not even know. Similar, Allop, Fifield, and Seiter (2002) used the term *intra-group favoritism* and *inter-group favoritism* to distinguish generalized reciprocity or exchange, depending on whether or not the mutual commitment is limited only to the group. This network-based relationship or the inter-group favoritism encourages individuals to be more active, and it involves more interactions and responsibilities (Yamagishi & Cook, 1993).

Mutual trust and the norm of reciprocity are the basis for constructing and maintaining a continuing social exchange network, which, in turn, promotes mutual trust and reinforces reciprocity (Ekeh, 1974). Network-based community participation is built upon the norms of reciprocity: *I do it for you now, and I expect you or others will do*

something similar in turn sometime for me. In this way, trust is built along with the development of social capital (Putnam & Gross, 2002). Frequent interactions among a diverse set of people tend to produce a norm of generalized reciprocity. Based on the mutual obligations, it benefits not only the participants but also outsiders as well. Once the social exchange system is normalized, it becomes the norm of reciprocity. Social relations create values through generalized social interactions (Putnam, 2000).

Sweat equity requires families to build a house along with those who are in need. This participation involves three stages of social exchanges: 1) learning construction skills from Habitat staff or other families; 2) helping others in Habitat offices, thrift stores, or others families' houses; and 3) being helped when volunteers come to build one's own house. This participatory process requires one to help others first and accepts assistance from the same person or other persons sometime in the near future. In other words, this sweat equity process contains generalized social exchanges that may promote human and social skill development.

Requiring partner families to help others first before receiving help eliminates the possibility of "free riders" that take the benefits without giving back to the common good in this sweat equity exchange. Partner families meet new people and work together to solve their housing problems. This social exchange is generalized rather than on a one-to-one basis. Therefore, it is assumed that the trust and the giving-taking pattern persist after sweat equity is completed because these generalized social exchanges are network-based. Families may feel obliged to give back to their neighbors and neighborhoods after receiving help from volunteers. By setting up the norm of giving-receiving by Habitat, it is expected that this norm of reciprocity and the trust built through sweat equity will be

maintained better if Habitat families live together in one neighborhood rather than live sparsely in scattered sites.

During the network-based generalized social exchanges in sweat equity, doing, learning, and sharing enable Habitat families to solve their housing problems collectively. However, there have been no existing models within Habitat studies that have incorporated all three aspects of sweat equity. The literature shows that the research on participation is inadequate and inconsistent in definition and measures (Chavis & Wandersman, 1990; Perkins, Brown, & Taylor, 1996; Perkins, Florin, Rich, Wandersman, & Chavis, 1990; Prestby, Wandersman, Florin, Rich, & Chavis, 1990). A new conceptual framework that involves participation, learning by doing, and sharing is critical to understanding what sweat equity is and the impact of sweat equity to the residents.

Conceptual Framework

The conceptual model of learning by doing in a Habitat context (see Figure 2-1) is adapted from Gifford's informal learning model and cognitive and behavioral model in a physical community. Gifford (2002) defined learning as "a relatively permanent change in behavior that occurs as [a] result of experience" (p. 299). Gifford proposed a general framework (2002, p. 299) to describe how students learn in formal learning settings.

In his learning model, the personal characteristics of students interact with the physical and social setting, and these interactions produce learning attitudes and learning behaviors. However, he did not incorporate the doing as a process in his model. Gifford also did not specify the process of learning or the outcomes of learning. Without emphasizing the learning as a process, it was challenging to identify what people learned and how to improve the learning experience.

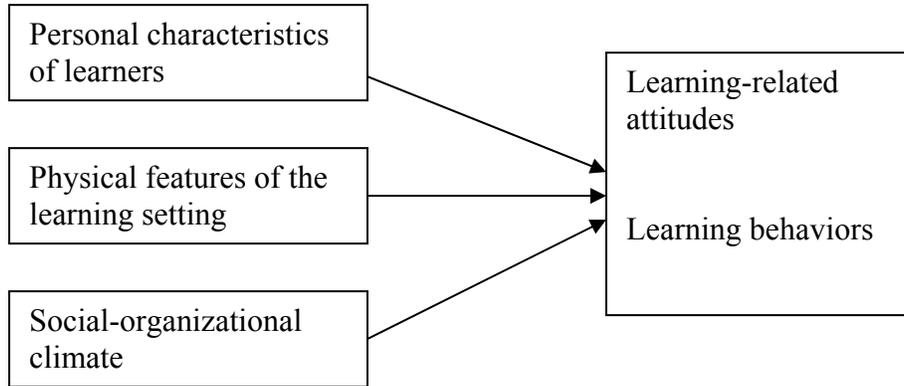


Figure 2-1. Simplified model from Gifford's framework of conceptualizing person-environment relations in learning settings (2002).

In another model that explained residents' cognitive and behavioral responses to their physical community, Gifford (2002, p. 265) included the learning outcomes and regarded design as an essential part of the environment-psychology cycle (see Figure 2-2). But in this model residents were static and passive players, and he ignored the interaction between persons and their physical environment.

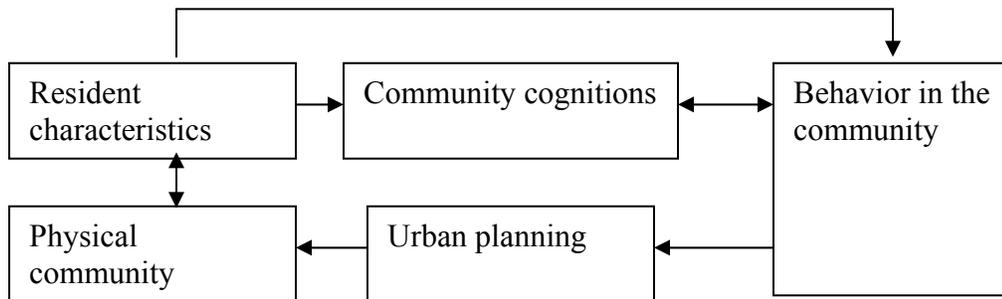


Figure 2-2. Simplified Gifford's model for urban environmental psychology (2002).

A new model was needed to fit the learning experience in a low-income residential setting with very special background: homes built by the homeowners who were organized by Habitat for Humanity. After extensive readings about participation, housing, human and social resources, a new model (see Figure 2-3) was proposed. The new model positions learning-by-doing (sweat equity as participation) as the driving force, and considers outcomes in terms of human and social resource building. Physical

settings and residents' characteristic may influence the outcomes as well. In comparison to Gifford's models, this framework explores the learning as a process. Learning activities, residents' characteristics, and physical settings together influence the physical and social outcomes or resources. Therefore, residents are regarded as active learners rather than passive recipients. Since the literature review was intensive, the new framework was introduced as a guiding framework for the literature review.

Based on the conceptualized framework, the following sections review sweat equity as housing participation, investigate human and social resource developments, and evaluate the impact of geographic segregation on housing. User's involvement in the design process will be addressed as design participation. Research approaches and instruments are also discussed.

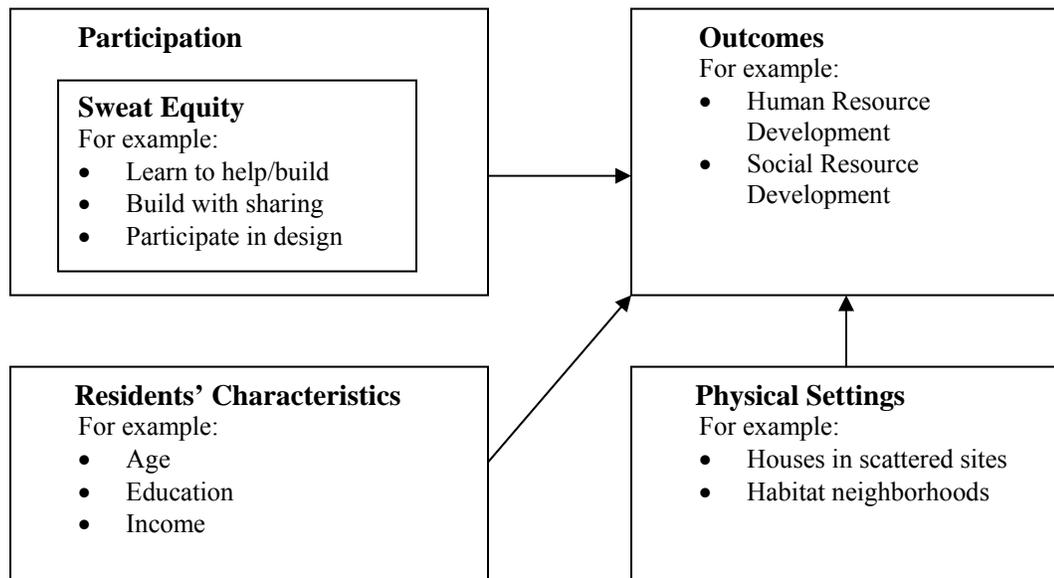


Figure 2-3. Conceptualized framework for sweat equity in a Habitat context.

General Background Information

Habitat for Humanity partners with volunteers, churches, local businesses, foundations, governments, organizations, and people in need. Government funding is

used to acquire land and construct infrastructure, such as streets, sidewalks, and utilities, but federal funding is prohibited from building and renovating or for administrative purposes. Though Habitat is a Christian organization, it welcomes everyone regardless of race, color, or creed. Houses are financed with interest-free loans. Although sweat equity is a required commitment of Habitat families, it is broadly defined as the willingness to work. The work Habitat families do includes a variety of activities, such as working in a thrift store, babysitting for others, painting one's house, and attending training courses. The partner families must meet certain requirements for income and concurrent living conditions and be willing to commit sweat equity on other families' houses as well as their own. Sweat equity starts after families are identified as being eligible for the Habitat program and ends when they move into their new homes. The required sweat equity hours usually range from 300 to 500 hours. Local Habitat affiliates decide how to distribute the hours among individual activities.

Sweat Equity as Participation

Completing the minimum sweat equity hours is mandatory in a Habitat program. During these sweat equity hours, families participate in the process of building other families' houses as well as their own houses. Most people use the term *sweat equity* or *participation* without a clear understanding about what it is and what it means to the residents. This section traces user participation in housing, self-help housing as a special type of user participation in housing, and sweat equity as a unique means in Habitat self-help housing.

Participation

The concept of participation is open and context-specific. The term *participation* first appeared in the 14th century, referring to “the act of participating” or “the state of

being related to a larger whole” (Merriam-Webster, 2003). Synonyms of *participation* include citizen involvement, cooperation, and self-decision. Generally participation implies the presence of the users and taking control in defining the problem, elaborating the solution, and evaluating of the results.

Housing, in this study, is regarded as a meaningful process rather than a product (Turner, 1977). In addition to the house’s physical forms and market value, the meanings or values are added to a house through the users’ participation in the planning and designing, building, and maintaining processes of their houses. Accordingly, participation in housing should be understood in each of these three stages. Many researchers emphasized citizen participation in the planning stage (Cressey, Martino, Bal, Treu, & Traynor, 1987), such as consulting and public hearings, and in the maintenance stage, such as volunteerism, voting, and community meetings (Langton, 1978). Some scholars addressed participation in the design process (Reis, 2000; Sanoff, 1992b). The World Bank (2002) addressed the importance of control and decision-making and defined participation as “a process through which stakeholders influence and share control over development initiatives and the decisions and resources which affect them.” According to the World Bank’s definition, user participation has been mostly ignored in the low-income housing history of the United States.

Federal low-income housing agencies and programs in the United States were established to relieve the depressed economic and social conditions during the 1920s and 1930s. During the early period of subsidized housing history, the Housing Division of the Public Works Administration (PWA) aimed to revitalize business districts by preventing the middle-class from fleeing to suburbs and by stimulating large-scale building in

downtown areas. The low-quality, low-income housing in central cities was seen as a threat to the business districts and an economic burden to taxpayers. Slum-clearance and new construction of public housing brought cities immediate economic benefits and social relief from urban sprawl (Coulibaly, Green, & James, 1998).

In 1937, the U.S. Housing Authority (USHA) replaced PWA to provide financial and technical assistance to local Public Housing Authorities (PHA), addressing unemployment problems and the shortage of decent, safe, and sanitary units for low-income families. Under the “equivalent elimination” that required building a new public housing unit with each destroyed unit, local authorities could decide where and how much public housing to build. During urban renewal, low-income families from central areas were displaced. The low-income families had no control over where to move. As a result, the number of low-income families (mostly minorities) living in substandard housing increased. Often, relocation created racial and income segregation within low-income housing.

Low-income housing policies in the United States do not directly respond to the needs of the low-income families, but instead to the economic and social needs of the mainstream of the society. Federal low-income housing programs focus on the rental market rather than homeownership, and recipients get direct subsidies with no means to influence the housing process until they move in. Even though currently the U.S. Department of Housing and Urban Development (HUD) requires citizen participation at the state level in the Consolidated Plan for community development, participation is usually regarded as the outcome or byproduct at the community level rather than an influential drive at the individual level. Debates have occurred over the effectiveness of

this “top-down” citizen participation. Green and Haines (2002) criticized such models and declared that there was no power for the low-income residents to make critical decisions. Consequently, user participation is only superficial when and if there is any in low-income housing policies.

Although HUD currently keeps a low profile on promoting genuine user participation in low-income housing, researchers advocated participation because it was beneficial to the well-being of homeowners, as well as to their neighborhoods and to society (Bruin & Cook, 1997; Florin & Wandersman, 1990; Perkins et al., 1996; Perkins et al., 1990; Rohe & Basolo, 1997; Rohe & Stegman, 1994b; Schmidt, 1998; Taggart, 1995). But in these studies, participation was regarded either as the number of organizations or neighborhood meetings a person attended or as a byproduct of other social factors. Finn (1994) identified sweat equity as a process of empowerment among Habitat homeowners. However, she did not have quantitative data to support her statements. Participation needs to be positioned as a dynamic yet measurable input from the end-users rather than being a static number of organizations or meetings.

Reis (2000) found that residents prefer user participation in the design process to user remodeling after the construction is complete. But federal housing programs seem reluctant to give up the control over the housing processes (Hasell & Scanzoni, 2000). Compared to HUD programs, non-profit self-help housing programs incorporate participation into daily practice.

Self-help housing

Self-help housing (SHH) is a special type of participation in housing that minimizes costs for housing through individual sweat equity. Margolis and Turner (Harms, 1982) identified three types of SHH in the United States: independent SHH, in

which users decide what and how to build without external help; organized SHH, in which users enter a program and become involved in a part of decision-making; and employed SHH, in which users enter a program and receive minimum pay. Harms (1982) defined self-help housing as “housing produced directly by the users, individually or collectively” (p. 45).

In colonial America, self-help housing was the most common practice for housing provision, which involved the families’ own sweat and the help from friends, neighbors, and local craftsmen. The house planning and design usually satisfied users’ needs. As the society shifted from farms to cities and industry with an increasing division of labor and organizations, houses were produced and distributed in an increasingly complex process for the accumulation of profit. Controlled by the relationship between supply and demand, housing production became a capitalistic commodity exchange, and housing distribution facilitated stratification of a society according to income levels, not to needs (Harms, 1982). Yet in capitalistic societies, SHH recurs whenever and wherever capitalism is weak and affordable housing is not available, such as in developing countries or rural areas in developed countries.

The United States uses a filtering process to stratify housing needs. When a natural filtering process cannot keep up with the growing demands, government intercedes. The first federal attempt was employed during the Great Depression. In the 1930s, the Federal Housing Authority (FHA) and U.S. Housing Authority (USHA) were created to assist the urban poor. Federal assistance was only able to shelter less than 10% of the eligible low-income population (Coulibaly et al., 1998). Since federal resources were completely inadequate given the scale of the problem, self-help became a popular form of social

support and behavior change (Cherniss & Cherniss, 1987). The first significant public SHH effort was conducted by the County Relief Board of Westmoreland County, Pennsylvania in 1933. Unemployed coal miners built self-sufficient communities together. By 1940, participants completed approximately 250 homes (Harms, 1982; Spohn, 1972). In the 1940s, Puerto Rico set up a mutual-help program to resettle those who lost job or lands in a huge crisis of unemployment. Under political and racial pressures in the late 1960s, federal housing agencies felt the need for alternatives to provide low-income housing without increasing the public burden. In 1968, the Housing and Home Finance Agency, the predecessor of HUD, conducted a study on the self-help phenomenon “in the construction, rehabilitation, and maintenance of housing for low income persons and families and the methods of selecting, involving, and directing such persons and families in self-help activities” (Spohn, 1972, pp. 23-24). The study showed that SHH could reduce construction costs through unpaid labor, management, and volunteerism. However, HUD was ultimately not interested in SHH because HUD was structured to serve the housing industry, not individuals (Grindley, 1972; Harms, 1982; Spohn, 1972; Turner, 1977). After the HUD Act of 1970 repealed self-help demonstration projects for managerial reasons, HUD kept a low profile in SHH by providing limited technical assistance and funding to non-profit organizations. The only direct involvement of HUD is in the Mutual Self-Help Housing program by Rural Housing and Community Development Services in U.S. Department of Agriculture (USDA) (Spohn, 1972).

Self-help discussions during the 1960s and 1970s were oriented to squatter housing and substandard housing in developing countries. Advocates considered it SHH a positive

solution to housing and social problems because housing was constructed, and it encouraged an individual's independence from political, economic, and historical contexts (Turner, 1977). Turner (1977) believed that taking control over decision-making, self-building, and managing became the key factors for a better physical environment, higher satisfaction, and greater self-responsibility. Arizmendi (2003) asserted that SHH gave low-income people an opportunity to recognize that they could change their homes, their community, and their lives. In a comparison study of a self-help rehabilitation program and other subsidized housing programs, self-help had more positive impact on residents and their living environment (Turner, 1977). The "bottom-up" user participation is the key factor of SHH during which housing democratizes and empowers.

The SHH approach, however, received criticism for its short-term benefits and non-theoretical implications to the society. The opponents questioned whether or not SHH was an adequate basis for low-income housing for political, economical, and ideological reasons (Burgess, 1982). The criticism was focused on management (lack of quality control, services, and endurance), the government's low commitment to long-term solutions, and the social inequality caused by extensive unpaid labor of unskilled homeowners (Harms, 1982; Ward, 1982). In other words, SHH solved low-income housing problems "at the expense of the users, while capital accumulation processes are kept intact" (Harms, 1982, p. 51). However, the opponents of SHH ignored the social gains through self-help housing: empowerment at the individual level and local level (Tait, 1997; Turner, 1982). Tait (1997) suggested that SHH could be more effective if the SHH approach involved the neighbors, as well as local and state planners. Although the

SHH approach could not provide mass housing production as HUD policies aimed at, it significantly changes the lives of the self-helpers who take control over the planning, designing, and building processes of their own houses with their sweat equity.

Sweat equity in Habitat

In general, sweat equity incorporates both the doing behavior and value of the labor. In dictionaries, sweat equity is defined as “equity in a property resulting from labor invested in the improvements that increase its value” or “the labor so invested” (Merriam-Webster Online Dictionary, 2003). The American Heritage Dictionary of the English Language (2000) claims that ownership is a part of sweat equity.

In the housing industry, sweat equity is often related to homeownership and control over one’s living space. The tenant-landlord relationship discourages sweat equity because it is difficult to determine the ownership of the equity added through a tenant’s sweat (Harris, 2003). Long before “do-it-yourself” (DIY) was coined, owners built equity into their houses by investing their own labor. The houses may start from scratch or sometimes homeowners buy an unfinished “shell” and decorate the interiors (Harris, 2003). Since the late 19th and early 20th centuries, building regulations in cities set stricter requirements for health and safety considerations. For example, electric equipment and plumbing should be installed by union labor. It became difficult for future amateur homeowners to have all the necessary skills to build a new home. Industrialization also discourages the sweat equity approach by shifting housing provisions and distribution into the hands of a free housing market and the filtering process. Established in the 1930s, the FHA and USHA intervened in the low-income housing process by providing low-rent public housing and federal government insurance of individual home mortgages at market interest rate. After World War II, the prevailing needs of housing for returning

veterans and the ever-expanding urbanism accelerated the gap between what government intervention and the free market produced and the housing needs (United Nations Center for Human Settlements [UNCHS], 1999). In the 1950s and 1960s, sweat equity again showed the potential to solve a part of the housing problems.

Habitat for Humanity was an innovation of sweat equity by a legendary figure in the 1970s. Millard Fuller, a young millionaire, found that the expanding affluence could not give him health, integrity, and a solution to his marriage crisis. After re-evaluating his life, Fuller and his wife Linda gave away all their wealth and started over (Baggett, 2003; Giri, 2002). In December 1965, the Fullers first visited Koinonia Farms, an interracial, self-sufficient Christian farming community in southwestern Georgia. About two and a half years later, Fuller and C. Jordan, the Founder of Koinonia Farms, initiated a program called *Koinonia Partners*, addressing partnership farming, partnership industries, and partnership housing. The partnership housing program helps to build non-profit houses on the basis of a partnership between the Koinonia Farms and the homeowners. Families invested their own sweat into their houses with volunteers. Families paid no-interest loans with which more houses could be built. The partnership housing later became the primary focus of *Koinonia Partners*. Other than working within Koinonia Farms, the Fullers tested the sweat equity model in Zaire (now the Democratic Republic of Congo) for three years. When they came back to Koinonia Farms in 1976, Fuller summoned a three-day conference with 27 committed friends during which the Habitat for Humanity was born (Baggett, 2003).

Habitat refers to sweat equity as the “labor that Habitat homeowners expend in building their houses and the houses of their neighbors, as well as the time they spend

investing in their own self-improvement” (Lassman-Eul, 2001). Defined by Ocala Habitat for Humanity, sweat equity is “the physical labor the partner family put under [into] building of their home to replace the traditional monetary down payment” (Nimmo, B., personal communication, June 11, 2003). These definitions emphasize the physical labor in relation to building houses, but they ignore the activities in relation to building social relations and a sense of community. Since Habitat does not specify in detail the nature of the labor activities in which a family should participate and how the family’s time should be divided among different activities, Habitat families do different tasks even within one affiliate. The above definition does not explain the term *self-improvement* clearly, and it does not indicate what values sweat equity adds.

Fuller (2000) asserted that Habitat “build pride and confidence by involving families in the construction of their own homes and encouraging them to help other families become Habitat homeowners” (p. 31). He emphasized the importance of partnership because it generated sharing of many resources in addition to homes (Giri, 2002, p. 50). In a report of community building, Torjman (1998) claimed that sweat equity was a form of human capital with which to create affordable housing. But he did not regard sweat equity as a form of social capital for the homeowners.

Commissioned by HUD in 1997, the Applied Real Estate Analysis (AREA), Inc. worked with Habitat for Humanity International and local affiliates to conduct a study about Habitat homeownership experiences. The AREA study concluded that Habitat was “structured to nurture families and break the poverty cycle—not just provide an affordable house” (Mitchell & Warren, 1998, p. VI-4). It indicated that sweat equity allowed Habitat families to gain resources or values other than just physical

environments. Since the AREA study measured neither the sweat equity nor the results of sweat equity, it was unable to empirically define the specific impact of sweat equity to the families.

According to the nature of activities a family may encounter, sweat equity in Habitat is then re-defined as the time and effort in which partner families invest through learning by doing to collectively build and maintain their physical resources, as well as human and social resources. The physical resources, or physical capital, include individual houses and neighborhoods. Human resources include knowledge, construction and maintenance skills, commitment, self-esteem, perceptions of skills, and so forth. Social resources include social connections, trust, a sense of community, and so forth. Both human and social resources are necessary for homeowners to act collectively and maintain their houses and neighborhoods. The new definition first emphasizes sweat equity 1) as a process by setting the time requirement; 2) as participation through investing one's own effort; 3) as an enlightening process through learning by doing; 4) as a sharing experience by doing collectively; and 5) as a resource development process to reflect the idea of self-improvement. Although the concept does not specify individual activities in sweat equity, it indicates that all activities in relation to the building and maintaining of one's physical, human, and social resources could account for sweat equity.

Sweat equity is also used by other non-profit organizations to eliminate substandard housing. For example, the Self-Help Opportunity Program, Mutual Self-Help Program, and USDA Rural Development all use sweat equity. Examining what sweat equity is and what it means to the homeowners potentially contribute to all low-income housing

programs that are using or have the potential to use sweat equity as a means to build affordable and decent homes.

In sum, building a Habitat home is an organized self-help process. Habitat affiliates raise funds, obtain planning and building permits, select partner families, and coordinate volunteers and construction. A low-income family enters the program and becomes the major stakeholder who helps other families build their homes. Although Habitat is not a self-run organization by the people in need, partner families do have some control over the designing, building process of their homes, and full control and responsibility for the completed home's maintenance and management. Through the sweat equity process, Habitat not only provides low-income people with the financial and technical assistance, but also shows these families the housing process. Although building a house is a one-time project, a home is a long-term project in terms of maintenance, repairs, redecoration, and financial management.

In this study, sweat equity is the participation of Habitat partner families. Sweat equity usually takes months for the partner families to accomplish. During the sweat equity process, partner families make some design-related decisions about their houses. They learn new skills, work hundreds of hours on their houses and the houses of others, pay for their houses, and take the responsibility to maintain it. Fuller believed that sweat equity built pride and a sense of responsibility, which was reflected in the good maintenance and care given to Habitat houses. The key factors to understand sweat equity as a participation process include: 1) how many hours sweat equity requires; 2) what types of activities families do during sweat equity; and 3) what sweat equity means to the users.

As participation, sweat equity directly contributes to the construction of physical houses and infrastructure. Since families learn new skills and interact with other people during sweat equity, exploring what families learn is necessary for a holistic understanding of sweat equity.

Sweat Equity as Learning and Sharing

In addition to physical houses, the other resources that families may acquire include human and social capital (resources), which together influence the physical environment (Organization for Economic Co-operation and Development [OECD], 2001). Some effects of human and social capital on economic and physical capital may take longer to emerge. When partner families learn new skills and work with other people to build their respective houses, the sweat equity process encourages human and social capital building in addition to the development of physical houses.

Human resource development

New skills and knowledge are acquired through interacting with one's physical or social environment (Dewey, 1939; Roth, 1962). These acquisitions are a part of human resources. Human resources include human abilities, knowledge, skills, health, appreciation, and other talents. Researchers also refer to human resources as human capital to emphasize the productivity of human resources (Cassidy & Jake, 2002; Green & Haines, 2002).

Human resource or capital is a relatively new concept. Labor, land, physical capital, and social capital were the four basic factors of production in economics. Beginning in the early 1960s, the quality of labor aroused large-scale attention. It was believed that through education and training, workers' productivity would be improved, and consequently the earning-based investment in human capital could be returned. Ostrom

defined human capital as “the required knowledge and skills that an individual brings to an activity” (2000, p. 175). The Organization for Economic Cooperation and Development (OECD) (2001) defined human capital in a broader sense as the “knowledge, skills, competencies and attributes embodied in individuals that facilitate the creation of personal, social and economic well-being.” The knowledge and skills can be acquired from formal education and training and informal learning in daily interactions. In many housing programs, human resources are invested in the form of social services and adult education (Torjman, 1998). Habitat believes that the learned construction skills encourage individuals to stand on their own feet in terms of taking care of their homes.

The term *human resource* instead of human capital is used in this study to address the skills and perceptions one immediately acquires or sharpens to build and maintain one’s house and neighborhood through learning by doing. Habitat families need to build and take care of their houses. These skills can be accumulated either consciously by seminar and task training or unconsciously through field experiences. Through formal training, Habitat families learn about household budgeting and how to be a homeowner. The unconscious investments in human resources continue in the building and volunteering process. Human resource is fundamental to building and maintaining the environment.

Some researchers (Barro, 2001; Cohen & Prusak, 2001; Cohen, 1988) were interested in human resources at the organizational level rather than at the individual level. For example, according to the United Nations Center for Human Settlements (UNCHS), capacity building included human resources and leadership development, training, institutional reform, organizational and managerial development at three levels:

policy, institution, and community (UNCHS, 1999). When Nye and Glickman (2000) studied organizations, resources, networks, programs, and political capacity among community partners, they realized the importance of learning to the non-profit organizations, but not to the residents. There is an emerging need to study human resources from the user's perspective. The AREA study reported that Habitat families rated the training through the Habitat program as being helpful or very helpful (Mitchell & Warren, 1998). But the study did not identify what families learned from training and failed to recognize the informal "learning-by-doing" during the daily interactions with their physical and social environments.

Social resource development

By working with volunteers and other partner families, Habitat families may develop certain social resources that are essential for the maintenance of a neighborhood. Social resources, also known as social capital, refer to the social connections (network) among individuals or the ties that facilitate collective action, build trust, self-esteem, a sense of community, and mutual support in the community (Bourdieu, 1983; Coleman, 1988; Green & Haines, 2002; Putnam, 2000; Putnam & Gross, 2002).

In the 1920s, L. J. Hanifan coined the term *social capital* to describe the tangible social resources in the daily life of ordinary people: good will, friendship, sympathy, and social interaction (Putnam & Gross, 2002). Since then, social capital was used in the analysis of city neighborhoods (Jacobs, 1961), the labor market (Loury, 1987), the relationship with human capital (Coleman, 1988), and the social capital at different levels (Fukuyama, 1995; Putnam, Leonardi, & Nanetti, 1993). In the literature, discussions were focused on what qualified as social capital rather than what constituted it (Uphoff, 2000). Uphoff (2000) suggested rigorous analysis of social capital in participation. He used

structural social capital to define the tangible social organizations and related rules, networks, and procedures. Cognitive social capital was used to describe intangible mental processes, such as trust, cooperation, norms, values, attitudes, and beliefs. Putnam (2000) used the informal and formal infrastructure of an organization to describe the relationship between insiders and outsiders. The formal pattern of connections included being a member of an organization and attending meetings at church, unions, or political parties. The informal social connections referred to interactions among people, such as having coffee with family members, playing baseball with friends, and lending a tool to a neighbor (Putnam, 2000).

Since social resource development is context-specific, social sciences, community psychology, and community development have different emphases on certain aspects of social resources in the setting.

In the social sciences, scholars favor norms, networks, trust, and levels of engagement or interaction in social activities (Hays, 2002; OECD, 2001; Putnam, 2000). Kleit (2001) compared the social ties for looking for a job between female public housing residents living in small clusters in a non-poor area and those in a dispersed housing pattern. She found that dispersed residents had neighborhood social networks with greater diversity, although they used their neighbors less frequently to look for a job than people living in clusters. The dispersed residents did not feel close to their neighbors, compared to residents in clusters. Although Kleit emphasized job-hunting, her study indicated that the clusters promoted a sense of closeness among low-income residents, which might contribute to a better neighborhood. Saegert, Winkel, and Swartz (2002) surveyed 487 buildings in New York and identified three components of social capital that were related

to crime prevention. These components were basic participation in tenant association activities, norms, and formal participation in building leadership, management, and maintenance. The informal neighboring activities were found not significant to crime prevention. Homeownership, building characteristics, and housing policy might influence the effectiveness of social capital.

In community psychology, scholars addressed the psychological aspects of social capital, such as sense of community (Chavis, Hogge, McMillan, & Wandersman, 1986; Chavis & Wandersman, 1990; Cochrun, 1994; McMillan, 1996; McMillan & Chavis, 1986; Perkins et al., 1990; Pretty, 1990); community attachment (John, Austin, & Baba, 1986; Riger, 2001); neighborhood attachment (Crenshaw & John, 1989; Wells, 2000; Woolerver, 1992); residential attachment (Fried, 1982); and neighborhood cohesion (Buckner, 1988; Litwak, 1961). Temkin and Rohe (1998) studied the relationship between social capital and the stability of a neighborhood. Acknowledging the few efforts to measure social capital at a neighborhood level, they used voting, resident volunteerism and presence of neighborhood organization to examine the institutional infrastructure. They used affective attachment, facilities for social interaction, a sense of community and neighboring activities (visiting, helping, and borrowing items) to measure the social-cultural milieu of a neighborhood. They found that loyalty and attachment to neighborhood explained stability while neighboring and spatial distribution of residents' friends and relatives were not significant to predict stability. They pointed out, however, that their study could not respond to how to build social capital in neighborhoods. Prezza and Costantini (1998) explored the relationship between sense of community, life satisfaction, self-esteem, perceived social support and satisfaction with community

services in a small town, a small city, and a city in Italy. The results showed that sense of community and life satisfaction were higher in the small town as compared with in the larger communities. Although Chavis and other researchers (1986) expected that homeownership and living in the community for years would encourage a higher sense of community, Prezza and Costantini's study did not find that association, which might be explained by the cultural differences of the specific setting.

In community development, social resources were explored through the relationships among homeownership, neighborhood, and satisfaction. The literature indicates that homeownership plays a role in house maintenance and repairs (Galster, 1983; 1987; 2003; Mayer, 1981), and homeowners may acquire *do it yourself* skills for house repair, negotiating with contractors and plumbers, and seeking refinancing (Boehm & Schlottman, 1999; Green & White, 1997). Homeowners are more likely to participate in informal social participation (Hunter, 1975; Jeffers & Dobos, 1984), in commitment to neighborhood (Austin & Baba, 1990), and in investing more in building positive relationships and helping networks among neighbors (Coleman, 1988; Coleman, 1990). Ellen and Turner (1997) investigated how neighborhood conditions impact families and children through a literature review and census tracts. Although the results showed that neighborhoods mattered, they suggested using both qualitative and quantitative methods to capture the true meaning of life experiences and how neighborhoods influence people's lives. Greenberg (1999) collected 309 survey responses to study the relationship between rating neighborhood quality and neighborhood attributes and personality. He found that associations existed between poor neighborhood quality and crime, vandalism and physical decay, mistrust of authority, negative emotions, pessimism, and a lack of

control. But he did not address intervention. Should people improve the quality of the neighborhood to address crime and vandalism, or does taking control bring trust, prevent physical decay, and thus improve the neighborhood quality?

Within a Habitat context, Baggett (2003) and Giri (2002) explored the religion aspects and the social capital of Habitat at the organizational level. Hays (2002) studied qualitatively citizen involvement in community housing as a faith-based expansion of social capital within nine Habitat affiliates, focusing on volunteers and paid staff. He found that the created one-on-one linkage between the volunteers and the families contributed little to the overall neighborhood. Habitat empowered families by giving them more control over their housing situation and developing building and maintenance skills. But Habitat failed to promote the collective actions among low-income families to deal with their community housing problems. Since Hays interviewed only the volunteers and the paid staff, these findings represented only the perception of the organization, not how families actually feel about themselves and their neighborhoods. Wells (2000) examined the relationship between house quality and psychological well-being among Habitat families. Even though Wells found positive results, she admitted that other factors might influence the psychological well-being for Habitat families, such as sweat equity participation, homeownership, and neighborhood characteristics.

Based on generalized social exchange theory and the social resource development in Habitat, it is assumed that Habitat neighborhoods—instead of scattered Habitat houses—better support the resources built through sweat equity. In the AREA study (Mitchell & Warren, 1998), families reported feeling safe by living close to other partner families. The finding indicated that the trust to other partner families persisted after

families move into their homes. Geographical proximity may facilitate supportive interactions among Habitat families who already have built trust with each other.

Noticing that Habitat homeowners are families with low and very low incomes, would the geographical proximity of Habitat homes compared to houses in scattered sites have a negative impact as well as a positive impact?

Physical Settings

Habitat houses are built on available lands, acquired at a low price. Usually the lots are disconnected so Habitat houses are separated from each other. When Habitat acquires a bigger lot that can accommodate more houses, a Habitat cluster or neighborhood is formed. According to the AREA study (Mitchell & Warren, 1998), houses are built in scattered lots “where there are no other Habitat homes on the homeowner’s street” (p. IV-27). Other houses are built in clusters “where the homeowner’s block includes other Habitat households but is not exclusively developed with Habitat homes” or subdivisions “where the homeowner is surrounded on the street only by homes built by Habitat” (Mitchell & Warren, 1998, p. IV-27).

“Scattered sites” refers to the locations where there are no other Habitat homes on the same street, or where a few Habitat houses are on the same street but there are less than ten Habitat houses in the same block. “Habitat neighborhoods” refers to the locations where ten or more than ten Habitat houses are clustered, or where Habitat houses are surrounded only by homes built by Habitat in the same block.

Since Habitat householders are normally single-parent minorities with low and very low incomes, building a Habitat neighborhood raises questions about segregation. Although often used in sociology, politics, and social sciences, there is little agreement about definitions and measures of segregation (Duncan & Duncan, 1955; Massey &

Denton, 1988; White, 1983). Residential segregation considers the racial and ethnic location patterns in minority groups (Massey & Denton, 1988). The index of dissimilarity and the minority proportion had been the standard measures of segregation. However, these methods fail to distinguish in what ways one group differentiates from the other. Massey and Denton (1988) proposed a multi-dimensional concept for residential segregation. Based on extensive literature research and James and Taeuber's models (Carr, 1999), their measures included evenness of segregation, exposure, concentration, centralization, and clustering. Accordingly, a group of residents "that is highly centralized, spatially concentrated, unevenly distributed, tightly clustered, and minimally exposed to majority members is said to be residentially 'segregated'" (Massey & Denton, 1988, p. 283). But these dimensions regard the residents as static numbers and address observed segregation rather than perceived segregation. These dimensions fail to identify whether or not the segregation is formed by choice.

The segregation problem symbolizes a battle of controlling resources and power. With the end of the American Civil War, the Whites, who had dominated almost all resources, tried to segregate the Blacks in every aspect of life. Personal preference, income distribution, and class-division were the popular explanations for physical separation. With the excuse that residential segregation helped to reduce racial conflicts, landlords and developers provided segregated white communities for higher profits. Since the Great Depression of the 1930s, subsidized low-income housing in the United States has been characterized to serve the needs for central business district redevelopment, industrial mobilization of World War II, and the private housing market (Coulibaly et al., 1998). The urban renewal and substandard housing clearance programs

resulted in racially and economically segregated residents. As the Blacks gained higher socioeconomic status, researchers in the 1960s found that the impact of integration on property value was minimal. This finding undermined the financial rationale for housing segregation. In the 1980s, declining air quality and increasing noise problems in residential areas drove higher-income people out of the areas around factories where segregated working-class districts were built. Implicitly or explicitly, segregation is assumed as “a manifestation of generalized white prejudice resulting in discrimination against racial minorities, often mediated through an imperfect market mechanism” (Coulibaly et al., 1998, p. 1). The Civil Rights Act of 1964 and the Fair Housing Act of 1968 aimed to remedy the inequalities resulting from segregation and racial discrimination. However, these two acts have had only minor impact, and segregation remains a serious and enduring fact in the United States. Coulibaly, Green, and James (1998) stated that racial and income segregation had been “an integral element of the federal housing policy from its inception” (p. 2).

Integration of race, ethnicity, and income within different groups is assumed to help in job growth, improve education, develop healthy and adequate housing supply, and alleviate residential segregation (Frey & Myers, 2002). As a result of a series of lawsuits against the housing policies by the Chicago Housing Authority and HUD, the first mobility program—the Gautreaux Program (1967-1998)—was born. It provided financial and social assistance to relocate segregated minority public housing residents into middle-income predominantly non-Hispanic white suburb communities. Given the success of the Gautreaux program, in 1994 HUD funded more *Moving to Opportunity* demonstration programs to relocate public housing families to low poverty

neighborhoods. The initial research studies of the Gautreaux program showed that minority households had positive experiences of improved quality of life. However, the newly integrated neighborhoods tended to re-segregate (Carr, 1999). In another study of suburban segregation, Farley (1993) confirmed that white households tended to flee integrated neighborhoods as the number of minority residents increases. After the Whites left their old neighborhoods, the integrated neighborhoods became predominantly minority or segregated. Stuart (2002) also concluded in his study of six metropolitan areas in Chicago that although efforts to mix minorities with non-Hispanic white neighbors had some effect in moderating segregation, this integration was only temporary. Subsidies, mobility programs, Fair Housing access, enhancing city service, and other programs had only a modest effect on segregation. These improvements were slight and the pace was slow (Carr, 1999; Denton, 1999).

Instead of trying to eliminate segregation with minimum results, some scholars (Brophy & Smith, 1997; Fischer, 1975; 1982; Schawrtz & Tajbakhsh, 1996; Suttles, 1972; Ward, LaGory, & Sherman, 1985) explored the benefits of segregation in certain cases. For instance, segregation by choice may help residents to preserve their traditions and culture, build self-respect, and provide social networks for a better job (Fischer, 1982). The residents' perspective became important in these segregation studies. Sabatini, Caceres, and Cerda (2001) suggested incorporating subjective perceptions into objective measures for segregation. Since she used census data rather than field data, she could not include subjective perceptions in her model. In a recent study of residential segregation, Squires, Friedman, and Saidat (2002) collected residents' opinions about discrimination in housing. He asked the residents' preferences to race within an ideal

neighborhood, but he did not address the perceived segregation by the same minority residents after living in their concurrent neighborhoods over a period of time. Therefore, there is a need to address the perception of segregation of minority residents who live in a segregated condition.

If segregated living promotes more benefits than problems, should segregation be eliminated in every case? Is there a way to fight the negative social pathologies caused by segregation rather than the form of spatial separation? In deciding whether or not segregation occurs, which is more important: the observed segregation by figures or perceived segregation by the residents?

Habitat families live in a segregated condition by definition. They differ only in levels of segregation. The low-income Habitat families could only afford houses on available and usually inexpensive lots within or near existing low-income neighborhoods. All surrounding neighbors probably share similar financial backgrounds, race composition, and education levels. Because a large number of Habitat families are within a very-low income category, in a Habitat neighborhood, as compared to scattered sites, the poverty level is higher and the segregation is assumed greater. Although research (Mitchell & Warren, 1998) showed that Habitat families who lived in clusters or subdivisions were more satisfied than families who lived in scattered homes, Habitat affiliations, HUD city governors, and planners feel the pressure for integration. Some Habitat affiliates try to mix Habitat families from different low-income levels, even though the created “mixed-income” neighborhood is still, by definition, economically and racially segregated to some degree. Since Habitat families participate in the building

process of the neighborhood, perhaps the residents in a racially segregated neighborhood will not perceive segregation.

By comparing the human and social resources preserved in Habitat neighborhoods and scattered sites, the results may help Habitat to understand the planning strategies. These findings may be useful for other low-income housing programs, such as HUD, USDA Rural Development housing programs, and non-profit programs.

Design participation

For affordability considerations, the design standards of Habitat houses are set by Habitat for Humanity International. However, neither the architects nor Habitat decision-makers are low-income householders. In a study that compared the preferences of planners, architects, and laypersons, Jeffrey and Reynolds (1999) found that architects developed different aesthetic criteria from the planners and the public. It is possible that the mismatch of the physical forms and the user needs exists in a Habitat house design.

Sanoff (1992b) defined participation as the “face-to-face interaction of individuals who share a number of values important to all, that is to say [,] a purpose for them being together” (p. 55). Reis (2000) described design participation as “user control over aspects of mass housing design, either in the design process or after construction” (p. 1). Design participation may not only provide satisfying design solutions, but also empower the users who take control of their lives (Sanoff, 2000).

A participatory design approach engaging the user body in the conceptual design stage has been advocated by many scholars (Birdsey, McKinney, & Stouffer, 1998; Hasell & Zhu, 2001; 2003; Sanoff, 1992a; 2000). The public had been viewed as a passive patient who needed help from the outside “experts.” With little local knowledge, the experts presented the designs to a restricted group of decision-makers (Barrow, 2000).

The World Bank (1995) stated that participation in the design and implementation of development efforts could enhance these efforts' impact. Becker (1977) related residents' participation in the development process to a better-maintained physical environment, greater public spirit, more user satisfaction, and significant changes. Dluhosch (1978) asserted that habitable space design could be responsive and effective if it included the user in the design process. Sanoff believes (2000) that "genuine participation occurs only when people are empowered to control action taken" (p. 9). In a study of user participation in passive social housing design, McLain-Kark (1986) identified the positive relationship between design and owner-built participation and housing satisfaction. However, he oversimplified the measure of participation, failed to identify participation as a process, and did not explore the meaning of participation to the residents. In 1994, Finn identified the selection of site, décor, and sometimes designs as one of many empowering experiences of Habitat homeowners (Finn, 1994). But she did not address how to improve the physical design. In 2000, Reis (2000) evaluated the relationship between user participation and satisfaction with mass housing design across three housing estates in Brazil. The evaluation showed positive evidence for the need of user participation, and participation in the design process was preferred, as compared to participation after construction. Since satisfaction with mass housing design may involve many social and physical factors, such as neighborhood conditions and skills for upkeep, Reis's study did not provide a holistic view of design participation.

Since Habitat is organized self-help housing, families have only limited control in the planning and designing stage. They can choose within available lots, options of layouts, interior and exterior colors, materials, and finishes. These design-related

activities begin before they start to build their own houses. The time spent in design participation may or may not be counted as sweat equity hours according to individual Habitat policies. Families' special needs may or may not be addressed if the design does not satisfy their needs. Empirical evidence is needed to support design participation within a Habitat context. The quantitative evidence may relate to satisfaction with the house, satisfaction with design, and satisfaction with design participation. The qualitative evidence may include users' opinions and suggestions about design of their concurrent houses.

The literature review of sweat equity as participation, human and social resource development, impact of physical settings, and design participation reveal several themes. First, these concepts are important and need be defined in context. Second, normative rather than empirical studies dominate the literature because of the complexity of the phenomena. Third, no consensus has been reached to measure these concepts. Fourth, the lack of previous studies that explore how sweat equity influence families' lives in terms of human and social resource development in a Habitat context requires an in-depth exploratory study.

Variable Measures

This research aims to gain a detailed understanding of the sweat equity process, explore the relationship between sweat equity and human and social resource developments, compare the impact of sweat equity in two physical settings, and identify the role of design participation during the sweat equity process. The complexity of the study, the lack of a prior research model and an existing database, and also an available resource for a large-scale approach required an in-depth case study. According to Yin (2003), a case study can incorporate both qualitative and quantitative data collections.

Documentation review and archival analysis help to build a sound research background. Statistics focus on the questions of quantifiable measures, such as who, where, how much, how many, and how often. Qualitative methods explore the *how* and *why* questions (Yin, 2003). Using multiple methods in one case study provides a holistic view of sweat equity.

Since the literature shows little consensus of measuring sweat equity, human and social resources, and design participation, this study needed to incorporate existing scales or design new instruments for this specific Habitat context. The criterion for choosing or designing the instruments is whether or not the variables contribute to solving the long-term house and neighborhood maintenance problems in Habitat.

Sweat Equity

Habitat uses the number of hours that family members contribute to their houses as well as other families' houses to record sweat equity. However, no one tests whether or not the measure is appropriate. Although sweat equity is regarded as a part of the monetary down payment, the AREA study (Mitchell & Warren, 1998) found that the most common benefit to the families was not the financial savings but the pride and stability, and about 20% of the families felt inadequately prepared for homeownership. Since the AREA study did not specify what families did during sweat equity specifically, it could not answer the question of how to get families better prepared, or why pride and stability are more important than financial savings. When Finn (1994) identified sweat equity as an empowerment process in Habitat, she did not specify which activities empowered the homeowners. Without empirical measures, both studies could not build the relationship between sweat equity and a sense of homeownership or empowerment.

In this study, sweat equity is measured by the number of types of individual activities, the meaning of sweat equity to the families, and the number of hours. The list of activities (see Appendix 1) is developed from background research and personal communications with local Habitat affiliates. The meaning of sweat equity is measured by two questions concerning participants' feelings about the sweat equity on other families' houses and on their own houses.

Human Resources

In the literature, human resources are defined as knowledge, skills, health, time, interest, and commitment (Torjman, 1998). Skill levels, academic learning (OECD, 2001), skill training (Torjman, 1998), and the rates of return on investments (Barro, 2001; Hanushek & Kimko, 2000) are the common measures of human resources. But these measures do not fit in a Habitat context. For families with limited resources, these life skills or academic or job training may not contribute directly to one's house and neighborhood. Finn (1994) found that the house maintenance and management process was not empowering because some families believed that Habitat should be responsible for those problems, but Habitat disagreed. Without quantitative analyses and comparison, Finn addressed only the responsibility issues and failed to look at other possibilities for home maintenance problems: families lack the skills, confidence, and resources for home maintenance so if the house needs repair, they could rely only on Habitat.

The other challenge in measuring human resources is to develop the appropriate scales to measure the intangible psychological feelings. Self-esteem is one of the common measures of psychological feelings in human resources. Self-esteem is defined as how one values, approves, and likes oneself (Blascovich & Tomaka, 1991). Self-esteem is believed to explain socioeconomic and psychological and social phenomena,

such as poverty, well-being, stress, locus of control, depression, and competitiveness (Lever, Pinol, & Uralde, 2005; Twenge & Campbell, 2002). More than 200 scales have been developed to measure self-esteem. The Rosenberg Self-Esteem Scale (Rosenberg, 1965) and the Coopersmith Self-Esteem Inventory (Coopersmith, 1981) are two of the most popular scales. But the scales were developed to study the self-esteem of children. They do not fit the profile of the low-income residents. Scheff and Fearon (2004) reviewed the development of self-esteem measurements and found that although studies about self-esteem tended to report positive results, these results were not consistent. Because of its interrelationship with race, gender, ethnicity, social connections, and socioeconomic status, the instrument design seldom met the requirement for each context (Scheff & Fearson, 2004). Sometimes self-esteem was used to measure social resources. For example, Cohen, Mermelstein, Kamarck, and Hoberman (1985) included self-esteem to measure social support, emphasizing the availability of a positive comparison when one compares him or herself with others.

Place attachment, or the person-place relationship, is believed to have a positive impact on one's socio-physical environment. Measures of home-based attachment include positive evaluations, rootedness, safety, a sense of belonging, activities, and identity (Harris, Brown, & Werner, 1996). Harris, Brown, and Werner (1996) examined the relationship between privacy and place attachment to rental housing. They measured attachment, satisfaction with the building, and feelings of rootedness. They also addressed why people were attached, such as safety, connection, and identity. Although they found positive results in the study, they suggested that ties to neighborhood, aesthetic and functional characteristics of the setting, past experiences with the place

should be incorporated for a better understanding of the dynamic phenomenon of place attachment. Vaske and Kobrin (2001) found that place attachment was related to environmental responsible behaviors among students working in a natural-resource program. They measured place attachment by place dependence and place identity, such as satisfaction, importance of the place, and personal connection. However these measures were chosen to examine connections with environment-friendly behaviors in a natural park, not a place that people own and live everyday. Wells (2000) is conducting a Habitat study that examines the well-being of the Habitat residents in relation to physical housing conditions. She included place attachment, contentment, and privacy as the environment scale. Since attachment is not her major research question, Wells uses a simple 5-item scale to measure both home attachment and neighborhood attachment.

Other related measures about human resources include, but are not limited to, pride, confidence, self-responsibility, and satisfaction. These intangible indicators are closely related to how one feels about the self, the skills, or the physical house one possesses. These may be incorporated in other scales such as sense of community or place attachment, or defined differently in the setting (Rossi & Weber, 1996).

Social Resources

Social resources refer to the social connections among individuals, such as social networks, the norms of reciprocity, and trustworthiness (Putnam, 2000). Different disciplines have different emphases on social resources. The literature has shown that consensus has not been reached on the universal scales to measure social resources, and the studies of social capital often concentrate on organizations rather than individuals.

The psychological aspects of social resources were explored through various emphases, including sense of community (Chavis & Wandersman, 1990; McMillan,

1996; Perkins et al., 1990); attachment (Riger, 2001; Wells, 2000; Woolver, 1992); neighborhood cohesion (Buckner, 1988); and trust (Fukuyama, 1995; Narayan & Pritchett, 1997). McMillan and Chavis' (1986) Sense of Community Index (SCI) instrument is often preferred to as a basic measure of a community. It measures membership, influence, integration and fulfillment of needs, and shared emotional connection. Other researchers often adapt their instruments from the SCI to measure the social capital for a certain context.

Social support, the resources provided by other persons, is believed to prevent individuals from the pathogenic effects of stress (Cohen et al., 1985). Cohen and his colleagues developed the Interpersonal Support Evaluation List (ISEL) to measure tangible support, appraisal support (trust), self-esteem support, and belonging support. The appraisal support or trust in the ISEL can be adapted in a neighborhood setting by redefining the setting in the scales. Since they studied stress related support, the tangible and belonging scales are too general in a neighborhood setting. Ungers and Wandersman (1983) used a 10-item scale to measure the neighboring activities. Respondents were asked the social contact and willingness to exchange goods and services with neighbors. Rather than measuring neighboring activities, Unger and Wandersman's scale measures social support in a neighborhood. The measures of neighboring activities, however, are better designed in Skjaeveland and Garling's (1997) Multidimensional Measure of Neighboring in an attempt to examine the effects of interactional space on neighboring. The 14-item scale included the weak social ties (frequent contacts), social support, attachment, and annoyance.

Pride, neighborhood satisfaction, and safety are also related to how individuals feel about their neighborhood (Basolo & Strong, 2002; Rohe & Stegman, 1994a). These indicators should be incorporated into the instruments as well. Reciprocity occurs when one helps others after receiving help. Habitat families help other families to build houses and then receive help to build their own. However it is unknown after receiving the help, whether or not and why they would continue to help in building a Habitat house, or help neighbors and the neighborhood. In the latter case, reciprocity is reflected in a sense of obligation to the neighborhood.

Although no study has focused on segregation issues in Habitat, the AREA study (Mitchell & Warren, 1998) showed that Habitat families in clusters or neighborhoods felt more satisfied compared to those who lived in scattered sites. This finding contradicts general beliefs about the negative pathology of segregation. Segregation is usually measured by Massey and Denton's (1988) dissimilarity index. Using administrative records or census data, scholars (Abramson, Tobin, & VanderGoot, 1995; Farley, Fielding, & Krysan, 1997; Van Ryzin & Genn, 1999) usually confirm or compare the changes of residential segregation level. However there is an emerging need to address the perception of segregation from the residents' points of view.

Design participation

The literature has shown that the physical design contributed to neighborhood development and social activities (Bothwell, Gindroz, & Lang, 1998; Torres-Antonini, 2001). Basolo and Strong (2002) examined the relationship between house conditions and satisfaction in New Orleans. The result showed that housing conditions and safety—but not social contact—were important to explain neighborhood satisfaction. On the contrary, Torres-Antonini (2001) found that social contact was as important as the physical

common house design in co-housing. They both focused on design features and overlooked whether the residents had the social skills or needed to develop those social skills that were necessary for social contact. Finn (1994) found that participating in the design process was empowering to Habitat homeowners but she did not provide measures of design participation. Design participation needs to be identified at three stages: planning, exterior design, and interior design in a Habitat context.

The literature provides a pool of instruments that may help to measure sweat equity, human and social resources, and design participation within a Habitat context. This case study addresses how and whether or not partner families accumulate social resources through sweat equity within a Habitat context. According to the research questions listed in the following section, maintenance and financing skills, self-esteem, perceptions of skills, satisfaction, attachment to homes, frequency of maintenance, and a sense of obligation are appropriate for measuring human resource development. Neighboring, social support, neighborhood involvement, sense of community, trust, attachment to neighborhood, and segregation seem appropriate for social resource measurement in this case study. The measures of the perception of segregation and design participation need be developed according to the specific setting.

Summary

Sweat equity as participation or self-help has contributed to solving housing problems for centuries. However, it was seldom studied as a learning and sharing process. Habitat defines sweat equity as the number of hours a family contributes, and does not specify individual activities. The impacts of sweat equity are claimed with normative statements rather than empirical studies. Design participation is not specified during the sweat equity process. Unlike HUD's emphasis strictly on the physical environment,

Habitat integrates the concepts of doing, learning, and sharing to solve both physical and social problems for partner families. The complexity of the sweat equity process and the variety of resources that families accumulate during sweat equity require an in-depth case study. Sweat equity is dynamic, multi-dimensional, and context-specific. The instruments in this study are exclusively selected and designed to measure sweat equity and human and social resource development in the local Habitat context.

CHAPTER 3 RESEARCH METHODOLOGY

This research responds to a perceived absence in the literature of empirical studies of sweat equity from Habitat partner families' points of view. Due to the complexity of the sweat equity process within a Habitat context, a case study will serve as a foundation to understand sweat equity as a holistic learning-by-doing and sharing process. This research explores the relationships between sweat equity and human and social resource development, compares resource maintenance between families in Habitat neighborhoods versus families in scattered sites, and examines design participation in a Habitat context. This chapter explains the logic for the research design, introduces the research settings, presents the implementation of the research processes, defines the instruments as well as the analytical methods, and recognizes the limitations of this study.

Case Study Paradigm

A case study is “an empirical inquiry that investigates a contemporary phenomenon within its real-life context” (Yin, 2003, p. 13). According to Yin (2003), a case study is preferred for contemporary phenomena in which the researcher has little control over the conditions and seeks *what*, *how* and *why* questions for a complete understanding of the phenomena. The case study inquiry explores yet-to-be-identified indicators, copes with a huge number of variables, and incorporates multiple sources of evidence. Although eminent for its power of qualitative analysis, a case study is a research paradigm rather than a qualitative method for data collection (Berg, 2001). For Yin, a case study “comprises an all-encompassing method—covering the logic of design, data collection

techniques, and specific approaches to data analysis” (2003, p. 14). Therefore, the case study methodology allows investigators to “retain the holistic and meaningful characteristics of real-life events” (Yin, 2003, p. 2).

Habitat for Humanity International is a unique self-help housing administration that partners with caring people and those who are in need. Local Habitat for Humanity (Habitat) affiliates develop their own organizational structures to satisfy their respective community needs. Partner families have different experiences even within the same affiliate. The scope of the causal links between sweat equity and the outcomes is too complex for experiments or surveys. The study of Habitat sweat equity and its impact on families’ lives explores *what*, *how*, and *why* questions. For example, what skills do Habitat families learn during sweat equity? Why do partner families help their neighbors? How do partner families feel about design participation? The needs for exploring yet-to-be-identified indicators and analyzing numerous variables require an in-depth case study.

Research Setting

Because of time and resource constraints, a case study was conducted among three regional Habitat affiliates in northern Florida: Alachua Habitat for Humanity (Alachua Habitat) in Alachua County, Florida; Habitat for Humanity of Jacksonville (HabiJax) in Jacksonville, Florida; and Habitat for Humanity for Greater Ocala (Ocala Habitat) in Ocala, Florida. A pilot study was conducted in the Alachua Habitat in order to preliminarily explore the sweat equity process and refine the research instruments. A principal study was carried out in all three affiliates. The three affiliates were incorporated with Habitat International in the late 1980s or early 1990s, focusing on new construction. Almost all new construction is in low-income neighborhoods that are in disrepair. More Habitat houses are planned in scattered sites than those in strictly Habitat

neighborhoods. The majority of partner families are single-parent families (more than 75.00%).

Although the general guidelines are similar, these affiliates have their own requirements for sweat equity. They differ in the minimum hours, what activities are included, how families are prepared in training, how they are involved in design participation, and the strategies for maintenance and community problems.

Sweat equity. Alachua Habitat regards sweat equity as the willingness to be a partner family (Feather, D., personal communication, May 12, 2003). HabiJax expands sweat equity as the willingness to help with other families' houses as well as their own houses, to abide by the HabiJax rules, and to become involved in their neighborhood. Ocala Habitat (Nimmo, B., personal communication, June 11, 2003) defines sweat equity as "the physical labor the partner family puts into building of their home to replace the traditional monetary down payment."

Table 3-1. Distribution of Sweat Equity Hours in Three Habitat Affiliates

	Mutual Help		Self-help	Total Hours
	Hours on Public and Training	Hours on Other Families' Houses	Hours on One's Own House	
Alachua Habitat	50	150	200	400
HabiJax	N/A	200	100-300	300-500
Ocala Habitat	150	100	250	500

Table 3-1 shows how sweat equity hours are distributed in the three affiliates. Alachua Habitat required 100 hours during the early 1990s. Currently, Alachua Habitat requires 400 sweat equity hours, 150 of which contribute to building other families' houses and 50 hours to other public activities before they build their own homes. Sweat equity includes the work a partner family puts on construction, working for the Habitat office, and training.

HabiJax requests 200 hours on other families' houses and at least 100 hours on one's own house. The standard 300 hours is the target for families between 30% and 50% of area median income (AMI). HabiJax is considering more hours for families between 50% and 80% of AMI.¹ In turn, the houses are more expensive with better designs. The additional hours include leadership training, participation in neighborhood organizations, and leading volunteers. Three hundred hours are required in the surveyed neighborhood.

Ocala Habitat requires a minimum of sweat equity hours of 500. Out of the 500 hours, 100 hours are delegated to community services in other non-profit organizations, 50 hours in the classroom, 100 hours working on someone else's home, and 100 hours on their own home. Another 150 hours are required on construction work, but they can be completed either by friends or family members.

Training. In Alachua Habitat, training courses include budget, home maintenance and repair, and issues about legal homeownership and insurance. These courses are available on a regular basis. Families must finish these courses before they finish building their own houses.

HabiJax has similar training content except for one experimental component—leadership. Families have a chance to learn to be a “leader” in certain fields so that these families can become special players either on the construction sites or in neighborhood activities. However, no leadership training was provided in the surveyed neighborhood.

In Ocala Habitat, the weekly provided training includes: concepts of Habitat; budget; home maintenance and repair; appliance repair; credit improvement; landscaping; neighboring skills (neighborhood maintenance); mortgage; and closing papers.

¹ Habitat provides affordable housing to very low- and low-income families. Their incomes range from 30% to 80% of the area median income.

Design participation. During the early years of partnering with families, designers in Alachua Habitat worked with families for customized design details. As Habitat evolved, families retained multiple options in such areas as layout designs, colors, and finishes for interiors and exteriors, but they seldom could change the structure, size of rooms, or add any opening. Families can choose the design after completing 200 hours.

When HabiJax families finish at least 100 hours, they can choose their houses from different floor plans and elevations. Families can pick the colors for carpet, shutters, and siding from color brochures, and choose either stucco or brick as an exterior finish material. Usually choices of matching colors are provided by paint companies. Fairway Oaks was built in a 17-day community blitz.² Planning and design work were done before family selection started. The exterior colors were determined by the location of the lot.

In Ocala Habitat, once a family completes 50% of the community service hours and 50% of the classroom hours (a total of 175 hours), the family is assigned a house. Partner families can choose the color for their siding. The color of shutters and front doors will complement the siding color, and the color of carpet/vinyl and color of countertop will be complementary. Families cannot choose among materials or change the layout design. However, they can influence their landscaping through workshops and choosing different plants provided by the Master Gardeners program in the county Agriculture Extension Office. Selecting colors occurs during the 50 classroom hours, or design participation is counted as sweat equity in Ocala Habitat.

² A blitz build in Habitat refers to building a group of houses at a concentrated period of time. Volunteers and families work together everyday until houses are finished. Among the Habitat houses investigated in this study, only families in HabiJax had a blitz build. Other houses were built only during weekends and the process took months to finish.

Problems. Finn (1994) found that some home maintenance and repair problems were caused by volunteers' unprofessional work. Families thought that since they paid for the house, Habitat was responsible for the quality of their houses. However, Habitat argued that a house needed regular maintenance and would encounter repair problems when the house aged, and that Habitat should not be responsible for long-term maintenance and repair problems.

In this study, some Habitat homeowners asked Habitat affiliates for financial and technical help in maintenance and repair. Alachua Habitat collects a \$20 maintenance escrow each month. When families have some maintenance or repair problems, they can use the money for material or professional services. Since a supervisor is assigned to ensure the quality of the projects, Habitat asserts that there is no complaint about the quality of those well-constructed houses.

HabiJax usually sends families who request financial assistance to other organizations. Although maintenance escrows are collected in HabiJax, the response to the requests for assistance with home maintenance and repair is based on needs. For example, volunteers and other homeowners respond to those requests submitted by disabled homeowners and the elderly.

Ocala Habitat does not require a maintenance escrow. Approximately 20% to 25% of Habitat homeowners ask for assistance with home maintenance and repair. Eight regular volunteers respond to maintenance and repair needs. Requesting such assistance often occurs during the first year of homeownership. After living one year in their new houses, according to Ocala Habitat, most partner families are self-sufficient.

The other challenge Habitat faces is the architectural integrity within the community. Habitat's limited resources do not permit much variety in floor plans and elevations. As the number of Habitat houses has increased over years of effort, the limitation on house styles and concentration of low-income families raised some adverse comments in the city and some neighborhoods. For example, some city community leaders and politicians objected to the homogenous low-income population, repetitive designs, and less diverse architectural styles in HabiJax neighborhoods. Responding to the challenges, HabiJax is seeking more design styles and to mixing families from 30% of the area median income (AMI) with families from 80% of the AMI.

Sampling and Data Collection

Different from large-scale surveys or experiments, case studies use in-depth evidence to explore unidentified indicators and relationships. Sampling is employed for an unbiased selection of participants rather than statistical generalization. The description of the sampling methods serves to facilitate future case studies within a similar theoretical framework.

This research had two steps: a pilot study and a principal study. Since gender plays a role in the informal network (Moore, 1990), gender differences were avoided by interviewing only female householders. Sampling was based on convenience and volunteerism. The two-step research procedures were similar except that respondents in the pilot study were interviewed twice (before and during receiving help from others), and in the principal study respondents were interviewed once.

When the pilot study started in Alachua Habitat in September 2002, 11 eligible families were working on other families' houses. All 11 families were invited to participate in the pilot study. A total of eight participants responded to the first wave of

data collection. Since the construction process was slower than the schedule, retaining participants during the second wave became difficult. Four of the eight respondents completed the second wave of this study. The pilot study served as the tests for instruments and the protocol.

The principal study began after the first wave of the pilot study. As of April 2003, more than 1,000 Habitat families live in HabiJax, 60 families in Alachua Habitat, and 88 families in Ocala Habitat. Since Alachua Habitat is in the process of building its first Habitat neighborhood, the other two affiliates provided initial contact information for families living in a neighborhood setting. Alachua Habitat provided contact information for families living in scattered sites. From the lists of contact information, each family was assigned a random number generated by the computer. Sorted by the random numbers, the top 30 families on each list were contacted. If any of the top 30 families declined to participate, the following name on the random list was contacted.

Once identified through Habitat affiliates, potential respondents were sent an introductory letter, consent form, and self-administered survey either through mail or in person. The survey took 10 to 20 minutes to complete. Within two weeks, the researcher contacted the homeowners by phone and set up the interview time for the willing respondents. The interviews consisted of close-ended and open-ended questions. With permission from participants, the interviews were tape-recorded. The consent form and survey were collected during the interview. Each interview took 30 to 40 minutes. No compensation was provided for the initial protocol. However, many interviews were missed because some families would not contact the researcher when they rescheduled. To solve the problem, the College of Design, Construction and Planning at the University

of Florida sponsored the researcher so that each participant could get up to \$20 as compensation. The compensation increased the response rate. If a participant wanted to see the report on the study, a brief was provided.

In the principal study, a total of 49 partner families were recruited from May 2003 to November 2004. Participants in neighborhoods were identified through HabiJax and Ocala Habitat. Twenty-eight responses were collected in these neighborhoods. Participants in scattered sites were identified through the Alachua Habitat office, and 21 responses were collected in scattered sites.

Operational Definitions and Measures

The operational definitions and measures are organized within a detailed conceptual framework, as shown in Figure 3-1. Participation or sweat equity is positioned as the independent variables include: 1) the total number of sweat equity hours; 2) the number of types of sweat equity activities (training, construction, public activities, and design participation); and 3) the qualitative measures of sweat equity. The dependent variables are divided into groups of human resource and social resource indicators, categorized under two physical settings—scattered sites and Habitat neighborhoods, respectively. Both human and social resources consist of tangible and intangible measures. Tangible measures are practical or realistic measures that are usually recorded with numbers or described with facts. Intangible measures refer to psychological feelings and perceptions.

In Figure 3-1, tangible measures are indicated with a solid color, and intangible measures are indicated with diagonal shading. Human resources refer to the skills, behaviors, and individuals' perceptions of the self and the house. Social resources refer to the behaviors in the neighborhood and the perceptions of neighbors and the neighborhood. The arrows indicate the theoretical relationships between factors that is being tested in this study. See Appendix A: Survey Instruments and Appendix B: Interview Questions for detailed measures. Individual operational definitions and measures are explained along with the review of the research hypotheses.

Hypothesis 1: Sweat equity contributes to human and social resource development.

Sweat Equity. Sweat equity refers to the time and effort in which partner families invest to collectively build and maintain their houses, as well as human and social resources. Quantitatively, sweat equity is measured by the number of hours respondents completed and the number of types of activities in which they become involved. A higher score indicates a higher level of participation. The activities are grouped into *training*, *public activities*, *construction*, and *design participation*. Since design participation is not counted as sweat equity in every Habitat, design participation will be explored separately. Training refers to the perception of the training courses. On a 4-point Likert scale, respondents are asked to rate the organization, depth, and usefulness of training, and their desire to learn more household repairs. Two open-ended questions are used to explore what families would like to learn. Public participation is measured by *Yes* or *No* to whether or not families have participated in certain public activities during sweat equity. Construction participation is measured by *Yes* or *No* to whether or not they have performed certain construction activities and for whom (self or others).

Sweat equity is also qualitatively measured by the meaning of sweat equity: what Habitat sweat equity affords Habitat families. Four sets of open-ended questions are used to explore: 1) why families choose to work with Habitat; 2) how they feel about helping others and self-helping; 3) what the advantages in sweat equity are (See Appendix B: Interview Questions for detailed measures); and 4) what the drawbacks of sweat equity are and suggestions for a change.

Human resource development. Human resources refer to the skills and house-related behaviors and perceptions of the individuals and the house. Human resources include: house maintenance skills; financing skills; frequency of house maintenance; pride in skills; confidence in skills; pride in house; house attachment; self-responsibility; self-esteem; house satisfaction; design solution satisfaction; and design participation satisfaction.

Maintenance skills are the skills that a family needs to keep a house in good condition by regular maintenance and repair when appropriate. On a 4-point Likert scale, maintenance skills are measured by the perception of the skill levels. Respondents are asked to rate 15 statements about how skilled they feel in doing the listed maintenance and repair tasks. A higher score indicates more maintenance skills.

Financing skills refer to the ability to pay mortgages in time. On a 4-point Likert scale, respondents are asked to rate two statements about their budgeting and on-time payment. A higher score indicates stronger financing skills.

House maintenance consists of activities one performs in order to keep a house in good condition. House maintenance is measured by the frequency of home maintenance and repair performance during the past six months. A higher score indicates more

frequent house maintenance. Two questions are used to explore whether or not they could maintain and repair the house by themselves; if not, from whom would they ask for assistance and why.

Pride in skills refers to the pleasure or satisfaction taken in an achievement. On a 4-point Likert scale, respondents are asked to rate one statement about their pride in self-accomplishment. A higher score indicates greater pride in skills.

Confidence in skills refers to one's self-assurance in the ability to maintain a house. On a 4-point Likert scale, respondents are asked to rate one statement about their confidence with future home maintenance and repairs. A higher score indicates greater confidence in skills.

Pride in house refers to the pleasure or satisfaction taken in one's house. On a 4-point Likert scale, respondents are asked to rate one statement about their pride in the house. A higher score indicates a greater pride in the house.

House attachment is the emotional tie to one's house. House attachment is measured by two items in regard to personal connection and a home-like feeling (Wells, 2000). A higher score indicates a stronger attachment to one's house.

Self-responsibility is the attitude one has toward house maintenance and repair. On a 4-point Likert scale, respondents are asked to rate the statement about their responsibility for home maintenance and repair. A higher score indicates a stronger self-responsibility for house maintenance and repair.

Self-esteem refers to how one perceives oneself compared to others (Cohen et al., 1985). Self-esteem is measured by a 10-item scale, adapted from a subscale of the Interpersonal Support Evaluation List (ISEL) (Cohen et al., 1985). Cohen, Mermelstein,

Kamarck, and Hoberman used ISEL to measure perceived availability and quality of potential social support. The 40-item ISEL scale measures: appraisal support (trust); belonging support (availability of people to share with); tangible support (instrumental help); and self-esteem support (positive comparison when comparing oneself with others). In a study of the buffering effect of ISEL on stress, appraisal and self-esteem significantly contributed to accounted variance independently (Cohen et al., 1985). The self-esteem and appraisal scales are more suitable to measure support in a neighborhood than belonging and tangible scales that measure general social support. The ISEL self-esteem subscale is correlated with the Rosenberg Self-esteem Scale at 0.74.

House satisfaction is the fulfillment of the house toward one's desires or needs. On a 4-point Likert scale, respondents are asked to rate one statement about satisfaction with the overall house. A higher score indicates a greater satisfaction with one's house.

Design solution satisfaction refers to the fulfillment of the house design to a family's desires or needs. The house design includes: interior colors, finishes, and layouts; exterior colors, finishes, and yard; lot selection; and public space planning. Regarding each design phase, participants choose *Yes*, *No*, or *Not know* to the question "Are you satisfied with the current design?" On a 4-point Likert scale, overall design solution satisfaction is rated on two items: how a respondent is satisfied with their present house and neighborhood. A higher score indicates greater satisfaction with the design of the house.

Design participation satisfaction refers to the fulfillment of design participation to satisfy one's desires or needs. On a 4-point Likert scale, participants are asked to rate their satisfaction with the level of involvement in the design process for their house and

also the satisfaction of selecting color and finishes for their house. A higher score indicates greater satisfaction with design participation.

Social resource development. Social resources refer to the social behaviors within the neighborhood and the perceptions of neighbors and the neighborhood. Social resources include: neighboring; social support; neighborhood involvement; pride in neighborhood; satisfaction with the neighborhood; safety; neighborhood attachment; a sense of community; trust in neighbors; reciprocity; a sense of obligation; and segregation.

Neighboring refers to the informal daily interactions or social network activities among residents. In order to better define the concept of a “neighbor” from a resident’s perspective, respondents are first asked how many neighbors they have. Then they are asked the number of neighbors they greet (Skjaeveland & Garling, 1997), the number of neighbors they consider close friends (Unger & Wandersman, 1983), the number of neighbors they visit and the number of times they visit their neighbors (Skjaeveland & Garling, 1997). Higher numbers indicate more frequent neighboring.

Social support refers to the behavioral supportive system that provides individuals with socioemotional and material aids when neighbors frequently interact with one another informally (Unger & Wandersman, 1983). Social support is measured by eight items. On a 4-point Likert scale, respondents are asked to rate the statements about borrowing for cooking (Skjaeveland & Garling, 1997), helping with other Habitat houses, and asking family members rather than neighbors to help with repair problems. Adapted from Unger’s *Neighboring Activities*, respondents are then asked the number of neighbors from whom they would seek assistance, such as borrowing tools, watching the house,

helping with house repair, needing a ride (Unger & Wandersman, 1983), and watching children. Unger's scale has an alpha reliability coefficient of 0.88 and a Spearman-Brown reliability coefficient of 0.89. A higher score indicates better social support.

Neighborhood involvement refers to the extent to which a Habitat family participates in activities that contribute to neighborhood building. Respondents are asked whether or not they are involved in neighborhood associations and neighborhood activities, such as crime watch or cleanups. A higher score indicates greater involvement in the neighborhood.

Pride in neighborhood is the pleasure or satisfaction taken into being part of a neighborhood. On a 4-point Likert scale, respondents are asked to rate the statements about shame in the neighborhood. A higher score indicates a lower pride in the neighborhoods.

Satisfaction with neighborhood refers to the fulfillment or gratification one has toward her neighborhood. On a 4-point Likert scale, respondents are asked to rate one statement about satisfaction with the overall neighborhood. A higher score indicates a lower satisfaction with the neighborhood.

Safety is the feeling of being protected from danger in one's neighborhood. On a 4-point Likert scale, respondents are asked to rate two statements about feeling safe during the daytime and nighttime. A higher score indicates a higher sense of safety in the neighborhood.

Neighborhood attachment refers to the emotional ties to one's neighborhood. Neighborhood attachment is measured by three items in relation to comfort, belonging

(Wells, 2000), and personal contact (Skjaeveland & Garling, 1997). A higher score indicates a stronger attachment to one's neighborhood.

A sense of community is defined by McMillan and Chavis (1986) as “a feeling that members have of belonging, a feeling that members matter to one another and to the group, and a shared faith that members' needs will be met through their commitment to be together” (p. 9). A sense of community is measured by a 12-item scale, adapted from McMillan and Chavis' Sense of Community Index (McMillan & Chavis, 1986). The Sense of Community Index (SCI) measures: membership (belonging), influence (community cohesiveness), integration and fulfillment of needs (common needs, goals, and values), and shared emotional connection. The overall reliability of SCI of an adult in a neighborhood setting was 0.66 (Chipuer & Pretty, 1999). A higher score indicates a greater sense of community. An open-ended question is used to explore the qualities of a good neighborhood.

Trust refers to the “perceived availability of confidants to talk to about one's difficulties” (Cohen et al., 1985, p. 74). During sweat equity, Habitat families usually develop trust in Habitat partners in general, and trust in neighbors contributes to the growth of a neighborhood. The 9-item scale of trust in neighbors is adapted from the *appraisal* subscale of the Interpersonal Support Evaluation List (ISEL) (Cohen et al., 1985). Cohen, Mermelstein, Kamarck, and Hoberman (1985) reported the internal reliability of ISEL ranged from 0.77 to 0.86 in general, and 0.77 to 0.92 for appraisal. Respondents are asked to choose *True* or *False* to the statements in relation to their trust in neighbors. A higher score indicates greater trust in one's neighbors.

Reciprocity refers to the dedication to mutual commitment and the ability to help. On a 4-point Likert scale, respondents are asked to rate one statement about their willingness to help others to build houses after their own houses were completed. A higher score indicates greater willingness to help as well as having the skills to help. Four sets of open-ended questions are used to explore why people do or do not help each other. These four questions include: 1) why they ask a neighbor for help; 2) whether or not they can maintain and repair their houses and if not, whom would they ask for assistance and why; 3) whether or not they would help neighbors and why; and 4) whether or not they care about receiving help from neighbors first and expect to receive assistance in return from the same person.

A sense of obligation refers to bonding to one's neighborhood through actions or the involvement in a neighborhood association. Respondents are asked whether or not they have a homeowner association in their neighborhoods. If the answer is *Yes*, respondents are asked how often the association holds meetings and how often they attend meetings. A sense of obligation is also explored as to why they would or would not attend these meetings and their suggestions for the existing or future organization.

Segregation refers to the perception of being segregated for families living in a place "that is highly centralized, spatially concentrated, unevenly distributed, tightly clustered, and minimally exposed to majority members" (Massey & Denton, 1988, p. 283). On a 4-point Likert scale, respondents are asked to rate two statements about perception of economic segregation and racial segregation. A higher score indicates a stronger feeling of being segregated.

Hypothesis 2: A difference exists in the maintenance of the resource developments in Habitat neighborhoods versus scattered sites.

Scattered sites refer to locations where no other Habitat homes exist on the same street, or where few Habitat houses exist on the same street—with less than 10 Habitat houses on the same block.

Habitat neighborhoods refer to locations where 10 or more Habitat houses are clustered, or where Habitat houses are surrounded only by homes built by Habitat on the same block.

Hypothesis 3: A relationship exists between users' participation in house design and the satisfaction with the results of their participation.

Design participation means the extent to which the homeowners participate in the decision-making during the design process of their own houses. Design participation is measured by two parts: 1) *Yes* or *No* to the question whether or not families have taken part in design activities for the following eight areas; and 2) the number of sweat equity hours a respondent completed when she began the design-related processes. The design activities include: selecting the lot; choosing interior and exterior colors and finishes; and taking part in the interior layout design, yard design, and public space planning. The higher total number of the types of design activities with which a family becomes involved indicates greater design participation. The meaning of design participation is explored through an open-ended question, “How do you feel about selecting interior colors and finishes for your house?” Respondents are also asked whether or not they would like to have more influence over the design of their houses and to specify their suggestions for both interiors and exteriors.

Analytical Techniques

Due to the complexity of the data, multiple methods were used to analyze data. The self-administered survey responses were coded, transferred to a computer spreadsheet, verified for accuracy, and input into statistical models. The open-ended interviews were transcribed as narratives for content analysis. Since it was a multi-factor study with a small sample size, the assumption of normal distribution and equal variance within groups were needed for statistical analysis.

Quantitative data were described by their mean, median, range, and standard deviation. Crosstab statistics, hierarchical cluster analysis (Dendrogram), and factor analysis were used to analyze data preliminarily. Controlled by such variables as education, income, age, and employment, the new generated data were analyzed using the General Linear Model, Univariate model, Multivariate model, Kendall's correlation, and analysis of variance (ANOVA). Once interaction effects were found, no individual effects were explored further. The alpha or level of significance was set at 0.05.

For qualitative data, content analysis is a common analytic method to draw replicable and valid inferences on the basis of the absence or presence of attributes in texts for cultural, social, psychological, and behavioral studies (Holsti, 1969; Krippendorff, 1980; Weber, 1990). Content analysis helps to quantify and analyze the presence, meanings, and relationships of interview responses within the Habitat context. It also allows the researcher to cross-validate findings obtained by surveys.

After interview responses were transcribed verbatim, the data frequency counts and data mining generated the broad categories. Since the interviews were semi-structured, the responses in relation to psychological feelings were recoded as ordinal scales to reveal the prominence of the attributes. The identified themes were then examined by

conceptual analysis or relationship analysis for the presence of concepts and the relationships between the concepts and data obtained from survey. A common coding frame was devised in order to allow for comparison for responses across questions. The results of content analysis were reported in tabulation and narratives. Since data were recoded manually, the researcher recoded the same responses twice over a period of one month.

Validity and Reliability

Since case studies are context-specific, the criticism of case studies is focused on the qualities of case studies, including validity, reliability, and difficulties to build a cause-and-effect relationship and generalize the findings. Compared to secondary data analysis, survey research, and field experiments, case studies may not build strong cause-impact correlations and apply generalization laws. But case studies have the advantage to explore complex phenomena when other methods are not applicable.

The criteria for judging the quality of a case study have different constructs from quantitative research. For a positivist paradigm, the constructs include: objectivity; reliability; internal validity (rigor and/or causal relationships); external validity (generalization); and construct validity (correct operational measures) (Kidder & Judd, 1986; Yin, 2003). Validity tests the degree to which a study assesses accurately the research concept. The validity of case studies can be improved by using multiple methods for data collections, such as documents, archival records/protocol analyses, open-ended interviews, focus group interviews, structured interviews and surveys, field studies, direct observations, and participant observations (Marshall & Rossman, 1999). Reliability tests the extent to which an experiment, instrument, or procedure yields the same result over time. Reliability is also concerned with whether two items measure identical concepts,

the precision between the observers or of the instruments, and the consistency of the implementation of a rating system. For a naturalistic paradigm, scholars suggested using credibility, transferability, dependability, and confirmability to judge qualitative research (Lincoln & Guba, 1985; Marshall & Rossman, 1999; Merriam, 1985).

This research follows the positivist paradigm because it contains both qualitative and quantitative methods to collect and analyze data. The methods adopted in this study were derived from Yin's (2003) suggestions for building the validity and reliability in case studies: using multiple sources of evidence and multiple cases; following case study protocol; developing a database; and guiding by theory or logic models.

The validity of this case study was strengthened by multiple sources of information, including documents, archival records, personal communication with Habitat affiliates, interviews with residents, and structured surveys. A triangulation was formed in seeking evidence from a wide range of different, independent sources and by different means. For a better understanding for participants, these quantitative measures were categorized under sweat equity, feelings about themselves, their house, their neighbors, and their neighborhood. The interview questions mainly addressed how families felt about sweat equity and why they helped their neighbors. Additional sources of data included newsletters, flyers, training booklets, copies of policy statements, Habitat International online resources, *Habitat World* magazine, and observations at the local Habitat Board of Trustees meeting and construction sites. Based on the *learning-by-doing* theory and the *generalized social exchange* theory, the theoretical framework (see Figure 3-1) helped to construct the external validity. If replicating the logic in multiple cases is available in the future, the external validity will be reinforced.

It is possible that a causal factor was not accounted for regarding the relationships between sweat equity and human and social resource development. The internal validity was considered by constructing patterns and explanations from the extensive literature review. With the help from research professionals and Habitat affiliates, a research protocol was developed and submitted to the Institutional Review Board (IRB) at the University of Florida. Any changes in the research protocol were reported to the IRB. The reliability of this study was taken into account in conducting a pilot study to test the measures and procedures. The pilot study protocol was also approved by IRB. It was conducted in a local Habitat whose families were in the middle of their sweat equity hours. Although the responses might be different from those in principal study that engaged Habitat homeowners, the pilot study showed that the procedures were operative and families understood the instruments. The pilot study also helped the researcher control the interview time and enhanced interview skills. Since the pilot study was successful, the principal study followed similar procedure and instruments with minor changes appropriate for homeowners rather than potential homeowners.

Limitations of This Study

The limitations of this study reside in the nature of the study and external constraints imposed by time and resources. Since sweat equity policies in Habitat affiliates are different from one another and partner families are pre-selected to enter this program, it is possible that opinions of the participants in this study are different from those in other affiliates or those who quit the program during the sweat equity process. The volunteerism sampling strategy may separate the participants who volunteered in this study and those who did not want to participate. Because of the scale of this case study, it is unwise to generalize the results to other housing programs. As Yin (2003) indicated,

any single scientific investigation contributed to theoretical explanations rather than generalization on a single case. Only additional cases following similar theoretical framework could test the truth within a larger population.

Assumptions have to be made about the accuracy of a self-report method. Although personal information and opinions provided by participants are exclusively confidential, Habitat families may feel obliged to comment positively to Habitat and its policies. Using both pro and con statements for certain questions increases the objectivity of the data.

Other constraints in this study include time, cost, and location. Time and cost shape the scope of the research and the range of activities undertaken. Within a certain timeframe and limited financial resources, the trade-offs are set on the depth and scope of the questions, the modes of data collection, the numbers of respondents, and the extent of the analyses. Location is another constraint. The location of the researcher limits the accessibility to a larger pool and the continuity of data collection.

Summary

The methodology adopted for this study was derived from an anthropological classification of case studies, as described by Yin (1994). This research explores sweat equity and its impact on low-income families' lives. Since the researcher had little control over the conditions, and the focus was on contemporary phenomena, a case study was chosen accordingly, which incorporated multiple data collection methods. Documents, literature review, and personal communication built a solid background for the sweat equity process. The self-administrated survey questionnaire included quantitative measures of sweat equity, human resources, and social resources. The open-ended interview questions were focused on the meaning of sweat equity and the impact of deciding colors and material to Habitat homeowners. Statistics were used to analyze

survey responses in two different physical settings of Habitat houses, and content analyses extracted the meanings emerged from the interview responses. Although the study was limited by both internal and external constraints, it generated valid and reliable information for a holistic understanding of sweat equity in the context of Habitat.

CHAPTER 4 RESULTS OF THE STUDY

This chapter reports the results of the research. The first section details the demographic characteristics of the respondents, shows the central tendency (mean and median) and measures of variability (variance s^2 , standard deviation s , and range) of sweat equity and the human and social resources developed during sweat equity. Scores 1 to 4 were assigned to each response on Likert-type items as follows: 1 = strongly disagree, 2 = disagree, 3 = agree, and 4 = strongly agree for most items; or 1 = unskilled, 2 = somewhat skilled, 3 = skilled, and 4 = very skilled for maintenance skill self-evaluation. Binomial responses were coded as 1 or 0. Other data collected were scored as described in the previous discussion of measures. An alpha level of 0.05 was used for all statistical tests unless specified. The second section reports the results of the statistical tests for each of the three hypotheses. The third section reports the results of the content analyses.

Characteristics of Sample

Demographic Characteristics

A total of 49 families from three Habitat for Humanity (Habitat) affiliations—Alachua Habitat, HabiJax, and Ocala Habitat—were recruited in the principal study. Out of the 49 participants, 14 were from HabiJax, 14 were from Ocala Habitat, and 21 were from Alachua Habitat. HabiJax and Ocala partner families (a total of 28) lived in Habitat neighborhoods, and Alachua partner families (a total of 21) lived in scattered sites. Since

the majority of the householders were female, only female householders' responses were included.

Categorical demographics for the respondents are shown in Table 4-1. Among all 49 respondents who participated in the survey and interview, two respondents would not provide information about their income and one would not reveal her age. Information concerning race, marital status, education, employment, and income was collected in a categorical format, and information about age, the number of children, and length of time in a Habitat home was collected in a numerical format.

Table 4-1. Demographic Characteristics of the Respondents

	Respondents	
	n	%
Race (n = 49)		
Black	46	93.88
White	2	4.08
Spanish	1	2.04
Marital Status (n = 49)		
Married Couple	10	20.41
Single, Never Married	19	38.78
Single, Divorced	18	36.73
Single, Separated or Engaged	2	4.08
Education (n = 49)		
Less than High School	5	10.20
High School	15	30.61
College	28	57.15
Graduate Degree	1	2.04
Employment (n = 49)		
Employed	41	83.67
Unemployed or Retired	8	16.33
Income (n=47)		
<\$20,000	26	55.32
\$20,000-\$25,000	10	21.28
\$25,000-\$30,000	3	6.38
\$30,000-\$35,000	3	6.38
>\$35,000	5	10.64

The majority (93.88%) of the 49 participants were Black, only two families were White, and one was Spanish. Among all the participants, only 10 (20.41%) were married. Among the 39 singles, 38.78% were never married, 36.73% were divorced, and 4.08% were separated.

Five out of the 49 respondents, or 10.20% of the sample, did not finish their high school education. Approximately 30.61% finished their high school education, 57.15% had one to four years of higher education, and one respondent held a graduate degree. Also, 83.67% of the participants were employed and eight families were either unemployed or retired. Only 47 participants reported their income ranges. The majority or 55.32% of these families' annual income was less than \$20,000; 21.28% had an annual income between \$20,000 and \$25,000. Only three families (6.38%) earned between \$25,000 and \$30,000 and \$30,000 and \$35,000, respectively. Five families earned more than \$35,000 a year, representing 10.64% of the total sample. The median income fell in the lowest category—less than \$20,000 ($M = 1.96$, $SD = 1.37$).

Forty-eight participants reported their ages, which ranged from 25 to 76. The average age of a participant was 44.52 years old ($Mdn = 42$, $SD = 11.99$) and the median age was 44. The number of children in a family ranged from 0 to 7 ($M = 2.90$, $Mdn = 3$, $SD = 1.76$). The average length a Habitat family lived in a Habitat house ranged from 4 months to 15 years ($M = 5.62$, $Mdn = 4$, $SD = 4.46$).

The one-way ANOVA showed that the length of time a family lived in a Habitat house was correlated to the physical settings, $F(1, 48) = 59$, $p < 0.00$. Families in scattered sites lived in their homes longer than families in the neighborhoods. Other demographic features between families in neighborhoods and those in scattered sites remained similar. The two groups are considered homogenous for the purpose of this study.

Sweat Equity

The sweat equity hours reported ranged from 100 to 2000 hours, with a mean of 428 hours and a median of 500 hours ($SD = 275.67$). During these hours, one respondent

(2.04%) did not participate in any of the design-related activities, and seven respondents (14.29%) participated all eight activities. The median number of design activities in which a family participated was 6 ($M = 5.1$, $SD = 2.3$). The numbers of sweat equity hours when families started design participation ranged from 50 to 800. The percentage of the sweat equity requirement finished when families started their design participation, compared to the total hours ranged from 8.50% to 100.00%. Approximately 16.33% of the partner families started their design participation when they finished less than one-third of all required sweat equity hours. Approximately 57.15% of the activities started during one-third to two-thirds of all required hours, and 26.53% of these design activities started after a family finished two-thirds of all the required hours. The median respondent finished half of her sweat equity hours when she chose her house lot.

All 49 respondents reported what they did during the sweat equity hours: public activities, construction for others, or construction for themselves. The number of public activities in which a family participated ranged from 0 to 9. One family did not participate in any of the public activities, such as working in the thrift store or public speaking for Habitat; two families participated in all public activities that Habitat provides. The mean score of the number of public activities in which a family participated was 5.45, and the median score of the public duty was 6 ($SD = 2.24$). Everyone participated in her own house's construction. Three out of the 49 families (6.12%) participated in at least two types of construction work, and three families participated in all types of construction work. The average number of types of construction in which a family participated was 5.49, and the median value of the types of construction in which a family participated was 5 ($SD = 2.13$). A total of four families

(8.16%) reported not having any training during sweat equity. The evaluation a family gave for training ranged from 4 to 12 ($M = 8.80$, $Mdn = 9$, $SD = 3.25$), where the higher number meant more satisfaction with training experiences. Regarding the statement that the contents of the training courses were well organized, seven out of the 45 respondents (15.56%) either strongly disagreed or disagreed, and 38 (84.44%) either agreed or strongly agreed. Concerning the statement that the contents of the training courses were thorough, nine (20.00%) disagreed and 36 (80.00%) either agreed or strongly agreed. Regarding the statement that the information presented in the training courses was useful, seven (15.56%) either disagreed or strongly disagreed, and 38 (84.44%) either agreed or strongly agreed. Ten out of the 49 (20.41%) respondents would not like to continue to learn how to do household repairs after they finished the required sweat equity hours, and 39 (79.59%) would like to learn more household repairs.

The most common practice in public activities was attending the groundbreaking of other participants' homes (85.71%, $n = 49$), followed by attending homeowner courses (77.55%), budget courses (65.31%), working in a Habitat office or thrift store (61.22%), attending a maintenance course (55.10%), and taking insurance courses (48.98%). Approximately 36.73% of the families attended fundraising events and worked with a family supporter on household management, respectively. About 32.65% engaged in public speaking for Habitat, and 26.53% attended leadership courses. Only 14.29% of the families babysat for other families, and three families (6.12%) participated in other public activities, such as attending groundbreaking, working in a Thrift store, and babysitting for others.

The most common construction job in which a family participated was painting (91.84%, n = 49), followed by landscaping a yard (87.76%), trimming an interior (79.59%), siding a framed house (71.43%), laying a foundation (53.06%), roofing (38.78%), installing floor tile (38.78%), working on drywall (34.69%), and installing windows or doors (30.61%). Only 14.29% reported participating in utility piping, and four families (8.16%) reported more construction work, such as laying a foundation, siding a house, painting, or landscaping.

Human and Social Resource Development

Almost all 49 families responded to the questions about their human and social resources unless specified. Participants felt most confident in their skills in decorating their houses (77.55%) and cleaning the yard (77.55%), followed by painting (73.47%), repairing lighting fixtures (32.65%), fixing a door (32.65%), replacing flooring (28.57%), repairing wallboard (22.45%) and kitchen appliances (22.45%), fixing a window (20.41%), repairing air-conditioning or heating systems (18.37%), repairing plumbing (16.33%), and repairing either roofing, porches, or steps (14.29%). One family reported confidence in house cleaning (2.04%).

However, the frequency of maintenance did not match confidence in maintenance skills. The most frequent house maintenance was cleaning the yard (81.63%, n = 49), followed by decorating the house (77.55%), painting a room (44.90%), fixing a door (30.61%), repairing a lighting fixture (24.49%), and replacing the flooring (20.41%). Less common maintenance practices included fixing a window (14.29%) during the past six months, repairing wallboard and plumbing (12.2%), repairing air-conditioning or heating systems (10.20%), repairing roofing (6.12%), porches (4.08%), or steps (2.04%).

The majority of the families (77.55%, $n = 49$) either agreed or strongly agreed that they had no problem in keeping their budget under control. Similarly, the majority (79.59%) either agreed or strongly agreed that they could manage their bill payments on time. The total financing skills scores ranged from 2 to 8, with a mean of 6.33 ($n = 49$, $SD = 1.59$), which indicated that approximately 79.15% of the families had good financing skills.

The majority of the families (69.39%, $n = 49$) had confidence with future home maintenance and repairs. Three families (6.12%) expressed the least confidence in their skills, and 24.49% had less confidence in their skills.

However, more families (89.80%) were proud of what they could achieve with their own hands, but they might not all be confident about their maintenance skills. The majority or 95.92% of the 49 families reported feeling proud of their houses and their neighborhoods. Two persons strongly disagreed with the statement about pride in the house and two disagreed with the statement about pride in the neighborhoods.

The self-esteem scores ranged from 5 to 10. The mean value was 8.65 ($SD = 1.36$). Most participants (87.76%) had a self-esteem score equal to or higher than 8, indicating that most families had relatively high self-esteem.

Home attachment scores ranged from 2 to 8, with a mean value of 7.41 ($SD = 1.34$, $n = 49$). Only 6.12% of the respondents did not feel personal connections to the house, but 93.88% felt personal connections to the house. About 4.08% of the respondents did not feel that their house was like a home, and 95.92% felt their house was like a home.

Neighborhood attachment scores ranged from 3 to 12, with a mean of 9.29 ($SD = 2.25$, $n = 49$). Although the majority felt attached to their neighborhoods, about 16.33%

of respondents did not feel comfortable with their neighborhoods, 24.49% did not feel a part of their neighborhoods, and 20.41% felt that they could have better contact with friends or families if they lived in another part of town.

Based on a 4-point Likert scale where the higher score indicated higher satisfaction, the mean score of house satisfaction was 3.47 ($SD = 0.74$, $n = 49$), and the mean of neighborhood satisfaction was 2.98 ($SD = 1.01$). Although the majority was satisfied with their houses and neighborhoods, 10.20% of the respondents were generally not satisfied with their house, and 26.53% were not satisfied with their neighborhoods overall.

On a 4-point Likert scale where higher scores indicated stronger feelings of being segregated, the mean of the perception of financial segregation was 1.90 ($SD = 0.94$), and the mean of the perception of racial segregation was 1.78 ($SD = 0.74$). About 77.55% ($n = 49$) of respondents did not feel financially segregated by living in their neighborhoods, and 85.71% did not feel racially segregated.

About 93.88% ($n = 49$) of the respondents felt safe in their neighborhoods during daytime, and 85.71% felt safe during nighttime.

The majority (93.88%, $n = 49$) felt strong responsibility for house maintenance and repair. Only three respondents felt less responsibility for house maintenance and repair.

The scores of trust for their neighbors ranged from 0 to 9, where higher scores indicated higher trust. The mean value of trust in neighbors was 5.88 ($SD = 2.83$, $n = 49$). The median value was 7, indicating a good sense of trust in neighbors overall.

Out of a total of eight types of design activities in which a family could become involved, one respondent did not have any design participation experience.

Approximately 10.20% ($n = 49$) of the participants were involved in one or two activities,

32.65% were involved in three to five activities, and 55.10% participated in six to eight activities. For each design activity, 77.55% of the respondents selected interior colors, 69.39% selected interior finishes, 55.10% selected interior layout, 79.59% selected exterior colors, 65.31% selected exterior finishes, 73.47% took part in yard design, 61.22% selected their lots, 22.45% participated in public space planning, and 6.12% took part in other activities.

The most satisfied design solution was the exterior colors (100% satisfaction, $n = 49$), followed by exterior finishes (95.92%), interior finishes (91.84%), interior colors (89.80%), layouts (83.67%) and lot selection (83.67%), yards (77.55%), and neighborhood planning (57.15%). One respondent chose *Not know* to neighborhood planning.

About 93.75% of the 48 respondents expressed satisfaction with the overall design participation experience, and 97.92% expressed satisfaction with selecting colors and finishes with their house design. One out of the 49 respondents did not answer the question.

Of the 49 respondents, 34 respondents or 69.39% of the sample would borrow something from a neighbor for cooking, 45 or 87.76% agreed that they would like to help others build their houses after their own houses were finished, 18 or 36.73% would rather call a family member than a neighbor for a repair problem. The mean and median scores of the number of neighbors from whom a respondent felt comfortable in borrowing a tool were 3.37 ($SD = 3.37$) and 2, respectively. The mean and median scores of the number of neighbors a participant felt comfortable in asking a neighbor to watch her house when she was away were 2.73 ($SD = 3.25$) and 2, respectively. The mean and median scores of the

number of neighbors a participant felt comfortable in asking a neighbor to watch her children when she was away were 1.57 ($SD = 3.01$) and 1, respectively. The mean and median scores of the number of neighbors a participant felt comfortable in asking to help with house repairs were 2.12 ($SD = 3.29$) and 1, respectively. The mean and median scores of the number of neighbors a participant felt comfortable in asking for a ride were 2.73 ($SD = 4.01$) and 2, respectively.

Approximately 46.94% ($n = 49$) reported taking part in neighborhood association activities in their neighborhoods (obligation). But only about half of respondents were aware of an existing neighborhood association in their area.

The scores of sense of community ranged from 19 to 44 ($M = 34.5$, $Mdn = 35$, $SD = 5.68$), where the higher scores indicated a stronger sense of community.

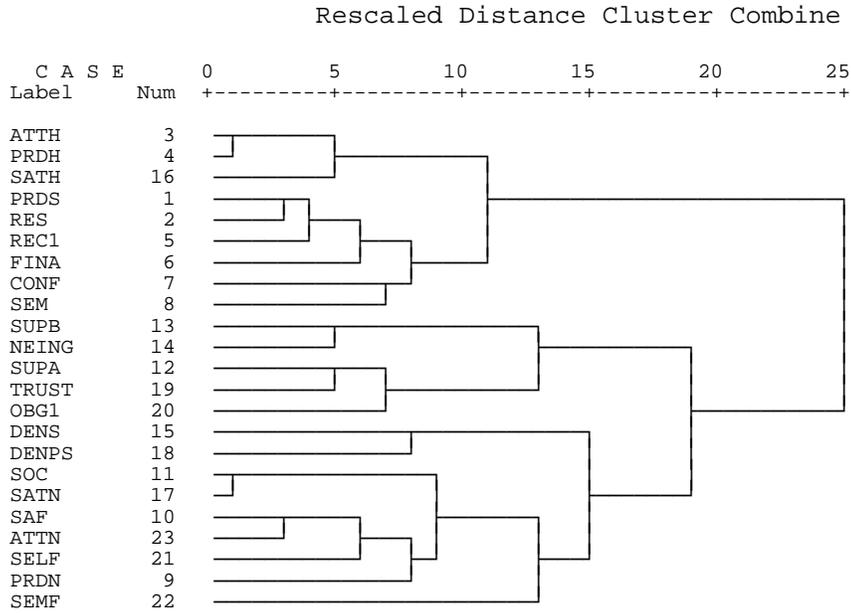
The number of neighbors surrounding a participant had ranged from 1 to 136 ($M = 13.43$, $Mdn = 5$, $SD = 25.54$, $n = 49$); the number of neighbors one said hello to ranged from 0 to 85 ($M = 11.04$, $Mdn = 6$, $SD = 18.32$). The number of neighbors one considered as close friends ranged from 0 to 20 ($M = 2.76$, $Mdn = 2$, $SD = 4.06$). The number of the neighbors one visited now and then ranged from 0 to 10 ($M = 1.76$, $Mdn = 1$, $SD = 2.17$), and the monthly frequency in which a respondent visited her neighbors ranged from 0 to 30 ($M = 3.37$, $Mdn = 1$, $SD = 6.56$).

Approximately 87.76% ($n = 49$) would like to help others build their houses after their own houses were finished, indicating a sense of reciprocity.

The majority of the respondents (91.84%, $n = 49$) believed that they could do regular maintenance by themselves, and around 79.59% would ask others for help in household repair work.

Results of Statistical Analyses

Responses to all items were coded, transferred to the Statistical Package for the Social Sciences (SPSS), and verified for accuracy. The Hierarchical Cluster Analysis (Dendrogram) was first employed to plot statistical clusters among dependent variables (see Figure 4-1). The plot illustrated that several clusters or interactions existed.



Note. Out of 49 cases, 48 were valid, 1 was missing. Squared Euclidean Distance was used.

Figure 4-1. Hierarchical cluster analysis: Dendrogram using Ward Method.

The nonparametric statistical test, Factor Analysis, was then conducted to detect the clusters of variables and to reduce a total of 23 dependent variables into seven statistically uncorrelated variables, or the seven factors of Factor Analysis. In Table 4-2, seven factors were generated through the Principal Component Analysis. The first factor included the following dependent variables: pride in skills; self-responsibility; house attachment; pride in house; reciprocity; financial skills; confidence in skills; and maintenance skills. A further factor analysis was employed within this first factor and two new factors were generated. Pride in skills, financial skills, maintenance skills,

confidence in skills, and reciprocity described an individual's perception of skills, which was named as SKILLS. Pride in house, house attachment, and self-responsibility described a respondent's psychological feelings about her house, which was named as attachment to house (ATT-H). Pride in neighborhood, safety, neighborhood attachment, satisfaction with neighborhood, and sense of community depicted a respondent's perception of the community. The term *Generalized Sense of Community* (GSOC) was used to describe the new factor. The numerical measures of social support (SUP-N) and neighboring formed the new factor support (SUP). Design satisfaction, satisfaction with house, and design participation satisfaction formed the new factor design-house satisfaction (DESIGN). The categorical measures of social support (SUP-C) and trust formed the new factor TRUST. Obligation and self-esteem formed the new factor SELF.

Table 4-2. Factor Analysis: Rotated Component Matrix

	Component						
	1	2	3	4	5	6	7
PRDS	0.88	0.17	-0.03	-0.03	0.01	0.09	-0.03
RES	0.81	0.11	0.13	0.27	-0.02	0.16	0.18
ATTH	0.77	0.20	0.09	0.26	0.34	-0.26	0.11
PRDH	0.74	0.11	0.08	0.30	0.33	-0.27	0.13
REC1	0.71	0.29	0.03	0.02	0.16	0.09	-0.07
FINA	0.68	0.07	0.23	-0.12	-0.34	0.09	0.04
CONF	0.57	0.13	0.02	0.17	-0.09	-0.02	-0.16
SEM	0.56	0.09	0.44	-0.15	0.12	0.04	0.10
PRDN	0.12	0.71	0.00	-0.11	0.09	-0.08	0.06
SAF	0.57	0.70	0.00	-0.01	0.05	0.04	0.03
ATTN	0.25	0.69	-0.01	0.35	-0.04	0.26	-0.07
SATN	0.22	0.68	0.42	0.21	0.10	0.14	0.09
SOC	0.18	0.66	0.34	0.31	0.25	0.24	0.05
SUP-N	0.12	0.19	0.84	-0.07	-0.08	0.03	-0.05
NEING	0.09	-0.02	0.79	0.17	0.20	-0.01	-0.05
DEN-S	-0.09	0.26	0.06	0.72	-0.26	0.17	-0.02
SATH	0.38	0.12	0.10	0.66	0.19	-0.27	0.28
DENPS	0.22	-0.08	-0.02	0.60	-0.02	0.02	-0.32
SUP-C	0.20	0.12	0.06	-0.15	0.84	0.12	-0.13
TRUST	-0.18	0.29	0.36	-0.05	0.62	0.43	-0.01
OBG	-0.11	-0.01	0.09	0.16	0.32	0.79	-0.01
SELF	0.36	0.34	-0.07	-0.12	-0.10	0.73	0.15
SEMF	0.05	0.07	-0.07	-0.08	-0.12	0.07	0.90

Note. The extraction method was the Principal Component Analysis, the rotation method was the Varimax with Kaiser Normalization, and the rotation converged in 15 iterations.

Maintenance frequency (MAINT) remained as a factor by itself. Numerical values were generated for each new factor. The only dependent variable that was not in the Factor Analysis was segregation because it was of special interest in this study. Therefore, a total of eight factors and economical segregation (SEG-E) and racial segregation (SEG-R) were therefore used in the following statistical tests. The new factors were incorporated into the conceptual framework (see Figure 4-2).

Because doing, learning, and sharing were closely connected in the sweat equity process, sometimes the boundary of human and social resources was subtle. For example, reciprocity and obligation seems to fit in the social rather than human resource category. However, helping requires one to have certain human skills rather than mere willingness or a supporting social environment. A family may not help others because of the lack of skills rather than not willing to help. People may report a strong sense of obligation but do nothing to improve the neighborhood. Because this study was structured under learning by doing, the focus was placed on whether or not a person had the skills to help and what this person did. The same reason may explain why reciprocity was grouped with perception of skills and sense of obligation was correlated with self-esteem. The reciprocal behaviors could be performed only if a respondent knew how to perform the favors. Thus an individual needs certain skills to perform generalized reciprocity. Similarly, the sense of obligation to ones' neighborhood also needs certain skills to do something for the neighborhood, not just good will. The more one could help a neighborhood, the more skills one has, and the stronger one's own self-esteem is.

Besides dependent variables, Factor Analysis also generated new factors for independent variables. Data, which were related to construction activities during sweat

equity, were named construction (CONST); data related to public activities were named public (PUBLIC). The number of design related activities in which a respondent participated remained unchanged for special research interest. The training experiences families had during sweat equity also remain unchanged. In statistical analyses, design participation was named as DENP, and training was named as SET.

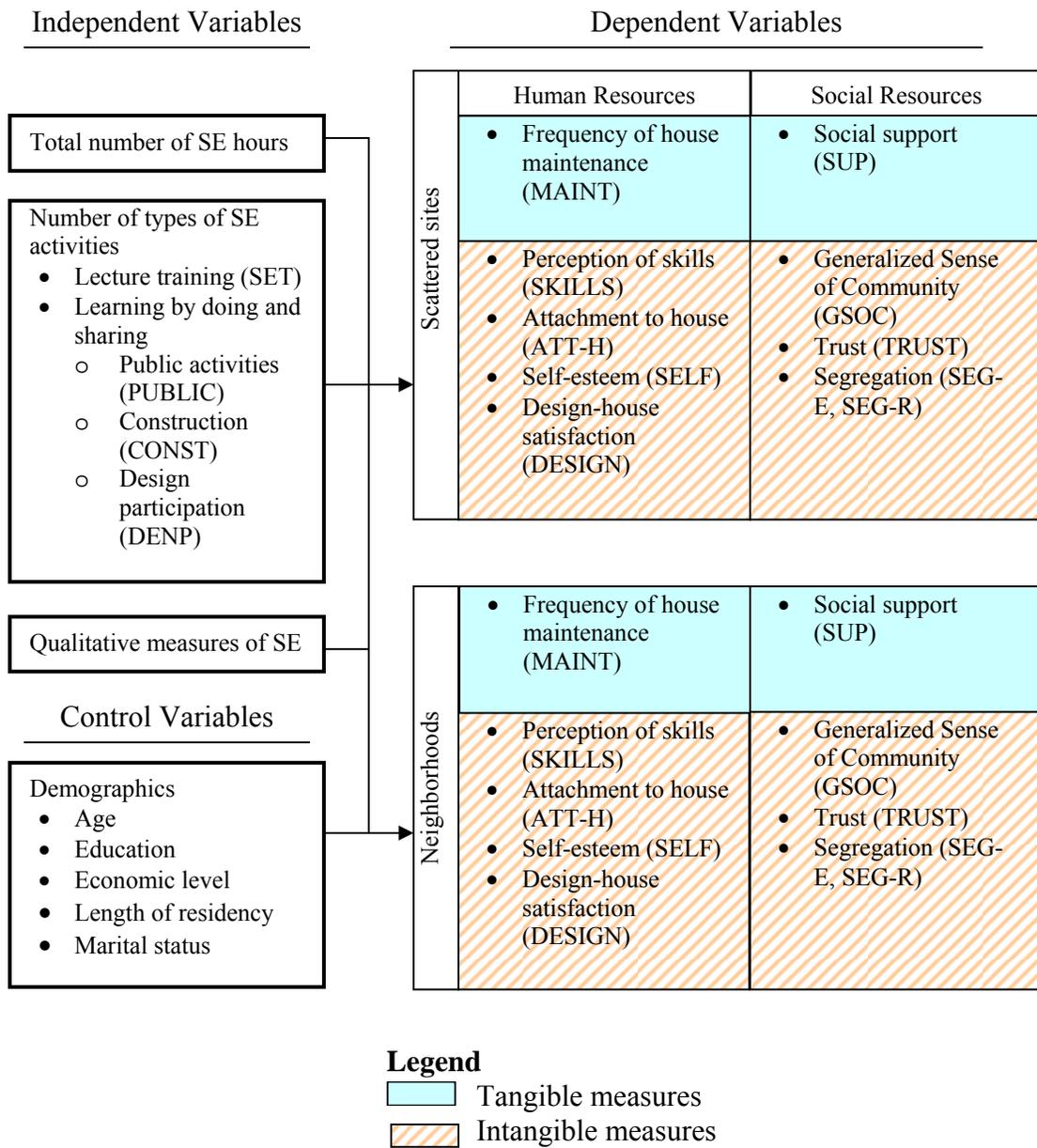


Figure 4-2. Modified conceptual framework for statistical analyses.

Hypothesis 1. Sweat equity contributes to human and social resource development.

According to the modified conceptual framework (see Figure 4-2), Multivariate Analysis of Variance (MANCOVA) was conducted to explore the impact of physical settings and sweat equity on human and social resource development, controlled for education. If the multivariate model could not explain all dependent variables, bivariate correlation coefficients were reported to describe how variables were related. If no significant correlation was found between variables, Univariate Analysis of Variance tests were reported for the effect of categorical variables for each unexplained dependent variable, controlling for continuous covariates.

The physical locations (LOCA)—neighborhood (n = 27) and scattered sites (n = 21)—were the between-subject factors. The independent variables were: construction (CONST); public activities (PUBLIC); training (SET); hour squared (HOURS2); and design participation (DENP). Education (EDU) served as the control covariate. The dependent variables were: perception of skills (SKILLS); house attachment (ATT-H); design and house satisfaction (DESIGN); self-esteem and obligation (SELF); frequency of maintenance (MAINT); generalized sense of community (GSOC); social support (SUP); trust (TRUST); economical segregation (SEG-E), and racial segregation (SEG-R).

Concerning the multivariate general linear model, Tables 4-3 showed that significant main effects existed for construction (CONST), public activities (PUBLIC), hour squared (HOURS2), design participation (DENP), education (EDU), and locations (LOCA). In other words, sweat equity had significant effects on human and social resource development.

Table 4-3. Multivariate Analyses of Covariance Examining Dependent Variables after Controlling for Education

Effect	Pillai's Trace	<i>F</i>	<i>Hyp. df</i>	<i>Error df</i>	<i>p</i>	η^2
Intercept*	0.463	2.674	10	31	0.017	0.46
CONST**	0.549	3.767	10	31	0.002	0.55
PUBLIC*	0.489	2.968	10	31	0.010	0.49
HOURS2**	0.491	2.996	10	31	0.009	0.49
DENP*	0.475	2.800	10	31	0.014	0.48
EDU*	0.432	2.361	10	31	0.033	0.43
SET	0.294	1.288	10	31	0.279	0.29
LOCA**	0.522	3.388	10	31	0.004	0.52

Note. * $p < 0.05$; ** $p < 0.01$; 2-tailed significance.

The between-subjects effects in Table 4-4 specified how individual independent variables significantly contributed to dependent variables in the multivariate analyses.

Table 4-4. Significant Results from the Between-subjects Effects Examining Dependent Variables

Independent Variable	Dependent Variable	Type III <i>SS</i>	<i>df</i>	<i>MS</i>	<i>F</i>	<i>p</i>
CONST	ATT-H*	2.865	1	2.865	5.691	0.022
	DESIGN*	3.885	1	3.885	6.256	0.017
	MAINT**	7.002	1	7.002	8.111	0.007
PUBLIC	SKILLS*	4.889	1	4.889	6.805	0.013
	SEG-E**	5.589	1	5.589	9.572	0.004
	SEG-R**	3.626	1	3.626	8.311	0.006
DENP	ATT-H*	2.393	1	2.393	4.753	0.035
EDU	DESIGN**	6.044	1	6.044	9.732	0.003
SET	DESIGN*	2.578	1	2.578	4.150	0.048
	SEG-E*	2.414	1	2.414	4.134	0.049
	SEG-R*	1.967	1	1.967	4.509	0.040
HOURS2	DESIGN**	9.483	1	9.483	15.268	0.000
LOCA	SELF*	4.161	1	4.161	4.460	0.041
	SEG-E**	6.071	1	6.071	10.397	0.003

Note. * $p < 0.05$; ** $p < 0.01$; 2-tailed significance.

Specifically, construction was related to attachment to house ($\beta = 0.267$, $t = 2.386$, $p < 0.05$), design-house satisfaction ($\beta = 0.311$, $t = 2.501$, $p < 0.05$), and maintenance frequency ($\beta = 0.417$, $t = 2.848$, $p < 0.01$). Public activity during sweat equity was related to perception of skills ($\beta = 0.741$, $t = 2.609$, $p < 0.05$), economical segregation ($\beta = 0.792$, $t = 3.094$, $p < 0.01$) and racial segregation ($\beta = 0.638$, $t = 2.883$, $p < 0.01$). The square of the sweat equity hours was related to design-house satisfaction ($\beta = -8.204E-07$, $t = -3.907$, $p < 0.01$). Design participation was related to attachment to house ($\beta = -0.125$, $t = -$

2.180, $p < 0.05$). Education was related to design-house satisfaction ($\beta = -0.256$, $t = -3.120$, $p < 0.01$). Training was related to design-house satisfaction ($\beta = 0.165$, $t = 2.037$, $p < 0.05$), perception of economical ($\beta = -0.159$, $t = -2.033$, $p < 0.05$), and racial segregation ($\beta = -0.144$, $t = -2.123$, $p < 0.05$). Location was related to self-esteem and obligation ($\beta = 0.746$, $t = 2.112$, $p < 0.05$) and perception of economical segregation ($\beta = -0.901$, $t = -3.224$, $p < 0.01$). Two statistically significant relationships were different from the hypothesized directions. It was expected that when families participated in more public activities, they would have more social resources, which helped reduce the perception of segregation. Finn (1994) found that selecting colors and designs was empowering. Therefore, it was expected that when families participated in more design-related activities, they would have more control over their houses and feel more attached to the houses. However, Habitat families tended to perceive more segregation when they participated in more public activities; and they felt less attached to their houses as design participation increased.

Within the multivariate models, univariate analysis of variance for each dependent variable was provided. Therefore, the multivariate tests also revealed the strength of the models for the following dependent variables: SKILLS, ATT-H, DESIGN, SELF, MAINT, SEG-E, and SEG-R (see Tables 4-5 through 4-11).

Table 4-5 explained the multivariate model for dependent variable SKILLS. The multivariate model significantly contributed to the perception of skills, $F(7, 40) = 2.989$, $p < 0.05$. Among the predictors, public activities significantly contributed to the perception of skills. Public activities explained 14.5% of the variability in SKILLS. The model explained approximately 34.3% of the variance of SKILLS.

Table 4-5. Multivariate Model for Dependent Variable SKILLS

Independent Variables	β	<i>SE</i>	<i>t</i>	<i>p</i>
Intercept	-0.415	1.624	-0.256	0.800
CONST	0.106	0.134	0.795	0.431
PUBLIC*	0.741	0.284	2.609	0.013
DENP	-0.108	0.069	-1.578	0.122
EDU	0.144	0.088	1.634	0.110
SET	-9.594E-02	0.087	-1.105	0.276
HOURS2	2.662E-07	0.000	1.179	0.245
LOCA	-0.319	0.310	-1.030	0.309
<i>F</i> (df1, df2)	2.989 (7, 40)			
<i>R</i> ²	0.343			
Adjusted <i>R</i> ²	0.229			

Note. * $p < 0.05$; ** $p < 0.01$; 2-tailed significance.

The multivariate model for dependent variable ATT-H was listed in Table 4-6.

Although the overall *F* value for the model was not significant to explain ATT-H, construction and design participation significantly contributed to the attachment to the house. Construction explained 12.5% of the variance in ATT-H and design participation explained 10.6% of the variance. Approximately 24.5% of the variance in the attachment to the house was explained by the model.

Table 4-6. Multivariate Model for Dependent Variable ATT-H

Independent Variables	β	<i>SE</i>	<i>t</i>	<i>p</i>
Intercept	0.377	1.359	0.278	0.783
CONST*	0.267	0.112	2.386	0.022
PUBLIC	-1.254E-02	0.238	-0.053	0.958
DENP*	-0.125	0.057	-2.180	0.035
EDU	-2.154E-03	0.074	-0.029	0.977
SET	5.900E-02	0.073	0.811	0.422
HOURS2	1.202E-07	0.000	0.636	0.529
LOCA	-0.280	0.259	-1.079	0.287
<i>F</i> (df1, df2)	1.855 (7, 40)			
<i>R</i> ²	0.245			
Adjusted <i>R</i> ²	0.113			

Note. * $p < 0.05$; ** $p < 0.01$; 2-tailed significance.

The multivariate model for dependent variable DESIGN was listed in Table 4-7.

The overall model was significant to predict house satisfaction, design satisfaction, and design participation satisfaction, $F(7, 40) = 5.096$, $p < 0.00$. Approximately 47.1% of the variance in design-house satisfaction was explained by the model. Construction, training, sweat equity hour squared, and education significantly contributed to the design-house

satisfaction (DESIGN). The hour squared explained approximately 27.6% of the variance in DESIGN, followed by education (19.6%), construction (13.5%), and training (9.4%).

Table 4-7. Multivariate Model for Dependent Variable DESIGN

Independent Variables	β	<i>SE</i>	<i>t</i>	<i>p</i>
Intercept	2.098	1.510	1.390	0.172
CONST*	0.311	0.124	2.501	0.017
PUBLIC	-0.363	0.264	-1.374	0.177
DENP	-1.976E-03	0.064	-0.031	0.975
EDU**	-0.256	0.082	-3.120	0.003
SET*	0.165	0.081	2.037	0.048
HOURS2**	-8.204E-07	0.000	-3.907	0.000
LOCA	1.945E-02	0.288	0.068	0.947
<i>F</i> (df1, df2)	5.096 (7, 40)			
<i>R</i> ²	0.471			
Adjusted <i>R</i> ²	0.379			

Note. * $p < 0.05$; ** $p < 0.01$; 2-tailed significance.

Although SELF was not significantly explained by the multivariate model, location significantly contributed to self-esteem, as listed in Table 4-8. Approximately 20.6% of the variance of self-esteem (SELF) was explained by the model.

Table 4-8. Multivariate Model for Dependent Variable SELF

Independent Variables	β	<i>SE</i>	<i>t</i>	<i>p</i>
Intercept*	-3.819	1.850	-2.064	0.046
CONST	-0.183	0.152	-1.204	0.236
PUBLIC	-0.121	0.324	-0.373	0.711
DENP	0.136	0.078	1.740	0.090
EDU	0.195	0.100	1.945	0.059
SET	2.665E-02	0.099	0.269	0.789
HOURS2	-3.322E-07	0.000	-1.291	0.204
LOCA*	0.746	0.353	2.112	0.041
<i>F</i> (df1, df2)	1.484 (7, 40)			
<i>R</i> ²	0.206			
Adjusted <i>R</i> ²	0.067			

Note. * $p < 0.05$; ** $p < 0.01$; 2-tailed significance.

Table 4-9 showed the multivariate model for the frequency of house maintenance (MAINT). The overall *F* value was not significant, but construction was significantly correlated to house maintenance, contributing to approximately 27.6% of the variance in MAINT. Construction explained approximately 16.9% of variance in house maintenance, and the entire model explained 26.5% of the variance.

Table 4-9. Multivariate Model for Dependent Variable MAINT

Independent Variables	β	<i>SE</i>	<i>t</i>	<i>p</i>
Intercept	2.007	1.780	1.128	.266
CONST**	.417	.146	2.848	.007
PUBLIC	4.078E-02	.311	.131	.896
DENP	-.149	.075	-1.975	.055
EDU	-6.934E-02	.097	-.718	.477
SET	-6.452E-02	.095	-.678	.502
HOURS2	3.086E-07	.000	1.247	.220
LOCA	.280	.340	.826	.414
<i>F</i> (df1, df2)	2.063 (7, 40)			
<i>R</i> ²	0.265			
Adjusted <i>R</i> ²	0.137			

Note. * $p < 0.05$; ** $p < 0.01$; 2-tailed significance.

The multivariate model listed in Table 4-10 significantly predicted the perception of economic segregation (SEG-E), $F(7, 40) = 3.578$, $p < 0.01$. Public activities, training, and location significantly contributed to SEG-E. Location explained approximately 20.6% of the variance in SEG-E, followed by public activities (19.3%), and training (9.4%). The entire model explained 38.5% of the variance in perception of economic segregation.

Table 4-10. Multivariate Model for Dependent Variable SEG-E

Independent Variables	β	<i>SE</i>	<i>t</i>	<i>p</i>
Intercept**	5.531	1.464	3.779	0.001
CONST	0.122	0.120	1.012	0.318
PUBLIC**	0.792	0.256	3.094	0.004
DENP	-8.690E-02	0.062	-1.403	0.168
EDU	-9.988E-02	0.079	-1.257	0.216
SET*	-0.159	0.078	-2.033	0.049
HOURS2	-1.007E-07	0.000	-0.495	0.624
LOCA**	-0.901	0.279	-3.224	0.003
<i>F</i> (df1, df2)	3.578 (7, 40)			
<i>R</i> ²	0.385			
Adjusted <i>R</i> ²	0.277			

Note. * $p < 0.05$; ** $p < 0.01$; 2-tailed significance.

The multivariate model for the perception of racial segregation (SEG-R) was significant, $F(7, 40) = 2.473$, $p < 0.05$. In Table 4-11, public activities and training significantly contributed to SEG-R. Public activities explained approximately 17.2% of the variance in SEG-R, and training explained approximately 10.1% of the variance. The entire model explained 30.2% of the variance in perception of racial segregation.

Although location did not show significant influence in the model, the model indicated that families living in Habitat neighborhoods tended to perceive less racial segregation ($p = 0.055$).

Table 4-11. Multivariate Model for Dependent Variable SEG-R

Independent Variables	β	<i>SE</i>	<i>t</i>	<i>p</i>
Intercept*	3.268	1.265	2.583	0.014
CONST	-0.112	0.104	-1.072	0.290
PUBLIC**	0.638	0.221	2.883	0.006
DENP	2.288E-02	0.054	0.427	0.671
EDU	-5.436E-03	0.069	-0.079	0.937
SET*	-0.144	0.068	-2.123	0.040
HOURS2	-1.529E-07	0.000	-0.869	0.390
LOCA	-0.477	0.241	-1.977	0.055
<i>F</i> (df1, df2)	2.473 (7, 40)			
<i>R</i> ²	0.302			
Adjusted <i>R</i> ²	0.180			

Note. * $p < 0.05$; ** $p < 0.01$; 2-tailed significance.

The multivariate model was not significant for the dependent variables generalized sense of community (GSOC), social support (SUP), and trust (TRUST). Therefore, the Univariate General Linear Model was used to test the effects of the independent variables on them. The univariate model in Table 4-12 showed that social support was significantly explained by public activities, design participation, and location, $F(3, 44) = 3.797$, $p < 0.05$. The model explained approximately 20.6% of the variance in SUP. However, GSOC and TRUST were not significantly explained using a Univariate General Linear Model.

Table 4-12. Univariate Model for Dependent Variable SUP

Independent Variables	β	<i>SE</i>	<i>t</i>	<i>p</i>
Intercept	-0.656	0.340	-1.926	0.061
PUBLIC*	0.316	0.140	2.261	0.029
DENP*	0.146	0.070	2.095	0.042
LOCA	-2.48	0.319	-0.777	0.441
<i>F</i> (df1, df2)	2.935 (3, 44)			
<i>R</i> ²	0.206			
Adjusted <i>R</i> ²	0.152			

Note. * $p < 0.05$; ** $p < 0.01$; 2-tailed significance.

Although the multivariate or univariate models did not explain the individual effect on the factors of generalized sense of community (GSOC) and trust, the nonparametric correlation coefficient test (Kendall's tau-b) showed interrelationships among these variables (see Table 4-13). The GSOC was significantly related to SET—training experiences ($t = 0.27, p < 0.05$), DENTP—the proportion of the sweat equity hours one finished compared to the total sweat equity hours when the individual participated in house design and planning ($t = -0.22, p < 0.05$), and also PUBLIC—the number of the public activities one participated during sweat equity ($t = 0.23, p < 0.05$). Trust was significantly related to design participation ($t = -0.21, p < 0.05$) and attachment to the house ($t = 0.38, p < 0.01$). In addition to trust, attachment to house was significantly related to perception of skills ($t = -0.21, p < 0.05$).

Table 4-13. Nonparametric Correlations Among Variables: Kendall's tau-b

Kendall's tau-b	DENP	DENTP	SET	CONST	PUBLIC	SKILLS	ATT-H	GSOC	SUP	DESIGN	TRUST	SELF	MAINT
DENP	1	-0.04 (49)	-0.11 (49)	0.20 (49)	0.01 (49)	-0.05 (49)	-0.10 (49)	.00 (48)	0.12 (48)	0.00 (48)	-0.21* (48)	0.07 (48)	-0.24* (48)
DENTP		1	-0.10 (49)	0.02 (49)	-0.09 (49)	-0.10 (49)	-0.00 (49)	-0.22* (48)	0.06 (48)	0.04 (48)	-0.08 (48)	-0.10 (48)	-0.02 (48)
SET			1	-0.07 (49)	0.62** (49)	0.29** (49)	0.07 (49)	0.27* (48)	0.11 (48)	0.15 (48)	0.03 (48)	0.04 (48)	-0.12 (48)
CONST				1	0.04 (49)	0.16 (49)	0.05 (49)	-0.07 (48)	0.06 (48)	0.18 (48)	-0.01 (48)	-0.06 (48)	0.17 (48)
PUBLIC					1	0.28** (49)	0.02 (49)	0.23* (48)	0.18 (48)	0.06 (48)	-0.01 (48)	-0.05 (48)	-0.09 (48)
SKILLS						1	-0.21* (49)	0.10 (48)	0.05 (48)	-0.03 (48)	-0.17 (48)	0.10 (48)	-0.03 (48)
ATT-H							1	0.12 (48)	-0.14 (48)	0.25* (48)	0.38** (48)	-0.15 (48)	0.06 (48)
GSOC								1	-0.06 (48)	0.01 (48)	-0.01 (48)	-0.02 (48)	-0.03 (48)
SUP									1	0.00 (48)	0.12 (48)	0.01 (48)	0.01 (48)
DESIGN										1	0.00 (48)	-0.01 (48)	0.00 (48)
TRUST											1	-0.01 (48)	-0.00 (48)
SELF												1	-0.01 (48)
MAINT													1

Note. * $p < 0.05$; ** $p < 0.01$; 2-tailed significance, numbers in parentheses were the number of cases for which valid data were available.

Since these dependent variables had interactions with one another, the alternative analysis was to combine all dependent variables that were related to human resources as

one factor and all variables that were related to social resources as the other factor. Therefore, the dependent variables under human resources were regarded as one factor HUMAN, and dependent variables under social resources were regarded as one factor SOCIAL. Multiple regression analyses (stepwise) were employed to examine the new factors: HUMAN and SOCIAL. The results are shown in Table 4-14. Human resource development (HUMAN) was significantly correlated with construction (CONST) and the design participation (DENP). Approximately 26.9% of the variance in the human resources was explained by construction and design participation. Social resource development (SOCIAL) was significantly correlated to public activities (PUBLIC) and design participation. About 27.9% of the variance in social resources was explained by public activities and design participation.

Table 4-14. Results of Two Multiple Regression Analyses Examining Human and Social Resource Developments

Independent Variable	Standardized Beta Coefficient	<i>T</i>	<i>p</i>
HUMAN; $F(2, 45) = 8.289, p = 0.001, R^2 = 0.269 (0.257)$			
CONST**	0.493	3.732	0.001
DENP*	-0.338	-2.558	0.014
SOCIAL; $F(2, 45) = 8.703, p = 0.001, R^2 = 0.279 (0.247)$			
PUBLIC**	0.440	3.474	0.001
DENP*	0.278	2.193	0.034

Note. * $p < 0.05$; ** $p < 0.01$; 2-tailed significance.

Hypothesis 2. A relationship exists in the maintenance of the resource developments in Habitat neighborhoods versus scattered sites.

The impact of location on human and social resource maintenance was tested in multivariate analyses. Location was significantly related to self-esteem and obligation ($\beta = 0.746, t = 2.112, p < 0.05$) and the respondents' perception of economical segregation ($\beta = -0.901, t = -3.224, p < 0.01$). In neighborhood settings, families had higher self-esteem and a higher sense of obligation than those who lived in scattered sites. Also,

families felt less economically segregated by living in Habitat neighborhoods than they did by living in scattered sites.

Hypothesis 3. A relationship exists between users' participation in house design and the satisfaction with the results of their participation.

Although the multivariate tests showed that the number of design-related activities was related to the attachment of the house, no significant effect was found between design participation and the design-house satisfaction (satisfaction with the house, design, and design participation). The effect of design participation on design-house satisfaction might be difficult to identify directly through statistical analyses due to small sample size, so the effect was explored again in the interview, which will be discussed in the content analysis. However, as previously discussed, design participation had negative effects on human resources, while construction had positive effects on human resources, when human resource development was considered as one factor HUMAN. HUMAN decreased as the number of design-related activities increased. Design participation, along with public activities, significantly contributed to the accumulation of social resource development when social resources were considered as one factor SOCIAL.

Results of Content Analyses

The semi-structured interview questionnaires addressed the following concerns: 1) reasons to participate in sweat equity; 2) meanings of sweat equity when participants helped others and when they helped themselves; 3) advantage and disadvantage of sweat equity; 4) neighborhood involvement and reasons for involvement; 5) helping behaviors; and 6) design participation.

Reasons to Participate in Sweat Equity

The reasons why a respondent participates in sweat equity with Habitat were explored by asking her why she worked with Habitat to get a house. Most of the respondents worked with Habitat because: 1) it helped to get homeownership (44.90%); 2) the Habitat program was a good housing program (26.53%); 3) they could help build houses (24.49%); 4) it was a learning experience (20.41%); and 5) they could afford it (16.33%). About 12.24% of the respondents chose Habitat because they could offer their input, but 12.24% reported that they did so because other housing programs turned them down. About 10.20% felt that participating in sweat equity gave them a chance to meet other people. Two respondents (4.08%) believed that sweat equity added house appreciation, and one (2.04%) mentioned the pride and attachment obtained through sweat equity. One respondent chose Habitat because the house was in a good neighborhood.

Meanings of Sweat Equity

The meanings of sweat equity were explored in two stages: when a respondent spent sweat equity hours in helping others before starting her own house, and when a respondent spent sweat equity on her own house.

Sweat equity had different meanings to Habitat families when they helped other families build a house and when they built their own houses. Only one respondent thought negatively about sweat equity experiences, and all others (97.96%, n = 49) enjoyed the sweat equity helping others, but several of them expressed some downside of sweat equity. Six respondents (12.24%) complained about the difficulty of sweat equity, and three (6.12%) did not like the weather. Two respondents (4.08%) thought working only once a week made this process too long.

Six themes appeared from the positive responses. The first theme was sharing. A total of 30 responses referred to meeting new people, helping others, having good communications, and generating bonds among other Habitat homeowners. The second theme was learning. A total of 21 responses referred to learning construction and maintenance skills and decorating ideas. The third theme was activities. Nineteen respondents enjoyed all the sweat equity processes, such as building and running public activities. The fourth theme was empowerment. Nine respondents felt that by helping others they could see the building process, could give their input into the process, and could take control of some part of their houses. The fifth theme (14 responses) was physical or psychological reward, including pride, appreciation, the physical house, and the exchange of help when needed. The sixth theme was demand. Four respondents felt that the reason for them to help others was because it was required.

The analysis of the self-helping process showed five themes. During this stage of sweat equity, most people emphasized the physical and psychological reward. Twenty responses focused on homeownership, and 20 responses focused on psychological feelings, including love, joy, pride, and appreciation. Learning ranked second, with a total of 13 responses. Sharing, doing, and empowerment ranked third, with 11 responses each, respectively.

Advantages and Disadvantages about Sweat Equity

The advantages and disadvantages about sweat equity were explored through a set of inquiries: the advantages of sweat equity when compared to getting a house without it; descriptions about the best part of the sweat equity; five questions concerning skills, neighbors, and neighborhood were explored if a respondent believed that there was no

advantage; drawbacks from participating with Habitat; and suggestions for Habitat, including general suggestions and learning experiences.

Comparing participation in sweat equity or getting a house without putting in any effort, eight respondents (16.33%, n = 49) felt that there was no advantage in sweat equity, one (2.04%) did not know, and 40 respondents (81.36%) believed there were advantages in the sweat equity. For these nine respondents who did not think or did not know whether or not there was advantage, five probing questions were asked about their learning, pride, relationship with neighbors, and attachment to the house and the neighborhood. Four respondents answered positively to all five questions, three were positive about four of the five questions, one felt positive about three questions, and only one was negative about four questions. The most frequent negative feeling (33.33%, n = 9) was the attachment to neighborhood and close relationship with neighbors, then learn new skills (22.22%), and were proud to use new skills to build the house (11.11%). And for these nine respondents, the best part of sweat equity was the doing experiences, then the pride attached to the sweat equity, homeownership, and finally the control one had during sweat equity.

For the 40 respondents who thought that there were advantages, five themes emerged from content analysis. The most frequently mentioned theme was participation or empowerment. Twenty-six respondents believed that the advantages included seeing the building process, knowing what was going on in their houses, the doing experiences themselves, and having personal input and control in their houses. The second theme was the psychological rewards. Twelve respondents believed that the advantages were in the joy, pride, feeling safe and stable, and appreciation added through sweat equity. The

learning and sharing both ranked third. Ten respondents claimed that the advantage of sweat equity was being able to learn building skills that contribute to future maintenance. And 10 respondents claimed that meeting new people, building bonds or connections among people, and helping and giving help were the advantages. Obtaining the homeownership ranked last in the five themes. Only six respondents asserted that being a homeowner and saving money were advantages compared to a house obtained with no sweat equity or a given house.

Among the 40 respondents who believed that there were advantages in the sweat equity, as compared to a given house, five categories emerged from analyzing the best part of sweat equity: homeownership, learning, participation, sharing, and psychological reward. Twelve out of 40 respondents (30.00%) regarded homeownership as the best part of sweat equity. Ten respondents (25.00%) believed that the best part was the learning experience. Eight respondents (20.00%) listed the doing process and the sharing process as the best parts, respectively. Only two respondents (5.00%) listed the psychological rewards as the best part of sweat equity.

Out of 49 respondents, only five (10.20%) felt that there were drawbacks from participating with Habitat. The drawbacks included not enough control in the decision making process, too many time-consuming activities, promises not kept by Habitat, and problems in the family selection process.

Out of 49 respondents, 35 homeowners (71.43%) suggested certain issues that could help Habitat improve its program. Three categories emerged from a total of 54 suggested items. The first category (23 suggestions) was focused on the design and planning stage, including location, layout, size of rooms, landscaping, and so on. The

second category (18 suggestions) was focused on the Habitat organization, including the family selection process, preparation of construction sites, personnel, quality inspection, allowing more support for each partner family, and religion. The third category (13 suggestions) was focused on the sweat equity process, including the hours, frequency of sweat equity, more involvement in the design process, and more involvement in the general process and also in the community.

Concerning future workshops from Habitat, nine respondents (18.37%, n = 49) expressed no interest to attend. The reasons for not attending were related to knowing how to maintain and repair the houses (44.44%, n = 9), health reasons (33.33%), and busy schedule (22.22%).

Of the 49 participants, 40 homeowners generated a total of 207 items that they would like to learn at the Habitat workshop. Seven categories emerged from these items: 1) repair; 2) maintenance; 3) home improvement; 4) building and design skills; 5) social skills; 6) financing skills; and 7) other skills. About 100 items were related to home repair, including plumbing, flooring, fixing appliances, fixtures, interior walls and openings, exterior siding and roof, electricity, and furniture. Twenty-five items related to maintenance, including general maintenance, upkeep, and painting. Twenty-one items related to home improvement, including upgrading current house, adding additions, landscaping, and fencing. Twelve respondents were interested in more building skills and decorating skills. Seven respondents wanted to learn more social skills. Seven respondents wanted to learn financing skills. In the seventh category, one respondent was interested in learning computer skills, and another respondent was interested in learning whatever information Habitat had to provide.

When asked how they felt about learning some leadership skills during sweat equity, five respondents (10.20%, n = 49) felt no need for leadership skills, while 41 respondents (83.67%) expressed some interest and three (6.12%) did not answer the question.

When asked how they felt about learning some design and decorating skills during sweat equity, four respondents (8.16%, n = 49) felt it was not necessary, and 45 (91.84%) showed strong interest in learning. The most popular design skill was related to interior design (29 responses), including color, texture, layout, bathroom and kitchen design, and general interior design. The next most popular design skill was related to decoration (15 responses), including using pictures to decorate walls, art craft, curtains, and adding personal touches to the rooms. Home improvement was the third design skill (9 responses), including flooring, carpeting, adding additions, and refinishing cabinets. Eight respondents were interested in learning landscaping. One respondent was interested in lighting.

Neighborhood and Involvement

The attitude toward neighborhood involvement was explored by the following inquiries: whether respondents would attend a neighborhood association, their suggestions about the neighborhood association, their satisfaction with their neighborhood, and their ideal qualities regarding a good neighborhood.

Twenty-three of the 49 respondents (46.94%) reported attending neighborhood association meetings. However, during the interview, only 12 admitted attending the meetings. Referring to the suggestions of the neighborhood, five categories were generated from 53 pieces of suggestions. The first concern was about safety. Twenty-one respondents wanted to discuss speed control, crime prevention, safety issues caused by

animals, and unsafe physical environments. Facility improvement and neighborhood association both ranked second. Nine responses referred to a playground, road improvement, a recreational park, and enclosure of properties. Nine respondents wanted to have neighborhood newsletters, change the schedule of association meetings, have training classes, and become more involved. Neighbors and neighborhood concerns both ranked fourth place. Seven respondents wanted the neighborhood association to address how neighbors get along, help each other, and look out for children. Seven respondents wanted the association to address neighborhood cleanups, noise control, and schools.

Thirteen out of the 49 respondents (26.53%) in the surveys were dissatisfied with their neighborhood. The quality of a good neighborhood therefore was explored. Four categories resulted from 154 features that qualified a neighborhood. The first category concerned people. Eight-two features were about the neighbors, including getting along with one another, helping each other, knowing your neighbors, respect, honest, independence, good communication, cooperation, interactivity, and so on. The next category was about the neighborhood. Thirty-four features were related to the physical or social aspects of the neighborhood, including house appearances, quiet hours, privacy, having an association, eliminating segregation, and so forth. The third category concerned safety. Twenty-four responses were related to less traffic, speed control, crime watch, and drug free zones. The final category was about the facility. The fourteen features related to the facility included having a convenience store, church, recreational center, park, playground, schools, streetlights, and so forth.

Helping Behaviors

The helping behaviors among Habitat families were explored by four questions: 1) why or why not a respondent asked for assistance from a neighbor; 2) when a neighbor

needed assistance from the respondent; would she be able to help; 3) when she helped the neighbor, would it matter to the respondent whether or not the neighbor had previously helped her; and 4) whether the respondent expected return assistance from the neighbor.

In the survey, 15 out of the 49 respondents (30.61%) did not ask for a neighbor's help, and 69.39% asked for help. During the interview, the reason why they did or did not ask for help was explored. Some respondents explained that the reasons they did not ask for help included maintaining their independence and privacy, their personality, family education, easy support from family members or nearby facilities, or no dependable neighbors around. For those who asked for help, they cited the friendship and trust with their neighbors, expected reciprocal help, acknowledged the capability of their neighbors, or no other ways to get help.

Concerning whether or not a respondent could maintain her house, 45 respondents (91.84%, $n = 49$) were positive, and only four were negative. Among the four respondents who could not maintain their houses, three had immediate family members who could help, and one had health problems.

Concerning whether or not a respondent could repair her house when needed, only 10 respondents (20.41%, $n = 49$) were positive and 39 were negative. Among the respondents who could not repair their houses, 19 would call professionals, 16 would call an able family member, 10 would ask a neighbor for help, nine would call Habitat, and three would call a friend. Among the 10 respondents who would ask a neighbor for help, three emphasized that they would ask male neighbors for help. The reasons for asking neighbors for assistance were mainly related to whether or not the neighbors had

dependable skills to complete the tasks. The reasons for not asking a neighbor for help were related to not knowing the neighbors, distrust, self-independence, and gender.

Concerning whether or not and why a respondent would aid a neighbor with maintenance or repair, nine respondents (18.37%, n = 49) would not help their neighbors. Four out of these nine respondents had health problems, two did not want to mingle with neighbors, two did not know how to help a neighbor, and one claimed that she did not know her neighbors. Forty respondents (81.63%) would like to help their neighbors if they could. The top reason for helping the neighbors was because they had the skills and abilities to maintain and repair houses. Eight respondents claimed that it was part of their personality to help others. Seven respondents did help their neighbors because friendship existed between them. Five respondents expected reciprocal help from others someday. Four respondents helped because the neighbors needed their aid. Four respondents helped their neighbors out of moral values. Two did so because it saved money for the neighbors, and two limited their help only to advice.

Only two out of the 49 respondents (4.08%) were positive when asked the question if it mattered whether or not the neighbor had previously helped them. They claimed that this was the way to build trust among neighbors. The majority (95.92%) did not care whether or not the neighbors needed to help them before the respondents decide to help the neighbors. Three categories emerged from the reasons. The first category was about self. Twenty-three respondents thought that they helped from the goodness of their hearts, or it was their personality, moral values, independence, and religion. The second category concerned social relations. Twelve respondents did not need the neighbors to help them first because the neighbors were also friends. These respondents trusted their neighbors,

and the teamwork that should exist among neighbors; some expected returned help in the future. The third category was related to skills. Three respondents thought that their neighbors lacked the skills to help others.

Concerning whether or not the respondents expect to get return assistance from the neighbors they helped, 16 respondents (32.65%, $n = 49$) were positive, and 67.35% did not expect any return. The reasons for not expecting returns were related to religion, personality, and moral values.

Design Participation

Design participation was explored by the following three questions: 1) How would a respondent feel about selecting interior colors and finishes for her house? 2) Would she want more influence on the design process of her house, such as changes about the interior and exterior and the yard? 3) Would she be satisfied with the involvement of design process and selecting colors and finishes?

About selecting colors and finishes for their own houses, eight respondents (16.33%, $n = 49$) had certain negative feelings, and 83.67% had positive responses. The negative feelings were caused by not enough design choices, inexperience in selecting colors and finishes, and unqualified personnel in helping to make choices. One respondent was not happy because she needed a bathroom that abided by Americans with Disabilities Act Accessibility Guidelines but did not get it. One respondent thought that colors and finishes were not important because owning a house was important. Among the positive responses, four categories emerged. Twenty-one responses were related to personalization. Respondents liked to have personal touches, customize their houses, and make their own decisions. Eleven responses were related to participation. They enjoyed the power and control that the selecting process gave them, and they had the right to

decide the colors and finishes because these houses belonged to them. Eleven respondents thought that the selecting process was very important because they would live with each decision. Six respondents expressed the self-satisfaction with the design choices they made.

When respondents were asked whether or not they wanted more influence in the design process, 17 respondents (34.69%, $n = 49$) were negative, and 65.31% wanted more influence. However, when asked to give some suggestions about the interior design, 12 out of the 17 respondents—who did not want more influence—wanted to change something in their interiors in addition to all other respondents who wanted more design influence. Among the 106 suggestions about improving interior design, three themes emerged. The most concentrated theme was interior design, including size or rooms (44.71%, $n = 85$), individual room design, such as the living room, kitchen, bathroom, and bedroom (18.82%, $n = 85$), openings (8.24%), adjacencies (7.06%), material (7.06%), color (5.88%), fixtures (5.88%), upgrading appliances (2.35%), and height of rooms (2.35%). The second theme concerned additions. Seventeen suggestions were about adding more rooms, adding more decorations, installing an air conditioner, and enclosing the porch or backdoor. The last theme was choices. Four respondents wanted more design choices, such as layouts, colors, and materials.

When respondents were asked whether or not they wanted more changes in the exterior or yard, 11 respondents (22.45%, $n = 49$) were negative, and 77.55% of the respondents wanted some changes. Two themes were generated from a total of 68 suggestions. The first theme concerned the yard. Forty-six suggestions were related to the yard, including landscaping, fencing, drainage, a driveway, accessibility, a deck, distance

between two houses, and so on. The second theme concerned the exterior building. Twenty-two suggestions were about the porch, color, garage, and siding.

When respondents were asked to rate their satisfaction level with involvement in the design process of their houses, 33 respondents (67.35%, $n = 49$) were satisfied or very satisfied, five respondents (10.20%) were dissatisfied or very dissatisfied, and one respondent (2.04%) did not know how to answer.

When respondents were asked to rate their satisfaction level with selection of colors and finishes for their houses, 47 respondents (95.92%, $n = 49$) were satisfied or very satisfied, and only two respondents (4.08%) were dissatisfied or very dissatisfied.

Summary

The statistical analyses of the survey results and the content analyses of the interview responses showed interesting patterns. Some patterns seemed to complement one another, such as the relationship between sweat equity and resource building, and between statistical results and interview responses. But some patterns showed some discrepancies between what was expected from the theories and what was obtained from the results, such as what families claimed to do and what families actually did for their houses, neighbors, and neighborhood. Detailed discussions will be presented in Chapter 5.

CHAPTER 5 DISCUSSION

This chapter covers the hypotheses tested in statistical analyses of survey responses, and relates the quantitative analyses with content analyses of interview responses. It also reflects the theoretical explanations revealed through discussions.

The purpose of this study was three-fold: 1) to explore the relationship between sweat equity in the Habitat program as participation—doing, learning, and sharing—and human and social resources building; 2) to compare the human and social resources maintained in two settings: Habitat neighborhoods versus scattered sites; and 3) to investigate the roles of design participation in sweat equity. The research was guided by a conceptual model presented earlier, which was generated from the theories of learning-by-doing and generalized social exchange.

Accordingly, I predicted that sweat equity contributed to human and social resource development. I wanted to show a difference in the maintenance of human and social resources within two settings: scattered sites and Habitat neighborhoods. I also wanted to demonstrate that a user's participation in house design increased the satisfaction with the results. The overview of the guiding theories provided a framework for the following discussion of the results.

Sweat Equity as Doing, Learning, and Sharing

The multivariate tests (see Figure 5-1) showed that certain activities in sweat equity had statistically significant effects on some aspects of both human and social resources. The activities in sweat equity were categorized into public activities (PUBLIC), training

(SET), design participation (DENP), and construction (CONST). The square of sweat equity hours was symbolized as HOURS2. The significantly impact on human resources and social resources in Figure 5-1 included attachment to the house (ATT-H), frequency of house maintenance (MAINT), design-house satisfaction (DESIGN), self-esteem (SELF), perception of economic segregation (SEG-E), perception of racial segregation (SEG-R), and perception of skills (SKILLS).

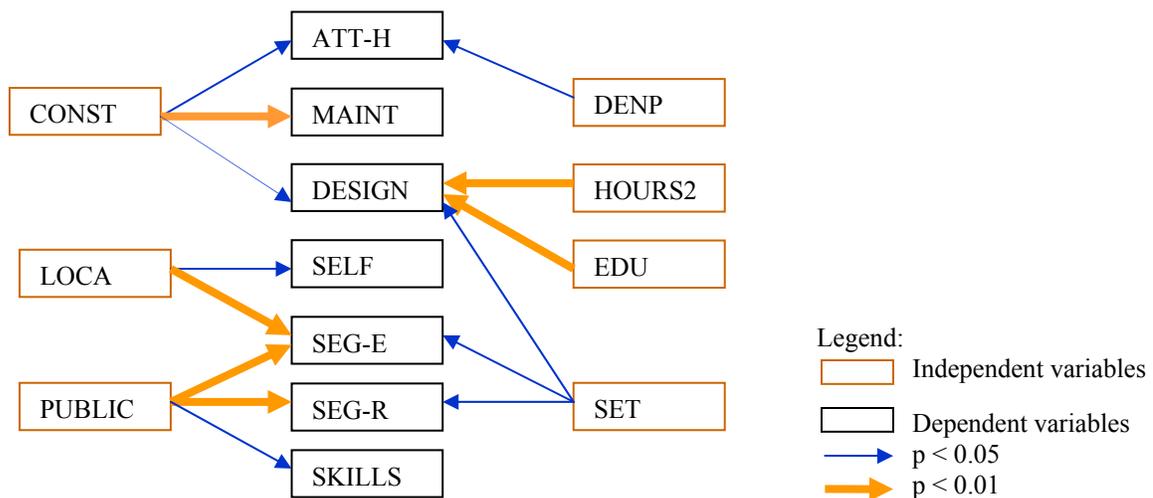


Figure 5-1. Simplified multivariate results.

Construction was positively related to the following three factors: house attachment; design-house satisfaction;¹ and the frequency of house maintenance. The more activities respondents participated in during the construction of their houses, the more attached those persons became to the house and the more pride they had in the house, thus developing more self-responsibility. Also, the more activities in which respondents participated regarding the construction of their houses, the more satisfaction those persons had with the house concerning the design and design participation. The

¹ The satisfaction a respondent had with her house had multiple dimensions, including house satisfaction in general, house design, and design participation.

more activities those respondents took part in during the construction of their houses, the more respondents maintained their houses frequently. According to the learning-by-doing theory, Habitat families learned building skills during this process, which resulted in more frequent maintenance to the houses. Because the homeowners built their houses, they knew every stage of the house construction and contributed to every dimension of the house. One participant directly stated the relationship between sweat equity and home maintenance:

It [sweat equity] helps you maintain your house, and you appreciate the value of the house. You know, when you are hammering and nailing, you are doing your own home, it helps you to appreciate. It helps you to want to keep it up.

With the permission of respondents, some pictures were taken from the inside and outside of their Habitat houses. Figure 5-2 illustrated a well-maintained entrance with outdoor furniture and landscaping. Figure 5-3 showed a living room that was well decorated and maintained.



Figure 5-2. An inviting entrance was created by using landscaping and outdoor furniture.



Figure 5-3. This was a living room with various decorations and displays. The homeowner tried to match the colors as well.

Although construction was positively associated with the frequency of maintenance, families did not learn all the maintenance skills they needed. They preferred learning more repair and maintenance from Habitat workshops. Figure 5-4 showed the wooden handrails that needed repair, but the respondent did not know how to do it herself.



Figure 5-4. The outside wooden handrails at the back entrance needed to be repaired.

Even though families may not learn all maintenance skills during the construction process, the more that families worked on the construction of their houses, the more attachment they had to their houses and the more satisfied they were with their houses, as well as the design.

The multivariate tests showed that public activities were positively related to the factor of perception of skills. The more public activities in which Habitat families participated, the more pride and confidence they developed in other maintenance and repair skills, as well as their financial skills. This confidence resulted in doing reciprocal favors for one another with house construction. It was interesting to find that public activities rather than construction activities were related to the perception of skills. It may be explained by the fact that families could only participate in certain activities in construction, such as painting, yard work, siding, and so on. Few could work on roofing, and none was allowed to help with plumbing. Therefore, families learned similar skills during the construction activities. However, the public activities in which Habitat families participated might differ radically from one another, such as working in a thrift store, helping out in the Habitat office, public speaking for Habitat, and so on. These social activities may have increased awareness of the public good, which encourages a respondent to maintain her house in her neighborhood. Also, the learned social skills might generally enhance the maintenance and repair skills learned through sweat equity. The nonparametric tests also showed that public activities were positively related to a generalized sense of community. In other words, when families became more involved in public activities, they had more pride in their neighborhood. They also felt safer and more attached to their neighborhood, and they had higher satisfaction with their neighborhood

and developed a stronger sense of community. The positive relationship between public activities and a generalized sense of community supported the hypothesis.

The square of the sweat equity hours was related to the design-house satisfaction. The design-house satisfaction (satisfaction with the house, house design, and design participation) increased first and then decreased when Habitat families worked their sweat equity hours. During the first few hundred hours, families participated in public activities and helped other Habitat families with their houses. During this preparation stage, learning how to build their house was the primary task. After this initial stage, families started selecting the lots, colors, and finishes for their houses. They began the design participation and started to visualize their own houses. After this design participation, they just had to come up with the design. During the building process, families still offered personal input into the house, but it was not as strong as in the beginning when they first saw how a house was built and how their houses might look. In other words, they had less control in the design of their houses but still had some control in the building process of their houses. This might explain the decreased design-house satisfaction. As many families expressed in the interview, sweat equity was hard because the majority of them were single-parent mothers. The longer the families worked, they might feel frustration because of the added pressure of sweat equity in their lives. One respondent expressed “worn out” as her feeling towards the end of her sweat equity.

Another single parent described the hardship for her and her child during sweat equity:

I work full-time, and I [am] also involved in religious, volunteering, and other things. I had no-sleep nights. I not only help others but also work. I helped to prepare the brochure needed for the next day, the logo, beyond my own job. It [sweat equity] is not only my time, but also time from my daughter, because mommy is working. I have no time to keep my house quite neat, fix the car, or even do the laundry.

In addition to the intense work efforts near the completion of their houses, respondents may realize how difficult it is to change anything in their house even if they are not satisfied with the original design decisions.

Training was related to design-house satisfaction and perception of economic and racial segregation, and generalized sense of community. The more training families had during sweat equity, the more satisfied they felt with the design and design participation and overall quality of their houses. Also, the more training they had, the less likely they felt they were living in economic or racial segregation, and they felt a greater generalized sense of community. These findings supported the hypothesis because training was definitely a learning experience. The more respondents learned about their houses and their neighborhoods, such as taking care of their houses and neighborhood, the more likely they enjoyed their new houses and neighborhoods. In other words, appreciation of their houses and neighborhoods could be learned during training in addition to the learning-by-doing process. According to Dewey (1939), the learners should be able to identify the meaning of actions during the process of learning-by-doing. However, the meanings could not be easily identified during the learning-by-doing process. For example, families perceive or do not perceive segregation after living in the neighborhoods for a certain period of time. And at this time, the sweat equity process, or the learning-by-doing, already ends so that it may be difficult for families to relate the two together. But during training, the meanings of actions, or certain activities during sweat equity, could be revealed to families directly, such as building trust among neighbors, social support, and responsibility of house maintenance and repair. Therefore, families learn to appreciate their houses more.

When all aspects of human resources were considered as one factor, the statistical results showed that the human resources factor was significantly correlated to construction and the design participation. The simplified correlations for human and social resources were shown in Figure 5-5.

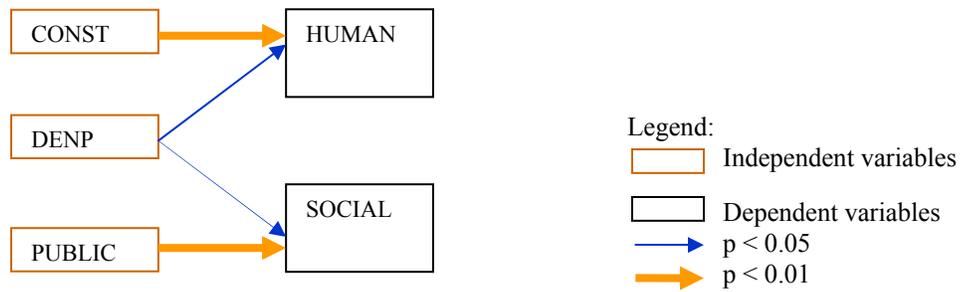


Figure 5-5. Simplified statistical results for human and social resources.

The finding in relation to construction was consistent with the multivariate test when human resources were considered as a separate individual factor. But the impact of public activities, training, and sweat equity hours was not significant if human resources were combined as one factor. It seemed inevitable that the more dependent variables a factor presented, the more inaccurate the classification of human resources and social resources might become. Because doing, learning, and sharing were closely connected in the sweat equity process, sometimes the boundary of human and social resources was vague. For example, reciprocity and obligation seem to fit in the social resource category rather than in the human resource category in the original conceptual framework. But being able to return a favor to a neighbor requires certain skills rather than a mere willingness to help. For this reason, reciprocity and obligation were therefore placed under human resources as the statistical analyses showed. Reciprocity was grouped with perception of skills, and a sense of obligation was correlated with self-esteem. The grouping of reciprocity and perception of skills was consistent with the interviews

findings. Most Habitat families would like to help their neighbors only if they had the skills needed to assist. Thus an individual needs certain skills to perform reciprocity. Similarly, the sense of obligation to a neighborhood also requires certain skills, not just good will. The more skills one could contribute to the neighborhood, the stronger obligation one feels to the environment. The more value one sees in the neighborhood, the more value one sees in one's own self-image as well.

The finding that design participation was negatively related to human resources was inconsistent with the hypothesis. It was hypothesized that as a part of sweat equity, the number of design-related activities in which families participated was positively related to human resources. The deviation may be explained by the fact that design participation is not counted formally as a part of sweat equity. According to Deweyan learning-by-doing theory, learning is the critical part instead of just doing. In the interview, Habitat families expressed the importance of design participation. For example, one participant explained why design participation was important to her:

Because you get to see the materials that is being used. You also get to see something that is done not to your taste. You can stop it before it is completed. Just say for example, the carpet. The carpet was donated from different companies. Even though I will have burgundy, there are different types of texture that you can choose from. So if I had not been here, I would've got the shaggy type, which I didn't like. So I was able to choose this type, which is more... [searching for words] when you sweep it or vacuum it, it doesn't tear.

But some families also expressed the frustration in the design participation because they do not know how to choose colors, layouts, and finishes. Most families would like to learn basic design skills during sweat equity. When a participant was asked about the necessity of learning these skills during sweat equity, she gave a very positive answer and explained as the following:

Because all of the homes from the beginning looked just alike. So therefore you need those types of skills because you want to differentiate your house from the neighbor's house. Because some people don't know [design and decoration], some people, especially when you always live in an apartment. But when you get a house, you get to explore different things. Some people just don't know how because they haven't had that experience.

Figures 5-6 through 5-9 illustrated how respondents personalized their houses with colors and decorations. Although the exteriors of these houses looked similar, the personalized interiors really made respondents felt like home. But not all families knew how to personalize their houses with interior designs and decorations. They did not learn design and decorating skills during their previous apartment experiences, and they did not learn these skills during sweat equity. The lack of design and decorating skills usually were reflected through similar yards and plain interiors. Figure 5-10 showed a yard that needed better landscaping.

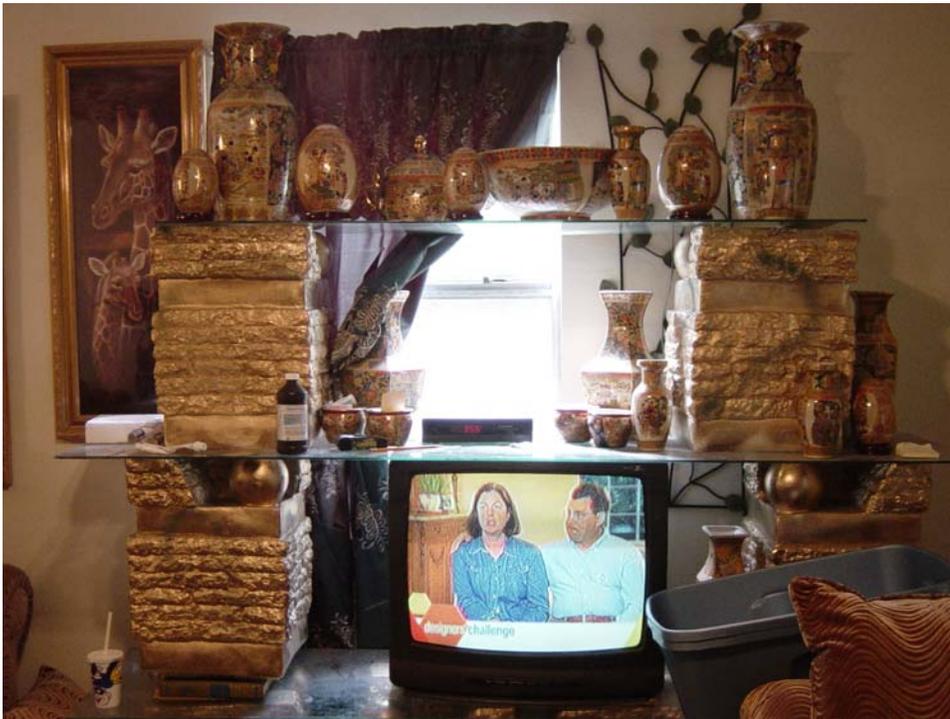


Figure 5-6. The TV display in a living room illustrated the cultural preference of the homeowner.



Figure 5-7. The color blue was used in this bedroom.



Figure 5-8. The playful primary colors were used on the walls, curtains, and the ceiling fan in a kid's room.



Figure 5-9. The decoration in a bathroom also was carefully considered.



Figure 5-10. This front yard needed better landscaping.

Since families lacked of necessary design skills and they did not learn skills in the design participation process, it was difficult for design participation to contribute to human resources in general. When families realized their lack of design skills and that they might not make the right decision for their houses, this might impact their self-esteem, satisfaction with house design, design participation, and confidence in skills, which all were a part of human resources. Therefore, lack of learning during design participation may explain the negative relationship between design participation and human resources.

Although the analyses between sweat equity activities and individual social factors did not show significant correlations, the multiple regression analyses showed that the social resources factor was significantly correlated to public activities and design participation when all aspects of social resources were considered as one factor. In other words, the social resources in general increased as the public activities and design participation during sweat equity increased. This finding was supported by content analyses because the majority of the participants claimed that during completion of public activities and helping other families build their houses, sweat equity meant meeting new people, helping others, having good communications, and building neighborly bonds. These activities helped build social resources for families, as one participant articulated the meaning of sweat equity in the interview:

I think it [sweat equity] is wonderful; it is a wonderful experience. I really do. Because you learn how to build your own house, you learn how to help people, you come together with other people, and you meet people. I think it is wonderful. I like the idea that you learn how a house is built. You get to see where your electric is going. You get to see how your walls come up. You get to know how to build stuff, how to put a door together. I would have never known any of this. I would have never had any desire to know any of it.

Regarding design participation, when respondents started choosing their lot, colors, and finishes for their houses, they began to think about their neighbors and the colors of

their neighbors' houses. If the neighbors were also Habitat homeowners, they might get to know each other and discuss design ideas before they actually moved into the house. In this way, design participation might help families get along with the neighbors, develop trust, create interactions, all of which were the foundation for social resources.

The content analyses from interview responses supported the proposition that sweat equity contributed to human and social resources. Homeownership was the ultimate goal of sweat equity for Habitat families, but the sharing and learning experiences made the participants believe that sweat equity helped them meet other people. The helping and being helped experiences created bonds with each other, and it afforded them learning skills necessary for building and maintaining their houses. Altogether these skills added appreciation for the physical goal of sweat equity—the house. This appreciation could not be obtained from getting a house without sweat equity. Therefore, sweat equity for Habitat families helped to build both human resources and social resources.

Since most families believed that sweat equity was a learning process, they would like to learn more from Habitat in addition to the skills they learned during sweat equity. These suggestions focused on skills in relation to repair, maintenance, home improvement, construction, design, social relations, and finance. When asked about learning some leadership skills and design and decorating skills, most respondents were interested.

Although the findings previously discussed supported the hypothesis, one statistically significant relationship was different from the hypothesized direction. Families in this study tended to perceive more segregation when they participated in more public activities. It was theorized that the more families participated in public

activities, the more social resources they built, and then they perceived less segregation. In fact, the Kendall's *tau-b* tests showed a correlation between public activities and a generalized sense of community. The more public activities a respondent participated in, the prouder she was of her neighborhood. She felt safer and more attached to the neighborhood, was more satisfied with her neighborhood, and had a stronger sense of community. The generalized sense of community was also correlated to racial segregation. The more generalized sense of community a respondent had, the less segregation she perceived. The negative linkage between public activities and segregation may exist in the nature of the Habitat program. Although Habitat allows families to choose the location of their house, the choices are limited to the available lots in a normally low-income area, and the majority of Habitat families are African American. Residential segregation seemed inevitable in this case. However, those who participated in more public activities might be more active in their social life and establish more social interactions with others. They therefore might expect more from their neighbors and want more control in terms of location, neighbors, and house. During these social interactions, families may have chances to know more about other Habitat houses, locations, and facilities within the neighborhoods. When they saw the differences between their own houses or neighborhoods and better houses or neighborhoods, they might become unsatisfied with what Habitat could provide them, which would lead to less attachment to their houses. During the interview, a few respondents mentioned that the drawbacks for participating in the Habitat program included the location of Habitat houses, less choices, and small rooms. This might partially explain that the more public activities a respondent attended, the more she felt segregated.

The other unusual finding in the nonparametric tests was the negative correlation between the dependent variables of perception of skills and attachment to the house. The more that the respondents became attached to their houses, the less confident they felt in having the skills to maintain and repair their houses. However, attachment to the house was positively correlated to trust. The more trust respondents had in their neighbors, the more attached they were to their houses. More investigation was needed to explain this finding. Did families need more skills? What types of skills could contribute to house attachment? Since the sample was small, the correlations among the dependent factors also indicated that the testing results might not be conclusive.

Habitat Neighborhoods versus Scattered Sites

The statistical tests regarding physical settings showed significant effects of location on self-esteem, obligation to the neighborhood, and perception of economic segregation. Families living in a Habitat neighborhood reported higher self-esteem, and they did more for the neighborhood than families living in scattered sites. Families living in a Habitat neighborhood perceived less economic segregation. These findings indicated that families living in a Habitat neighborhood, which was assumed to have more segregation than families living in scattered sites, better maintained some aspects of the human and social resources. Although not statistically significant, families living in a Habitat neighborhood tended to perceive less racial segregation than families living in scattered sites ($p = 0.055$).

However, it was expected that more human and social resources could be maintained better in Habitat neighborhoods, such as perceptions of skills, satisfaction, a generalized sense of community, social support, design, trust, and frequency of home maintenance. The explanations for the lack of relationships among these factors might

exist in several interview explorations. For example, concerning social support (helping behaviors), most respondents would assist their neighbors only if they knew how to help. Many respondents would not ask for assistance from their neighbors, but would like to help their neighbors if they were asked. The dilemma here was that no one would like to ask for help first. So within the neighborhoods, actual social support was minimal because of the dilemma. Another reason for the lack of social support was that respondents claimed that they did not know the neighbors well. The neighborhoods in this study were newly built compared with houses in scattered sites. Therefore, Habitat families living in scattered sites might reside longer in the area, and they know more about their neighbors during years of interaction. This might also explain the lack of a relationship between location of the house and social support. Ellen and Turner (1997) found that neighborhood conditions impact families and their children. Because this study was interested in the formation of neighborhoods (neighborhoods versus scattered sites), other physical features of the neighborhood were ignored, including the size of neighborhood, physical facilities of the neighborhood, and qualities of the surrounding houses. In the interviews, respondents ranked having good neighbors first among the many qualities of a good neighborhood. The lack of interaction among neighbors may also explain why some social resources in Habitat neighborhoods were not significantly different from those social resources in scattered sites. Another interesting phenomenon was that when asking respondents to count how many neighbors they had, most respondents counted only the ones living close to their houses, but some counted the ones living on the same street; only a few counted everyone in the neighborhood. This response indicated that the formation of small groups of houses might encourage more

neighboring activities than flat rows of houses lined up in a big neighborhood. Perception of skills may be better explained by the learning experience, marital status, income, employment, training, and public activities. The nonparametric tests indicated that the frequency of maintenance may be better explained by other factors, such as employment, age, and hours, as shown in the nonparametric tests. Comparing these factors, location may not be an influential factor for perception of skills and frequency of home maintenance.

Segregation, which was usually related to location, also was related to training. The more training one had during sweat equity, the less was one's perception of economic and racial segregation. This was exciting news for many low-income neighborhoods. The historic and economic reasons for the formation of low-income neighborhoods made segregation undesirable. Eliminating segregation has been one target of U.S. Department of Housing and Urban Development housing policies (HUD, 2000). Mixed-income neighborhoods seemed a possible way to solve this problem, but it also seemed a short-term solution (Carr, 1999). One of the Habitat affiliates that participated in the study is trying to mix very low-income families with low-income families, but they are still low-income in order to qualify for this Habitat program. This research compared families living in scattered sites to families living in Habitat neighborhoods. The results showed that those respondents living in Habitat neighborhoods perceived less economic segregation than those in scattered sites. It showed also that increasing the training during sweat equity would decrease the perception of both economic and racial segregation. This finding might also provide some insight for other low-income housing programs.

However, this study also found that public activities were related to economic segregation and racial segregation. The more public activities in which Habitat families participated, the more segregated they felt economically and racially. As discussed earlier, this might be explained by the higher expectation of houses and neighborhoods of those who participated more in public activities, especially those who found that others families had better choices. From another perspective, Habitat seldom helps homeowners face segregation problems—if such problems exist. In addition to skills training during sweat equity, Habitat may address segregation problems with Habitat families instead of ignoring the potential problems during sweat equity. Besides a possible perception of segregation, as previously discussed, the bottom line was that the majority of Habitat families did not report experiencing either economic or racial segregation. This study tried to help Habitat understand more about the families and their needs in order to serve them better and to provide a better foundation for the organization's decision-making process.

Concerning the relationship between location and obligation to the neighborhoods, respondents' capabilities might be a reason, as previously discussed; but other issues about neighborhoods will be further addressed. How much a respondent would do for her neighborhood also depended on what the neighborhood could do for the respondent. In the interview, fewer respondents reported attending neighborhood association meetings than those reported in the survey. The reason for this difference in data collection might be that some respondents in the survey misunderstood neighborhood association meetings with other meetings at other levels, such as church activities and crime watch programs organized at a higher level. Some participants living in a neighborhood with an

association did not know of its existence, and some living in a neighborhood without an association believed that they had one but they just never attended it. The inaccurate perception of neighborhood association may affect the participation in the association meetings. The president of one neighborhood association claimed that not many homeowners participated in the meetings, so the association did not have enough votes to make certain decisions. The association therefore had little influence or hope to change or improve the neighborhood. Two respondents were very surprised to learn that in their neighborhood there was an association that held regular meetings. They stated that if they had known, they would attend those meetings. Therefore, improving the efficiency of the association seemed important. One participant suggested that:

They [Habitat] would have a meeting about more about how you have to get involved with the homeowner association. You know, you have to get involved with that, you have to take care of your neighborhood. It's like that should be one of the requirements of a Habitat house. Once people get their houses, they tend to forget. And they tend to stop doing what they want to do. And it harms other people who are taking care of the house.

Other suggestions for the neighborhood association were mainly focused on safety, physical facilities, and a more efficient association. For many respondents, no association existed in their neighborhoods. It was clear that the neighborhoods were not well organized, and neighbors interacted with one another basically on an individual basis. Little chance therefore existed for a respondent to do anything for her neighborhood. But the interview also showed that if they had a chance, they would like to support their neighborhoods. Also, the length of time living in a house may matter: the longer families lived in their homes, the more sense of obligation they developed to their neighborhoods. Even though families living in Habitat neighborhoods lived a shorter time in their homes, compared to those living in scattered sites, they held a greater sense of obligation for their

neighborhoods. So Habitat neighborhoods helped maintaining certain social resources better than scattered sites.

In the ideal image of a good neighborhood, neighboring was the most important feature for many Habitat families, followed by the physical qualities such as house appearance, quiet hours, privacy, an association, no segregation, safety, and the physical facilities. Since location was not listed as one of the qualities of a good neighborhood, it might explain why location did not show much influence in the social resource maintenance. Rather, neighboring was the most important feature of a good neighborhood. In a Habitat neighborhood, all neighbors participated in sweat equity—no matter where the house was built, but they did not learn or learn enough how to be neighborly and support each other—even after moving in. This finding was consistent with the study that Hays (2002) conducted among volunteers and Habitat staff. Hays found that Habitat empowered families by giving them control over their housing situation and skill development, but failed to promote collective actions among families to deal with neighborhood problems. If the neighborhood association took actions effectively and actively, it seemed more likely that more neighborly activities would be encouraged. The neighbors would thus be able to address other issues such as the physical qualities, safety, and facilities. Increasing the awareness of the neighborhood would be as important as enhancing the leadership skills for the president and other active players in the association.

Design Participation

Although the whole sweat equity process was a process of participation that included doing, learning, and sharing, the roles of participation in the design and planning

stage were not fully recognized in Habitat. Some Habitat families did not count the time spent on design participation as sweat equity hours.

No statistical significant relationship was found between the number of design-related activities in which families participated and satisfaction with the results of participation, including satisfaction with the house, house design, and design participation. This finding was different from the study conducted by McLain-Kark (1986). McLain-Kark found positive relationship between design and owner-built participation and housing satisfaction. Rather than asking families to rank housing satisfaction in general, this study specified satisfaction with the results of participation as the satisfaction with the quality of the house, house design, and design participation. The three types of satisfaction were highly correlated in this study. Therefore, it might explain the lack of relationship between the number of design-related activities in which families participated and satisfaction with the results of participation. Families might respond differently to the question concerning housing satisfaction and the specified design-house satisfaction.

Other than the different measures of satisfaction in McLain-Kark's study, design participation was also different in this Habitat study. Design participation in Habitat was limited to certain areas, such as choosing colors, finishes, and layouts within the provided options. Habitat families did not have the complete control as normal owner-built participation as McLain-Kark studied. During design participation, families were shown with two-dimensional drawings and small wall color samples. It would be difficult for them to visualize the actual space and design choices they had. Once their houses were built, families began to visualize what the rooms and colors looked like. If the look was

not as good as what they expected from the drawings and small samples, they might get disappointed with their design choices and get more disappointed when they realized that they could not make any changes in design. Education also had negative effect on design-house satisfaction. The more education one has, the higher expectation they might have for their lives and houses, including the design of their house. Considering the fact that design participation takes up only a few hours, activities that take longer but also allows families to have personal input (such as construction) may have more influence on satisfaction. The amount of time spent on sweat equity that indicated how long respondents could actively be involved in their own houses would also impact the design-house satisfaction. The lack of relationship between design participation and design-house satisfaction also indicated that the measures of design participation also needed improvement. Currently design participation was measures by the number of design-related activities categorized into eight simple groups, such as interior layout, interior color, and yard. However this study was unable to specify the level of participation for each category. For example, did families choose a layout or did they change some design of the layout? If they just chose an existing layout, was there only one layout or several layouts to choose from? If they changed the design, which part of the house did they change? It was assumed that a more comprehensive measure of design participation would be necessary for further investigation of the roles of design participation.

Although no significant relationship was found between the number of design-related activities and design-house satisfaction, the univariate test showed that design participation and public activities significantly contributed to social support. The more design-related activities and public activities in which families participated, the more

likely they would support one another in their neighborhoods. Consistent with this finding, the nonparametric tests also showed a significant difference between the time when a respondent started design participation and a generalized sense of community. If a respondent started design participation earlier, she would experience more pride in her neighborhood, feel safer, become more attached to the neighborhood, be more satisfied with her neighborhood, and have a stronger sense of community. The earlier a respondent started design participation, the more in-depth she could think about the design of her house and neighborhood. The thoroughness of design considerations might result from carefully comparing the design of a respondent's own house with those of the neighbors' houses. By examining a neighbor's house design, the respondent might notice how well her neighbor's house was maintained or the taste of the neighbor, which represented some aspects of the personality of the neighbors. The more a respondent considers a neighbor's house design, the more she would regard herself as a part of the neighborhood. This might help explain why the earlier one participated in the design process of her house, the more generalized sense of community she experienced later. Also in the interview, some families expressed that they would like to know earlier the location of their lots and the appearance of their houses. One respondent claimed that one of the advantages of participating with Habitat was that she could choose her neighbors. Families may not directly realize the importance of starting design participation earlier, but they wanted more participation in the design process.

If social resources were considered as one factor, social resources would increase as the number of design-related activities in which a respondent participated increased. This finding indicated that design participation was not only related to skills or self-

esteem, but also to social means that had a continuing impact on people. It was also consistent with the finding that design participation was positively related to the generalized sense of community, which was discussed earlier. Design participation can involve interior, exterior, yard, lot, and neighborhood planning. The more design activities in which a respondent became involved, the more perspectives she had to consider her individual house, as well as the entire neighborhood. The way neighbors decorated their yards, the colors chosen for the roof and siding, and the way neighbors maintained their houses and yards might also impact future neighboring activities. During the design participation, families could discuss all design concerns with designated personnel or volunteers, which also helped families build trust with others and feel that they were being helped. The indebtedness might also contribute to further social resource developments. Therefore, even though the relationships between design participation and individual aspects of social resources were difficult to find in this case study, it was interesting to see how design participation impacted the overall social resources.

However, some findings in the relationship between design participation and certain human and social resources deviated from the general beliefs about participation. For example, the multivariate tests showed that design participation was negatively related to house attachment (the pride, attachment, and self-responsibility to the house) and human resources in general. This finding contradicted the common expectations. It was expected that a positive relationship existed between design participation and house attachment. The negative relationship between design participation and house attachment may be explained by the small sample size or inadequate measures of design participation. However, in the content analyses, most respondents were very positive

about design participation, and they wanted more influence in the design process of their houses. The majority believed that participating in sweat equity gave them a chance to have personal input and control over the house, learn skills, and build connections with other people. One respondent expressed her passion for design participation:

I think it [design participation] is wonderful. Well, me being a female, I like stuff that looks pretty. So to learn something about it, how I can do little things that make stuff look different, I think it is wonderful. I think how you like your house can make it different than other houses, and stuff—have your personal touch on it. So I think it is really good. I probably would like to learn some designs or something.... I think I like that. I think it is wonderful. I think people get more excited because their being able to put personal touch, and their being able to say “Oh, we can change this, we can put this, and we can learn this.” And then we can add more ideas to Habitat... This is something I am gonna to be in for 30 years, 20 years. I wanna at least like it.

Families suggested that Habitat improve the design and overall planning, including location, layout, size of rooms, landscaping, and so on. Some families already improved the design of their houses or yards by themselves. Figures 5-11 and 5-12 indicated certain design expectations that some families had for their homes.



Figure 5-11. The new bathroom was built by the homeowner herself after she moved in.



Figure 5-12. This was a multi-functional backyard. The backyard functioned as the garden, gym, picnic area, kid's playground, gathering place, and utility storage space.

Figure 5-11 showed that after moving in, the respondent built a new bathroom with different choices of materials and colors from the other bathrooms Habitat designed for her. Figure 5-12 showed a respondent's creative use of the backyard: a multi-functional space. It was a garden, gym, picnic area, kid's playground, gathering place, as well as utility storage space. These pictures also indicated that current Habitat house design did not consider how families used their space. On the one hand, the design suggestions confirmed that the design of the house was not exactly what families wanted. On the other hand, the design suggestions indicated that design participation needed skills to become involved in the design process. Families could choose matching colors and finishes, read the layout, and get a sense of scale from blueprints, but families might also be frustrated if they knew nothing about the basic design skills and acknowledged that they had to live with their decisions. Actually, most families were very interested in

learning some design and decorating skills during sweat equity. Concerning the possibility that a participant needed to learn some design skills in order to participate effectively in the design process, it might partially explain that the more design participation a respondent had, the less attachment, less pride, and less self-responsibility she felt. One respondent complained about the similar interior and exterior design of Habitat houses. Figure 5-13 showed the similarity of three Habitat houses. The exception included the exterior color and landscaping.



Figure 5-13. This picture showed three Habitat houses. The exterior of these houses looked similar.

When human resources were considered as one factor, the multiple regression analyses showed that design participation was negatively associated with human resources. As previously discussed, families did not have a lot of choices regarding the activities in relation to design participation. The families could select the lot within the designated areas, choose the layout within the limited blueprints, and decide the colors and finishes among the ones donated by others. If they were not totally satisfied with the layout, they could seldom make small changes in the design. This was understandable

when affordability was considered, but it also meant that when the blueprint was designed, no homeowners were consulted. After listing some inappropriate designs for her house, one respondent said, “Designers’ attitude is to take what you get. But why don’t you ask me, the current homeowners?” If design participation gave families the empowerment to influence their houses, the empowerment was limited because the degree of design participation was limited. When families realized the limitations in the design participation, the human resources factor might decrease since some of the so-called “participation” was superficial.

Design participation was also negatively related to trust in neighbors. The more design involvement a participant had, the less she tended to trust her neighbor. This finding was unexpected. But considering the strong correlation that existed between house attachment and trusting neighbors, the negative relationship between design participation and trust might simply be a side product of the negative relationship between design participation and house attachment.

The nonparametric tests also showed that design participation was negatively related to the frequency of house maintenance and repair. This finding might be explained by the small sample of this study. Since most respondents lived in the Habitat houses for less than five years, most houses were still in very good shape at the time of the research. In addition to maintenance skills, the age and health conditions of the homeowners really mattered when it came to maintenance and repair. A few respondents expressed directly that because they were old or had health problems, they did not maintain the houses well as they would like to. Also, employment may impact the frequency of maintenance as well. Many respondents, who were single-parent mothers,

had to work (sometimes double jobs or 12-hour shifts) while taking care of their children by themselves. This situation would leave them less time and energy to take good care of their houses. Mayer (1981) and Galster (1983, 1987) found a significant relationship between homeownership and home maintenance and repair when compared to rental housing. And this study found that construction was positively related to the frequency of home maintenance and repair.

Summary

Two of the three study hypotheses were supported by the statistical analyses for the survey and content analyses for the interview. The two supported hypotheses are: 1) Sweat equity contributes to building or increasing the human and social resources; and 2) A difference exists in the maintenance of human and social resources between physical settings of houses—Habitat neighborhoods and scattered sites. The third hypothesis—a relationship exists between design participation and satisfaction of the results of participation—was not supported. However, evidence was found to support the hypothesis that design participation had an impact on building social resources.

The analyses also showed that some results were unexpected from the study hypotheses. These results indicated that several possible problems might exist. For example, a small sample limited the accuracy of the results. Some factors such as physical features of the neighborhoods and personality of the respondents were not considered in this study. The adequacy of the measures needed verification. The intertwined relationships among human and social resources might also cause the unexpected results.

CHAPTER 6 CONCLUSIONS

Summary of the Study

This final chapter reviews the problem, research procedures, and specific research hypotheses, and also examines the results, conclusions, and implications. Since this study was built upon learning by doing and generalized social exchange theories, the conclusion attempts to integrate the findings with the theoretical rationale of this research. The implications and recommendations of this study will be discussed from the points of view of the researchers, designers, and Habitat for Humanity (Habitat) affiliates.

Statement of the conceptual theory. The conceptual theory or framework was built upon Gifford's (2002) informal learning model and cognitive and behavioral model in a physical community (see Figures 2-1 and 2-3). According to Deweyan learning-by-doing and Levi-Strauss's generalized exchange theory, a new model (see Figure 3-1) incorporated Gifford's concerns for personal characteristics, physical settings, behaviors, cognitions, and design/planning in a Habitat context. The new model added sweat equity as a predictor for a broader range of outcomes that included human and social resource developments of the low-income families.

Statement of the problem. This research investigated the sweat equity process and its impact on Habitat families' lives from three aspects: 1) the relationship between sweat equity and human and social resource development; 2) the maintenance of resource development in Habitat neighborhoods versus scattered sites; and 3) the relationship between design participation and satisfaction of the families.

Statement of the procedures. After extensive background research, this research was designed in two parts. A pilot study was conducted to preliminarily test the survey and interview instruments and the procedures among families who were in the sweat equity process in a local Habitat affiliate. The principal study was conducted among female householders in three regional Habitat affiliates. Initial contact information was obtained through Habitat. Convenience sampling and volunteerism were used to identify potential participants who were sent an introduction letter, a consent form, and a survey questionnaire by mail or in person. The willing participants were interviewed within two weeks after they were first contacted. The consent forms and survey responses were collected during the interview.

Research hypotheses. The Three specific hypotheses were:

1. Sweat equity contributes to the human and social resource development.
2. A difference exists in the maintenance of the resource developments in Habitat neighborhoods versus scattered sites.
3. A relationship exists between users' participation in house design and the satisfaction with the results of their participation.

Discussion. Hypothesis 1 was supported by the statistical analyses for the survey and content analyses for the interview: Sweat equity contributes to both human and social resource development. Specifically, construction had a positive impact on house attachment (pride in house, attachment to the house, and self-responsibility), design-house satisfaction (satisfaction with the house, the design, and design participation), and the frequency of house maintenance. Public activities had a positive impact on skills (pride in skills, financial skills, confidence in skills, and maintenance skills, reciprocity) and generalized sense of community (pride for neighborhood, safety, attachment to the neighborhood, satisfaction with neighborhood, and sense of community). The design-

house satisfaction increased and then decreased as the sweat equity hours increased. Training had a positive impact on satisfaction with the house, house design, and design satisfaction. Perception of economic and racial segregation decreased as training activities increased. Considered as one factor, human resources increased as construction increased. Human resources decreased as design participation increased. Considered as one factor, social resources increased as public activities and design participation increased.

Hypothesis 2 was supported by the findings: A difference exists in the maintenance of the resource developments in Habitat neighborhoods versus scattered sites. Specifically, families living in Habitat neighborhoods had higher self-esteem, a stronger sense of obligation to the neighborhoods, and a perception of less economic segregation.

Hypothesis 3 was not supported by the analyses: No statistically significant relationship exists between users' participation in house design and the satisfaction with the results of their participation. However, the research found evidence to support that design participation had an impact on social resources. Specifically, the earlier the families started design participation, the more they developed generalized sense of community, including pride in the neighborhood, safety, attachment to the neighborhood, satisfaction with their neighborhoods, and a sense of community. Social resources would increase as the number of design-related activities in which a respondent participated increased.

However, a few analysis results differed from the three hypotheses. For example, people who participated in more public activities perceived more segregation. A negative correlation existed between perception of skills and attachment to the house and between

design participation and house attachment, trust, and frequency of house maintenance. And the negative relationship existed between the number of design-related activities and the satisfaction with house, house design, and design participation. These discrepancies indicated possible problems in the theory, in the research questions, or methods, such as the sample and sampling, uncounted control factors, inadequacy of the measures, the correlation among human and social resources, and so on.

Conclusions

Sweat Equity as Participation, Learning, and Sharing

Sweat equity is a holistic process of doing, learning by doing, and sharing. Participation takes place in all sweat equity activities when a partner family learns skills, builds houses, and helps other families at the individual level and the neighborhood level. Although Habitat refers participation exclusively to the construction and management of houses, the effects of being able to play a part in the design process (i.e., choosing colors and materials) are significant to families, and the participatory process in the Habitat self-help program is empowering.

Sweat equity teaches Habitat families the skills to build and maintain their homes and what they can achieve by supporting each other. Habitat partner families are required to take formal seminars to learn about how to budget, how to be good neighbors, and how to control their lives. These training contents are only a small part of the learning-by-doing experiences. Partner families learn how to build and maintain a house from working side by side with others. Learning from housing experiences and making do with what is at hand can ease low-income families from these skill-based long-term tasks, and families appreciate the learning experience from Habitat. It is the learning-by-doing process that makes the participant feel proud of her own accomplishment. It is also a part

of the self-help process in terms of increasing the human resources. Therefore, the human resources are developed through a learning-by-doing process of sweat equity. However, the learning experiences or learned skills are insufficient for all the needs that families must have for house maintenance or repair in the long run.

Habitat partner families participate in other families' construction work, as well as their own house construction. Together they not only construct new houses, but they also build a new social network, friendship, and trust. Everyone is both a giver and a taker. First, the required sweat equity hours that address both helping and being helped ensure no free rider in Habitat, which helps to build and maintain trust and reciprocity. In Habitat, the norms are set by a Habitat affiliate and each partner family must agree to commit to them. Activities and sweat equity hours are recorded in the Habitat office. Anyone who violates the norm (i.e., not commit to sweat equity hours or volunteer labor) could be asked to withdraw from this program. No one gets a free ride during sweat equity with Habitat. Second, it is a generalized social exchange because most families help others regardless of whether or not the neighbors have previously helped them, and they do not expect to receive help from the same neighbors they assisted. Therefore, it is also a network-based generalized exchange. Everyone in the sharing process is a critical link to the entire supportive system. During the sharing process, partner families meet other people, get to know their neighbors, and build friendship and bonds with volunteers and neighbors. The process creates a sense of responsibility, belonging, pride, and trust. When partner families visualize all these meanings of helping and being helped in their houses, this entire process is empowering, and the learning-by-doing process advances people from taking care of their houses to caring for their neighbors and neighborhoods.

Hence, the sharing process of sweat equity builds social resources development.

However, the mutual support network is not effective because the neighboring activities are spontaneous and limited to a few neighbors. During the learning experience, families do not learn enough skills about neighboring or getting involved in their neighborhood. Instead, they would view seeking support as losing their independence although they would like to help others if they knew how.

Habitat Neighborhoods versus Scattered Sites

According to the generalized social exchange theory, Habitat neighborhoods may make it easier for Habitat families to maintain their human and social resources than being in scattered lots because they can trust their neighbors who also invested themselves through sweat equity. This study therefore showed that in Habitat neighborhoods, families had higher self-esteem and perceived less economic segregation. Considering the low price of Habitat houses compared to those on the housing market, Habitat homeowners have lower incomes than their neighbors who can afford the same houses at the market price. So Habitat neighborhoods should be more segregated economically. However, families living in Habitat neighborhoods perceive less economic segregation than those living in scattered sites, which in reality would be considered economically less segregated. This study indicated that perceived segregation might be different than the segregation defined by U.S. Department of Housing and Urban Development. In the case of Habitat, neighborhoods actually help to eliminate the perception of economic segregation.

The norm of generalized reciprocity is not maintained just because Habitat families live close to one another in the same neighborhood. The norm of generalized reciprocity is established during sweat equity. After moving into a Habitat neighborhood, without

proper organizing and neighboring, families live their own lives and do not know how to maintain reciprocity. They would like to continue to help other families build a Habitat house but because of the time and energy, they seldom go out and help. They would like to help their neighbors with maintenance and repair problems, but the families who need help would not ask for assistance. They regard “neighbors” as only those who live close them, regardless of how many Habitat neighbors they really have in the neighborhood. Habitat neighborhoods, compared to scattered sites, have only the physical form of neighborhoods. How to run the neighborhoods as the ideal places for Habitat families to live out their dreams needs more study.

Design Participation

In addition to the construction skills, maintenance skills, and social skills, this participatory housing process enables Habitat partner families to acquire personal control as well as social resources. The sense of control is far beyond building and repairing skills. Although Habitat does not fully understand the roles of design participation, it increases the development of social resources. Design participation allows families to personalize their homes and empowers them to make design decisions for their own houses, which most homeowners in other housing programs do not have. However, the level of design participation that Habitat families execute is limited. A higher level of design participation needs the full understanding among the designers, homeowners, Habitat, and the donors. The feedback from homeowners indicated a gap between current house design and planning and Habitat families’ needs. For example, some respondents preferred a bigger backyard to a bigger front yard because they needed to look out for their kids while they were working in the kitchen. This indicated that designers lacked social perspective of the residents: low-income single moms with small kids.

This study first contributes to completing Gifford's learning model in a Habitat setting. Compared with personal characteristics and physical setting, the results show that the sweat equity process contributes to human and social resource development. In other words, participation as a process is a driving force for resource building rather than a byproduct. The learning-by-doing process should not be ignored in theoretical models. Since the learner plays an active role in the learning process, it allows the researcher to identify which activities contribute to what learning results. Therefore it also provides an opportunity to improve the learning process. The study also explores quantitative and qualitative methods to test the generalized social exchange theory. These methods enrich the studies of generalized social exchange theory and fill the gap of theory and practice in the literature.

In addition to theoretical contribution, the study is significant in terms of presenting the importance of learning-by-doing during sweat equity, and providing evidence that supports Habitat neighborhood planning and design participation. The findings enrich the body of knowledge of participation in a Habitat context. The study originally applies both quantitative and qualitative measures to sweat equity, which allow more investigation of the learning-by-doing process. The application of subjective perception of economic and racial segregation also fulfills Sabatini and other researchers' (2001) proposition of a more comprehensive measure of segregation. The results indicate that a gap exists between the subjective and objective measures of segregation. Therefore, including subjective perception of segregation is essential and necessary.

In general, sweat equity is not just an instrument to deliver a low-cost housing product, but a process that allows people to learn, to share, and therefore to change. Due

to these special sweat equity experiences, Habitat neighborhoods are not perceived as segregated. Design participation is important to families, but requires more confirmative recognition from Habitat. Since this is a small-sample case study, the results are not conclusive in order to generalize the findings.

Although the main interests of this research are built upon extensive literature review and theoretical development, this study explores new ideas and suggestions from Habitat partner families that would inspire further research and Habitat improvement. The homeowners' input is valuable not only to the researcher and local Habitat affiliates, but also to other low-income housing programs in terms of strategies and design improvement. The following implications are suggested for designers, Habitat, and future research.

Implications

Suggestions for Designers

Currently, designers of Habitat houses do not work with Habitat homeowners in the design process. The designers may be volunteers at Habitat and have contact with Habitat families, but have no active design involvement. Most Habitat families would like to have more influence in the design of their houses. A few families do not want more influence because when they had their houses built, they worked with designers to discuss their layouts and furniture arrangement. One Habitat affiliate participating in this study had active designer-homeowner cooperation during the beginning stage, but the organization lost this tradition as Habitat has evolved in scale and efficiency. I suggest that having small seminars with potential homeowners who are working on other families' homes could help designers better understand families' needs. Instead of customizing each house design, designers could achieve both efficiency and more

customized design. At the same time, designers can teach potential homeowners how to read drawings, understand budget limitations, and discuss their priorities such as size of rooms, materials and finishes, and yard landscaping. The results of the seminar can be sent out as fliers to other potential homeowners in case they have more insightful input.

Finding the proper opportunity to work with Habitat families is difficult in some circumstances. The following suggestions from this study concerning design improvement may offer customized design ideas for low-income, single-parent families.

Adjacency of master bedrooms and children's rooms does not seem appropriate for privacy. Placing closets or bathrooms between the partition walls may ease the problem. Living rooms and dining areas should be separated if possible. Design bedrooms with a little more space so that a study area can be set up in the bedrooms. Keep the laundry room closer to the bedrooms and bathrooms instead of the kitchens because it is the bedroom and bathroom where dirty clothes are generated. The kitchen and closet spaces in current house designs are not big enough for most families. Instead of having a big closet, divide the same square footage into several smaller closets. Some families prefer tiles on the floor due to easy maintenance; some families prefer a carpet for its comfort touch. If no additional bathroom is financially available, a bigger bathroom with tub instead of shower may offer a good solution. Many families want a front porch for their houses, and most families with a front porch want to enclose the space because of the heat from a southern exposure and insects in the summer.

Concerning the yard, fencing the surrounding property is necessary to protect the families' ownership boundaries. Prepare more landscaping design choices for families. Besides the exterior colors on their houses, landscaping shows a family's personal touch

from the outside. In addition to fences and better yards, families with small children need more space in the back yard than space in the front yard. Since most of the Habitat householders are single parents, the parent—just the mother—often needs to do the household work while watching the children playing in the yard. For safety issues, a back yard is preferred to a front yard for children to play safely. If the lot size is limited, design a shared park or a recreational center as a solution for small individual lots. The park or the recreational center (common room) can provide a safe space for both children and adults to gather, and it can become the symbol of the neighborhood.

Other than design features, design communication with Habitat families should also be considered. One difficult task for families is to visualize the three dimensions of their houses. The two-dimensional drawings and small pieces of wall color samples make it difficult for untrained eyes of the families. Sketches of the interior perspectives and mock-up models with movable furniture may help families to understand their design choices. Using a computer model may simplify the rendering process for the designers. Families could then visualize the same room from different perspectives and with different colors or different furniture arrangements. Design students in interior design, architecture, and landscape may be a good source of workshop leaders.

Suggestions for Habitat

Habitat is playing an active role in terms of providing low-income housing. However, this study showed that the program could benefit families more if Habitat could improve certain stages in its current process. These suggestions concern the sweat equity process, participation, partnership, outreach, and action-orientated research.

Concerning the amount of time contributed in sweat equity, families believe that the more time they put into their house, the more appreciation they have in their house.

Some families think that 300 to 400 hours are reasonable and preferable, and 500-plus are too much for single-parent family—although families who finished 500 or more hours had no regrets. However, the researcher believes that defining the hours (for example, 200 hours) for public activities, training, and helping other families is more important than the total hours because families usually do whatever it takes to finish their own houses; they lose count of the sweat equity hours for their own houses. Since families need to work half or more of their sweat equity hours on public activities or on other families' houses, they want to complete their own houses as soon as possible. They therefore prefer to arrange the building activities twice a week instead of one day a week. Concerning the learning experience, Habitat may consider adding or strengthening the following skills as the training sweat equity: neighboring, maintenance, repair, leadership skills, and design. This study showed evidence that learning these skills during sweat equity could benefit families in the long run.

Although the sweat equity process is empowering in theory, families could not feel the empowerment until they participated in the planning, designing, and building process of their own house. Although Habitat addresses participation in the building process throughout the entire process, participating in the planning and design stages is uncommon. Having a full-time design staff may help to coordinate the entire participation process. Although the difficulty to organize open planning and designing participation is understandable, a small effort of change can make a big impact on the participating families. For example, Habitat should be encouraging families to participate in the board meetings, should be having small seminars to explain available choices (location, design, donation, and so on), and should be recruiting designers or builders to

work with families directly. Changing this process also needs local donors' cooperation. With the donors' understanding of how they can help families more efficiently, families may have more choices regarding plan, layout, colors, materials, and finishes. In this way, Habitat is solving problems with the families instead of solving problems for the families.

During the sweat equity process, Habitat partners with families. However, after families move in, Habitat has difficulty in describing its relationship with Habitat homeowners. Instead of being a parent to families, Habitat would rather encourage a family's independence via a homeownership association. Habitat annually inspects Habitat houses to encourage house maintenance. Although families built physical and social skills during sweat equity, this study showed that families did not learn enough skills for taking care of their houses in the long run. It is suggested that Habitat build a long-term partnership (not parent, but coach or mentor relationship) with families by providing the following needed information or skill learning: continuing learning experiences in the form of workshops or a video of workshops for both potential homeowners, as well as existing homeowners. The workshop should address both physical maintenance skills and social maintenance skills. The schedule of the workshops or learning experiences should be adaptable for both the facilitators (volunteers and skilled Habitat homeowners) and the learners (participating families). The continuity of sweat equity enables families to build the social power in addition to physical skills that they need for a better life beyond the improved physical environment.

Another way to help families build their neighborhood—in addition to houses—is to establish or enforce a functioning neighborhood association. The effectiveness of the

neighborhood depends on several issues, such as the organizer's leadership skills, neighboring skills, a sense of obligation, a sense of community of families, and the proper neighborhood activities (such as child care and upkeep). All these issues would increase the awareness of the neighborhood. The association could strengthen the generalized social exchange by encouraging neighboring activities and network-based reciprocal favors.

The final suggestion for Habitat is to conduct action-oriented research where stakeholders are actively involved in both problem identification and problem solving processes. The outcomes of the research include not only a report for the decision makers, but also an action plan that is to be carried out by the stakeholders. Although the resources for Habitat are limited, Habitat can work with schools and universities or other nonprofit groups to conduct research that addresses certain issues that they need to investigate. For example, volunteer students with a design background and/or social science background do not have to contribute to the hammering process. These students can contribute better with their design skills or social research skills. Habitat can also get periodic feedback from homeowners by sending anonymous surveys. In doing this, Habitat can examine its program, its policy, design of the houses, and better serve the families' needs.

Suggestions for Further Research

Although this research found interesting patterns, the findings are not conclusive for several reasons. First, some dependent variables are correlated. Although it is natural to think about the close relationship between human and social resources, the statistical analyses need independent variables. After this exploratory study, future research could focus on fewer and more controllable dependent variables with a larger sample size.

Second, the measures could have been improved by adding more statements about the participants rather than other people's opinions. For example, the self-esteem scale from Interpersonal Support Evaluation List (Cohen et al., 1985) emphasizes the positive comparison when comparing oneself with others. However, many families do not understand why their self-esteem has anything to do with what other people think. Therefore, more direct statements about oneself would help participant understand the scale better. Third, because of the complexity of the research, some extraneous variables were not considered or measured. For example, the physical features of the neighborhoods in which families live, personality, lifestyle or prior experiences of the respondents, and house characteristics may also have an impact on the dependent variables, such as satisfaction with the house, design, and neighborhoods. But conducting a full-scale study at this depth needs more interdisciplinary input, and more physical and social resources. Although this study provided valuable information and interesting results, the conclusions cannot be generalized to all low-income housing cases because of the small sample included in this case study. Multiple case studies with a larger sample are needed for generalization if they follow the same procedure with the same theoretical framework. Although the findings are not conclusive and could not be generalized due to some reasons, the understandings of sweat equity and its impact on families' lives sheds new light for other low-income housing programs to follow.

APPENDIX A
SURVEY INSTRUMENTS

Comparing Human and Social Resources Accumulated through Participation with
Habitat for Humanity in Scattered Sites and Habitat Neighborhoods

Research Survey

By

Yun Zhu
College of Design, Construction & Planning
University of Florida
Gainesville, FL 32611
(352) 392-0252 ext. 426

Section 1: Sweat Equity

As a Partner family of Habitat for Humanity (HFH), you have taken part in many activities with Habitat. I'd like to ask you to recall which activities you have done during your sweat equity hours.

Activities	Have you done it?	
	Yes	No
Have you ever attended groundbreaking of other homes?		
Have you ever worked in a HFH office or Thrift Store?		
Have you ever baby-sat for other partner families?		
Have you ever attended budgeting courses?		
Have you ever attended home maintenance courses?		
Have you ever attended homeownership courses?		
Have you ever attended insurance courses?		
Have you ever attended leadership courses?		
Have you ever worked on fundraising events?		
Have you ever engaged in public speaking for HFH?		
Have you ever worked with a family supporter on household management?		
Other (Please give examples)		

The following questions are related to sweat equity hours for construction of a HFH house. Please recall whether or not you have done these activities, and indicate whether the hours were done for you or other Habitat partner families.

Activities	Have you done it?		For whom?	
	Yes	No	Me	Others
Have you laid a foundation?				
Have you ever roofed a house?				
Have you ever sided a framed house with vinyl siding?				
Have you ever trimmed the interior?				
Have you ever painted?				
Have you ever landscaped a yard?				
Have you ever worked on drywall?				
Have you ever installed linoleum or floor tile?				
Have you ever installed utility pipes?				
Have you ever installed windows/doors?				
Other (Please give examples)				

Next I will ask you some questions about home maintenance during the past 6 months. First please indicate your confidence in your home maintenance skills using a scale from 1 to 4 where 1 means you are unskilled and 4 means you are very skilled. Then please check Yes or No to indicate whether or not you have done any home maintenance tasks, and how many times you have done each activity.

1 = unskilled, 2 = somewhat unskilled, 3 = skilled, 4 = very skilled

Activities	How skilled are you in doing each home repair?				Have you ever done any of the following home repairs?		How many times?
	1	2	3	4	Yes	No	
Paint rooms							
Replace flooring							
Repair wall board							
Repair roofing							
Repair porches							
Repair steps							
Repair plumbing (pipes)							
Repair kitchen appliance							
Repair lighting fixtures							
Repair AC or heater							
Fix a door							
Fix a window							
Decorate my house							
Clean my yard							
Other (Please give examples)							

Besides the skills learned from building a house, Habitat also provides some training courses for homeownership. Please rate the following statements using a scale from 1 to 4 where 1 means you strongly disagree and 4 means you strongly agree with these statements.

1 = strongly disagree, 2 = disagree, 3 = agree, 4 = strongly agree

1	The contents of the training courses were well organized.	1	2	3	4
2	The contents of the training courses were thorough.	1	2	3	4
3	The information presented in the training courses was useful.	1	2	3	4
4	I would like to continue to learn how to do household repairs after my required sweat equity hours are completed.	1	2	3	4
5	I am confident with future home maintenance and repairs.	1	2	3	4
6	I am proud of what I can accomplish with my own hands.	1	2	3	4
7	I have no problem keeping my budget under control.	1	2	3	4
8	I have no problem paying my bills on time.	1	2	3	4

Thank you. Please turn to the next section about feelings about yourself on the next page.

Section 2: Feelings about Yourself

The following statements concern how you feel about yourself in the past 6 months. For each statement, please indicate whether it is *True* or *False* for you (Circle one).

1	Most people I know think highly of me.	T	F
2	Most of my friends are more successful at making changes in their lives than I am.	T	F
3	I am closer to my friends than most other people.	T	F
4	I have a hard time keeping pace with my friends.	T	F
5	In general, people don't have much confidence in me.	T	F
6	I am more satisfied with my life than most people are with theirs.	T	F
7	Most of my friends are more interesting than I am.	T	F
8	I have someone who takes pride in my accomplishments.	T	F
9	I am able to do things as well as most other people.	T	F
10	I think that my friends feel that I'm not very good at helping them solve problems.	T	F

Thank you. The next page will discuss your feelings about your house.

Section 3: Feelings about Your House

The following statements reflect how you feel about your house. Please rate the following statements using a scale from 1 to 4 where 1 means you strongly disagree and 4 means you strongly agree with the statements.

1 = strongly disagree, 2 = disagree, 3 = agree, 4 = strongly agree

1	I feel a personal connection to this house.	1	2	3	4
2	This house really feels like a home.	1	2	3	4
3	I am proud of my house.	1	2	3	4
4	I am very satisfied with my present house overall.	1	2	3	4
5	I feel strong responsibility for house maintenance and repair.	1	2	3	4

Design involvement refers to participating in a part of the design process of your own house, such as choosing sites, colors, and finishes for your house.

Please check *Yes* or *No* to indicate which activities you participated in, when you did it (for example, I selected my paint colors when I began my 160th sweat equity hour), and whether you are satisfied with the current design.

Have you taken part in design activities for the following areas?		Yes	No	When did you do it? # of sweat equity hour	Are you satisfied with the current design?		
					Yes	No	Not known
Interior	Colors						
	Finishes						
	Layout						
Exterior	Colors						
	Finishes						
	Yard						
Neighborhood	Lot selection						
	Public space planning						
Other							

Thank you. The next page will discuss your feelings about your neighbors.

Section 4: Feelings about Your Neighbors

This section contains 3 parts: how you trust your neighbors, supportive neighborhood interactions, and how close you and your neighbors are.

1. Please circle T for True or F for False to indicate whether you agree with the following statements.

1	There is at least one person in this neighborhood I know whose advice I really trust.	T	F
2	There is really no one in this neighborhood I can trust to give me good financial advice.	T	F
3	There is really no one in this neighborhood who can give me objective feedback about how I'm handling my problems.	T	F
4	When I need suggestions for how to deal with a personal problem I know there is someone I can turn to.	T	F
5	There is someone in this neighborhood who I feel comfortable going to for advice about intimate problems.	T	F
6	There is someone in this neighborhood I can turn to for advice about handling hassles over household responsibilities.	T	F
7	I feel that there is no one in this neighborhood with whom I can share my most private worries and fears.	T	F
8	If a family crisis arose almost no one in this neighborhood would be able to give me good advice about handling it.	T	F
9	There is someone in this neighborhood I could turn to for advice about changing my job or finding a new one.	T	F

2. The following statements explore supportive interactions between you and your neighbors. Please rate these statements with 1-4 scale to indicate how much you agree with them.

1 = strongly disagree, 2 = disagree, 3 = agree, 4 = strongly agree

1	If I don't have something I need for my cooking, I can borrow it from a neighbor.	1	2	3	4
2	I would like to help others to build their houses after my house is finished.	1	2	3	4
3	If I have a repair problem, I would rather call a family member than a neighbor for help.	1	2	3	4

3. Please tell me how many of your neighbors you feel close to to do the following activities. Please fill in a number in the blank.

How many neighbors do you have? _____

How many of your neighbors do you say hello to when you see them? _____

How many of your neighbors do you consider close friends? _____

How many of your neighbors would you feel comfortable asking to borrow a tool? _____

How many of your neighbors would you feel comfortable asking to watch your house while you're away? _____

How many of your neighbors would you feel comfortable asking to watch your children while you're away? _____

How many of your neighbors would you feel comfortable asking to help you with a house repair?

How many of your neighbors would you feel comfortable asking for a ride when your car is not working? _____

How many of your neighbors do you visit now and then? _____

How often do you visit your neighbors? _____ times a month

Thank you. The last page is about your feelings about your neighborhood.

Section 5: Feelings about Your Neighborhood

Now I would like you to rate your current neighborhood. Please use a scale from 1 to 4, where 1 means you strongly disagree and 4 means you strongly agree, to indicate how much you agree with the following statements.

1 = strongly disagree, 2 = disagree, 3 = agree, 4 = strongly agree

1	I am satisfied with my present neighborhood overall.	1	2	3	4
2	I think my neighborhood is a good place for me to live.	1	2	3	4
3	People in this neighborhood do not share the same values.	1	2	3	4
4	My neighbors and I want the same thing from this neighborhood.	1	2	3	4
5	I can recognize most of the people who live in my neighborhood.	1	2	3	4
6	I feel at home in this neighborhood.	1	2	3	4
7	Very few of my neighbors know me.	1	2	3	4
8	I care about what my neighbors think of my actions.	1	2	3	4
9	I have no influence over what this neighborhood is like.	1	2	3	4
10	If there is a problem in this neighborhood, people who live here get it solved.	1	2	3	4
11	It is very important to me to live in this neighborhood.	1	2	3	4
12	People in this neighborhood generally don't get along with one another.	1	2	3	4
13	I expect to live in this neighborhood for a long time.	1	2	3	4
14	I feel comfortable in my neighborhood.	1	2	3	4
15	I do feel that I belong in this neighborhood.	1	2	3	4
16	I am ashamed of my neighborhood.	1	2	3	4
17	I feel safe in my neighborhood during the daytime.	1	2	3	4
18	I feel safe in my neighborhood during the nighttime.	1	2	3	4
19	I would have better contacts with friends or family if I lived in another part of town.	1	2	3	4
20	I feel segregated by living in this neighborhood.	1	2	3	4

The next question is about your neighborhood association. Please check *Yes* or *No* to indicate whether you have a homeowner association in your neighborhood and if yes, whether it holds regular meetings.

	Yes	No
Do you have a homeowner association in your neighborhood?		
If yes, does your neighborhood hold homeowner association meetings?		

If your neighborhood holds homeowner association meetings, please check a category that describes the frequency your homeowner association holds meetings and the frequency you attend those meetings.

	Once a month	Twice a month	Once a week	Twice a week
How often does your homeowner association hold meetings?				
How often do you attend neighborhood meetings?				

That is it! Thank you again! Please use the pre-paid envelop to send back the signed Consent Form and the survey you just finished. I will call you to set up the interview time within two weeks.

APPENDIX B
INTERVIEW QUESTIONS

Address: _____ Zip code: _____ Subject ID: _____

I'd like to ask you how you feel about participating in sweat equity. Please use your own words or stories.

1.1 Not everyone chooses to work on his or her own house. Why did you choose to work with Habitat? (Habitat helps people purchase a house by putting in several hundreds of sweat equity hours of work. Why did you choose to obtain your house with Habitat?)

1.2 How do you feel about the sweat equity hours that must be spent helping others before building your own house? (Can you give me examples of what you liked or disliked?)

1.3 How do you feel about the sweat equity hours that must be spent building your own house? (Can you give me examples of what you liked or disliked?)

1.4 Are there advantages in building your own house instead of having a house without making any effort to build it? ___ Yes ___ No
a. If yes, what are these advantages?

b. What is the best part of the sweat equity?

- c. If no,
- i. Do you learn new skills in construction and home maintenance? What did you learn?
 - ii. Do you feel attached to your home? Yes No
 - iii. Are you proud of using your new skills to build your house? Yes No
 - iv. Are you and your neighbors keeping close relations? Yes No
 - v. Do you feel attached to your neighborhood? Yes No

1.5 Are there drawbacks from participating with Habitat? Yes No
If yes, what are the drawbacks?

1.6 Imagine that you could change any part of the process in Habitat for Humanity. Can you suggest one or two things that would help to improve the process?

1.7 Do you like future workshops or training courses from Habitat? Yes No
What would you like to learn?

1.7.1 Leadership skills are skills that influence and negotiate among people, and facilitate collaborative actions to improve the overall community. Basically it is about team building and interpersonal skills. How do you feel about including leadership skills in sweat equity?

1.7.2 How do you feel about learning design and decorating skills during sweat equity?

1.8 If you would like to continue to learn household repairs after your required sweat equity hours, what types of repair do you want to learn?

1.9 Why do (don't) you attend the neighborhood association meetings? Do you have any suggestions for the neighborhood association?

1.10 You are (are not) satisfied with your current neighborhood. What are the qualities of a good neighborhood?

1.11 When you need some advice or something (a tool or food), why do (don't) you ask a neighbor for help?

Thank you.

Next I would like to ask some questions about your house.

- 2.1 If your house needs regular maintenance (for example, changing the AC filter), can you do this yourself? ___Yes ___No
If no, would you ask someone else for help? Who are they? Why?
- 2.2 If your house needs repairs (for example, fixing a leaking pipe or roof), can you do this yourself? ___Yes ___No
If no, would you ask someone else for help? Who are they? Why?
- 2.3 If a neighbor asks for your help with their home repairs, would you be able to help?
___Yes ___No
Why?

Does it matter to you whether the neighbor helped you before or not? Why?

Do you expect that he or she may someday help you back? Why?

Design involvement refers to participating in a part of the design process of your house. The next five questions are about your feelings about designing your house.

- 3.1 How do you feel about selecting interior colors and finishes for your house?
- 3.2 Would you like to have more influence over the design of your house? Can you suggest two changes that you like to make to your interiors? What are these changes?
- 3.3 Are there any particular changes you would like to make to the exterior? What are these changes?

3.4 Using the following scale (show the card), please rate your satisfaction with level of involvement in the design process for your house.

1= very unsatisfied, 2= unsatisfied, 3= satisfied, 4= very satisfied
999= don't know

3.5 Using the following scale (show the card), please rate the usefulness of selecting color and finishes for your house.

1= very unsatisfied, 2= unsatisfied, 3= satisfied, 4= very satisfied
999= don't know

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BIOGRAPHICAL SKETCH

Yun Zhu, M. Arch., is a Ph.D. candidate in the Department of Interior Design, College of Design, Construction and Planning (CDCP), University of Florida. Ms. Zhu earned her Bachelor of Architecture at Tsinghua University in Beijing, China, in 1997. She obtained a Master of Architecture at the Beijing Institute of Civil Engineering and Architecture. She started her doctoral study at the College of Design, Construction and Planning, University of Florida, in 2000. During her studies at CDCP, she received funding from the Dean's Office and the Department of Interior Design. Ms. Zhu received the following awards: five consecutive academic excellence awards; two scholarships from the Central Florida Builders Exchange and the University of Florida; a Graduate Student Travel Grant from Student Government Council; the Presidential Recognition for Outstanding Student (University of Florida); and the Doctoral Award for Outstanding Service (Department of Interior Design at the University of Florida).

Ms. Zhu began her academic career as a teaching assistant at Beijing Institute of Civil Engineering and Architecture. She advanced her teaching experience as a graduate assistant with the Department of Interior Design at the University of Florida. The courses she taught included studios, theory, design communication, furniture design, and detailing. While at the University of Florida, she participated in the Foundation for Interior Design Education Research accreditation process in 2004, assisted with self-examination, documentation of courses provided by the department, and the initial design

of the display gallery. She has been a member of Interior Design Educator's Council since 2005.

Ms. Zhu's undergraduate study focused on the relationship between the forms, mass, and contrast of housing exteriors and the surrounding environment. The graduate study of housing and residential design enabled her to investigate the relationship between residents' behaviors and their lighting environments. However, the housing study did not explore the social aspects that also might impact residents' behaviors. Ms. Zhu became interested in the social environments, as well as the physical environments, and their impact on human behaviors. Her doctoral study was focused on sweat equity and the impact of this participatory process on human and social resource development in the context of Habitat for Humanity. Her current research interests include: environment-behavior design in color, special populations, and personal space; social design in the workspace, public space planning, co-housing, and design methods; and design participation among designers and stakeholders.