HOUSING QUALITY AND WELL-BEING: AN EVALUATION OF SLUM REHABILITATION POLICY

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ABSTRACT

This study investigates the effects of housing quality on well-being by comparing a sample of low-income women living in two different housing conditions: slum housing and public housing. Interviews, questionnaires and observations were used to collect data on quality of housing, well-being aspects, and demographic factors. T-tests and multiple linear regression models were used to statistically analyze the difference in housing conditions and well-being between the two groups and to understand the effect of housing quality on well-being. Bootstrapping method was also used to examine housing quality as an underlying mechanism in the association between housing site and well-being. Household income, educational attainment and employment status were used as statistical controls. Results of this study suggest that housing quality and overall well-being were better in women living in public housing in comparison to women in slum housing. Also housing quality was an effective predictor of various aspects of well-being. Mediational analyses suggest that well-being correlates of better housing are explained by housing quality. However, given the quasi-experimental research design of this study, these pathways should be interpreted with caution. These results begin to fill in the gap in housing literature in developing countries. Moreover, these results provide a preliminary psycho-social evaluation of slum rehabilitation policies with implications for planners and policy-makers.

BIOGRAPHICAL SKETCH

Uchita Vaid grew up in Ahmedabad in India, a city with a rich architectural heritage. She has always been interested in designs of spaces and their effect on people. She attended Institute of Environmental design in India where she received her Bachelors in Interior Design. She practiced interior design, graphic design, retail design and architecture in various design firms in India. She worked on projects in residential environments, retail and hospitality industry. While working as a designer, she always felt a need to further understand and analyze the effect of her designs on the people. This urge led her to become fascinated by the field of environmental psychology and eventually led her to Department of Design and Environmental Analysis at Cornell University in 2010 to pursue her M.S. in Applied Research in Human-Environment Relations. During her masters she became interested in housing policies in India and the effect of housing quality on well-being. After graduating, she hopes to conduct housing policy research in India.

Dedicated to my grandfather ‘Nanaji’

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INTRODUCTION

The general thesis of this study is that the physical characteristics of a house influence the well-being of its residents, where some housing quality characteristics are more salient than others. The particular population and context under investigation are two groups of low-income urban women: one residing in slum housing and the other in public housing provided under slum rehabilitation policies in Ahmedabad, India. Studying this population also affords a preliminary evaluation of slum rehabilitation policies in developing countries. This study conducts a psycho-social evaluation of slum rehabilitation policy as most prior evaluations have been from an economical or institutional perspective. For example, an economical evaluation might ask questions about the effect of housing policy on the land market or an institutional evaluation might ask about the levels of involvement and responsibilities of various organizations part of the policy. There is a need for psycho-social evaluation examining the effect of these policies on resident's well-being and quality of life. Also studying the relationship between housing quality and well-being in a different context than prior studies would give us more nuanced theoretical understanding of how environments affect people.

Background

Because of increasing population growth and limited economic resources, housing continues to be among the major social problems facing developing nations today. Substandard housing poses tremendous health and societal risks to its residents. An important element of society's health, safety, and stability, achievement of minimum quality housing standards is viewed as the most important single indicator of the success of government actions (Struyk & Turner, 1986).

According to the United Nations, approximately 50 percent of the global urban population can be classified as slum dwellers—individuals who suffer from inadequate access to safe water, sanitation and other infrastructure; poor structural quality of housing; overcrowding; or insecure residential status. In the least developed countries, estimates of slum dwellers amount to approximately 78 percent of the urban population (United Nations Human Settlements Programme, 2003). South Asia has the largest share, followed by Eastern Asia, sub-Saharan Africa and Latin America. China and India together have 37 per cent of the world's slums (United Nations Human Settlements Programme., 2006). Between 2000 and 2010, the number of slum dwellers increased by six million every year (City Alliance, 2010). In India the slum population increased from 75.26 million in 2001 to 93.06 in 2011 (Government of India, 2011). Slums have both negative and positive characteristics. On the negative side, slums have the most intolerable of urban housing conditions, which frequently include: insecurity of tenure; lack of basic services, especially water and sanitation; inadequate and sometimes unsafe building structures; overcrowding; and location on hazardous land. In addition, slum areas have high concentrations of poverty and of social and economic deprivation, which may include broken families, unemployment and economic, physical and social exclusion (Abrams, 1964). Slum dwellers have limited access to credit and formal job markets due to stigmatization, discrimination and geographic isolation (Amis & Rakodi, 1995). People in slum areas suffer inordinately from water-borne diseases such as typhoid and cholera, as well as more opportunistic ones that accompany HIV/AIDS. Slum areas are also commonly believed to be places with a high incidence of crime, although this is not universally true since slums with strong social control systems can have low crime rates.

On the positive side, slums are the first stopping point for immigrants – they provide the low-cost and often only affordable housing that will enable immigrants to save for their eventual absorption into urban society (Amis & Kumar, 2000). As the place of residence for low-income employees, slums keep the wheels of the city turning in many different ways. The majority of slum dwellers in developing country cities earn their living from informal sector activities located either within or outside slum areas, and many informal entrepreneurs operating from slums have clienteles extending to the rest of the city. Slums are also places in which the vibrant mixing of different cultures frequently results in new forms of artistic expression. Out of unhealthy, crowded and often dangerous environments can emerge cultural movements and levels of solidarity unknown in the suburbs of the rich. Against all odds, slum dwellers sometimes develop economically viable and innovative shelter solutions for themselves. However, these few positive attributes do not in any way justify the continued existence of slums and should not be an excuse for the slow progress towards the goal of adequate shelter for all.

The government of India has implemented various rehabilitation policies like Jawaharlal Nehru Urban Renewal Mission (JNURM) and Slum Rehabilitation Scheme (SRS) to ameliorate inadequate housing issues. Under these policies slum dwellers are rehabilitated to public housing at either the same site or a different site. Public housing is meant to provide basic services to community, secure land tenure, and enhance overall living conditions. The Government of India announced the National Housing Policy (NHP) in 1988, whose long term goal was "to eradicate the problem of lack of housing, improve the housing conditions of the inadequately housed, and provide a minimum level of basic services and amenities to all" (National Informatics Centre, 2011).

But to understand the efficacy of these policies in creating just and equitable housing conditions, it is vital to empirically evaluate the effects of slum rehabilitation housing policies by assessing how housing quality affects people's well-being and quality of life. First it is pertinent to evaluate if the housing quality improves from slum neighborhoods to public housing. Secondly, does housing quality influence occupants' well-being? In this study, I explore the relationship between housing quality and well-being by comparing two groups living in different housing conditions: slums and public housing. Questions about the effects of housing quality on people's well-being are important to ask. A better understanding of this relationship not only provides theoretical knowledge of how environments affect human well-being, but also enables us to make better housing policy decisions, design more apposite housing, and provide insight into areas for effective interventions. The housing research that has been conducted thus far has suggested that housing conditions do have an effect on residents' well-being. However it is difficult to clearly interpret the relationship through prior research. There is huge variability in the ways housing quality is measured, and sometimes it is measured only through subjective appraisal. Poor measures of housing quality are among the most common failings of housing research. Also housing research which often relies on cross-sectional comparisons is prone to internal validity threats. There are various confounding factors such as socio-economic status, age, education etcetera related to housing quality. If factors such as these co-vary with the independent variable (e.g., higher income families in better quality housing; low-income families in poor quality housing), then it is unclear whether housing quality or the confounding variable truly explains the variance in dependent variables.

Moreover, well-being is defined narrowly in most of the extant literature related with housing. Most studies focus on one or few aspects of well-being such as physical health, mental

health, social networks, or life satisfaction. However, the broad construct of psychosocial well-being encompasses a plethora of social indicators which reflect quality of life. Ryff (1989) summarized dimensions of psychological well-being into six major categories; self-acceptance, positive relations with others, autonomy, environmental mastery, purpose in life and personal growth. The quantity of indicators can make it difficult to measure the construct. This problem can be solved by constructing a small number of effective indicators as master indices which can represent a cluster of indices (Rapley, 2003). These domains can incorporate; physiological conditions, health conditions, social conditions, materialistic conditions, personal conditions, work conditions, environmental conditions, cultural and leisure conditions (Diener & Arora, 2009). Based on aspects of well-being mentioned in the literature, several domains that hypothetically are influenced by housing conditions are studied in this research. I aim to examine well-being in a broader framework by studying the variables mentioned in Figure 1.

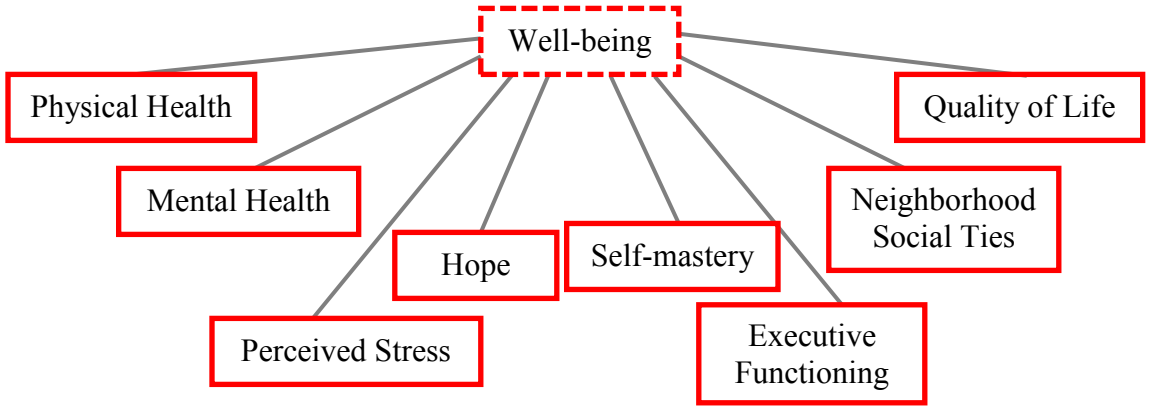


Figure 1: Aspects of well-being under study.

Now I will review existing literature regarding the relationship between housing quality and well-being aspects shown above. Also, I will review prior evaluations of slum rehabilitation policies in India.

Physical Health

The effects of poor housing on physical health have been recognized in the scientific literature for over 150 years, since Chadwick (1843) estimated the average life expectancy of people in Liverpool in the worst housing (cellars) to be only 15 years. The literature on housing conditions and health points to the conclusion that housing can have significant impacts on physical health. Studies have shown that people living in poor housing conditions are more likely to suffer from physical health consequences. For instance, inadequate heating systems and the presence of dampness, molds, and other allergens are associated with poor respiratory health (Bornehag et al., 2001; Burridge & Ormandy, 1993; Matte & Jacobs, 2000; Peat, Dickerson, & Li, 1998). Several British studies such as those by Martin, Platt and Hunt (1987) and by Strachan (1988) focused on damp and moldy housing demonstrated severe detrimental effects on physical health. These studies document detrimental effects of dampness and mold not only on respiratory illnesses (e.g. wheeze, coughs, cold) but also on a variety of non-respiratory ailments (nausea, vomiting, aching joints). Epidemic increases in asthma have been partially attributed to ambient pollutants along with exposure to allergens in the home (Hopton & Hunt, 1996; Packer, Stewart, & Fowle, 1994; Rauh, Landrigan, & Claudio, 2008; Rosenstreich et al., 1997). Furthermore, studies focused on effects of exposure to toxic substances such as lead, radon, and carbon monoxide, have shown serious detrimental health effects (Field, 2001; Leighton, Klitzman, Sedlar, Matte, & Cohen, 2003; Meyer, McGeehin, & Falk, 2003; Raub & Benignus, 2002; Walker & Hay, 1999). Another set of risks to health that literature associates with housing are injuries (Bonnefoy, 2007; DiGuiseppi, Edwards, Godward, Roberts, & Wade, 2000; Great Britain. Dept. of Health, 1999). Some of this risk is caused by features of the home (e.g., steep staircases), the presence or absence of safety equipment (e.g., stair gates, handrails) (Shaw, 2004;

Tinetti, Speechley, & Ginter, 1988). Thomson et. al. (2009) reviewed 45 housing intervention studies from 1887 to 2007 and concluded that housing improvements can generate health benefits. Although the authors do acknowledge some methodological limitations of the studies, there is evidence that interventions to improve housing enhance health.

A longitudinal study where around 400 women were followed as they moved from substandard housing to better quality housing concluded that the rate of total episodes of illness were lower after the group moved (Wilner, Walkey, Glasser, & Tayback, 1962). A British study utilizing data collected at six time periods between 1958 and 1991 for a sample of 11407 participants concluded that multiple housing deprivation factors led to a 25 percent increased risk of experiencing severe ill health across the life course (Marsh, Gordon, Heslop, & Pantazis, 2000). The prevalence of literature concerning housing related physical illness continues to grow and shed light on the bleak living conditions of people with access to few resources.

Mental Health

In addition to physical ailments, previous research has also provided evidence of links between housing quality and psychological distress or mental health. People in sub-standard housing have been found to be more likely to suffer from mental health issues such as depression and anxiety. A study conducted in London found that "housing difficulties" such as severe overcrowding, extreme physical shortcomings, or major problems related to noise or tenure security partly explained variance in mental health in women (Brown, Bhrolchain, & Harris, 1975). More studies corroborated their finding of effects of housing quality on mental health (Halpern, 1995; Hunt & McKenna, 1992; Kasl, Will, White, & Marcuse, 1982; Payne, 1997).

One of the largest longitudinal studies, conducted by Wilner, Walkley, Pinkerton, and Tayback (1962), found that after relocating to better-quality public housing, residents'

psychological well-being improved significantly compared to the wait-list control group. They studied effects on housing quality on multiple aspects of well-being like health; psychological adjustment pertaining to personal and family relations, neighborhood ties, self-concept and aspirations. Elton and Packer (1986) also compared the psychological well-being of relocated public housing occupants and found reduced depression and anxiety symptoms relative to the control group. Evans, Wells, Chan, and Saltzman (2001a) studied women relocating through a housing program and found that change in housing quality was predictive of post-move psychological distress. Wells and Harris (2007) studied a group of low-income women relocating from inadequate to newly constructed homes and results indicated that changes in housing quality predict post-move psychological distress, after controlling for pre-move psychological distress. They also suggested that improvement in psychological distress from improved housing was largely due to one subcomponent of housing quality; crowding. Furthermore, in a review of literature on housing and mental health, Evans, Wells and Moch (2003) reveal that across many studies representing various populations, there is a positive correlation between mental health and housing quality.

Perceived stress

Perceived stress can be viewed as a variable measuring the experience of the level of stress as a function of objective stressful events, coping processes, personality factors etcetera (Cohen, Kamarck, & Mermelstein, 1983). It seems logical to expect the effects of stress to be closely related to the many direct effects of material deprivation, simply because material insecurity is always worrying (Wilkinson, 1997). An environment that is continually and uncontrollably noisy, noxious, depressing or dangerous is a serious source of stress (Pacione, 1990). Perceived stress is associated with housing deprivation and housing quality in the existing literature. Cohen

et al. (2000) concluded that expectations and aspirations are conditioned by experience so that poor housing and deprived neighborhoods lead to stress and a general state of dissatisfaction. Based on study of 588 families in England, Fanning (1967) concluded that psychological stress varied by housing type; those residing in walk-up apartments were most stressed. Similar results with housing type were obtained by Gillis (1977) in a study of 442 residents of two Canadian cities, where residents living in apartments were more stressed in comparison to residents of single family homes. Overcrowded housing conditions have also been shown to exacerbate stress in residents (Gove, Hughes, & Galle, 1983; McCarthy & Saegert, 1979; Mitchell, 1971). Moreover, specific housing problems like inadequate structural conditions, lack of basic amenities may lead to higher stress as well. In a prospective study, Cattaneo et. al. (2007) found that replacing dirt floors by cement floors resulted in significantly lower rates of perceived stress in people in Mexico.

Hope & Self-mastery

"Hope is defined as the process of thinking about one's goals, along with the motivation to move toward (agency) and the ways to achieve (pathways) those goals" (Snyder, 1995). Hope can be viewed as a basic, fundamental, integral part of living (Fromm, 1968; Hinds, 1984; Miller, 1989). Marcel (1962) sees hope as a central raison d'être for being human. Russinova (1999) described three types of hope-inspiring strategies. The first explores the healing potential of supportive relationships; the second focuses on increasing the consumer's inner resources; and the third facilitates the use of external resources. It can be posited that the external environment may nurture hope or negatively impact levels of hope.

Previous studies examined the effect of housing on the level of hope of residents and concluded that housing environment affects hope. For instance, in an exploratory study with a

sample of 60 older adults in a nursing home, perceptions of hope were found to be influenced by place of residence (Herth, 1993). Housing was shown to influence the level of hope in bereaving elders (Lund, Caserta, & Dimond, 1986). Housing conditions were found to influence self-esteem and hope in a study with 171 low-income people (Rohe & Stegman, 1994). In a longitudinal study, as women moved from inadequate housing to better housing conditions, their hope and optimism levels improved (Wilner et al., 1962). However, hope is not a very ubiquitous dependent variable in housing studies. It is studied more within the context of social support and human relationships as these are significant factors affecting hope levels.

Self-mastery concerns the extent to which one regards one's life-chances as being under one's own control in contrast to being fatalistically ruled (Pearlin & Schooler, 1978). The possession of a sense that one is in control of the forces impinging on one is an important psychological resource in vitiating stress. Control beliefs, such as self-mastery, locus of control, and desire for control, have been linked to active coping and persistence in a number of studies (Aspinwall & Taylor, 1992; Bandura, 1977; Marshall, 1991; Thompson, 1981; Thompson & Spacapan, 1991). Low rates of mastery have been linked to decreased overall well-being (Rotter, 1966) as well as to hopelessness and passivity (Rosenfield, 1989). High rates of mastery, on the other hand, have been shown to boost mental health and functioning (Badger, 1993; Roberts, Dunkle, & Haug, 1994).

Prior studies have evaluated the effects of making housing available to homeless people on their perceived self-mastery. One study followed 197 homeless adults and concluded that self-mastery scores improved as people received adequate housing (Greenwood, Schaefer-McDaniel, Winkel, & Tsemberis, 2005). A longitudinal study assessed changes in sense of control, pre- and post-ownership, and compared them to those in a control group of continuing renters. The

findings indicated that, relative to the control group, those in the homeowner group did not experience a significant increase in sense of control. Also effects on self-mastery and control have been looked at previously with no effect on the general population with change on housing (Seilheimer & Doyal, 1996) but improvement has been seen in homeless adults who obtained housing (Wolf, Burnam, Koegel, Sullivan, & Morton, 2001). Perhaps the magnitude of change in housing from the current conditions may have resulted into the effect on self-mastery.

Neighborhood Social Ties

Neighborhood social ties are the glue which makes a collection of unrelated neighbors into a neighborhood—a source of social support and sense of community (McMillan & Chavis, 1986; Unger & Wandersman, 1985). Robert Putnam (2000) defines social capital as "the connections among individuals—social networks and the norms of reciprocity and trustworthiness that arise from them". Thus, social capital exists in the structure of relationships and helps individuals and groups achieve goals (Coleman, 1988). Briggs (1999) conceptualizes social capital as having two dimensions. One element is made up of the social ties that provide us with social support and help us get by in life. The other element is made up of the ties that act as social bridges and provide us with leverage to help us get ahead in life.

Several studies have shown that poor urban residents often have insular and localized social networks that offer little opportunity for advancement (Tigges, Browne, & Green, 1998; Wacquant & Wilson, 1989; Wilson, 1996). In effect, such residents are isolated from the social capital of mainstream society. Yet, another set of studies have found that rich social networks do exist in low-income communities and that these kin networks provide an important safety net for the poor (Edin & Lein, 1997; Stack, 1974; Vale, 2002). These studies point to tight functioning social networks as one of the greatest assets in poor communities and challenge the notion that

the social networks of the poor are inferior. These networks have been shown to be disrupted with relocation under rehabilitation and redevelopment housing policies (Cadavid, 2010). Scholars have raised concerns about the disruption of social ties offering social support (Clampet-Lundquist, 2006; Popkin et al., 2004) as well as the disruption of the social fabric of entire communities (Fullilove, 1996; Venkatesh, 2005) in relation to housing rehabilitation programs. Analyzing in-depth interviews with 41 families who were relocated, Lundquist (2010) concluded that relocation translated into less socializing and weaker local ties.

Quality of life

Quality of life (QOL) is a subjective phenomenon based on a person's perception of various aspects of life experiences, including personal characteristics, objective life conditions, and the perception of significant others (Schalock, 1990). Borthwick-Duffy (1992) has presented three perspectives on quality of life: (a) quality of life defined as the quality of one's life conditions, (b) quality of life defined as one's satisfaction with life conditions, and (c) quality of life defined as a combination of both life conditions and satisfaction. Along similar conceptual lines, the WHO (1994) defines QOL as "an individual's perception of their position in life in the context of the culture and value systems in which they live, and in relation to their goals, expectations, standards and concerns".

It is plausible to theorize a relation between an individual's perception of their position in life and their housing situation. Poor housing conditions can mar perception of being in a good position in life. Kahlmeier et. al (2001) studied associations between changes in reported quality of life with change in 40 housing quality indicators by using multiple logistic regression adjusting for socio-demographic variables. They concluded that an improvement in perceived environmental housing quality was conducive to an increase in wellbeing of movers when other

dimensions of housing quality and potential confounders were taken into account. Similar results were obtained by a study in Germany with older adults. The central hypothesis of this work that housing-related variables explain a substantial portion of variance in life quality was supported by the data (Oswald, 2003). However, most housing quality research focuses on singular aspects of quality of life like health, stress, social relations and like. This is because quality of life is a broad construct and the variation in this construct may be a result of variety of factors other than housing quality such as socio-economic status, education level, employment status, family conditions etcetera. But there is some merit in studying the effect of housing quality on quality of life as people's perception of their position in life can be influenced by the house that they live in.

Slum Rehabilitation Policy evaluations

As Cities Alliance aptly observes, slums result from failed policies, bad governance, corruption, inappropriate regulation, dysfunctional land markets, unresponsive financial systems, and a fundamental lack of political will (2000). Thus, while inadequate housing certainly comprises a significant facet of the slum challenge, shelter remains but one component of a larger development problem. Slum and housing policies have multiplied, bringing new waves of thinking and solutions that consider much more than just a house. Previous evaluations of these policies have revealed that slum rehabilitation policies, by changing the living environment, might trigger positive changes as well as unwanted side-effects. These evaluations mostly fall into three major categories; economical evaluations, institutional evaluations and spatial evaluations.

Economical evaluations of slum policies have reported that these policies have resulted into poverty reduction, better access to credit and higher income generation (Aiga & Umenai,

2002; Bapat, 1988; Cattaneo, 2007; Sanyal & Mukhija, 2001). But there is contradictory evidence in the literature that shows disruption of informal employment networks leading to reduction in income (Vaquier, 2010). Spatial evaluations of these policies have reported rehabilitation resulting into longer commute to work, poverty recycling and unsettled social and professional networks (Cadavid, 2010; Mukhija, 2003). Institutional evaluations mostly evaluate how various organizations and groups involved in the rehabilitation policies work with each other and how well the system works. There have been several case studies of rehabilitation projects in India where the relationship among slum-dwellers, rehabilitation agencies and non-government organizations throughout the process is examined (Mukhija, 2001; Nijman, 2008; O'Hare, Abbott, & Barke, 1998). These studies have reported a need for more formal involvement of non-government organizations in the rehabilitation process. Moreover, they have also recognized a need for rehabilitation agencies to not only participate in the rehabilitation process in crude monetary terms, but to also provide qualitative and quantitative inputs that incorporate collective action to form co-operatives, to complete paper work, and to participate in managing and monitoring development as it takes place.

Contributions of the study

This review shows that available data on effects of housing quality on people's well-being are largely confined to North America and Western Europe. The paucity of data in developing countries is particularly troublesome given both the greater population size and more adverse living conditions in many of these countries (Evans & English, 2002). This study attempts to take a small step towards filling in this gap in the literature by studying housing conditions in India. This study builds upon prior research in three key ways. First, the study is based in a developing country, India where there is dearth of research on housing quality and its effect on

well-being. Second, this study employs a wider framework for studying well-being that gives a more comprehensive view of the effects of housing quality. Third, this study also evaluates the efficacy of a slum rehabilitation policy in India by comparing people who moved into public housing from slum neighborhoods to people currently living in slum neighborhoods waiting to move into public housing.

Most policy evaluations examine the effects of rehabilitation under the lenses of spatial, economical and institutional development. However, it is imperative to also evaluate them under the lens of social indicators such as health, psychosocial development and quality of life. As Bhradwaj and Wilkening (1980) describe, "The recognition that the economic health of a nation is not synonymous with individual satisfaction and well-being has led to the development of social indicators to assess individual quality of life…"

Study aims and hypotheses

The present study addresses three key questions. First, does quality of housing improve from slum neighborhoods to public housing provided under rehabilitation policies? Second, are there differences in well-being between women living in slums and public housing? If so, can these differences be explained by differences in housing quality? Lastly, does one or more of the subscales of housing quality significantly predict well-being characteristics under study?

To answer these questions a slum rehabilitation policy was evaluated. Under this rehabilitation policy the government provides slum-dwellers with public housing (Figure 2) at the same site of the current slums or a different site. Public housing provided under this policy is mostly multi-storied apartment complexes with primary infrastructure for water supply, drainage and electricity (Figure 2). I hypothesize the housing quality to be better in public housing in comparison to slums. Also, I hypothesize well-being to be more positive in public housing in

comparison to slum neighborhoods except for neighborhood social ties. Finally I hypothesize that some of the expected differences in well-being characteristics between slum and public housing will be accounted for by housing quality. Following further substantiation of the link between housing quality and well-being characteristics, findings from this study can be incorporated into slum rehabilitation policies to promote wellness for people living in poverty and poor quality housing.

Figure 2. Slum and public housing images. Images on the left are slum neighborhoods and images on the right are public housing.

METHODS

Research Design and Protocol:

This is a cross-sectional study which is the initial component of a larger prospective, longitudinal analysis of housing quality and well-being. Low-income women will be monitored before and after they move from slum neighborhoods to public housing provided under rehabilitation schemes by the Government of India. The move of slum-dwelling families into public housing affords a natural quasi-experiment as populations which may be virtually identical in income, education, and previous life experience in general, change their housing environment. In the present study we compare female heads of households prior to rehabilitation to women who have already been rehabilitated to public housing. The underlying assumptions of equality of groups and change in housing quality are tested later in the paper.

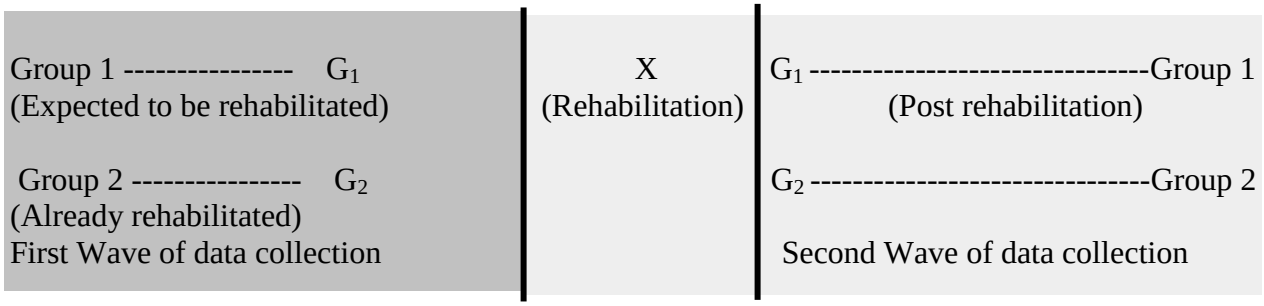


Figure 3. Research Design ▢ Current Cross-sectional Study ▢ Future Longitudinal Study

As shown in Figure 3, there are two participant groups in the study. One group currently lives in slum housing but is slated to move into public housing in the future. A second group has already moved to public housing from slum neighborhoods. These two groups are compared on the aforementioned independent and dependent variables to answer key questions of the study. 'Group 1' is the experimental group, subjected to two different housing conditions: slum housing and public housing and 'Group 2' serves as a baseline control group for comparison that stays in

public housing for both waves of the study. The cross-sectional study that this paper reports, uses data from the first wave of the longitudinal study (refer to figure 3) that includes data collection from both the groups: one living in slum neighborhoods and the other group living in public housing.

The success of longitudinal research design depends on the condition that the participants in 'Group 1' will be rehabilitated and can be located for longitudinal data collection post rehabilitation. This substantial reliance on group 1's condition stresses the importance to ensure the presence of participants in the post rehabilitation phase. It is even more important to take measures in the context of India where rehabilitation plans are often stalled or annulled. To increase the probability of having a sample that is rehabilitated, 'Group 1' is further sub divided into three groups. These three groups are three different rehabilitation projects, so it increases the possibility of at least one group being rehabilitated. To make sure that participants who are rehabilitated can be found and contacted post rehabilitation, all participants were asked to fill out a re-contact form which asks them to list contact details of three people (family or friends) who can be contacted to procure contact details of the participant. Additionally, participants were also asked to provide government identity numbers such as driving license number and ration card number (equivalent to social security number) which can help to track down participants' location post rehabilitation.

Data were collected by trained research assistants (RAs) in participants' homes. The RAs were all men who came from lower middle income families. Key qualities of RAs that were kept in mind during selection were fluency in the local language and experience of interacting with the target population.

A standardized housing quality scale (Evans, Wells, Chan, & Saltzman, 2000) was adapted to assess housing quality. Assistants also conducted a structured interview in the local language. The interview included standardized measures of physical health (Belloc, Breslow, & Hochstim, 1971), mental health (Dohrenwend, Shrout, Egri, & Mendelsohn, 1980), perceived stress (Cohen et al., 1983), self-mastery (Pearlin & Schooler, 1978), hope (Snyder et al., 1991), social ties (Kuo, Sullivan, Coley, & Brunson, 1998), and overall quality of life (World Health Organization, 1998). Participants were also asked to perform a computer task measuring executive functioning (Stroop, 1935). These scales will be discussed in detail later in the paper. Complete interview took approximately 1.5 hours and participants were compensated Rs 250 ($5) for their participation.

Sampling and participant demographics:

Housing cases for the aforementioned groups were identified in August 2011. It was important to select these groups such that the sample in both groups is comparable. To maximize this comparability, housing cases under the same rehabilitation policy were chosen. This helped to ensure similar rehabilitation procedure and conditions. Also, the three sub groups under 'Group 1' were chosen because they will be rehabilitated by the same private developer, increasing the comparability of housing quality provided under public housing. Access to these identified communities was gained via community leaders. Snow ball sampling was used to recruit participants from the community for both the groups. 84 participants in slum housing group belonged to 3 different sites and 92 participants in public housing group all belonged to one site. The participants were women residents of either of these four identified housing cases in Ahmedabad, India.

The women ranged in age from 18 to 70 years, with a mean age of 37 years in slum neighborhoods and the range in public housing was 17 to 75 years, with a mean of 36 years. Majority of women; 89.8 % in both groups (88.1 % in slums and 91.3 % in public housing) were married. The sample was low-income; with a mean monthly household income before taxes of Rs. 4825 (Rs. 57900 annually) in slum neighborhoods and Rs. 4686 in public housing (Rs. 56232 annually). Most households in both groups; 86 % (92.9 % in slums and 80.4 % in public housing) had children. The number of people per household ranged from 1 to 16 with a mean of 5.93 in slum neighborhoods and 1 to 13 with a mean of 5.48 in public housing. Table 1 shows the comparison of means of these two groups on various demographic variables with independent *t*-tests. Table 2 shows the comparison of frequencies in the two groups of demographic variables like marital status, presence of children, education attainment level, and employment status with Pearson chi-square analysis. These tables show that the two groups are comparable on most of the basic demographic characteristics. Except there were statistically significant differences in literacy levels of the women (p = .047*), employment status of the women (p = .008*), and number of women having children (p = .016*). The difference in employment may be a result of the location of these different housing communities. The public housing community is located in an area with not many proximate employment opportunities as opposed to slum housing. The difference in literacy levels may be an effect of self-selection as educated slum-dwellers may have better know-how of the political system and have better chances of rehabilitation.

Demographic Variable	Slum Housing	Public Housing	t	df	*p*
Age (in years)	36.94	36.03	.319	91	.75
Income (in Rs.)	4825.61	4686.81	.339	171	.735
Household size	5.93	5.48	1.343	174	.181

Table 1. Demographic comparison of women in slum and public housing groups; *t*-tests.

Demographic Variable	Slum Housing	Public Housing	Value	df	*p*
% married	88.1%	91.3%	.493	1	.483
% having children	92.9%	80.4%	5.754	1	.016*
% Illiterate	56.3%	40.2%	3.951	1	.047*
% Employed	44.4%	25.3%	6.988	1	.008*

Table 2. Demographic comparison of women in slum and public housing groups; Pearson chi-square.
*p < .05

Constructs and Measures:

Independent Variable:

Housing quality was measured using a standardized aggregate housing scale (Evans et al., 2000) adapted to the Indian context. This scale is based on evaluations by trained raters on four subscales - cleanliness and clutter, structural quality, privacy/crowding, and hazards. The original scale contains two other sub-scales - indoor climatic conditions and child resources, which were omitted for this study due to their non-applicability to the Indian context and because of focus on adults in this study. A sub-scale called 'basic services' was added to the original scale. The housing quality subscales are based primarily on objective ratings of the trained housing rater. For example, the cleanliness and clutter subscale consisted of 8 rated items such as ''How much clutter is in the kitchen?'' (2 = chaos, 1 = some clutter, 0 = little or none). Structural quality was assessed through 20 items such as ''rate the worst wall surface in the room'' (2 = more than 1 square foot loose or missing, 1 = less than 1 square foot loose or missing, 0 = good).

The 11-item crowding subscale was derived from items such as ‘‘do you have to walk through the bedroom to get to another room?’’ (2 = more than one other room, 1 = one other room, 0 = no other rooms) and household density (number of people/room). Hazards subscale was comprised of 15 items and was assessed through questions such as ‘‘is there a handrail?’’ (0 = yes, 2 = no). Basic services subscale measures the presence/absence of infrastructure such as sewers, water supply, and electricity etcetera. Mean of the standardized scores on each subscale was computed to compute an overall housing quality score. A higher score indicates more housing problems and thus poorer housing quality. Previous research reports internal consistency of the overall scale by using Cronbach's alpha $\alpha = .78$, which shows moderate reliability. This scale has also been shown to have a moderate inter-observer reliability (Ebel r = .72; Ebel r for the subscales ranged from .61 to .86) (Evans et al., 2000). This scale has already been used in low-income samples and was pilot tested in India before actual data collection. The reliability (internal consistency) of these subscales was assessed for the sample in this study. Cronbach alphas ranged from .375 for Hazards to .977 for structural quality. The α for cleanliness and clutter was .917, basic necessities was .664 and for crowding, .662. The α for the overall housing quality scale, based on the five subscales, was .698 which shows moderate reliability. The correlations among the subscales and with the composite housing-quality score are presented in Table 3.

	1	**2**	**3**	**4**	**5**	**6**
1. Overall Housing Quality	--					
2. Cleanliness and Clutter	.866**	--				
3. Crowding	.690**	.479**	--			
4. Structural Quality	.909**	.695**	.600**	--		
5. Hazards	.035	-.052	-.206**	-.135	--	
6. Basic necessities	.682**	.492**	.352**	.619**	-.123	--

Table 3. Cross-sectional correlations between housing quality aggregate score and its subscales (n = 176) **p<.01.

Dependent Variables:

Physical health was measured using a scale developed by Belloc et al. (1971). This scale is further divided into five sub scales: general health, chronic health, acute health, chronic stress symptoms, and activities of daily living. The general health 7-item subscale asks respondents about their energy levels, general health in comparison to people their age, and sleep patterns with questions such as "how would you rate your health in comparison to other people your age?" (1= better than most, 2= same as others, 3= worse than most). Chronic health subscale asks the respondents to endorse whether they have experienced a particular symptom/condition (e.g. pain, dizziness) over the past twelve months by indicating yes or no from a list of 22 chronic diseases such as diabetes, cancer, tuberculosis, etcetera. Acute health subscale is a list of 9 symptoms/conditions such as pain, dizziness, etcetera. Chronic stress symptom subscale was a list of 5 conditions such as ulcer, high blood pressure, etcetera. Lastly, activities of daily living subscale consists of 5 items that inquires whether respondents have any trouble in conducting daily tasks such as eating, clothing themselves, moving, etcetera. Scores on these subscales were obtained by summing responses to each item. A higher score depicted better health. This measure has been found to be reliable and valid in comparison with medical records and as a predictor of health outcomes (Banthia, Moskowitz, Acree, & Folkman, 2007). This scale was adapted to Indian slums by consulting with two medical practitioners to ensure the applicability and appropriateness of the symptoms and conditions listed by the scale. Some health conditions that have been reported to be prevalent in India were added to the original scale. These included typhoid, malaria, jaundice, measles, kidney stones and appendicitis.

Mental health was measured using the Demoralization Index of the Psychiatric Epidemiology Research Instrument (PERI) (Dohrenwend et al., 1980). This is a standardized 21-

item symptom checklist for non-clinical populations. The items on this scale asks respondents about how often they have felt a certain way in the last three months (e.g., ‘‘How often have you felt anxious?’’). Responses are scored on a five-point scale that ranges from 0 to 4, where 0 is very often and 4 is never. Higher score on this scale depicts better mental health. The PERI has been widely used across ethnically, economically, and geographically diverse samples both in the United States and abroad (Evans et al., 2000). This scale also has a reliability measure of high Cronbach alpha (a = .91) (Dohrenwend et al., 1980). The Cronbach alpha in the current sample is similar to previously reported alpha levels (a = .92). The PERI shows concurrent validity with other measures of psychological health (e.g., Langner, 1962) and is predictive of eventual psychiatric case openings as well as help-seeking reports (Catalano & Dooley, 1983). This scale has been previously used in low-income populations (Wells & Harris, 2007).

Perceived stress was measured by Perceived Stress Scale (PSS-10) (Cohen et al., 1983). This 10-item scale asks respondents how often they have felt a certain way in the last month (e.g., “How often have you been upset because of something that happened unexpectedly?”). Responses are scored on a 5-point scale that ranges from 0 to 4, where 0 is never and 4 is very often. It measures the amount of stress experienced by an individual in her daily life. The PSS-10 has demonstrated adequate reliability coefficients in previous studies; Cronbach’s alpha ranging from 0.75 to 0.91 (Cohen et al., 1983; Cohen & Williamson, 1998; Cole, 1999). The Cronbach alpha in this study was lower than previously reported (a = .600). At least two studies reported test–retest reliability with correlations ranging from 0.55 (six-week interval) to 0.61 (12 months) (Cohen et al., 1983; Cole, 1999). The PSS has been widely used throughout the world and also used in low-income populations as well (Evans et al., 2000).

To assess *self-mastery* perceptions, the self-mastery scale developed by Pearlin and Schooler (1978) was used. This 7-item scale assesses the degree to which individuals perceive personal mastery over life outcomes (e.g., "I can do just about anything I really set my mind to"). Responses were given on a 4-point scale ranging from (1) strongly disagree to (4) strongly agree. Previous research has determined that this scale possesses satisfactory psychometric properties (Pearlin & Schooler, 1978; Pearlin, Menaghan, Lieberman, & Mullan, 1981; Turner & Noh, 1988). This scale has not been used in low-income populations but was piloted tested. The measure of reliability Cronbach alpha was very low on this scale (a = .383). This low reliability may be a reflection of the Indian culture with its more deterministic view and belief in concepts like fate. Also prior research has shown people in lower socio-economic status to be more external in their locus of control (Khanna & Khanna, 1979). Due to low reliability of the scale, data from this scale will not be used for further analysis.

Hope was measured using the Hope scale developed by Snyder et al. (1991). This 12-item scale asks the respondents about hopefulness (e.g., "I can think of many ways to get out of a jam"). Respondents are asked to rate the extent to which each statement applied to them on a 4-point scale (1 = definitely false, 2 = mostly false, 3 = mostly true, 4 = definitely true). Previously reported coefficient alpha of reliability for this scale is acceptably high (Cronbach's alphas of .74 to .84) (Snyder, 1995). It also shows concurrent validity with measures of self-esteem, optimism, perceptions of control in life and positive outcome efficiencies. Conversely, it correlates negatively with social introversion, anxiety and depression (Snyder, 1995). The coefficient alpha of reliability in the current sample was .71 which is similar to previous studies.

To measure *neighborhood social ties* the Neighborhood Social Ties (NST) scale (Kuo et al., 1998) was employed. This scale has 8 items with responses on a 5- point Likert scale from 0

(not at all) to 4 (very much). It asks the respondents about their relationship with their neighbors (e.g., "Do you have many visitors from your neighborhood every day?" and "Do you socialize a lot within the building?"). This scale aims to capture the breadth and depth of existing neighborhood social networks. The NST scale had acceptable reliability in the sample under study (a = .865).

Overall *quality of life* was measured by World Health Organization Quality of Life scale (WHOQOL) (World Health Organization, 1998). This is a cross-cultural scale with good psychometric properties (Skevington, Lotfy, & O'Connell, 2004). This 25-item scale asks respondents questions about their satisfaction with four different life domains namely physical, psychological, social, and environment. This scale was developed by validating the sub-constructs and respective items in 15 different countries including India. The coefficient alpha of reliability in the sample under study is acceptably high (Cronbach's alphas of .891).

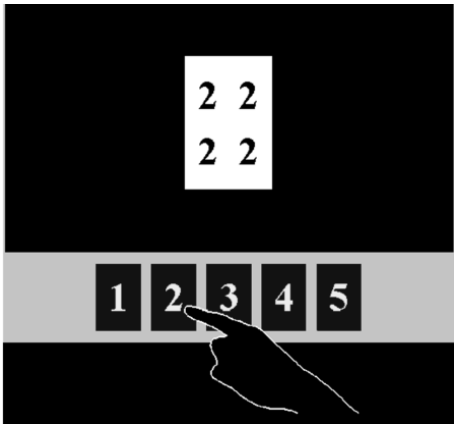
Scale	**Reliability**	**Used in low SES population**	**Applicability to Indian Context**
Independent Variable:			
Housing Quality Scale	α = .698	✓	Adapted and pilot tested
Dependent Variables:			
Physical Health scale	α = .743	✓	Adapted and pilot tested
PERI scale (Mental Health)	α = .918	✓	Pilot tested in India
Perceived Stress Scale	α = .600	✓	Pilot tested in India
Self-Mastery scale	α = .383	x	Pilot tested in India
Hope scale	α = .710	x	Pilot tested in India
Neighborhood Social Ties scale	α = .865	x	Pilot tested in
Quality of Life scale	α = .891	✓	Validated in India

Table 4. Reliability and context applicability of scales.

Lastly, participants were asked to perform a computer task that measured executive functioning. The task used was the Stroop cognitive interference task (Stroop, 1935). The Stroop task requires participants to attend to a single dimension of a stimulus while simultaneously

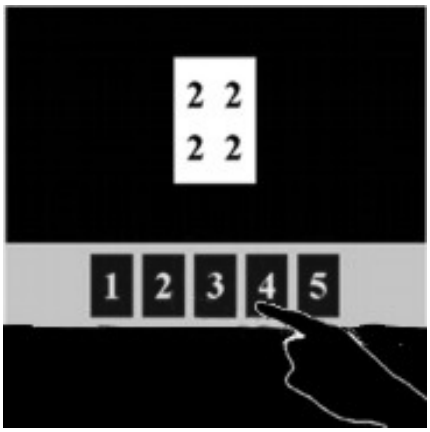
ignoring other, task-irrelevant dimensions. This version of Stroop uses numbers as stimuli and there are two kinds of stimuli in the task. The participant's task is to press a key as rapidly as possible with high accuracy. The key corresponds to the digits shown on the card in the center. The two kinds of stimuli are shown in Figure 4.

A card will appear in the center of the screen. Sort the cards according to the number written on each cards as quickly as you can. Click on the card in the bottom with same number as there is on the card in the center.



Stimuli 1: Normal Stimuli

You will sort some more cards now as quickly as you can. This time, count how many times the number appears on each card. Click on the card in the bottom with the number that is the count of the number on the card in the center.



Stimuli 2: Interference Stimuli

Figure 4. Stroop test trials

Reaction times and errors are recorded as outcomes. There are 100 trials of each type of stimuli. Normal stimuli requires participants to press a key corresponding to the digits on the card in the center while interference stimuli requires participants to press a key corresponding to the amount of digits on the card in the center. This test is considered to measure selective attention, cognitive flexibility and processing speed and it is used as a tool in the evaluation of executive functions (Strauss, Sherman, & Spreen, 2006). An increased interference effect is found in disorders such as brain damage, dementias and other neurodegenerative diseases, attention-deficit hyperactivity disorder, or a variety of mental disorders such as schizophrenia,

addictions, and depression (Barch, Braver, Carter, Poldrack, & Robbins, 2009; Lansbergen, Kenemans, & Engeland, 2007).

In addition to the above mentioned variables, demographic information from the respondents was also collected. That included age, caste, family structure, occupational status, education attainment, household income, and housing cost. These variables helped to create a demographic profile of the participants in the study. Also, research assistants were asked to rate each participant based on their experience during the interview on three variables: comfort, honesty and hesitance. The scale ranged from 1, very uncomfortable to 5, very comfortable for all three variables.

RESULTS

The analytic strategy was to first assess hypothesized difference in housing quality between the two housing sites: slum housing and public housing. The two groups residing in slum housing and public housing were then compared on dependent variables (physical health, mental health, perceived stress, hope, social ties, quality of life, and executive functioning). Second, the contribution of housing quality to the variation in dependent variables after statistically controlling the effects of demographic characteristics like income, education, and employment was examined. Third, I examined whether one or more of the subscales of housing quality were significant predictors of dependent variables under study. Last, the role of housing quality as an explanatory mechanism between housing site and dependent variables was examined. Each of these analyses will be delineated in further sections.

Is there a difference in housing quality between slum and public housing?

To evaluate the first set of hypotheses, differences in housing quality and its subscales-cleanliness and clutter, crowding, structural quality, hazards, and basic services between the two housing sites were evaluated using independent sample *t*-tests. Overall housing quality and all subscales except for hazards differed significantly in the predicted direction (Figure 5).

Data analysis demonstrated a statistically significant difference in the number of housing problems between slum housing (.429) and public housing (-.226) ($t(174) = 16.588$, $p < .000$). Note that for the housing quality scale and all its subscales, a lower score indicates less housing problems and thus better housing conditions. For example, a lower crowding score indicates better, less crowded, conditions; and a lower score in structural quality reflects better structural quality. Crowded conditions were lower in public housing (-.281) in comparison with slum

housing (.319) ($t(174) = 10.628$ $p < .000$). Cleanliness and clutter differed from .617 in slum housing to -.397 in public housing ($t(174) = 10.45$, $p < .000$). Structural quality varied from 1.10 in slum housing to -.348 in public housing ($t(174) = 19.51$ $p < .000$) and basic services differed from .158 to -.133 ($t(174) = 5.78$ $p < .000$). On the other hand, there was no statistically significant difference in hazards subscale between public housing and slums. The implications of these findings will be discussed in following section.

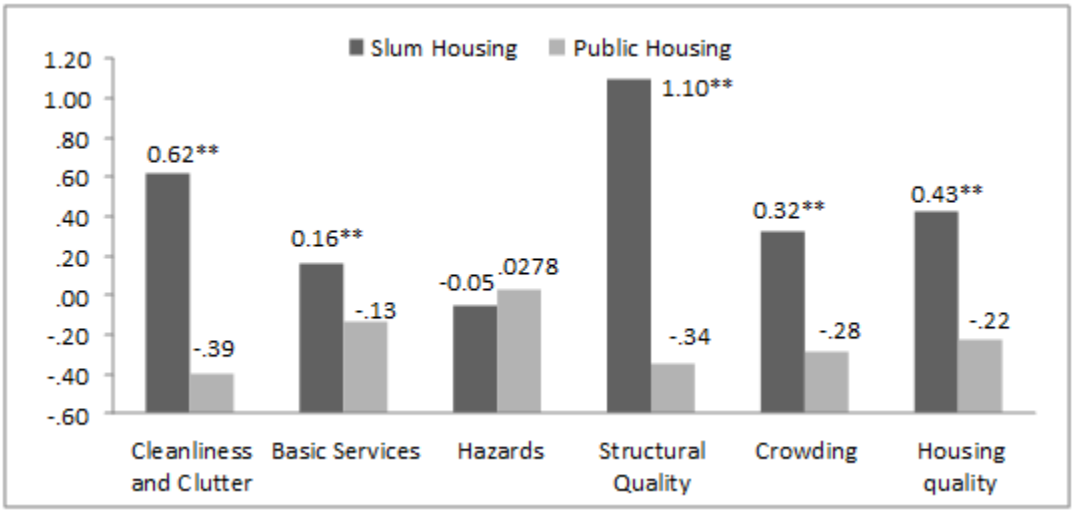


Figure 5. Housing quality differences in slum housing and public housing. A lower score indicates lesser housing problems and thus better housing conditions.
**p<.001.

Is there a difference in health between women residing in slum and public housing?

Mean scores for physical health - general health, chronic health, acute health, chronic stress symptoms and activities of daily living were computed for each participant in both groups. Similarly, a mean mental health score was computed. Higher scores indicate better health. These scores were compared using independent sample *t*-tests to examine differences between women in slum housing and public housing. Women in public housing reported better chronic health, acute health and lesser problems in carrying out activities of daily living in comparison to

women in slum housing. However, there was no statistically significant difference in the scores of general health and chronic stress symptom as reported by women in both groups. Women in public housing also reported better mental health (Table 5). Statistical controls for household income, education, and employment status did not alter these results.

Variables	Mean Slum Housing score	Mean Public Housing score	*t*	df	*p*
General Physical Health	2.11	2.15	-.728	174	.468
Chronic Health	21.24	21.57	-2.16*	174	.033
Acute Health	9.19	9.79	-2.60*	174	.031
Chronic Stress Symptoms	4.79	4.75	.474	174	.510
Activities of Daily Living	6.06	6.51	-2.66*	174	.023
Mental Health	3.51	3.85	-3.266**	174	.000

Table 5. Physical health and mental health differences in slum housing and public housing. Differences in mean calculated using independent sample t-tests. Higher score indicated better health.
*p<.05, **p<.001.

Is there a difference in well-being characteristics between women residing in slum and public housing?

To examine the difference in well-being characteristics such as perceived stress, hope, neighborhood social ties, and quality of life, a mean score on all these variables was computed and two groups were compared using independent sample *t*-tests. Quality of life as reported by women in public housing was significantly higher (3.63) in comparison to women in slum housing (3.14, *p*=.009) after statistically controlling for household income, education, and employment status. However, women in slum housing reported having stronger neighborhood social ties (3.22) than women in public housing (2.83, *p*=.000) after employing mentioned statistical controls. No significant differences were found between the two groups in perceived

stress (p=.480) or hope levels (p=.614) (Figure 6). Women were also measured on their executive functions using a computer Stroop task. But there was no significant difference found in the two groups in either error rates or reaction times.

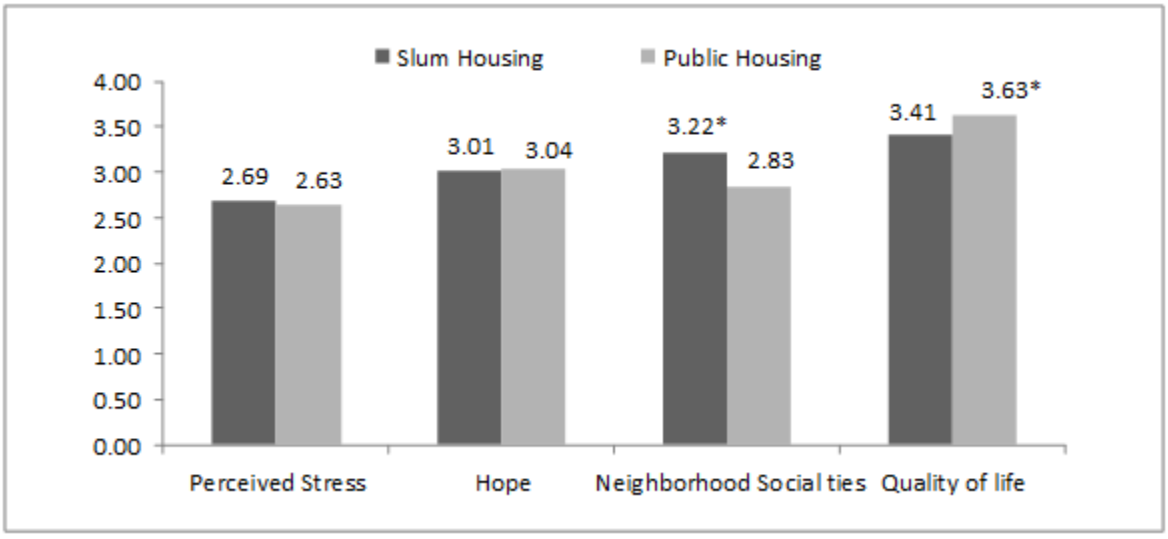


Figure 6. Well-being differences in women in slum housing and public housing.
*p < 0.05

Does housing quality contribute to variation in the dependent variables?

Dependent variables were regressed onto housing quality after controlling for household income, participant's education level and employment status. As can be seen in Table 6, overall housing quality was a statistically significant predictor of general physical health after controlling for the demographic variables, explaining 10.4% of the variance. The coefficient (b) for housing quality is negative because a higher score on housing quality indicates more housing problems. As housing problems decrease, health improves. The increment in R^2 after adding housing quality as a dependent variable was .028 (p=.035). Housing quality was also a significant predictor of chronic and acute health explaining 8.7% and 7.8% variance respectively after controlling for household income, employment and education. The increment in R^2 on account of adding

housing quality was .057 (p=.003) in chronic health and .036 (p=.02) in acute health. 11% of variance in activities of daily living score was explained by the model and increment in R^2 after adding housing quality was .072 (p=.001). However variance in chronic stress symptoms was not significantly predicted by housing quality.

Dependent Variable	**R^2**	***df***	***b***	**SE *b***	**F**	***p***
General Physical Health	.104	144	-.187	.088	4.176	.035*
Chronic health	.087	144	-.645	.215	3.415	.003**
Acute Health	.078	144	-.737	.313	3.044	.020*
Chronic Stress Symptoms	.025	144	-.062	.102	.907	.545
Activities of Daily Living	.110	144	-.776	.228	4.454	.001**
Mental Health	.204	144	-.576	.136	9.246	.000**
Perceived Stress	.155	144	.241	.112	6.625	.033*
Hope	.105	144	-.109	.084	4.215	.195
Quality of Life	.284	144	-.548	.100	14.27	.000**

Table 6. Housing quality as a predictor of well-being. Results after controlling for household income, employment status and educational attainment.
*p<.05, **p<.001.

Similar relationship was observed between housing quality and mental health and quality of life where housing quality explained 20.4 % and 28.4% of variance respectively. The change in R^2 with addition of housing quality to the model was also statistically significant in both cases (ΔR^2 = .099, p=.000 and ΔR^2 = .15, p=.000). Lastly, housing quality explained 15.5% of variation in perceived stress after employing statistical controls (ΔR^2 = .027, p=.033). With an increase in housing problems, perceived stress tends to increase as well. As can be seen in Figure 7, as housing quality increases physical health, mental health and quality of life improve and

perceived stress decreases. The data shown in Figure 7 are for descriptive purposes only; all of the regression analyses maintained the continuous nature of housing quality variable.

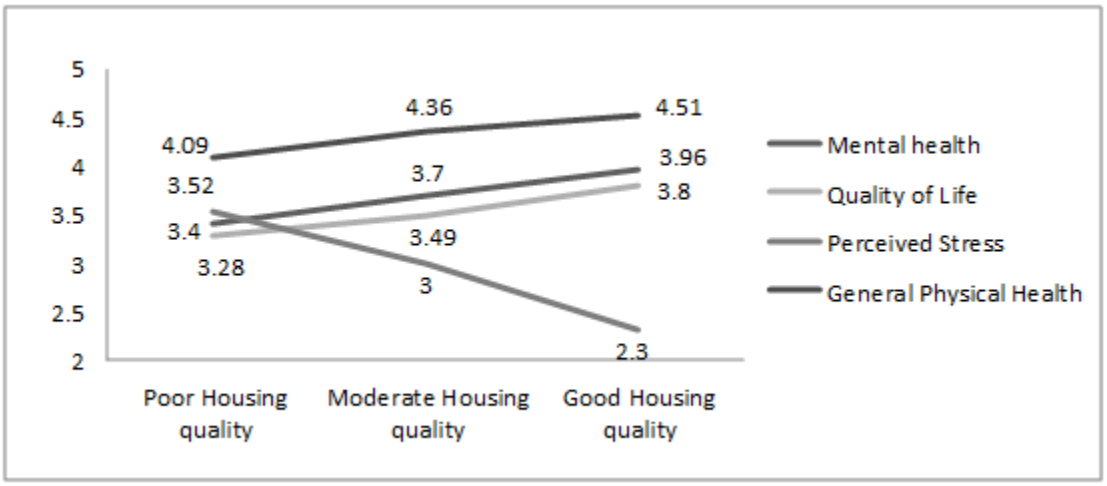


Figure 7. Relationship between housing quality and well-being.

Which subscales of housing quality are more salient predictors of well-being characteristics?

This set of analysis used backward selection multiple regression to glean out the most salient subscales of housing quality for predicting dependent variables after controlling for demographic variables (household income, employment status and educational attainment). The housing scale consisted of five subscales - cleanliness and clutter, structural quality, privacy/crowding, hazards, and basic services.

After controlling for household income, employment status and educational attainment, structural quality scale was salient in predicting chronic health (Table 7). Acute health was best predicted by cleanliness and clutter scale. Salient predictors for mental health and neighborhood social ties were structural quality scale and basic services scale. Quality of life was best predicted by cleanliness and clutter scale and basic services scale. This analysis shows that three out of five subscales of housing quality are best predictors of most of the well-being characteristics.

Dependent Variable	R^2	F	*df*	Independent Variables	*b*	SE *b*	*p*
Chronic health	.072	11.325	147				
				Structural Quality Scale	-.325	.096	.001
Acute Health	.059	9.255	147				
				Cleanliness & Clutter Scale	-.455	.149	.003
Mental Health	.216	13.315	145				
				Structural Quality Scale	-.192	.079	.016
				Basic services Scale	-.391	.187	.038
Neighborhood Social Ties	.071	5.591	146				
				Basic services Scale	-.371	.180	.041
				Structural Quality Scale	.254	.076	.001
Quality of Life	.289	19.599	145				
				Cleanliness & Clutter Scale	-.170	.056	.003
				Basic services Scale	-.431	.124	.001

Table 7. Salient housing quality subscales as predictors of well-being. Results after controlling for household income, employment status and educational attainment characteristics.

Is housing quality an underlying mechanism for the association between housing site and well-being?

The last set of analyses examined the role of housing quality as a mediator of the relation between housing site and mental health as shown in Figure 8. A mediator is an explanatory mechanism describing how or why two variables are related. In addition to the requirement that there exist a relation between the independent variable (housing site) and the dependent variable (mental health) that could be mediated by a third variable, there are two other prerequisites for mediation. (1) Mediators are influenced by the predictor (in this case, influenced by housing site); and (2) mediators affect the outcome variable (in this case, mental health). Each of the bivariate relations (i.e., housing site and mental health; housing quality and mental health) is necessary but not sufficient to demonstrate mediation. Ultimately, the true test of mediation is whether the association between the original independent variable (housing site) and dependent variable (mental health) becomes non-significant (or reduces in case of partial mediation) with

the introduction of the hypothesized mediator. This requires a test of the significance of the shrinkage in the initial association between the predictor (housing site) and the outcome (mental health) when the mediator (housing quality) is included in the model. This method of testing mediation is *causal steps approach* developed by Baron and Kenny (1986). As can be seen in Figure 8, each of the bivariate relations are significant and also the association between housing site and mental health becomes non-significant with the introduction of housing quality in the model.

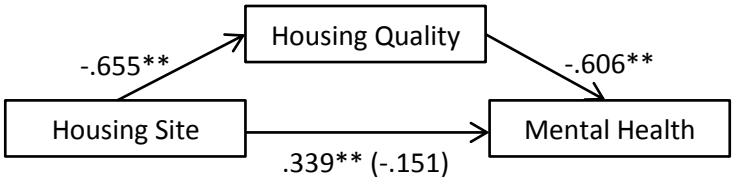


Figure 8. Mediation by housing quality between housing site and mental health. The standardized regression coefficient between housing site and mental health controlling for housing quality is in parentheses, and is not significant.

An additional method employed to test mediation was bootstrapping (Bollen & Stine, 1990; Shrout & Bolger, 2002). Bootstrapping is a non-parametric method based on resampling with replacement which is done many times, e.g., 2000 times. From each of these samples the indirect effect is computed and a sampling distribution can be empirically generated. With the distribution, a confidence interval (CI) and a p value can be determined. The confidence interval can be checked to determine if zero is in the interval (LLCI < 0 < ULCI). If zero is not in the interval, then mediation effects are likely present. Table 8 shows data analysis examining relationship between housing site and various dependent variables as mediated by housing quality using bootstrapping method. The confidence interval for mental health does not contain zero. Housing quality mediates the relationship between housing site and mental health. The results are based on 10000 bootstrap samples.

Table 8 shows the computed confidence interval for each dependent variable and Figure 8-11 present *the causal steps approach* analysis for mediation. Based on these two analyses it can be observed that even though the initial association between housing site and chronic health shrinks with the introduction of housing quality in the model (Figure 9), the bootstrap interval shown in Table 8 contains zero. Thus there is no mediation by housing quality for the association between housing site and chronic health. Similar pattern was observed in the relationship between housing site and acute health.

Dependent variables	Effect	Boot SE	BootLLCI	BootULCI
Chronic Health	.3736	.2122	-.0133	.8160
Acute Health	.4500	.3069	-.1532	1.0576
Activities of Daily Living	.6120	.2501	.1533	1.1332
Mental Health	.4894	.1407	.2312	.7833
Quality of Life	.5487	.1057	.3505	.7683
Neighborhood social ties	.0705	.1213	-.1684	.3073

Table 8. Confidence intervals for mediation between housing site and dependent variables by housing quality. Intervals based on 10000 bootstrapped samples to test.

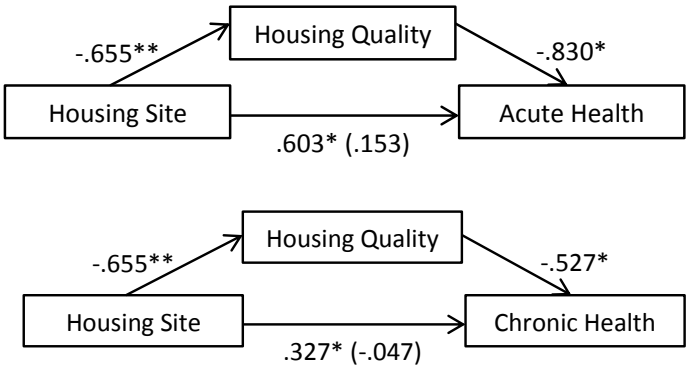


Figure 9. Mediation by housing quality between housing site and chronic and acute health. The standardized regression coefficient between housing site and dependent variables controlling for housing quality is in parentheses, and is not significant.

Figure 10 shows that relationship between housing site and activities of daily living becomes insignificant with the introduction of housing quality in the model. Also the bootstrap interval does not contain zero (Table 8). Housing quality likely mediates the relationship between housing site and activities of daily living.

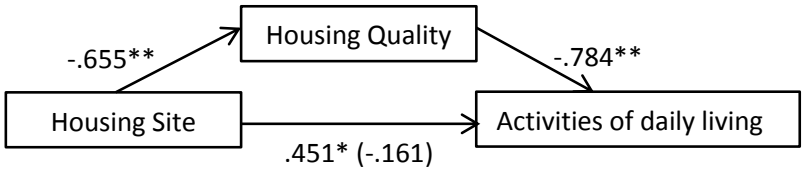


Figure 10. Mediation by housing quality between housing site and activities of daily living. The standardized regression coefficient between housing site and activities of daily living controlling for housing quality is in parentheses, and is not significant.

As can be seen in Figure 11, association between housing site and quality of life is weakened with introduction of housing quality in the model. Also the bootstrap interval does not contain zero (Table 8). This shows partial mediation by housing quality for the association between housing site and quality of life. Though the initial effect between housing site and neighborhood social ties is weakened, the bootstrap interval contains zero. Thus it can be said that housing quality does not mediate the relationship between these two variables.

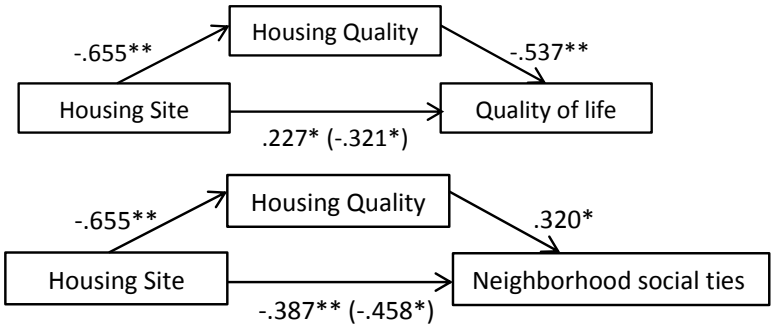


Figure 11. Mediation by housing quality between housing site and quality of life and neighborhood social ties. The standardized regression coefficient between housing site and dependent variables controlling for housing quality is in parentheses, which is weakened but still significant.

In summary, housing quality likely mediates the relationship between housing site and mental health, quality of life and activities of daily living. But there is no mediation found between housing site and chronic health, acute health and neighborhood social ties (Figure 12).

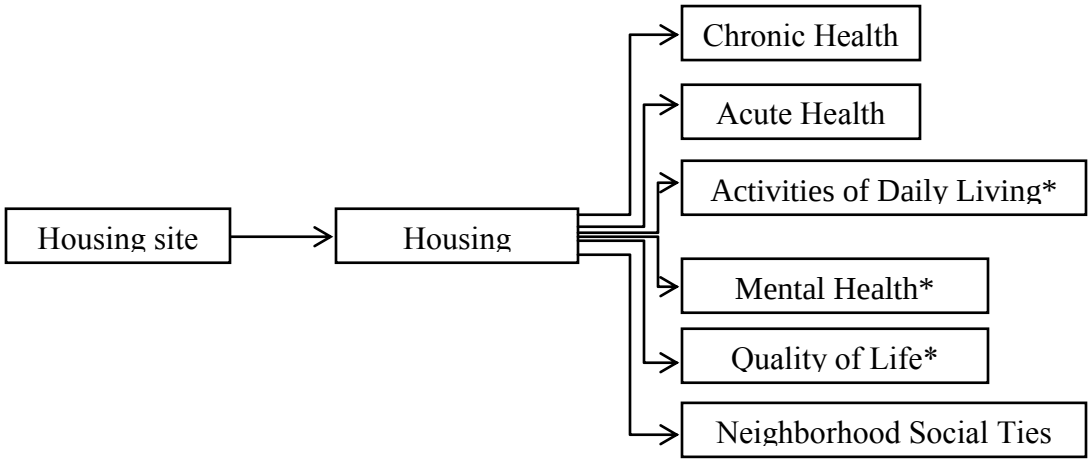


Figure 12. Summary of mediation effect of housing quality in the association of housing site and well-being.

DISCUSSION

Summary of Findings

This study compares two groups of women living in Ahmedabad, India who reside in different housing conditions: slum housing and public housing, residents on public housing waitlists and those already rehabilitated. The context and population under study also affords a preliminary evaluation of slum rehabilitation policies in developing countries. I hypothesized that the housing quality in public housing would be better in comparison to slum neighborhoods. I also hypothesized that well-being would be more positive in public housing in comparison to slum neighborhoods, except for neighborhood social ties. The latter prediction was because another hypothesis in this study was that housing quality would explain some of the observed variance in well-being. Finally I hypothesized that some of the expected differences in well-being between slum and public housing would be accounted for by housing quality. Results of this study support the first hypothesis (Figure 5). Second, third, and fourth hypotheses were supported for some well-being outcomes (Figure 6, Table 5 and 6 respectively). These results and their implications will be discussed further in this section.

As two groups with different housing conditions are compared in this study, the results depend heavily on the assumption that the two groups are comparable on various demographic aspects. To check the validity of this assumption, t-tests were used to see if the groups are different on characteristics like age, employment, education, marital status, income and like (Table 1 and 2). This analysis shows that there is no statistically significant difference in the group on most characteristics. But they do differ in literacy levels, employment status and presence of children (Table 2). There are more illiterate women in the slums in comparison to

public housing. Possibly educated women are more likely to be rehabilitated into public housing from slums as they might be more adept at working the government system to get rehabilitated. Also there are more employed women in slums than in public housing. This employment difference may be due to location of these different housing facilities. There are many employment opportunities around the area where the slums are located, whereas public housing does not have that benefit. These differences were statistically controlled for while evaluating the relationship between housing quality and well-being to remove confounding factors explaining the difference in well-being in the two groups. Statistical controls for household income, education, and employment status did not alter any of these results discussed further. For lucidity, I will present the possible explanations and implications of the results in the same framework and order as the results.

1. Difference in housing quality between slum and public housing.

The results of this cross-sectional study indicated that there are significant differences in the overall housing quality between the slum housing and public housing under study (Figure 5). Housing quality in public housing is better in comparison to slum housing. Slum rehabilitation policy appears to have been successful in providing comparatively better living conditions in the case under study. Further evaluations in multiple sites are needed to generalize this result. My analysis of specific housing quality dimensions also helps us delineate the areas where public housing has improved and areas where there is further scope for improvement. As can be seen in Figure 5, structural quality and cleanliness and clutter have considerably improved but basic services, hazards and crowding could still be improved. It may be effective for policies to pay more close attention to the basic infrastructure like water, drainage and electricity provided in public housing to further improve housing conditions of the residents. Moreover problems with

crowded living conditions remain in public housing as the area of houses provided under rehabilitation schemes may not be in accord with the number of members in a family. A more flexible approach of area allotment in rehabilitation policies may help to ameliorate this problem. As the data shows hazardous living conditions are not very different in public housing in comparison to slum housing (Figure 5). More consideration needs to be given to safety in public housing.

2. Difference in health between women residing in slum and public housing.

Health differences between the two groups under study were evaluated. Public housing residents reported better physical and mental health in comparison to slum housing residents (Table 5). This finding corroborates research in other parts of the world. There is a 28 year difference in the life expectancy of people living in different neighborhoods within Glasgow (Marmot & Wilkinson, 1999). In Nairobi, a child who lives in a slum is four times more likely to die before the age of five than his or her compatriot in other parts of the city (Gulis, Mulumba, Juma, & Kakosova, 2004). Also a study in Bangladesh reported adolescents living in non-slum areas to have better mental health in comparison to those living in slum areas (Izutsu et al., 2006). However, such results are not consistent across all aspects of physical health in present study. Chronic health and acute health have been reported to be better in public housing in comparison to slum housing. But there was no significant difference in chronic stress symptoms in the two groups. Stress symptoms result from a variety of factors besides the housing environment such as socio-economic status, family conditions, personal aspirations etcetera. Perhaps non-significant difference in chronic stress symptoms between the two groups is the result of these other mentioned factors. On a preliminary level, this finding indicates that the housing policy under

this study was successful in improving health conditions of the residents. However, due to the cross-sectional nature of this study, this finding should be interpreted with caution.

3. Difference in well-being characteristics between women residing in slum and public housing. To examine the difference in well-being in two groups of women, characteristics such as perceived stress, hope, self-mastery, neighborhood social ties, and quality of life were compared. There was no significant differences in perceived stress between two groups (Figure 6). This fits with the previous finding of no significant difference in chronic stress symptoms. This result may be due to the need for a more sensitive perceived stress scale. The magnitude of difference in perceived stress between two groups may not have been captured by the scale used as the standard deviation observed in the sample was much lower than reported in previous normative studies in North America (Cohen & Williamson, 1998). In addition, use of objective measures of measuring stress such as resting blood pressure and overnight epinephrine and norepinephrine, might be helpful in capturing more nuanced differences in stress levels. Prior studies have used objective physiological measures to measure chronic stress. A study examining stress in low-income and middle-income children used resting blood pressure and overnight neuroendocrine hormones (Evans & English, 2002). In another study elevated overnight epinephrine, norepinephrine, and cortisol were reported in a low-income sample but not in a middle-income sample (Evans & Marcynyszyn, 2004).

The self-mastery scale was not reliable with the sample under study. This low reliability may be a reflection of the Indian culture with its more deterministic view and belief in concepts like fate. Also prior research has shown people in lower socio-economic status to be more external in their locus of control (Khanna & Khanna, 1979). There may be differences in the definitions of self between western and eastern civilizations. In most western cultures the

referential self is perceived to be 'egocentric'. It is the locus and source of action (doing), thought and emotion. The self is distinct, autonomous and capable of control, as well as a center and source of motivation (Geertz, 1973). While self could be called 'sociocentric' in Shweder and Bourne's (1982) term when describing Indian person conceptions. Sociocentric self is not experienced as distinct from aspects of the wider social environment, it cannot be solely under (self) control (Shweder & Bourne, 1982). In United States' society, autonomy, individuation and (personal) development/growth are central existential issues; this is not in accord with Indian culture (Gaines, 1992).

There was no significant difference in hope in the two groups (Figure 6). Extant literature on hope has been mostly in the context of social relationships. Though there have been some studies indicating difference in hope levels with a difference in place of residence (refer to literature review). The lack of difference observed in this study may have been an effect of reduced social ties in the group living in public housing. Hope was expected to be higher in better quality housing. However, the group of women living in better housing conditions (public housing) in this study had poorer neighborhood social ties in comparison to women living in substandard housing (slum neighborhoods). As social ties have been reported in prior research to be associated with hope, the poor social ties in public housing may have attenuated possibly higher level of hope in comparison to slum housing.

There was significant difference in neighborhood social ties between the two groups of women (Figure 6). The women in public housing reported having weaker neighborhood social ties in comparison to women in slum housing. Furthermore, given that in impoverished communities, social networks are critical assets, it suggests that other resident differences in well-being are robust (Edin & Lein, 1997; Stack, 1974; Vale, 2002). This result also agrees with

another set of literature that shows disruption in community networks because of rehabilitation and redevelopment (Cadavid, 2010; Clampet-Lundquist, 2006; Fullilove, 1996). Moreover, this finding helps us to be more confident in negating the possibility of social desirability bias in the data. As the direction of this dependent variable is opposite to other dependent variables, it is likely that the tendency to respond to questions in a socially acceptable direction was not observed in the data.

Women in public housing reported higher quality of life in comparison to women in slum housing (Figure 6). This finding helps to extend this literature from North American and European countries into the context of developing countries. It also provides preliminary support for Indian housing policies. The housing policy case examined under this study seems to be successful as the women rehabilitated into public housing reported higher quality of life in comparison to women living in slums. This difference could possibly be even larger if the neighborhood social ties in public housing can be improved.

4. Housing quality explains variation in health and well-being characteristics

Another aim of this study was to examine if there is an association between housing quality and well-being characteristics. While looking at this association, demographic factors such as household income, employment status and educational attainment were statistically controlled. Housing quality explained variance in general physical health, chronic health, acute health and mental health of women (Table 6). This indicates that there is a relationship between housing quality and health. This finding corroborates previous findings in the literature pertaining to housing quality and health (Dunn & Hayes, 2000; Evans, Saltzman, & Cooperman, 2001b; Halpern, 1995; Hunt & McKenna, 1992; Wells & Harris, 2007; Wilner et al., 1962). However, causation cannot be implied due to the cross-sectional design of this research.

Housing quality was also associated with lower perceived stress and higher quality of life (Table 6). This finding is in concert with prior research demonstrating an effect of poor housing quality on perceived stress (Cohen et al., 2000; Pacione, 1990) and quality of life (Kahlmeier, Schindler, Grize, & Braun-Fahrländer, 2001; Oswald, 2003). This finding supports the theory that housing environment has an effect on the well-being of its residents. However, further research is required to examine the pathways through which housing quality affects people's well-being. It is plausible that poor housing quality could be capable of diminishing self-esteem which could in turn affect one's well-being. Additional research is required to further understand how housing quality influences well-being.

5. Salient subscales of housing quality as predictors of well-being characteristics.

To further explore the effect of housing quality on health and well-being characteristics, I examined which subscales of housing quality (cleanliness and clutter, crowding, structural quality, hazards, and basic services) were most salient in predicting well-being. Chronic health and acute health were predicted best by structural quality scale and cleanliness and clutter scale respectively (Table 7). Previous literature on housing and health has shown increases in chronic respiratory diseases such as asthma due to structural quality issues like dampness and mold (Hopton & Hunt, 1996; Rosenstreich et al., 1997). Also, previous studies have shown effects of unhygienic living conditions and acute health symptoms (Burke, 2006). Mental health was predicted best by basic services and structural quality subscales (Table 7). Poor quality of basic services like water, electricity, and sanitation may result into increased day to day stress that consequently could affect mental health. However, this pathway needs to be further studied by examining stress levels in residents with varying degrees of basic services available to them.

6. Housing quality an underlying mechanism for the association between housing site and well-being.

The final aim of this study was to examine housing quality as an underlying mediating variable to explain the association between housing site and well-being characteristics. The question asked was, does housing quality explain the differences in well-being characteristics in the two housing sites- slums and public housing? The findings in this study indicate that housing quality does act as a mediating mechanism linking housing site with mental health and quality of life (Figure 8 and 12). This study begins to provide insight concerning the mediating mechanisms underlying the association between housing site and mental health. We have suggested that change in housing site from slum housing to public housing, lead to a better housing quality which in turn improves mental health and quality of life. However, given the quasi-experimental nature of this study, these pathways should be interpreted with caution. There could be other environmental or social factors that may have been different between slum housing and public housing and could have influenced mental health and quality of life of the residents. Effective mediation by housing quality was not found between housing site and physical health. The difference in physical health between two housing sites could have been a result of access to better health services rather than housing quality.

Contributions of the study

This study builds upon prior research concerning housing quality and well-being in several ways. First, the study is based in a developing country, India where there is dearth of research on housing quality and its effect on well-being. Testing the theory of effects of housing quality on well-being in a different context from prior research, helps us to expand the literature and strengthen the theory by increasing its external validity. Besides expanding theoretical

knowledge, this context also aids to fill the gaps in data in developing countries. Developing countries require housing research to effectively understand the effect of adverse living conditions being made worse by ever increasing population and urban migration. Secondly, this study employs a broader framework for studying well-being and thus provides a more comprehensive view of the effects of housing quality. Until recently, most housing quality research focused on piecemeal aspects of well-being such as health, psychological distress, hope etcetera. Also, the fact that this study presents the disaggregation of housing quality into its constituent parts is another important contribution. Previous research has either focused on specific, narrow aspects of housing characteristics such as dampness, hazards or structural quality; or examined the overall construct of housing quality without measuring or identifying what constitutes ‘‘housing quality.’’ Thirdly, this study also conducts a preliminary evaluation of a slum rehabilitation policy in India by comparing well-being of people who moved into public housing from slum neighborhoods to people currently living in slum neighborhoods. This gives us some insight into the efficacy of this housing policy from a psycho-social perspective. Most policy evaluations in prior research have used economical or institutional indicators. Lastly, this is one of the few studies to investigate housing quality as the mediating mechanism between housing site and well-being characteristics. This could be the greatest contribution of this study as it provides insight into the reason behind the differences in well-being in residents of slum neighborhoods and public housing residents. This finding can help to inform policy, planning and design.

Policy Implications

Questions about effects of housing quality are only partly academic; it is a field that also derives value from societal questions that are going on inside society/community (practice), relevant to

policymakers, architects, urban planners, environmental planners (Brown, 2004). The expected contributions to quality of life of a given project increasingly play a role in the social acceptance of decisions, plans and planning. One of the important questions in the choices of planners and policy makers is: what is the effect of my (planning and designing) measures/interventions on environmental quality and well-being?

This study begins to answer some questions in the context of slum rehabilitation policy in Ahmedabad, India. The findings in this study show that the housing quality and well-being in public housing are better in comparison to slum neighborhoods. However, there is room for improvement in providing better basic services and improving crowded conditions in public housing. Also, better services might help in further improvement in mental health in residents of public housing as the basic services subscale was the best predictor of mental health. Furthermore, neighborhood social ties were seen to be weaker in public housing as compared to in slum neighborhoods. It is incumbent upon policy-makers and researchers to recognize the full complement of qualities and dimensions of the slum communities being dismantled as well as the meanings and functions that such communities play in residents' lives in order to evaluate properly the full impact of the rehabilitation program. Policy makers might consider integrating social programs along with housing improvement to counter the ill-effects of rehabilitation on neighborhood social ties. Planners and designers can focus on site planning and design features that are conducive to creating a richer social fabric by fostering social interaction.

Limitations of the study

The results in the study show that housing quality is significantly associated with well-being of human beings (Table 6). But due to the cross-sectional research design used in this study, it cannot draw causal conclusions between housing quality and well-being. The two groups studied

may have different demographic and well-being characteristics to begin with. Also, people may have self-selected themselves into groups of slum housing or public housing. People rehabilitated into public housing may have been a self-selected group having characteristics that could affect well-being such as education, income, or better social network. Comparability of these two groups can be questioned due to the quasi experimental research design and thus it limits the internal validity of the findings. Although demographic factors were statistically controlled for in this study, there may be alternative explanations for the change in health and well-being between the two groups. Also, it is important to keep in mind that although this study statistically controlled for some probable confounding variables, well-being cannot be accounted for by the housing environment alone. Many other factors affect well-being, such as financial troubles, loss of a loved one, personal disposition, or unemployment. While improving housing quality can lead to improvements in well-being, one cannot solely rely on the built environment to address all economic, social, or personal aspects of well-being. Furthermore, it is possible that a selection bias led to certain kinds of women participating in the study, potentially skewing the results. For example, sampling method could have led to more extrovert women participating in the study. Moreover, only one case for each slum neighborhood and public housing was examined under this study. This brings the generalizability or external validity of the study into question. Due to this limitation, caution should be used in applying these findings across contexts and populations.

Future research

The limitations of this study warrant further research examining housing quality and well-being. A longitudinal study would be a more robust research design where one group is followed as they move from one housing condition to another and measured on independent and dependent

variable pre and post move. This within-subjects comparison research design would allow the researcher to control for a variety of potentially confounding variables. By comparing the same individual from pre- to post-move, many variables can be held constant including personality, socio-economic status, ethnicity, and family composition. This research design can overcome ambiguity concerning causal directionality which so frequently plagues studies of housing quality.

Further research can include a multi-method approach with both objective and subjective measures of well-being characteristics. Subjective indicators allow us to gain insight into the well-being/satisfaction of a person, and insight into what people consider important. They contribute to the commitment of people to their environment, and to the creation of public support. Objective indicators are necessary for aspects of the environment that are hard to evaluate, they form the point of departure for environmental policy, and enable the validation of subjective measures (Van, Leidelmeijer, Marsman, & De, 2003). In this study objective measures for stress such as cortisol levels, or blood pressure levels can be used in addition to measures of perceived stress to have more conclusive results. Also objective measures for physical health in addition to self-reported health may provide important additional information.

Future research can also explore underlying links in the association between housing quality and physical health, mental health, perceived stress, executive functioning and quality of life. Social withdrawal has been suggested by prior research as a possible link between housing quality and mental health (Wells & Harris, 2007). Studying social withdrawal in this context may help to understand this phenomenon in a cross-cultural perspective. Another pathway for future investigations might be housing quality → stress → executive functioning. Poor housing quality has been shown to affect stress levels in people and executive functioning has been shown to be

impaired by high stress levels. Also there might be some merit in exploring effects of the process through which rehabilitation policies are implemented in future studies. It is plausible that the amount of control the residents had over rehabilitation process might affect their perceptions of housing and may in turn affect well-being. Future research can also examine the effect of rehabilitation and housing quality on family relations by studying parent-child interactions as it might affect well-being. In a future study, participants who have been rehabilitated can also be asked about the proximity of their former friends/neighbors. It is possible that neighborhood ties may be affected by method of housing allotment in public housing. In case of random allotment former neighbors might be separated leading to disruption of social fabric in the community.

Conclusion

The evidence provided by this study suggests that women living in slum neighborhoods are subjected to poorer living conditions in comparison to women living in public housing provided under slum rehabilitation policies in Ahmedabad, India. However, policy makers should further aim to improve the basic services available to residents of public housing. This study also suggests that women in slums report lower well-being than the women in public housing. However, neighborhood social ties seem to be stronger in women in slum neighborhoods. Some of the differences in well-being between the two groups of women in two different living conditions can be explained by differences in housing quality in these conditions. This finding helps to make a case for policies to focus on improving the housing quality in low-income neighborhoods for higher well-being of residents. This data also underscores the potential interconnections between physical and social living conditions and well-being of its residents.

APPENDIX

This appendix contains the Housing quality scale, Physical health scale, Mental health scale, Perceived stress scale, Hope scale, Self-mastery scale, Neighborhood social ties scale, quality of life scale, Demographic details and Interviewer scale.

Subject ID_____ Date_____ Rater Name_____

HOUSING SCALE

IF A QUESTION DOESN'T APPLY, PUT N/A

DATE ____/____/____.

Please list the number of each type of room in the house. Each room should only be listed once; do not duplicate. Also, remember that eating areas are only counted as eating rooms if they are separate and not part of another room(Confirm with the participant).

of:

Kitchens _____
Eating Rooms _____
Bathrooms _____
Bedrooms _____
Living Rooms _____
Family Rooms _____
Studies _____
Other Rooms _____ Please list: _____
Playrooms, store rooms, laundry rooms, etc.
_____
_____
_____
_____

Please measure the size of the rooms in feet and inches using the laser measure tape.

	Length	Breadth
Kitchen		
Eating Room		
Bathroom # ___		
Bathroom # ___		
Bedroom # ___		
Bedroom # ___		
Bedroom # ___		
Living Room		
Family Room		
Study		
Other Rooms Playrooms, store rooms, laundry rooms, etc.		

BASEMENT (make sure this family has access to it)

1. WHAT IS IT USED FOR?

if a living room, family room, office/study, or bedroom, rate under those sections.

if a play space check one: _____1. FINISHED

_____2. UNFINISHED

Note: Answer the following questions whether the basement is finished or unfinished. You should only skip this section if the basement is used as a study, family room, living room or bedroom, in which case you will rate it under those sections instead.

2. ODORS

0=NONE

1=SLIGHT

2=BAD

3. ARE THERE LOCKS ON THE WINDOWS (openable windows only)?

0=ALL

1=SOME

2=NONE

9=N/A

4. IF THERE IS AN EXTERIOR DOOR, DOES IT LOCK?

    0=LOCK AND BOLT

    1=LOCK ONLY

    2=NO

    9=N/A

5. IS THERE WATER RELATED CEILING DAMAGE?

    0=NO

    1=STAINED

    2=STAINED AND CRACKED

    3=DAMP RIGHT NOW

6. RATE THE WORST CEILING **OR** WALL IN THE ROOM ON ITS

    PROTECTIVE SURFACE (paint, wallpaper, molding etc.)

    0=GOOD

    1=LESS THAN 1sq ft LOOSE OR MISSING

    2=MORE THAN 1 sq ft LOOSE OR MISSING

    STRUCTURAL SURFACE (includes wood, drywall,etc.)

    0=GOOD

    1=LESS THAN 1sq ft LOOSE OR WARPED

    2=LESS THAN 1sq ft HOLE

    3=MORE THAN 1sq ft LOOSE OR WARPED

    4=MORE THAN 1sq ft HOLE

7. RATE THE FLOOR IN THE ROOM ON ITS

    STRUCTURAL SURFACE

    0=GOOD

    1=LESS THAN 1sq ft LOOSE OR WARPED

    2=LESS THAN 1sq ft HOLE

    3=MORE THAN 1sq ft LOOSE OR WARPED

    4=MORE THAN 1sq ft HOLE

8. IS THERE TRASH IN THE BASEMENT?

    0=NONE

    1=2 BAGS or CANS OR LESS

    2=MORE THAN 2 BAGS OR CANS

9. ARE THERE CRACKS IN THE FOUNDATION?

    0=NONE

    1=LESS THAN 1 ft CRACK

    2=MORE THAN 1 ft CRACK

KITCHEN

1. ODORS

   0=NONE

   1=SLIGHT

   2=BAD

2. SINK

   IS THERE WATER LEAKING FROM THE FAUCET?

   0=NO

   1=SLIGHT DRIPPING

   2=VERY QUICK DRIP OR FLOW

3. HOW MUCH CLUTTER IS IN THE ROOM?

   0=LITTLE

   1=SOME CLUTTER

   2=CHAOS

4. HOW CLEAN IS THE ROOM?

   0=CLEAN (can be rated clean if stained but washed)

   1=SATISFACTORY

EXAMPLES: dirt in corners, dirt inside burners, one appliance dirty, but rest of kitchen clean

   2=DIRTY/MOLDY

5. GARBAGE CONTAINER

   0=CLOSED

   1=OPEN IN CLOSED SPACE

   2=OPEN

6. WHERE ARE TOXIC SUBSTANCES KEPT?

   0=UPPER CABINET & LOCKED

   1=UPPER CABINET OR LOCKED

   2=EASILY ACCESSIBLE

   9= NO TOXINS IN ROOM

7. VENTILATION FAN

   0=YES

   1=NO

8. ELECTRICAL

IS THERE ANY EXPOSED WIRING?

0=NO

1=YES

ARE THERE EXTENSION CORDS EXPOSED (excluding those around the perimeter of the room)?

0=NO

1=YES

9. ARE THERE LOCKS ON THE WINDOWS?

0=ALL

1=SOME

2=NONE

9=N/A

10. IF THERE IS AN EXTERIOR DOOR, DOES IT LOCK?

0=LOCK AND BOLT

1=BOLT ONLY

2=LOCK ONLY

3=NO

9= N/A

11. IS THERE WATER RELATED CEILING OR WALL DAMAGE?

0=NO

1=STAINED

2=STAINED AND CRACKED OR MOLDY

3=DAMP RIGHT NOW

12. RATE THE WORST CEILING **OR** WALL IN THE ROOM ON ITS

PROTECTIVE SURFACE (paint, wallpaper, molding, tiles, etc.)

0=GOOD

1=LESS THAN 1sq ft LOOSE OR MISSING

2=MORE THAN 1 sq ft LOOSE OR MISSING

STRUCTURAL SURFACE (includes wood, masonry, etc.)

0=GOOD

1=LESS THAN 1sq ft LOOSE OR WARPED

2=LESS THAN 1sq ft HOLE

3=MORE THAN 1sq ft LOOSE OR WARPED

4=MORE THAN 1sq ft HOLE

13. RATE THE FLOOR IN THE ROOM ON ITS

STRUCTURAL SURFACE

0=GOOD

1=LESS THAN 1sq ft LOOSE OR WARPED

2=LESS THAN 1sq ft HOLE

3=MORE THAN 1sq ft LOOSE OR WARPED

4=MORE THAN 1sq ft HOLE

14. HOW MANY PICTURES, POSTERS, WALL HANGINGS, OR CALENDARS ARE IN THE ROOM?

0=MORE THAN 3

1=1-3

2=NONE

15. WHAT IS THE VIEW FROM THE ROOM?

{stand where most natural view can be seen; sky is natural}

0=MORE THAN 1/2 NATURAL

1=LESS THAN 1/2 NATURAL

2=NO NATURAL/TOO HIGH TO SEE

3=NONE

EATING AREA

1. IS IT A SEPARATE ROOM?

O=YES

1=NO → → → WHAT ROOM IS IT IN?_____

*****RATE WHOLE ROOM IF IT IS A SEPARATE ROOM (e.g. dining room), DON'T IF IT IS NOT A SEPARATE ROOM*****

2. HOW MUCH CLUTTER IS IN THE ROOM?

0=LITTLE

1=SOME CLUTTER

2=CHAOS

3. HOW CLEAN IS THE ROOM?

0=CLEAN

1=SATISFACTORY

EXAMPLES: dirt in corners of floor, dirt inside burners, one item dirty, but rest of eating area clean

2=DIRTY/MOLDY

4. ELECTRICAL

IS THERE ANY EXPOSED WIRING?

0=NO

1=YES

ARE THERE EXTENSION CORDS EXPOSED (excluding those around the perimeter of the room)?

0=NO

1=YES

5. ARE THERE LOCKS ON THE WINDOWS?

0=ALL

1=SOME

2=NONE

9=N/A

6. IF THERE IS AN EXTERIOR DOOR, DOES IT LOCK?

0=LOCK AND BOLT

1=BOLT ONLY

2=LOCK ONLY

3=NO

9=N/A

7. IS THERE WATER RELATED CEILING OR WALL DAMAGE?

0=NO

1=STAINED

2=STAINED AND CRACKED OR MOLDY

3=DAMP RIGHT NOW

8. RATE THE WORST CEILING **OR** WALL IN THE ROOM ON ITS

PROTECTIVE SURFACE (paint, wallpaper, molding etc.)

0=GOOD

1=LESS THAN 1sq ft LOOSE OR MISSING

2=MORE THAN 1 sq ft LOOSE OR MISSING

STRUCTURAL SURFACE (includes wood, masonry, etc.)

0=GOOD

1=LESS THAN 1sq ft LOOSE OR WARPED

2=LESS THAN 1sq ft HOLE

3=MORE THAN 1sq ft LOOSE OR WARPED

4=MORE THAN 1sq ft HOLE

9. RATE THE FLOOR IN THE ROOM ON ITS

STRUCTURAL SURFACE

0=GOOD

1=LESS THAN 1sq ft LOOSE OR WARPED

2=LESS THAN 1sq ft HOLE

3=MORE THAN 1sq ft LOOSE OR WARPED

4=MORE THAN 1sq ft HOLE

10. HOW MANY PICTURES, POSTERS, WALL HANGINGS, OR CALENDARS ARE IN THE ROOM?

0=MORE THAN 3

1=1-3

2=NONE

11. WHAT IS THE VIEW FROM THE ROOM?

{stand where most natural view can be seen, sky is natural}

0=MORE THAN 1/2 NATURAL

1=LESS THAN 1/2 NATURAL

2=NO NATURAL/TOO HIGH TO SEE

3=NONE

****PLEASE NUMBER ALL BATHROOMS****

BATHROOM #_____

1. ODORS

0=NONE

1=SLIGHT

2=BAD

2. IN WHAT PHYSICAL CONDITION IS THE TOILET?

0=FINE

1=SOME CRACKS LESS THAN 1 INCH

2=MORE THAN A 1" CRACK OR PIECES MISSING

3. BATHTUB/SHOWER

THERE IS:

0=BOTH

1=SHOWER ONLY

2=BATHTUB ONLY

3=NONE

4. PRIVACY

WINDOWS

0=BLINDS IN GOOD SHAPE / FROSTED GLASS/CURTAINS

1=BLINDS IN OK SHAPE (broken slats, holes, a make shift blind such as a sheet or ripped, short curtains

2=NO BLINDS OR FROSTED GLASS OR CURTAIN

IS THE DOOR CLOSABLE ?

0=YES

1= NOT TIGHT / GAP

2=NO

5. HOW MUCH CLUTTER IS IN THE ROOM?

0=LITTLE

1=SOME CLUTTER

2=CHAOS

6. HOW CLEAN IS THE ROOM?

0=CLEAN

1=SATISFACTORY

EXAMPLES: dirt in corners, one item dirty, but rest of bathroom clean

2=DIRTY/MOLDY

7. ELECTRICAL

IS THERE ANY EXPOSED WIRING?

0=NO

1=YES

ARE THERE EXTENSION CORDS EXPOSED (excluding those around the perimeter of the room)?

0=NO

1=YES

8. ARE THERE LOCKS ON THE WINDOWS?

0=ALL

1=SOME

2=NONE

9=N/A

9. IF THERE IS AN EXTERIOR DOOR, DOES IT LOCK?

0=LOCK AND BOLT

1=BOLT ONLY

2=LOCK ONLY

3=NO

9=N/A

10. IS THERE WATER RELATED CEILING DAMAGE?

0=NO

1=STAINED

2=STAINED AND CRACKED

3=DAMP RIGHT NOW

11. RATE THE WORST CEILING OR WALL IN THE ROOM ON ITS PROTECTIVE SURFACE (paint, wallpaper, molding, tiles,etc.)

0=GOOD

1=LESS THAN 1sq FOOT LOOSE OR MISSING

2=MORE THAN 1sq FOOT LOOSE OR MISSING

STRUCTURAL SURFACE (includes wood, masonry, etc.)

0=GOOD

1=LESS THAN 1sq FOOT LOOSE OR WAPED

2=LESS THAN 1sq FOOT HOLE

3=MORE THAN 1sq FOOT LOOSE OR WARPED

4=MORE THAN 1sq FOOT HOLE

12. RATE THE FLOOR IN THE ROOM ON ITS STRUCTURAL SURFACE

0=GOOD

1=LESS THAN 1sq FOOT LOOSE OR WARPED

2=LESS THAN 1sq FOOT HOLE

3=MORE THAN 1sq FOOT LOOSE OR WARPED

4=MORE THAN 1sq FOOT HOLE

13. HOW MANY PICTURES, POSTERS, WALL HANGINGS, OR CALENDARS ARE THERE IN THE ROOM?

0=MORE THAN 3

1=1-3

2=NONE

14. WHAT IS THE VIEW FROM THE ROOM?

{stand where most natural view can be seen; sky is natural}

0=MORE THAN 1/2 NATURAL

1=LESS THAN 1/2 NATURAL

2=NO NATURAL/TOO HIGH TO SEE

3=NONE

****PLEASE NUMBER ALL BEDROOMS****

BEDROOM #_____

1. WHO'S ROOM IS THIS?

0=CHILD

1=ADULT

2=BOTH

2. HOW MANY PEOPLE INHABIT THIS ROOM? _____

3. PRIVACY

DO YOU HAVE TO WALK THROUGH THE BEDROOM TO GET TO ANOTHER ROOM? (not including a bathrooom)

0=NO

1=YES 1 OTHER ROOM

2=YES 2 OR MORE ROOMS

IF YOU MUST WALK THROUGH THIS BEDROOM TO GET TO OTHER ROOMS, WHAT ARE THE OTHER ROOMS?

_____ _____ _____

DOES THE DOOR CLOSE?

0=YES

1=NOT TIGHT

2=NO

DO THE WINDOWS HAVE BLINDS/CURTAINS?

0=YES, IN GOOD CONDITION

1=YES, IN POOR CONDITON (broken slats, holes, a make shift blind such as a sheet or ripped, short curtains)

2=NONE

9=N/A (i.e. no windows)

4. HOW MUCH CLUTTER IS THERE IN THE ROOM?

0=LITTLE

1=SOME CLUTTER

2=CHAOS

5. HOW CLEAN IS THE ROOM?

0=CLEAN

1=SATISFACTORY

EXAMPLES - dirt in corners of floor, one item dirty, but rest of bedroom clean

2=DIRTY/MOLDY

6. ELECTRICAL

IS THERE ANY EXPOSED WIRING?

0=NO

1=YES

ARE THERE EXTENSION CORDS EXPOSED (excluding those around the perimeter of the room)?

0=NO

1=YES

7. ARE THERE LOCKS ON THE WINDOWS?

0=ALL

1=SOME

2=NONE

9=N/A

8. IF THERE AN EXTERIOR DOOR, DOES IT LOCK?

0=LOCK AND BOLT

1=BOLT ONLY

2=LOCK ONLY

3=NO

9=N/A

9. IS THERE WATER RELATED CEILING OR WALL DAMAGE?

0=NO

1=STAINED

2=STAINED AND CRACKED OR MOLDY

3=DAMP RIGHT NOW

10. RATE THE WORST CEILING **OR** WALL IN THE ROOM ON ITS

PROTECTIVE SURFACE (paint, wallpaper, molding etc.)

0=GOOD

1=LESS THAN 1sq ft LOOSE OR MISSING

2=MORE THAN 1 sq ft LOOSE OR MISSING

STRUCTURAL SURFACE (includes wood, masonry, etc.)

0=GOOD

1=LESS THAN 1sq ft LOOSE OR WARPED

2=LESS THAN 1sq ft HOLE

3=MORE THAN 1sq ft LOOSE OR WARPED

4=MORE THAN 1sq ft HOLE

11. RATE THE FLOOR IN THE ROOM ON ITS

STRUCTURAL SURFACE

0=GOOD

1=LESS THAN 1sq ft LOOSE OR WARPED

2=LESS THAN 1sq ft HOLE

3=MORE THAN 1sq ft LOOSE OR WARPED

4=MORE THAN 1sq ft HOLE

12. HOW MANY PICTURES, POSTERS, WALL HANGINGS, OR CALENDARS ARE IN THE ROOM?

0=MORE THAN 3

1=1-3

2=NONE

13. WHAT IS THE VIEW FROM THE ROOM?

(**SIT** where most natural view can be seen)

0=MORE THAN 1/2 NATURAL

1=LESS THAN 1/2 NATURAL

2=NO NATURAL/TOO HIGH TO SEE

3=NONE

LIVING ROOM

1. WHAT IS THE CONDITION OF THE COUCHES AND CHAIRS?

0=UPHOLSTERY OR FINISH GOOD / STURDY

1=RIPPED, SCRATCHED, DIRTY

2=NOT STURDY OR BADLY TORN

3=NONE

2. HOW MUCH CLUTTER IS IN THE ROOM?

0=LITTLE

1=SOME CLUTTER

2=CHAOS

3. HOW CLEAN IS THE ROOM?

0=CLEAN

1=SATISFACTORY

EXAMPLES: dirt in corners, one item dirty, but rest of living room clean

2=DIRTY/MOLDY

4. ELECTRICAL

IS THERE ANY EXPOSED WIRING?

0=NO

1=YES

ARE THERE EXTENSION CORDS EXPOSED (excluding those around the perimeter of the room)?

0=NO

1=YES

5. ARE THERE LOCKS ON THE WINDOWS?

0=ALL

1=SOME

2=NONE

9=N/A

6. IS THERE WATER RELATED CEILING OR WALL DAMAGE?

0=NO

1=STAINED

2=STAINED AND CRACKED OR MOLDY

3=DAMP RIGHT NOW

7. IF THERE IS AN EXTERIOR DOOR, DOES IT LOCK?

0=LOCK AND BOLT

1=BOLT ONLY

2=LOCK ONLY

3=NO

9=N/A

8. RATE THE WORST CEILING **OR** WALL IN THE ROOM ON ITS

PROTECTIVE SURFACE (paint, wallpaper, molding etc.)

0=GOOD

1=LESS THAN 1sq ft LOOSE OR MISSING

2=MORE THAN 1 sq ft LOOSE OR MISSING

STRUCTURAL SURFACE (includes wood, masonry, etc.)

0=GOOD

1=LESS THAN 1sq ft LOOSE OR WARPED

2=LESS THAN 1sq ft HOLE

3=MORE THAN 1sq ft LOOSE OR WARPED

4=MORE THAN 1sq ft HOLE

9. RATE THE FLOOR IN THE ROOM ON ITS

STRUCTURAL SURFACE

0=GOOD

1=LESS THAN 1sq ft LOOSE OR WARPED

2=LESS THAN 1sq ft HOLE

3=MORE THAN 1sq ft LOOSE OR WARPED

4=MORE THAN 1sq ft HOLE

10. HOW MANY PICTURES, POSTERS, WALL HANGINGS, OR CALENDARS ARE IN THE ROOM?

0=MORE THAN 3

1=1-3

2=NONE

11. WHAT IS THE VIEW FROM THE ROOM?

{stand where most natural view can be seen}

0=MORE THAN 1/2 NATURAL (sky is natural)

1=LESS THAN 1/2 NATURAL

2=NO NATURAL/TOO HIGH TO SEE

3=NONE

FAMILY ROOM

1. WHAT IS THE CONDITION OF THE COUCHES AND CHAIRS?

   0=UPHOLSTERY OR FINISH GOOD / STURDY

   1=RIPPED, SCRATCHED, DIRTY

   2=NOT STURDY OR BADLY TORN

   3=NONE

2. HOW MUCH CLUTTER IS THERE IN THE ROOM?

   0=LITTLE

   1=SOME CLUTTER

   2=CHAOS

3. HOW CLEAN IS THE ROOM?

   0=CLEAN

   1=SATISFACTORY

   EXAMPLES: dirt in corners, one item dirty, but rest of living room clean

   2=DIRTY/MOLDY

4. ELECTRICAL

   IS THERE ANY EXPOSED WIRING?

   0=NO

   1=YES

   ARE THERE EXTENSION CORDS EXPOSED (excluding those around the perimeter of the room)?

   0=NO

   1=YES

5. ARE THERE LOCKS ON THE WINDOWS?

   0=ALL

   1=SOME

   2=NONE

   9=N/A

6. IF THERE IS AN EXTERIOR DOOR, DOES IT LOCK?

   0=LOCK AND BOLT

   1=BOLT ONLY

   2=LOCK ONLY

   3=NO

   9=N/A

7. IS THERE WATER RELATED CEILING OR WALL DAMAGE?

0=NO

1=STAINED

2=STAINED AND CRACKED OR MOLDY

3=DAMP RIGHT NOW

8. RATE THE WORST CEILING **OR** WALL IN THE ROOM ON ITS

PROTECTIVE SURFACE (paint, wallpaper, molding etc.)

0=GOOD

1=LESS THAN 1sq ft LOOSE OR MISSING

2=MORE THAN 1 sq ft LOOSE OR MISSING

STRUCTURAL SURFACE (includes wood, masonry, etc.)

0=GOOD

1=LESS THAN 1sq ft LOOSE OR WARPED

2=LESS THAN 1sq ft HOLE

3=MORE THAN 1sq ft LOOSE OR WARPED

4=MORE THAN 1sq ft HOLE

9. RATE THE FLOOR IN THE ROOM ON ITS

STRUCTURAL SURFACE

0=GOOD

1=LESS THAN 1sq ft LOOSE OR WARPED

2=LESS THAN 1sq ft HOLE

3=MORE THAN 1sq ft LOOSE OR WARPED

4=MORE THAN 1sq ft HOLE

10. HOW MANY PICTURES, POSTERS, WALL HANGINGS, OR CALENDARS ARE IN THE ROOM?

0=MORE THAN 3

1=1-3

2=NONE

11. WHAT IS THE VIEW FROM THE ROOM?

{stand where most natural view can be seen}

0=MORE THAN 1/2 NATURAL

1=LESS THAN 1/2 NATURAL

2=NO NATURAL/TOO HIGH TO SEE

3=NONE

STUDY

***** FIND OUT IF ANYBODY SLEEPS HERE AT LEAST 1/2 OF THE WEEK.***

IF YES, RATE AS A BEDROOM, IF NO, RATE AS A STUDY **

1. HOW MUCH CLUTTER IS THERE IN THE ROOM?

   0=LITTLE

   1=SOME CLUTTER

   2=CHAOS

2. HOW CLEAN IS THE ROOM?

   0=CLEAN

   1=SATISFACTORY

   EXAMPLES - dirt in corners of floor, one item dirty, but rest of study clean

   2=DIRTY/MOLDY

3. ELECTRICAL

   IS THERE ANY EXPOSED WIRING?

   0=NO

   1=YES

   ARE THERE EXTENSION CORDS EXPOSED (excluding those around the perimeter of the room)?

   0=NO

   1=YES

4. ARE THERE LOCKS ON THE WINDOWS?

   0=ALL

   1=SOME

   2=NONE

   9=N/A

5. IF THERE IS AN EXTERIOR DOOR, DOES IT LOCK?

   0=LOCK AND BOLT

   1=BOLT ONLY

   2=LOCK ONLY

   3=NO

   9=N/A

6. IS THERE WATER RELATED CEILING OR WALL DAMAGE?

0=NO

1=STAINED

2=STAINED AND CRACKED OR MOLDY

3=DAMP RIGHT NOW

7. RATE THE WORST CEILING **OR** WALL IN THE ROOM ON ITS

PROTECTIVE SURFACE (paint, wallpaper, molding etc.)

0=GOOD

1=LESS THAN 1sq ft LOOSE OR MISSING

2=MORE THAN 1 sq ft LOOSE OR MISSING

STRUCTURAL SURFACE (includes wood, masonry, etc.)

0=GOOD

1=LESS THAN 1sq ft LOOSE OR WARPED

2=LESS THAN 1sq ft HOLE

3=MORE THAN 1sq ft LOOSE OR WARPED

4=MORE THAN 1sq ft HOLE

8. RATE THE FLOOR IN THE ROOM ON ITS

STRUCTURAL SURFACE

0=GOOD

1=LESS THAN 1sq ft LOOSE OR WARPED

2=LESS THAN 1sq ft HOLE

3=MORE THAN 1sq ft LOOSE OR WARPED

4=MORE THAN 1sq ft HOLE

9. HOW MANY PICTURES, POSTERS, WALL HANGINGS, OR CALENDARS ARE IN THE ROOM?

0=MORE THAN 3

1=1-3

2=NONE

10. WHAT IS THE VIEW FROM THE ROOM?

{stand where most natural view can be seen}

0=MORE THAN 1/2 NATURAL

1=LESS THAN 1/2 NATURAL

2=NO NATURAL/TOO HIGH TO SEE

3=NONE

GENERAL HOUSE INSIDE

1. IN WHAT CONDITION ARE THE STAIRS? (not basement stairs)

0=GOOD

1=FUNCTIONALLY GOOD, BUT CRACKED OR DISCOLORED

2=POTENTIALLY DANGEROUS

EXAMPLES: severe structural damage (e.g. no backs to single stairs), nails stick out, stairs move when used

9=N/A

2. IF THERE ARE MORE THAN 2 STAIRS IN THIS STAIRCASE (not the basement stairs), IN WHAT CONDITION IS THE HANDRAIL?

0=GOOD

1=WOBBLY BUT USEABLE

2=UNUSEABLE

3=NONE

9=N/A

3. HOW MANY BOOKS DO YOU SEE IN THE HOUSE? (any books-child or adult)

0=MORE THAN 20

1=10-20

2=LESS THAN 10

3=NONE

GENERAL HOUSE OUTSIDE

1. IF THERE ARE MORE THAN 2 STAIRS IN THE STAIRCASE, IN WHAT CONDITION IS THE HANDRAIL?

0=GOOD

1=WOBBLY, BUT USEABLE

2=UNUSEABLE

3=NONE

2. IS THERE AN OUTSIDE LIGHT?

0=MORE THAN 1

1=1

2=NONE

3. YARD MAINTENANCE

0=WELL KEPT

1=SOME CLUTTER/UNKEMPT WEEDS OR GRASS

2=VERY JUNKY (car parts, etc)

4. IS THERE A PLACE FOR CHILDREN TO PLAY OUTDOORS WHERE PARENTS CAN WATCH FROM THE HOUSE?

0=YES AND HAS PLAY EQUIPMENT

1=YES BUT HAS NO PLAY EQUIPMENT

2=NO PLACE WITHIN SIGHT

5. ACCESS TO THE HOME - SEPARATE ENTRANCE?

0=ALL ENTRANCES ARE SEPARATE

1=THERE ARE BOTH SEPARATE AND SHARED ENTRANCES

2=SHARED ENTRANCES

6. RATE THE EXTERIOR WALLS ON (rate each plane separately)

*FRONT:

PROTECTIVE SURFACE (e.g. paint or tiles)

0=GOOD-NO DAMAGE

1=LESS THAN1/4 DAMAGED/MISSING

2=BETWEEN 1/4 AND 1/2 DAMAGED/MISSING

3=MORE THAN 1/2 DAMAGED/MISSING

STRUCTURAL SURFACE

0=GOOD-NO DAMAGE

1=LESS THAN1/4 DAMAGED/MISSING

2=BETWEEN 1/4 AND 1/2 DAMAGED/MISSING

3=MORE THAN 1/2 DAMAGED/MISSING

*SIDE:

PROTECTIVE SURFACE (e.g. paint or tiles)

0=GOOD-NO DAMAGE

1=LESS THAN1/4 DAMAGED/MISSING

2=BETWEEN 1/4 AND 1/2 DAMAGED/MISSING

3=MORE THAN 1/2 DAMAGED/MISSING

STRUCTURAL SURFACE

0=GOOD-NO DAMAGE

1=LESS THAN1/4 DAMAGED/MISSING

2=BETWEEN 1/4 AND 1/2 DAMAGED/MISSING

3=MORE THAN 1/2 DAMAGED/MISSING

*SIDE:

PROTECTIVE SURFACE (e.g. paint or tiles)

0=GOOD-NO DAMAGE

1=LESS THAN1/4 DAMAGED/MISSING

2=BETWEEN 1/4 AND 1/2 DAMAGED/MISSING

3=MORE THAN 1/2 DAMAGED/MISSING

STRUCTURAL SURFACE

0=GOOD-NO DAMAGE

1=LESS THAN1/4 DAMAGED/MISSING

2=BETWEEN 1/4 AND 1/2 DAMAGED/MISSING

3=MORE THAN 1/2 DAMAGED/MISSING

*BACK:

PROTECTIVE SURFACE (e.g. paint or tiles)

0=GOOD-NO DAMAGE

1=LESS THAN1/4 DAMAGED/MISSING

2=BETWEEN 1/4 AND 1/2 DAMAGED/MISSING

3=MORE THAN 1/2 DAMAGED/MISSING

STRUCTURAL SURFACE

0=GOOD-NO DAMAGE

1=LESS THAN1/4 DAMAGED/MISSING

2=BETWEEN 1/4 AND 1/2 DAMAGED/MISSING

3=MORE THAN 1/2 DAMAGED/MISSING

7. IS THERE ANY EVIDENCE OF SEPTIC TANK OR SEWAGE LEAKAGE?

0=NO EVIDENCE

1=GROUND SINKING

2=VISIBLE/BAD ODOR

8. WHAT TYPE OF HOUSE IS THIS?

0=DETACHED, SINGLE FAMILY

1=TRAILER

2=DUPLEX (double house) / ROW HOUSE

3=MULTIPLE DWELLING (>1 family shares this house) (eg. Apartments)

9. HOW MANY FLOORS IN THE BUILDING? _____

10. WHAT FLOOR IS THE HOME ON (if an apartment or complex)? _____

NEIGHBORHOOD

1. WHAT IS THE DISTANCE TO THE CLOSEST NEIGHBOR? (categorical)

    1=LESS THAN 25'

    2=25-50'

    3=100-500'

    4=MORE THAN 500'

2. STREET OUTSIDE OF THE HOUSE

    HOW BUSY IS THE STREET?

    0=NO CARS IN TIME SPENT AT HOUSE

    1=A FEW CARS HAVE GONE BY

    2=HEAVY/STEADY TRAFFIC

NUMBER OF LANES_____ (if house is on a corner, count the number of lanes of the busier of the two streets)

3. IN WHAT CONDITION IS THE SIDEWALK OUTSIDE OF THE HOME?

    0=GOOD

    1=O.K. (cracked)

    2=BAD

    3=NONE

4. WITHIN THE BLOCK, HOW MANY HOUSES HAVE SEVERE STRUCTURAL DAMAGE OR ARE BADLY IN NEED OF NEW PAINT OR TILES?

    0=NONE

    1=FEW

    2=MOST HOUSES LOOK BAD

    9=THERE ARE NO HOUSES AROUND

5. IS THERE LITTER IN THIS NEIGHBORHOOD?

    0=NONE

    1=SOME

    2=A LOT

----------END OF SCALE----------

Subject ID_____ Date_____ Rater Name_____

PHYSICAL HEALTH STATUS

Now I am going to ask you some questions about your health. Please answer the following questions as frankly and accurately as you can.

1. Compared with previous periods of your life, would you say your health is:

___1=the best it's ever been ___2=better than usual

___3=about the same as always ___4=poorer than usual

___5=the poorest it's ever been

2. Is your health better or worse than the health of most other people of you age?

___1=better ___2=about the same ___3=worse

3. All in all, would you say your health is generally:

___1=excellent ___2=good ___3=fair ___4=poor

4. Would you say you have more energy or less energy than most people your age?

___1=much more ___2=a little more ___3=a little less ___4=a lot less

5. How often do you have any trouble getting to sleep or staying asleep?

___1=often ___2=sometimes ___3=almost never

6. When you have only four or five hours of sleep during the night, how tired do you feel the next day?

___1=very tired ___2=somewhat tired ___3=not tired at all

7. How often are you completely worn out at the end of the day?

___1=often ___2=sometimes ___3=almost never

8. Here is a list of medical conditions that usually last for some time. Have you had any of these conditions during the past 12 months? Please answer YES or NO for each condition. And if YES, how many years/months ago did it start?

High blood pressure ___NO ___YES

If YES, When did it start? _____

Heart trouble ___NO ___YES

If YES, When did it start? _____

Stroke ___NO ___YES

If YES, When did it start? _____

Chronic bronchitis ___NO ___YES

If YES, When did it start? _____

Asthma ___NO ___YES

If YES, When did it start? _____

Arthritis ___NO ___YES

If YES, When did it start? _____

Chronic nervous trouble ___NO ___YES

If YES, When did it start? _____

Epilepsy ___NO ___YES

If YES, When did it start? _____

Diabetes ___NO ___YES

If YES, When did it start? _____

Cancer ___NO ___YES

If YES, When did it start? _____

Tuberculosis ___NO ___YES

If YES, When did it start? _____

Emotional/mental illness ___NO ___YES

If YES, When did it start? _____

Drinking problems ___NO ___YES

If YES, When did it start? _____

Stomach ulcer ___NO ___YES

If YES, When did it start? _____

Chronic gallbladder trouble ___NO ___YES

If YES, When did it start? _____

Chronic liver trouble ___NO ___YES

If YES, When did it start? _____

Hernia or rupture ___NO ___YES

If YES, When did it start? _____

9. Here is a list of physical ailments. Have you had any of these during the last 12 months? If YES, how many years/months ago did it start?

1.Frequent cramps in legs ___NO ___YES

If YES, When did it start? _____

2.Pain in the heart or tightness ___NO ___YES

or heaviness in chest If YES, When did it start? _____

3.Trouble breathing or ___NO ___YES

shortness in breath If YES, When did it start? _____

4.Swollen ankles ___NO ___YES

If YES, When did it start? _____

5.Pain in the back or ___NO ___YES

spine If YES, When did it start? _____

6. Repeated pains in the ___NO ___YES

stomach If YES, When did it start? _____

7. Frequent headaches ___NO ___YES

If YES, When did it start? _____

8. Constant coughing or ___NO ___YES

frequent heavy chest colds If YES, When did it start? _____

9. Paralysis of any kind ___NO ___YES

If YES, When did it start? _____

10. Stiffness, swelling, or ___NO ___YES

aching in any joint or muscle If YES, When did it start? _____

10. Here is a list of impairments. Do you have any of these?

a. Missing hand, arm, foot, or leg ___NO ___YES

b.Trouble with seeing (even with glasses) ___NO ___YES

b.Trouble with hearing (even with hearing aid) ___NO ___YES

11.Do you have any other medical condition, ailment, or impairment that has not been listed so far?

___NO ___YES Describe: _____

If YES, When did it start? _____

12. Here are three activities that people sometime have trouble with:

a) trouble with feeding themselves; b) trouble dressing themselves;

c) trouble moving around. Do you have trouble doing any of these things?

___NO ___YES

If YES, For how long? ___ less than 6 months ___6 months or more

13. Here are two more activities that people sometimes have trouble with:

a) trouble climbing stairs; b) trouble getting outdoors. Do you have trouble doing any of these things?

___NO ___YES

If YES, For how long? ___ less than 6 months ___6 months or more

14. Are you unable to work because of some illness or injury?

___NO ___YES

If YES, For how long? ___ less than 6 months ___6 months or more

15. Have you had to change the kind of work you used to do, or had to cut down on the number or hours you used to work because of some illness or injury?

___NO ___YES

If YES, For how long? ___ less than 6 months ___6 months or more

16. Have you had to cut down or stop any other activity you used to do because of some illness or injury? (For example, you've had to 'take it easy', or cut some sport or you find you can't spend as many hours gardening as you used to.)

___NO ___YES

If YES, For how long? ___ less than 6 months ___6 months or more

----------END OF SCALE----------

Subject ID_____ Date_____ Rater Name_____

PERI SCALE

The following questions apply to the last **3 months**, that is since_____. Please tell me how often you have felt any of the following ways during the past **3 months**.

1. How often have you felt you were both by all different kinds of ailments in different parts of your body?

___0 = never ___1 = almost never ___2 = sometimes ___3 = fairly often ___4 = very often

2. How often have you been bothered by feelings of sadness or depression - of feeling blue?

___0 = never ___1 = almost never ___2 = sometimes ___3 = fairly often ___4 = very often

3. How often have you had attacks of sudden fear or panic?

___0 = never ___1 = almost never ___2 = sometimes ___3 = fairly often ___4 = very often

4. How often have you felt confident?

___0 = never ___1 = almost never ___2 = sometimes ___3 = fairly often ___4 = very often

5. In the past 3 months, how often have you felt lonely?

___0 = never ___1 = almost never ___2 = sometimes ___3 = fairly often ___4 = very often

6. How often have you been bothered by feelings of restlessness?

___0 = never ___1 = almost never ___2 = sometimes ___3 = fairly often ___4 = very often

7. How often have you felt useless?

___0 = never ___1 = almost never ___2 = sometimes ___3 = fairly often ___4 = very often

8. How often have you feared going crazy; losing your mind?

___0 = never ___1 = almost never ___2 = sometimes ___3 = fairly often ___4 = very often

9. How often have you felt anxious?

___0 = never ___1 = almost never ___2 = sometimes ___3 = fairly often ___4 = very often

10. How often have you feared something terrible would happen to you?

___0 = never ___1 = almost never ___2 = sometimes ___3 = fairly often ___4 = very often

11. How often have you felt confused and had trouble thinking?

___0 = never ___1 = almost never ___2 = sometimes ___3 = fairly often ___4 = very often

12. How often have you had trouble concentrating or keeping your mind on what you were doing?

___0 = never ___1 = almost never ___2 = sometimes ___3 = fairly often ___4 = very often

13. How often have you felt that nothing turns out for you the way you want it to?

___0 = never ___1 = almost never ___2 = sometimes ___3 = fairly often ___4 = very often

14. During the past 3 months, how often have you felt completely hopeless about everything?

___0 = never ___1 = almost never ___2 = sometimes ___3 = fairly often ___4 = very often

15. How often have you had times when you couldn't help wondering if anything was worthwhile anymore?

___0 = never ___1 = almost never ___2 = sometimes ___3 = fairly often ___4 = very often

16. How often have you felt completely helpless?

___0 = never ___1 = almost never ___2 = sometimes ___3 = fairly often ___4 = very often

17. How often have you been bothered by cold sweats?

___0 = never ___1 = almost never ___2 = sometimes ___3 = fairly often ___4 = very often

18. How often have you had trouble with headaches or pains in the head?

___0 = never ___1 = almost never ___2 = sometimes ___3 = fairly often ___4 = very often

19. During the past 3 months, how often has your appetite been poor?

___0 = never ___1 = almost never ___2 = sometimes ___3 = fairly often ___4 = very often

20. How often have you feared being left alone or abandoned?

___0 = never ___1 = almost never ___2 = sometimes ___3 = fairly often ___4 = very often

21. How often have you been bothered by nervousness being fidgety or tense?

___0 = never ___1 = almost never ___2 = sometimes ___3 = fairly often ___4 = very often

----------END OF SCALE----------

Subject ID_____ Date_____ Rater Name_____

PSS-10

I am going to ask you some questions about how you felt in the **last month**. Remember there are no right or wrong answers. We just want to know how you feel.

1. In the last month, how often have you been upset because of something that happened unexpectedly?
__0=never __0=almost never __0=sometimes __0=fairly often __0=very often

2. In the last month, how often have you felt that you were unable to control the important things in your life?
__0=never __0=almost never __0=sometimes __0=fairly often __0=very often

3. In the last month, how often have you felt nervous and "stressed"?
__0=never __0=almost never __0=sometimes __0=fairly often __0=very often

4. In the last month, how often have you felt confident about your ability to handle your personal problems?
__0=never __0=almost never __0=sometimes __0=fairly often __0=very often

5. In the last month, how often have you felt that things were going your way?
__0=never __0=almost never __0=sometimes __0=fairly often __0=very often

6. In the last month, how often have you found that you could not cope with all the things that you had to do?
__0=never __0=almost never __0=sometimes __0=fairly often __0=very often

7. In the last month, how often have you been able to control irritations in your life?
__0=never __0=almost never __0=sometimes __0=fairly often __0=very often

8. In the last month, how often have you felt that you were on top of things?
__0=never __0=almost never __0=sometimes __0=fairly often __0=very often

9. In the last month, how often have you been angered because of things that were outside of your control?
__0=never __0=almost never __0=sometimes __0=fairly often __0=very often

10. In the last month, how often have you felt difficulties were piling up so high that you could not overcome them?
__0=never __0=almost never __0=sometimes __0=fairly often __0=very often

----------END OF SCALE----------

Revised: 7/24/11

Subject ID_____ Date_____ Rater Name_____

MASTERY SCALE

These are some statements about how people feel about certain things. There are no right or wrong answers. We just want to know how strongly you agree or disagree with the following statements:

(1) I have little control over the things that happen to me.

___1 = Strongly agree ___2 = Agree ___3 = Disagree ___4 = Strongly disagree

(2) There is really no way I can solve some of the problems I have.

___1 = Strongly agree ___2 = Agree ___3 = Disagree ___4 = Strongly disagree

(3) There is little I can do to change many of the important things in my life.

___1 = Strongly agree ___2 = Agree ___3 = Disagree ___4 = Strongly disagree

(4) 1 often feel helpless in dealing with the problems of life.

___1 = Strongly agree ___2 = Agree ___3 = Disagree ___4 = Strongly disagree

(5) Sometimes I feel that I'm being pushed around in life.

___1 = Strongly agree ___2 = Agree ___3 = Disagree ___4 = Strongly disagree

(6) What happens to me in the future mostly depends on me.

___1 = Strongly agree ___2 = Agree ___3 = Disagree ___4 = Strongly disagree

(7) 1 can do just about anything I really set my mind to do.

___1 = Strongly agree ___2 = Agree ___3 = Disagree ___4 = Strongly disagree

----------END OF SCALE----------

Subject ID_____ Date_____ Rater Name_____

FUTURE SCALE

Below are some statements about how people feel about certain things. There are no right or wrong answers. Please choose the most appropriate answer for you based on how you **feel majority of the time.**

1. I can think of many ways to get out of a jam.
___1 = Definitely False ___2 = Mostly False ___3 = Mostly True ___4 = Definitely True

2. I energetically pursue my goals.
___1 = Definitely False ___2 = Mostly False ___3 = Mostly True ___4 = Definitely True

3. I feel tired most of the time.
___1 = Definitely False ___2 = Mostly False ___3 = Mostly True ___4 = Definitely True

4. There are lots of ways around any problem.
___1 = Definitely False ___2 = Mostly False ___3 = Mostly True ___4 = Definitely True

5. I am easily downed in an argument.
___1 = Definitely False ___2 = Mostly False ___3 = Mostly True ___4 = Definitely True

6. I can think of many ways to get the things in life that are most important to me.
___1 = Definitely False ___2 = Mostly False ___3 = Mostly True ___4 = Definitely True

7. I worry about my health.
___1 = Definitely False ___2 = Mostly False ___3 = Mostly True ___4 = Definitely True

8. Even when others get discouraged, I know I can find a way to solve the problem.
___1 = Definitely False ___2 = Mostly False ___3 = Mostly True ___4 = Definitely True

9. My past experiences have prepared me well for my future.
___1 = Definitely False ___2 = Mostly False ___3 = Mostly True ___4 = Definitely True

10. I've been pretty successful in life.
___1 = Definitely False ___2 = Mostly False ___3 = Mostly True ___4 = Definitely True

11. I usually find myself worrying about something.
___1 = Definitely False ___2 = Mostly False ___3 = Mostly True ___4 = Definitely True

12. I meet the goals that I set for myself.
___1 = Definitely False ___2 = Mostly False ___3 = Mostly True ___4 = Definitely True

----------END OF SCALE----------

Subject ID_____ Date_____ Rater Name_____

NEIGHBORHOOD SOCIAL TIES

Now I am going to ask you some questions about your relationship with your neighbors.

1. How many close neighbors do you have? (meaning people that you feel at ease with, can talk to about private matters, and can call on for help)

___None ___1 ___2 ___3 ___4 ___5 ___6 ___7 or more

2. How many of these close neighbors do you see or talk to on the telephone at least once every two weeks?

___None ___1 ___2 ___3 ___4 ___5 ___6 ___7 or more

3. How many of your neighbors do you visit or talk to at least once every two weeks? (not including the once that you listed in the previous question)

___None ___1 ___2 ___3 ___4 ___5 ___6 ___7 or more

4. Do you have many visitors from your neighborhood every day?

1 = never 2 = seldom 3 = sometimes 4 = often

2. Do you socialize a lot within the building?

1 = never 2 = seldom 3 = sometimes 4 = often

3. Do neighbors here acknowledge one another when passing by?

1 = never 2 = seldom 3 = sometimes 4 = often

4. Are neighbors here concerned with helping and supporting one another?

1 = never 2 = seldom 3 = sometimes 4 = often

5. Do neighbors help each other out by lending things like tools, giving someone a ride, or watching each other's houses when they're away?

1 = never 2 = seldom 3 = sometimes 4 = often

6. How well do you know the people next door?

1 = not at all 2 = not much 3 = somewhat 4 = a lot

7. How well do you know the people on your floor?

1 = not at all 2 = not much 3 = somewhat 4 = a lot

8. Is there a strong feeling of belonging here?

1 = not at all 2 = not much 3 = somewhat 4 = a lot

----------END OF SCALE----------

Subject ID_____ Date_____ Rater Name_____

WHOQOL-BREF

The following questions ask how you feel about your quality of life, health, or other areas of your life. I will read out each question to you, along with the response options. **Please choose the answer that appears most appropriate.** If you are unsure about which response to give to a question, the first response you think of is often the best one.

Please keep in mind your standards, hopes, pleasures and concerns. We ask that you think about your life **in the last month.**

		Very poor	Poor	Neither poor nor good	Good	Very good
1.	How would you rate your quality of life?	1	2	3	4	5

		Very dissatisfied	Dissatisfied	Neither satisfied nor dissatisfied	Satisfied	Very satisfied
2.	How satisfied are you with your health?	1	2	3	4	5

The following questions ask about **how much** you have experienced certain things **in the last month**.

		Not at all	A little	A moderate amount	Very much	An extreme amount
3.	To what extent do you feel that physical pain prevents you from doing what you need to do?	5	4	3	2	1
4.	How much do you need any medical treatment to function in your daily life?	5	4	3	2	1
5.	How much do you enjoy life?	1	2	3	4	5
6.	To what extent do you feel your life to be meaningful?	1	2	3	4	5

		Not at all	A little	A moderate amount	Very much	Extremely
7.	How well are you able to concentrate?	1	2	3	4	5
8.	How safe do you feel in your daily life?	1	2	3	4	5
9.	How healthy is your physical environment?	1	2	3	4	5

The following questions ask about how completely you experience or were able to do certain things **in the last month.**

		Not at all	A little	Moderately	Mostly	Completely
10.	Do you have enough energy for everyday life?	1	2	3	4	5
11.	Are you able to accept your bodily appearance?	1	2	3	4	5
12.	Have you enough money to meet your needs?	1	2	3	4	5
13.	How available to you is the information that you need in your day-to-day life?	1	2	3	4	5
14.	To what extent do you have the opportunity for leisure activities?	1	2	3	4	5

		Very poor	Poor	Neither poor nor good	Good	Very good
15.	How well are you able to get around?	1	2	3	4	5

		Very dissatisfied	Dissatisfied	Neither satisfied nor dissatisfied	Satisfied	Very satisfied
16.	How satisfied are you with your sleep?	1	2	3	4	5
17.	How satisfied are you with your ability to perform your daily living activities?	1	2	3	4	5
18.	How satisfied are you with your capacity for work?	1	2	3	4	5
19.	How satisfied are you with yourself?	1	2	3	4	5
20.	How satisfied are you with your personal relationships?	1	2	3	4	5
21.	How satisfied are you with your sex life?	1	2	3	4	5
22.	How satisfied are you with the support you get from your friends?	1	2	3	4	5
23.	How satisfied are you with the conditions of your living place?	1	2	3	4	5
24.	How satisfied are you with your access to health services?	1	2	3	4	5
25.	How satisfied are you with your transport?	1	2	3	4	5

The following question refers to how often you have felt or experienced certain things **in the last month.**

		Never	Seldom	Quite often	Very often	Always
26.	How often do you have negative feelings such as blue mood, despair, anxiety, depression?	5	4	3	2	1

----------END OF SCALE----------

Subject ID_____ Date_____ Rater Name_____

DEMOGRAPHIC DETAILS

LAST NAME: _____

1. FIRST & MIDDLE NAME,

MALE HEAD (HUSBAND)_____

FEMALE HEAD (PARTICIPANT)_____

2. DATE OF BIRTH,

FEMALE HEAD (PARTICIPANT) _____/_____/_____

3. CASTE: _____

4. OCCUPATIONAL STATUS

MALE HEAD (HUSBAND)

___1=EMPLOYED (FULL-TIME) (work 5 hrs more)

___2= EMPLOYED (PART-TIME) (work less than 5 hrs)

___3=UNEMPLOYED

FEMALE HEAD (PARTICIPANT)

___1=EMPLOYED (FULL-TIME) (work 5 hrs more)

___2= EMPLOYED (PART-TIME) (work less than 5 hrs)

___3=UNEMPLOYED/ HOUSEWIFE

4. NO. OF ADULTS(18 YRS OR OLDER) LIVING IN THE HOUSE _____

5. NO. OF CHILDREN LIVING IN THE HOUSE _____

6. TOTAL NUMBER OF PEOPLE LIVING IN THE HOUSE _____

7. TOTAL NET HOUSEHOLD INCOME _____ (INCLUDE INCOME OF ALL FAMILY MEMBERS)

8. EDUCATION LEVEL (Names not required note only education level)

(IF OTHER MEMBERS ARE CHILDREN AND CONTINUING EDUCATION PLEASE MAKE A NOTE)

MALE HEAD (HUSBAND) _____

FEMALE HEAD (PARTICIPANT) _____

OTHER MEMBER 1 _____

SPECIFY RELATIONSHIP _____

OTHER MEMBER 2 _____

SPECIFY RELATIONSHIP _____

OTHER MEMBER 3 _____

SPECIFY RELATIONSHIP _____

OTHER MEMBER 4 _____

SPECIFY RELATIONSHIP _____

OTHER MEMBER 5 _____

SPECIFY RELATIONSHIP _____

OTHER MEMBER 6 _____

SPECIFY RELATIONSHIP _____

OTHER MEMBER 7 _____

SPECIFY RELATIONSHIP _____

OTHER MEMBER 8 _____

SPECIFY RELATIONSHIP _____

9. LENGTH OF RESIDENCE IN AHMEDABAD _____

10. LENGTH OF RESIDENCE IN CURRENT HOUSE _____

11. HOUSING COST: RENT _____/MONTH

_____/YEAR

OR

MORTAGAGE(ઘર માટે હપ્તા) _____/MONTH

_____/YEAR

DOWNPAYMENT _____

----------END OF SCALE----------

Subject ID_____ Date_____ Rater Name_____

Interviewer Scale

1. According to you the participant was

a. Comfortable

1	2	3	4	5
Very Uncomfortable				Very Comfortable

b. Honest

1	2	3	4	5
Very Dishonest				Very Honest

c. Hesitant

1	2	3	4	5
Very Hesitant				Not Hesitant at all

2. Was there somebody else present in the room during the interview?

YES NO

Who?_____

3. Any other notes:

_____

_____

_____

_____

_____

_____

_____

----------END OF SCALE----------

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