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Subjective life satisfaction in public housing in urban areas of Ogun State, Nigeria

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ABSTRACT

This study investigated subjective life satisfaction of 452 residents in 10 newly constructed public housing estates in urban areas of Ogun State Southwest Nigeria. Data were collected using structured questionnaire and subjected to descriptive statistics, factor and multivariate regression analyses. The result shows that 61% of the respondents were generally satisfied with life in their current residences. A larger proportion of them were also found to be satisfied with the physical and spatial characteristics of the dwelling unit components of their housing environment but were dissatisfied with access to housing services and infrastructural facilities. Tenure, income and marital status as well as satisfaction with the size of residence, housing services and management of the housing estates and housing delivery strategy were among the strongest predictors of subjective life satisfaction among the respondents. This implies that among other factors, satisfaction with housing environment as well as housing delivery strategy have a significant influence on residents' satisfaction with life in public housing. Therefore, public housing developers need to take adequate steps to improve residents' satisfaction with the size of main activity areas in dwelling units, housing services and management of housing estates and encourage the participation of users in housing delivery process in order to enhance the subjective life satisfaction of residents of public housing in urban areas in Nigeria.

Introduction

The recent history of urban areas in many developing countries has been marked by a stark deterioration in the quality of life of residents. As a result, the need to improve the subjective life satisfaction (SLS) and standard of living of a majority of the citizens has become a major concern to governments, housing experts and international development agencies. Subjective life satisfaction (SLS) represents one of the key components of subjective well-being or quality of life that deals with individual's assessment of satisfaction with life (SWL) as a whole (Ozmete, 2011; Veenhoven, 1996). In fact, Suh, Diener, Oishi, and Triandis (1998) noted that SLS is a cognitive appraisal of positive or negative feelings and attitudes about one's life at a particular time based on one's own set of criteria rather than on objective measures defined by experts. Therefore, in this study, SLS is conceived of as an aspect of subjective well-being or quality of life that evaluates peoples' perception of the extent to which they are satisfied with their current life situations.

Generally speaking, a wealth of literature on subjective life satisfaction (SLS) exists in the field of social research, particularly in the developed countries. Part of this literature is focused on the predictors of SLS (Bailey & Snyder, 2007; Dyrdal, Raysamb, Nes, & Vitterso, 2011; Lucas, Clark, Georgellis, & Diener, 2004; Pavot & Diener, 1993) and the relationship between SLS and satisfaction in the different domains of life (Hlavac, 2011; Van Praag, Frijters, & Ferrer-i-Carbonell, 2003). In the housing domain, a number of existing studies (including Arku, Luginaah, Mkandawire, Baiden, & Asiedu, 2011; Bashir, 2002; Krieger & Higgins, 2002; Vera-Toscano & Ateca-Amesttoy, 2007) have established that housing environment has a significant influence on the well-being and health, while others (e.g. Galster, 1987; Galster & Hesser, 1981; Lew & Park, 1998) have shown that residential satisfaction (satisfaction with housing environment) correlates with the quality of life of residents. Based on this understanding, governments in the developing countries have engaged in different housing schemes as a means of improving the economic status, living standards and productivity of their people.

In Southwest Nigeria for example, the Ogun State Government has been at the forefront of providing housing for her citizens. Being one of the most populated and urbanized States, its population grew from 2,333,726 in 1991 to 3,728,098 in 2006 (Ogun State Regional Development Strategy, 2008) representing about 1.7

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times increase in population in 15 years. This high rate of population growth has contributed to a huge supply deficit of over 24,000 housing units in the State as at 2008. This is expected to rise to about 1.55 million housing units by 2025 when the population of the State will be about 9.32 million and 75% of this population will be urban dwellers (Ogun State Regional Development Strategy, 2008). In a bid to bridge the existing urban housing supply gap, improve the general poor housing condition and falling standard of living in urban areas of the State, the immediate past government of Otunba Gbenga Daniel initiated an integrated urban housing programme in 2003.

Although the existing studies in Nigeria have addressed issues related to the adequacy (Ibem, Aduwo, & Uwakonye, 2012; Ibem & Amole, 2011), quality (Federal Republic of Nigeria, 1991; Ibem, 2012; Ikejiofor, 1999; UN-HABITAT, 2006b) and residents' satisfaction with public housing (see Fatoye, 2009; Fatoye & Odusami, 2009; Ibem & Amole, 2012; Ilesanmi, 2010; Jiboye, 2009, 2010; Olatubara & Fatoye, 2007; Ukoha & Beamish, 1996, 1997); to date, little is known of residents' subjective life satisfaction (SLS) in public housing in urban areas of the country. There is also a paucity of published works on the relationship between satisfaction with the different components of housing environment and subjective life satisfaction in the Nigerian context. It is against this background that this study sought to explore residents' subjective life satisfaction in public housing in urban areas of Ogun State Southwest Nigeria. The key objectives were to examine the socio-economic characteristics of residents in public housing constructed between 2003 and 2009 in urban centres in the study area; the extent to which the residents are generally satisfied with life and with the different components of their housing environment; and the factors that have significant influence on residents' SLS in their current residences. The hypotheses that are put forward and tested in this study are: (1) most residents in public housing in urban areas of Ogun State are generally satisfied with life in their current residences, and with the different components of their housing environment; (2) satisfaction with the different components of housing environment (residential satisfaction) is a significant predictor of subjective life satisfaction in public housing; and (3) residents' socio-economic characteristics, housing delivery strategy and state of repairs of the residences are significant predictors of SLS. It is hoped that this study will help to bridge some gaps in the literature, and provide some useful lessons for urban housing policy makers and programme designers in Ogun State in particular and Nigeria in general.

Nexus between subjective life satisfaction and residential satisfaction

In the literature, subjective life satisfaction (SLS) or satisfaction with life (SWL) has been defined in terms of happiness (Berry & Okulicz-Kozaryn, 2009; Dyrdal et al., 2011; Ozmete, 2011; Veenhoven, 1996), good life (Peterson, Park, & Seligman, 2005) standard of living and quality of life (Fadda & Jiron, 1999; Ibrahim & Chung, 2003; Yuan, 2001). It has also been described as a cognitive component of subjective well-being which deals with individual's subjective evaluation of one's life (Ozmete, 2011; Pavot & Diener, 2008). Therefore, the current study draws on the notion that SLS is an aspect of the quality of life or subjective well-being of individuals that is based on life experiences and events (Dyrdal et al., 2011; Hlavac, 2011; Steger & Kashdan, 2007). According to Van Praag et al. (2003), satisfaction with life is an aggregate satisfaction in the different life domains. These include satisfaction with family life, employment, social activities, recreation, health, consumption, ownership of properties, self, and spiritual life (Day, 1987); marriage, standard of living, friendship, sex life, and leisure (Headey & Wearing, 1992); material well-being, productivity, intimacy, safety, community and emotional well-being (Cummins, 1996) as well as money, social relationships, education and housing (Argyle, 2001). This means that SWL encompasses satisfaction with the different aspects of human life and that every domain of life has influence on an individual's satisfaction with life. Therefore, studies on SLS or SWL can be approached from the perspective of satisfaction in the different life domains.

The review of literature shows that SLS has generally been evaluated based on objective and subjective parameters (Becchetti, Castriota, & Solferino, 2011; Yuan, 2001). In the former case, Satisfaction With Life Scale (SWLS) (Peterson et al., 2005; Tucker, Ozer, Lyubomirsky, & Boehm, 2006; Steger & Kashdan, 2007) is used to examine the extent to which people have access to basic necessities of life such as food, housing and medical services at the neighbourhood, city and country levels (Ibrahim & Chung, 2003). On the other hand, in the latter case, individuals' perception of satisfaction with their current life situation is measured based on one's own set of criteria (Ozmete, 2011). Following the tradition of the latter case, the current study is focused on residents' satisfaction with life and the extent to which satisfaction with the different components of their housing environment, housing delivery strategy and other factors can explain SWL public housing in the study area.

As noted in our introduction, the existing studies on SLS focus mainly on the predictors of SLS as well as the relationship between SLS and satisfaction in the different domains of life. For examples Pavot and Diener (1993) and Dyrdal et al. (2011) found that marital status was a predictor of SLS, while age and sex were not. Suh et al. (1998) identified personal emotions and norms as the predictors of SLS in individualist and collectivist cultures, respectively; while economic status, culture (Bailey & Snyder, 2007; Diener, Gohm, Suh, & Oishi, 2000; Tucker et al., 2006) and mental health (Pavot & Diener, 2008) have also been associated with SLS. Indeed, findings of these studies form part of the emerging consensus in the literature indicating that what determines SLS varies among individuals and may include personal characteristics, emotions, health conditions, norms and culture among several other factors.

The influence of satisfaction with the different domains of life on SLS has also been investigated by previous studies (see Van Praag et al., 2003; Zapf & Glatzer, 1987). For instance, Leelakilthanit, Day, and Walters (1991) observed that satisfaction with acquisition/consumption had the most significant impact on the overall satisfaction with life. According to that study, this is because the acquisition/consumption domain encompasses the acquisition of food, medicine, clothing, housing and transportation, which are the basic needs of life. This finding is important to us in this study as it identifies housing as one of the key components of the acquisition/consumption domain of life. In fact, previous studies have linked the quality of housing environment to the overall well-being (Bovaird & Elke, 2003; Park, 2006; UN-HABITAT, 2006a), quality of life (Galster, 1987; Galster & Hesser, 1981; Park, 2006) and health of residents (Arku et al., 2011; Krieger & Higgins, 2002). Several authors (e.g. Bashir, 2002; Cazacova, Erdelhun, Saymanlier, Cazacova, & Ulbar, 2010; Theriault, Lecclerc, Wisniewski, Chouinard, & Martin, 2010) have also found that the type of housing, levels of security and privacy as well as quality of surrounding environment have a significant influence on the well-being and quality of life of people. Furthermore, residential satisfaction, which has been defined as residents' satisfaction with the quality (Galster & Hesser, 1981; Kaitilla, 1993; Lee & Park, 2010; Mohit, Ibrahim, & Rashid, 2010; Salleh, 2008) and adequacy (Ibem & Amole, 2012) of their housing environment, has been adopted as a measure of quality of life (Caldieron, 2011; Galster, 1987; Galster & Hesser, 1981; Park, 2006). From the foregoing studies, it is suggested that peoples' levels of satisfaction with their housing environment can influence the extent to which they are also satisfied with life gen-

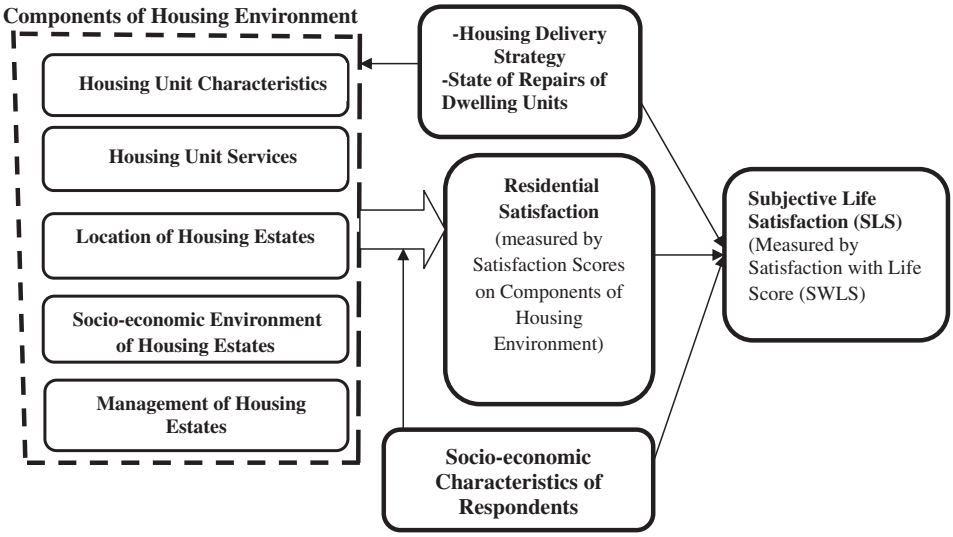

Fig. 1. Conceptual framework of the study.

Table 1
Sample size of housing units for each housing delivery strategy.

Delivery strategies	Housing estate	Income class	Housing units completed	Housing units occupied	Sample size (%)
Core Housing	Workers H/Estate Laderin Abeokuta	Low and Middle	270	270	250 (93.%)
Shell Stage Housing	OSHC Estate, Ajebo Road, Abeokuta	Middle and High	100	3	15 (100.0%)
	OGSHC H. Estate, Ota	Middle and High	60	12	
Public–Private Partnership	Havilah Villas, Isheri	High	100	0	30 (100.0%)
	OGD-Sparklight, Ibafo	Middle and High	340	30	
Turnkey	Obasanjo Hill-Top (GRA) Estate Abeokuta	High	32	30	375 (95.0%)
	Media Village, Abeokuta	Low and Middle	104	60	
	OPIC Estate, Agbara	Low and Middle	60	50	
	Kemta Extension H. Estate, Olokota-Abeokuta	Middle	88	12	
	OGD H.Estate Asero-Abeokuta	Low, Middle and High	212	212	
	OGD H/Estate, Itanrin, Ijebu-Ode	Middle and High	30	30	
	OGSHC Housing Estate, Idiroko	Low and Middle	15	0	
Total	12		1411	709	670

erally. Also the studies cited above indicate that studies on SLS can be approached from the perspective of satisfaction with the different components of housing environment; however, there is no conclusive evidence in the literature linking satisfaction with housing environment to SLS in public housing in Nigeria.

Going by evidence in the literature (e.g. Federal Republic of Nigeria, 1991; Ibem, 2012; UN-HABITAT, 2006b) indicating that the quality of public housing in urban areas in Nigeria is generally poor, and that residents in public housing in the country have been satisfied or dissatisfied with the different aspects of their housing environment (see Fatoye, 2009; Ibem & Amole, 2012; Ilesanmi, 2010; Jiboye, 2009; Olatubara & Fatoye, 2007; Ukoha & Beamish, 1997), there is a need to investigate the extent to which satisfaction with housing environment influences subjective life satisfaction in the context of Nigeria. Since residential satisfaction has been linked to quality of life research as noted earlier, the conceptual framework of this study (Fig. 1) is based on the notion that the socio-economic characteristics of residents and satisfaction with the different components of their housing environment (*residential satisfaction*), housing delivery strategy and state of repairs of residences have significant influence on their subjective life satisfaction (SLS) as measured by satisfaction with life scores (SWLS). Residential satisfaction in the context of this study is conceived of as a composite construct of respondents' satisfaction with the quality of the different components of their housing environment, including housing unit characteristics, housing services, social environment, location, and management of the housing estates. Housing delivery strategy on the other hand represents the approach used in housing procurement.

Research method

Setting and sampling

This study is part of a larger research work conducted to evaluate public housing in Ogun State Southwest Nigeria. It followed a quantitative approach and the survey research method was used. A cross-sectional survey of residents of public housing constructed between 2003 and 2009 in study area was conducted. At the time of the survey, 12 housing estates were being constructed by the Ogun State Government; however, only 10 of the estates completed and occupied were selected for the study (see Table 1 and Fig. 2 for the names and locations of the housing estates, respectively). Two basic criteria were used in selecting these housing estates. The first was based on the four different housing delivery strategies: Turnkey (build and sell), Core Housing, Public–Private Partnerships (PPP) and Shell Stage used in developing the housing

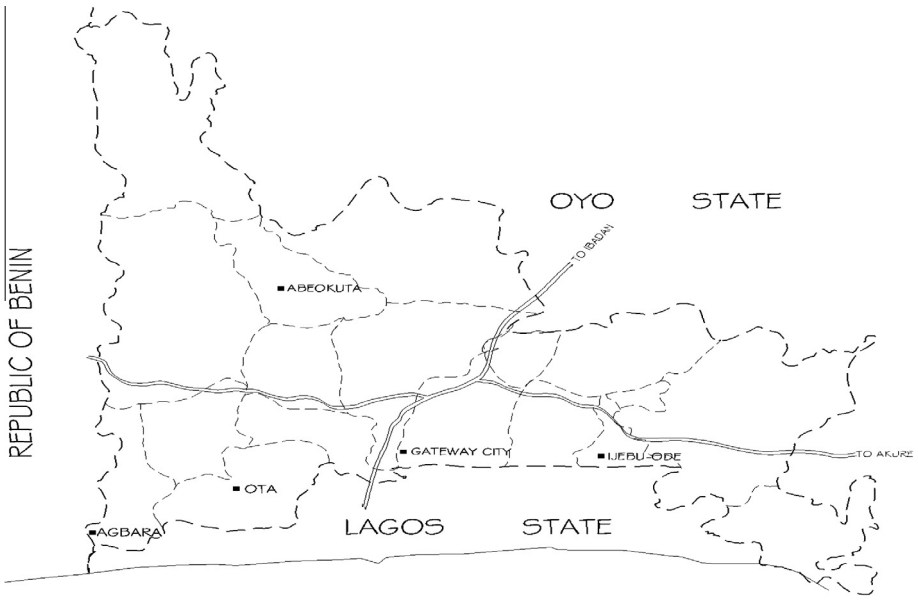

Fig. 2. Map of Ogun State Showing the locations of the Housing Estates.

estates. It should be mentioned that in the Turnkey Strategy, the government constructed complete housing units (walk-in homes) for public acquisition, while in the Core Housing Strategy, one-bedroom core housing (starter) units were constructed by the government for low-and middle-income civil servants who then upgraded the houses to 3-bedroom apartments. In the PPP Strategy, however, the government provided land to corporate private sector housing developers to construct houses for the public under a joint-venture partnership agreement; while the Shell Stage Strategy involved the construction of the sub- and super structures of housing units by the government. The "Shell houses" as they are called were sold to interested members of the public who then finished the houses according to their taste. It is important to mention here that the adoption of these strategies was an attempt to meet the housing need of the different categories of urban residents in the study area. The second criterion was based on the socio-economic status of the housing estates (low, middle and high-income). Table 1 shows the housing estates sampled and that of a total of 1411 housing units completed, 709 housing units were occupied at the time of the survey. Using the stratified sampling technique, 670 units representing about 95% of the occupied housing units were sampled. This sampling technique aimed at having a sample size that is representative of the three categories of housing provided using the four different housing delivery strategies mentioned above (see Table 1).

The survey was conducted between December 2009 and February 2010 in the study area by the researchers. Before the commencement of the fieldwork, both the Ogun State Ministry of Housing (the supervising ministry of all public housing agencies and projects) and the residents' Community Development Associations (CDAs) in the selected housing estates granted permission for the study to be conducted. Data were obtained from household heads (male or female) that were present at the time the researchers visited the housing units using structured questionnaire. Of the 670 questionnaires distributed, a total of 517 questionnaires were retrieved, but 65 of them were invalid questionnaires. The invalid questionnaires comprised those that contained incomplete information because they were not properly filled by the household heads and those filled by individuals who were by their age considered not to be household heads. Consequently, they were rejected and only 452 questionnaires representing about 68% of the distributed questionnaires were subsequently used in the analysis.

Data collection instrument

The structured questionnaire used in collecting data for the survey was designed by the researchers and had three main sections. 'Section-1' comprised nine items related to socio-economic characteristics of the respondents. 'Section-2' had items related to the strategy used in constructing the houses, type and size of housing units, while'Section-3' comprised 31 items on residents' satisfaction with housing unit characteristics, housing services, the location, management and social environment of the housing estates and one item on satisfaction with life. To ensure the validity of findings of the research, the questionnaire was pre-tested among residents of Covenant University, Ota-Nigeria staff quarters. Some of the questions were adjusted in line with the feedback from this exercise.

Variables used in the study

Independent variables

The independent or explanatory variables used in this study were variables related to socio-economic characteristics of the residents, housing delivery strategy and state of repairs of the dwelling units (objective variables) as well as respondents' satisfaction with the different components of their housing environment (subjective variables) (see Table 2). The variables related to personal characteristics of the residents used were sex, age, education, income, marital status, tenure status, employment sector, length of stay and household size. For housing delivery strategy, housing units provided using the Turnkey, Core Housing, PPP and Shell Stage Strategies were coded 1, 2, 3 and 4, respectively. Data for state of repairs of the dwelling units were obtained using a schedule of dilapidation, which was part of the observation schedule prepared by the researchers. The schedule of dilapidation is a checklist of the physical state of building elements (dwelling units) (e.g. walls, roofs, doors, windows, finishes, fittings, etc.). Based on what was observed during the field work, the researchers rated the physical state of the dwelling units using the following codes: '1' for dilapidated, '2' for major repairs, '3' for minor repairs and '4'

Table 2
Descriptive statistics.

	Frequency (*N* = 452)	Percentage (100)
Sex of respondents		
Male	295	65.0
Female	157	35.
Age group in years		
No Response	3	0.70
31–45	293	65.0
46–59	140	31.0
60 and above	16	4.0
Marital status		
No Response	7	2.0
Never married before (Single)	13	3.0
Married	420	93.0
No longer married (Widowed or Divorced)	12	3.0
Highest level of education		
No Response	7	2.0
Below Tertiary level of Education	11	4.0
Tertiary level of Education	434	96.0
Employment sector		
No Response	4	0.9
Public	268	59.0
Private	167	37.0
Unemployed	13	3.0
Average Monthly Income[a] (Naira)		
No Response	30	7.0
Below N38,000 (Low-income)	103	23.0
N38,000–N144,999 (Middle income)	239	54.0
N145,000 and above (High-income)	80	18.0
Length of stay in the residence		
No Response	5	1.1
Less than 1 year	63	14.0
1 year–3 years	361	80.0
4 years +	13	5.1
Tenure status		
No Response	2	0.40
Rented	159	35.2
Owner Occupied	291	64.4
Household size		
No Response	4	0.90
Not more than 2 persons	43	21.0
3 Persons	62	15.0
4 Persons	152	34.0
More than 4 persons	191	42.0
State of repairs of residences		
Dilapidated	0	0.0
Major Repairs	0	0.0
Minor Repairs	28	6.0
Sound	424	94.0
Housing delivery strategies		
Turnkey	270	60.0
Core Housing	156	35.0
PPP	17	4.0
Shell Stage	9	1.0
Satisfaction with location of housing estates		
Very Dissatisfied	16	3.5
Dissatisfied	379	84.0
Neutral	18	4.0
Satisfied	39	8.5
Very Satisfied	0	0.0
Satisfaction with management of housing estates		
Very Dissatisfied	4	0.9
Dissatisfied	209	46.0
Neutral	93	21.0
Satisfied	138	31.0
Very Satisfied	8	1.1
Satisfaction with size of residences		
Very Dissatisfied	6	1.0
Dissatisfied	77	17.0
Neutral	57	13.0
Satisfied	306	68.0
Very Satisfied	6	1.0
Satisfaction with type and location of residence in the estates		
Very Dissatisfied	16	3.5
Dissatisfied	380	84.0
Neutral	18	4.0
Satisfied	38	8.5
Very Satisfied	0	0.0
Satisfaction with housing services		
Very Dissatisfied	52	11.5
Dissatisfied	271	60.3
Neutral	60	13.0
Satisfied	68	15.0
Very Satisfied	1	0.2
Satisfaction with housing unit characteristics		
Very Dissatisfied	8	1.8
Dissatisfied	57	12.6
Neutral	65	14.4
Satisfied	318	70.4
Very Satisfied	4	0.9
Satisfaction with social environment of the estates		
Very Dissatisfied	3	0.7
Dissatisfied	53	11.7
Neutral	129	28.5
Satisfied	262	58.0
Very Satisfied	5	1.1
Satisfaction with sizes of cooking and storage spaces		
No Response	2	0.4
Very Dissatisfied	12	2.7
Dissatisfied	86	19.0
Neutral	134	30.0
Satisfied	150	33.2
Very Satisfied	68	15.0
Satisfaction with natural lighting and ventilation in living and bedrooms in the residence		
Very Dissatisfied	2	0.4
Dissatisfied	24	5.3
Neutral	281	62.2
Satisfied	125	27.7
Very Satisfied	20	4.4
Satisfaction with distance between home and place of work		
No Response	13	2.9
Very Dissatisfied	35	7.7
Dissatisfied	51	11.3
Neutral	172	38.1
Satisfied	148	32.7
Very Satisfied	33	7.3
Satisfaction with communal activities in the housing estates		
No Response	9	2.0
Very Dissatisfied	70	15.5
Dissatisfied	47	10.4
Neutral	245	54.2
Satisfied	67	14.8
Very Satisfied	14	3.1
Satisfaction with Life		
Very Dissatisfied	0	0.0
Dissatisfied	13	3.0
Neutral	163	36.0
Satisfied	240	53.0
Very Satisfied	36	8.0

[a] 1 US$ = ₦ 158 as at April, 2013.

for sound. The choice of even number as against odd number Likert-type scale in rating the state of repairs of the residences was based on the fact that the researchers rather than the occupants were the evaluators of this aspect of the dwelling units. Besides the rating was not meant for the respondents to form opinion on this aspects of their residences, but to ensure that assessment of

the state of repairs of their dwelling units was as objective as possible based on what was observed at the time of the survey.

The other set of independent variables were respondents' satisfaction with 31 housing attributes grouped under the different components of housing environment; namely, housing unit characteristics, housing unit services, location, social environment and management of the housing estates (see Mohit & Nazyddah, 2011). Table 3 shows the comprehensive list of the 31 housing attributes (variables) used in assessing residents' satisfaction levels with the different components of their housing environment in the housing estates. Responses on satisfaction with these housing attributes were measured using a Likert-type scale ranging from '1' for very dissatisfied; '2' for dissatisfied; '3' for neutral; '4' for satisfied to '5' for very satisfied and '0' for No response. Similar scale was used in previous studies (see Jiboye, 2009; Kaitilla, 1993; Salleh, 2008).

The dependent variable

The dependent variable in the regression analysis was residents' satisfaction with life in their current residences. Residents were asked one question: 'How satisfied are you with life generally in your current residence?' The responses were also coded using a 5-point Likert-type scale ranging from '1' for very dissatisfied to '5' for very satisfied. Abbott and Wallace (2012) used similar question in their study, and they noted that general satisfaction is a relatively stable cognitive construct and a good indicator of individual overall satisfaction with life.

Data analysis

Data were analysed using SPSS V. 15.0 and three main types of analyses were conducted. The first was descriptive statistics which generated percentages and frequencies of the respondents' socio-economic characteristics and satisfaction levels with the different components of their housing environment and with life generally. It is important to mention that missing values for some of the variables were imputed with the mode values based on the procedures available in the SPSS software used in the analysis of data. This was to ensure that the sample size was not reduced by deleting cases or persons from the data set. According to Schafer and Graham (2002), this has adverse implications for the validity of the results as it can introduce bias in effect estimates such as regression coefficients in regression analysis. The second type of analysis conducted was exploratory factor analysis with Categorical Principal Component Analysis (CPCA) and Varimax rotation methods. The responses on satisfaction level with the 31 housing attributes were reduced to a smaller number of uncorrelated factors; and thus ensuring that the best combination of variables was obtained.

Table 3
Factor analysis of responses to satisfaction with housing environment.

	Cronbach's alpha	Factor loadings	Eigen value	% of Variance	Cum %
Factor 1: Location of Housing Estates	**0.849**		7.764	25.04	**25.04**
Proximity to Recreation/Sporting facilities		0.546			
Public infrastructure and Urban services		0.539			
Shopping Facilities		0.679			
Health care /Medical facilities		0.695			
Children's' School		0.733			
Market		0.804			
Prices of goods and Services		0.717			
Business and job opportunities		0.558			
Factor 2: Management of Housing Estates	**0.796**		3.981	12.84	**37.88**
Rules and Regulations within the Estate		0.732			
Management and Maintenance of facilities		0.626			
Cleanliness of the Housing Estates		0.762			
Security of life and property		0.671			
Factor 3: Size of Residence	**0.800**		1.700	5.49	**43.37**
Sizes of Living and Dining Spaces		0.811			
Sizes of bedrooms		0.812			
Number of Bedrooms in the Residence		0.619			
Number of Bath and Toilets in the residence		0.508			
Factor 4: Type and Location of Residence in the Estates	**0.710**		1.396	4.50	**47.87**
Type of Residence		0.506			
Location of Residence in the Estate		0.539			
External Appearance of the Residence		0.606			
Factor 5: Housing Services	**0.741**		1.240	4.00	**51.87**
Water Supply and Sanitary Services		0.735			
Electrical Services		0.701			
Factor 6: Housing Unit Characteristics	**0.712**		1.218	3.93	**55.80**
Building materials used in the construction of Houses		0.618			
Privacy in the Residence		0.588			
Cost of Housing		0.502			
Factor 7: Social Environment	**0.720**		1.069	3.45	**59.25**
Noise Level in the Housing Estate		0.693			
Level Crime and anti-social activities		0.535			
Design of residence in relation to cultural values of residents		0.502			
Variables not loaded on any factor					
Sizes of Cooking and Storage Spaces (SATSCOOKST)		0.372			
Natural Lighting and Ventilation in Living and Bedrooms (SATNLVENLB)		0.389			
Distance between home and Place of Work (SATDISHOWK)		0.307			
Level of Communal Activities in the Housing Estates (SATCOMAT)		0.271			

Total variance explained = 59.25%.

The factor analysis revealed the key dimensions of housing (factors) the residents responded to and was later used in the multivariate regression analysis. It was also used as a means of handling the multicollinearity problem that may arise due to interrcorrelations among the 31 housing attributes. In reporting the result of the CPCA (factor analysis), the method recommended by Pallant (2011) and used in previous studies (Ibem et al., 2012; Mathonsi & Thwala, 2012; Salleh, 2008) was adopted. To test the internal consistency of the group of variables used in measuring satisfaction with the different dimensions (sub-groupings) of satisfaction with housing environment extracted from the CPCA, Cronbach's alpha test was conducted. According to (Pallant, 2011:97), Cronbach's alpha coefficient should be above 0.7. In the current study, the result in Table 3 shows that the Cronbach's alpha coefficients for the seven dimensions (sub-groupings) of residential satisfaction were over 0.7. This suggests that the various attributes that make up the sub-components of residential satisfaction have good internal consistency.

The third type of analysis carried out was the multivariate (multiple) regression analysis (MRA). The specific type of MRA used was the Categorical Regression Analysis with optimal scaling technique also referred to as CATREG in SPSS. The choice of CATREG analysis was based on the fact that data used in this study are categorical, nominal, ordinal and numerical in nature; and studies (e.g. Amole, 2009; Shrestha, 2009) have shown that CATREG can be used when there is a combination of nominal, ordinal and numerical/interval independent variables. In fact, Shrestha (2009) specifically noted that GATREG model is preferred to General Linear Models (GLM) for two main reasons. Firstly, it can be run with small samples and least assumptions; and secondly, it is advantageous in circumventing the problems associated with nominal and ordinal data when using GLM as it uses optimal scaling to convert nominal and ordinal variables to numerical variables. It was for this reason that dummy variables were not created for the categorical independent variables in the analysis. In adopting CATREG, we however ignored clustering effect on standard errors obtained in the regression model because data used in the study were obtained through a cross-sectional survey as Skinner and Vieira (2007) have noted that clustering effect is less pronounced in cross-sectional than in longitudinal surveys, and when the purpose of the analysis is exploratory.

Specifically, the CATREG analysis was used to explore the variance explained by R^2 as well as identifying the predictors of subjective life satisfaction. In carrying out the regression analysis, satisfaction with life score (SWLS), which is individual residents' score on satisfaction with life in their current residences was the dependent variable. The nine items related to the socio-economic characteristics of the respondents; housing delivery strategy, state of repairs of the residences, the factor scores of the seven dimensions (factors) extracted in the CPCA of responses on the 31 attributes used in measuring satisfaction with housing environment were the independent variables. In addition, satisfaction scores on variables, including sizes of cooking and storage spaces, natural lighting and ventilation in living and bedrooms; distance between home and place of work and the level of communal activities in the housing estates, which were found not to have loaded on any of the factors extracted were also included as the independent variables.

Study findings

Respondents' socio-economic characteristics

Table 2 shows the descriptive variables investigated in the study. The result on the socio-economic characteristics of the respondents in the survey as shown in Table 2 indicates that majority (65%) of the respondents were male, 35% were female and 93% were in marriage relationship. The result also reveals that a majority (96%) of the respondents were between 31 years and 59 years, while 96% of them had education up to the tertiary level. The majority (59% and 65%) of the respondents were also found to be public sector employees and owner-occupiers, respectively, while 54% were middle-income earners. Similarly, 76% of them had household sizes of over three persons. From this result, it is evident that the household heads encountered in the survey were predominantly middle-aged, married, highly educated males and public sector employees.

The result (Table 2) also reveals that a majority (60%) of the respondents lived in houses provided using the Turnkey Strategy, followed by 35% who lived in Core houses and 4% who were in PPP provided houses, while very few (1%) lived in Shell houses. This result is not a surprise going by the number of housing estates constructed using the turnkey Strategy (see Table 1). It was observed that nearly all (94%) of the dwelling units sampled were in good physical (sound) condition, while very few (6%) required minor repair works. Again, this result was to be expected as the buildings were constructed few years ago.

Satisfaction with housing environment

As noted earlier, satisfaction with housing environment (residential satisfaction) was measured using satisfaction with different components (sub-groupings) of housing environment. Data in Table 2 show the respondents satisfaction levels with the different components of their housing environment. It is evident from the result that majority (69%; 71%, 59%) of the respondents were satisfied with the size of their dwelling units, housing unit characteristics and social environment of the housing estates, respectively. In contrast, most (88%; 88%; 72%) of them were not satisfied with the location of the housing estates, type and location of their residences in the estates and the provision of housing services (water and electricity) in their dwelling units, respectively. Also the result shows that very close to half (47%) of the respondents felt dissatisfied with management of the housing estates. This result tends to suggest that most respondents in the survey were most satisfied with housing unit characteristics related to the type of building materials used in the construction of the houses, privacy in residence and cost of residence, size of residence (sizes of main activity areas, number of bedroom and toilets in the dwelling units) and social environment of the housing estates (including levels of noise, crime and anti-social activities and the design of the houses in relation to residents; cultural values). Most of them were however least satisfied with the location of the housing estates in relation to recreational/sporting facilities, urban infrastructure, shopping, healthcare, children's educational facilities, market, business and job opportunities, etc. This result suggests that satisfaction with dwelling unit features was higher than any other components of the housing environment in the estates. Thus, it can be inferred that the respondents were most satisfied with housing unit characteristics and least satisfied with access to basic social infrastructure and urban services from their homes. Therefore, our survey data is not in support of the hypothesis that most residents of public housing in the study area are generally satisfied with the different components of their housing environment.

Satisfaction with life (subjective life satisfaction)

The distribution of the respondents according to their satisfaction with life in their present housing environment (Table 2) reveals that a majority (61%) of them were satisfied with life in their current residences, 36% were neither satisfied nor dissatisfied, while very few (4%) of them said that they were not satisfied with

life in their present housing environment. The result also reveals that almost all (90%) of the respondents in housing provided using the Shell Stage Strategy expressed satisfaction with their current life situation in the housing estate, followed by 78% of those in housing constructed using the PPP Strategy and 61% of those living in the Core Housing Estate, respectively. However, 56% of the respondents in housing provided using the Turnkey Strategy indicated that they were satisfied with life in their present housing condition. This result clearly shows that the proportion of respondents who were satisfied with life are more in houses in which the private sector (individuals or organizations) was actively involved in the construction process than those solely constructed by the government and sold to the public. From this result, it can be concluded that our survey data is in support of the hypothesis stating that most residents in public housing in the study area are generally satisfied with life in their current residences.

Factor analysis

The result of the factor analysis displayed in Table 3 reveals locational, physical, social, and management/maintenance as well as service dimensions of housing to which those sampled responded to in their evaluation of satisfaction with their housing environment in the housing estates. The result showed Kaiser–Meyer–Olkin measure of sampling adequacy of 0.882 which is higher than the recommended index of 0.60. The first factor was the location of the housing estates with Cronbach's alpha coefficient of 0.849 and contributed about 25% of the variance in satisfaction with housing environment. This factor (dimension) is loaded on eight variables as shown in Table 3. The second was management of the housing estates with Cronbach's coefficient of 0.796 contributing 12.84% of the variance in satisfaction with housing environment and is loaded on four items, while the third factor was size of residence having Cronbach's alpha coefficient of 0.800 and contributing 5.5% of the variance in satisfaction. This factor is also loaded on four items as shown in Table 3. Next were type and location of residence in the housing estates (Factor 4), housing services (Factor 5), housing unit characteristics (Factor 6) and social environment of the housing estates (Factor 7). The above result indicates that location of the housing estates contributed most to the variance in satisfaction with housing environment, followed by housing unit characteristics, management of the housing estates, provision of utilities in the dwelling units and social environment of the housing estates, respectively. Table 3 also shows that of the 31 housing variables investigated, 27 were loaded on the seven factors mentioned above, with each of them contributing differently to the main (seven) factors as indicated in their factor loadings. However, four of the variables; namely, satisfaction with sizes of cooking and storage spaces; satisfaction with natural lighting and ventilation in living and bedrooms; satisfaction with the distance between home and place of work and satisfaction with the level of communal activities in the housing estates were not loaded on any of the seven factors.

The predictors of subjective life satisfaction

To explore the factors which explain and possibly predict residents' subjective life satisfaction among the respondents, CATREG, which is a variant of Multivariate Regression Analysis (MRA), was conducted. The respondents' socio-economic characteristics, state of repairs of the dwelling units, housing delivery strategy and the factor scores of the seven dimensions (factors) of satisfaction with housing environment as well as the four housing attributes not loaded on any of the seven factors obtained in the factor analysis were regressed on satisfaction with life scores (SWLS). The regression model (Table 4) explained around 50% of the variance in subjective life satisfaction ($R^2 = 0.495$, df = 40, $F = 10.072$, $p < 0.000$), which is a substantial amount and an indication that our model is a good measure of subjective life satisfaction. Further, the result also shows that three socio-economic variables: income, marital and tenure status of the respondents were significant predictors of SLS. The two objective variables which came out as significant predictors of SLS were the state of repairs of the housing units and housing delivery strategy. The subjective variables which significantly explained SLS were satisfaction with the management of the housing estates, size of residence, housing services and satisfaction with housing unit characteristics. Interestingly, two of the four variables, namely, satisfaction with natural lighting and ventilation in living and bedrooms and satisfaction with the distance between home and place of work which were not loaded on any of the seven factors extracted in the factor analysis also emerged as significant predictors of subjective life satisfaction. However, the other two variables: satisfaction with the sizes of cooking and storage spaces and satisfaction with the level of communal activities in the housing estates appeared not to be significant predictors of SLS. This probably explains why they were not loaded on any of the seven factors extracted in the factor analysis. Again evidence from the result shows that our data is also in support of the second and third hypotheses of the study, which state that residents' satisfaction with the different components of their housing environment, their socio-economic characteristics, housing delivery strategy and state of repairs of the dwelling units are significant predictors of SLS.

Of all the predictors of SLS identified in our regression model, the strongest was satisfaction with the size of residence (Factor 3), followed by satisfaction with housing services (Factor 5) and satisfaction with the management of the housing estates (Factor 2), respectively. Others were tenure status of the respondents; housing delivery strategy, state of repairs of the dwelling units and satisfaction with natural lighting and ventilation in living and bedrooms. All the variables that emerged as significant predictors of subjective life satisfaction had a positive relationship with SLS except residents' satisfaction with the distance between home and place of work.

Discussion

From the result, it is clear that a majority of the respondents in the survey were middle-income public sector workers and owner occupiers; suggesting that government's effort at providing housing for the citizens in the study area in most recent time is targeted at middle and low-income public sector workers. This is to be expected as these categories of residents have more critical housing challenge than the high-income group in the study area. From the exploratory factor analysis, it obvious that those encountered in the survey responded to seven key dimensions of housing, namely; location, management (management and maintenance of facilities) and social environment of housing estates, type, location, size and physical characteristics of residences as well as supply of services in the dwelling units. These residential components collectively describe the housing environment the respondents found themselves in, and show the way they construed satisfaction with their current housing environment in the housing estates. The study also found that a majority of the respondents were satisfied with the spatial and physical characteristics of the dwelling units, as well as social environment of the housing estates, but dissatisfied with the provision of housing services and location of the housing estates proximity to basic social and urban infrastructure. This goes to suggest that public housing providers in the study area pay more attention to the architectural design and construction of the housing units than the provision of housing services and loca-

tion of the housing estates in proximity to city-wide services and infrastructure.

Contrary to the finding on satisfaction with their housing environment, a majority of the respondents were generally satisfied with life in their current residences. Firstly, this result can be explained within the context of evidence in the literature (Leelakilthanit et al., 1991) indicating that housing is just but one of the several contributory factors to SLS; suggesting that other factors outside the housing domain of life could have contributed to influencing the respondents' subjective life satisfaction in the housing estates investigated. Secondly, it also appears that this result is consistent with the observation by Westaway (2006) that some individuals rate their quality of life very good even in extremely poor physical living conditions, whilst others rate their quality of life poor even though their housing conditions are excellent.

In support of previous studies (Bailey & Snyder, 2007; Diener & Seligman, 2004; Diener et al., 2000; Dyrdal et al., 2011; Tucker et al., 2006) residents' socio-economic characteristics such as tenure, marital and income status were found to be significant predictors of SLS; while age, sex, education and employment were not. From Table 4 it is evident that the beta coefficients associated with tenure, marital and income status are .195, .061 and .056, respectively. The implication of this is that a one unit difference in each of these variables results in the respondents switching from one category to the other. What this means is that a change of status from a renter to own-occupier, single to married and from low-income to middle or high-income earner will increase the chances of a respondent to express satisfaction with life by .196, .061 and .056 times, respectively. In specific terms, the emergence of tenure status as the socio-economic variable that most strongly predicted subjective life satisfaction in the survey may be linked to evidence in the literature (Macintyre, Ellaway, Der, Ford, & Hunt, 1998) suggesting that tenure status influences the health of occupants. Indeed, this result may also be related to the findings by Newman and Harkness (2002) indicating that frequent change of homes (residential mobility), evictions and distractions by co-tenants have adverse physiological and psychological effects on renters. It is also not surprising that marital status appeared as a significant predictor of SLS in this study. This is because Dyrdal et al. (2011) observed that having a satisfying romantic relationship is important for retaining and increasing life satisfaction; suggesting that being involved in a good marriage relationship can increase subjective life satisfaction. Similarly, the emergence of income status as a predictor of SLS may also be linked to findings of study by Stam and Ruut (2007) associating improved satisfaction with life to increasing individual income and household savings.

Apart from the respondents' socio-economic characteristics, other variables that most strongly predicted SLS were residents' satisfaction with the different components of their housing environment. Satisfaction with size of residence which comprises satisfaction with sizes of living-dining, sizes and number of bedrooms as well as number of bath and toilets in the dwelling units, emerged as the strongest predictor of SLS in the survey. This is probably because this housing component describes the spatial attributes of the main activity areas in homes where residents spend greater part of their lives in. This goes to suggest that the spatial characteristics and availability of services in main activities areas of dwelling units contribute immensely to the level of satisfaction of residents and by extension their SLS. Satisfaction with housing services was the next strong predictor of SLS among the respondents. Although, Table 2 shows that most (60%) of the respondents were dissatisfied with water, sanitary and electrical services in their residences; satisfaction with housing services emerged as one the strongest predictors of SLS. This is probably because previous studies (Joshi, Fawett, & Mannan, 2011; Sverdlik, 2011) have shown that adequate access to safe water, basic sanitation and electricity is a vital component of adequate housing and that this is important in promoting hygienic living environment, health and quality of life of people. Satisfaction with management of the housing estates was also found to be another strong predictor of SLS. Indeed, going by evidence in the literature (Jiboye, 2009; Ukoha & Beamish, 1997) indicating that management and maintenance of facilities in housing estates and the dwelling units are vital components of housing provision that contribute to predicting residential satisfaction; the above finding may not really be unexpected. Similarly, satisfaction with the distance between home and place of work was found as one of the significant predictors of SLS probably because the respondents were satisfied with the distance between their homes and their place of work. This is quite understandable as closeness of home to place of work reduces the financial and health burdens associated with commuting to work every day, especially in Nigerian cities where there is inefficient transport system. Generally speaking, it is evident from this study that an increase in respondents' satisfaction with some key components of their housing environment can result in higher SLS.

It is also interesting to find out that the different housing delivery strategies used in public housing provision in the study area and the state of repairs of the dwelling units contributed significantly in explaining SLS among the respondents. Notably, Ibem (2012) observed that in the context of Ogun State, housing delivery strategies contributed significantly in determining the physical characteristics, cost and quality of newly constructed public housing; while earlier studies (Bashir, 2002; Theriault et al., 2010) have shown that the aforementioned housing attributes have significant influence on the total well-being and quality of life of residents. It is on this premise that we argue that the different approaches used in providing public housing can contribute to determining the extent to which housing performs its functions in meeting the needs

Table 4
Regression Model of Subjective Life Satisfaction.

Variables	Beta	Std. Error	df	*F*	*P*
Sex	.032	.037	2	.731	.482
Age	−.073	.040	1	3.355	.068
Marital Status	.061	.037	4	2.808	.025*
Highest level of Education	.030	.038	1	.625	.430
Employment sector	.051	.038	3	1.830	.141
Income	.056	.039	2	2.088	.015*
Length of stay	−.051	.037	1	1.887	.170
Household size	−.006	.039	1	.027	.870
Tenure Status	.195	.045	2	18.698	.000*
State of repair of residence	.101	.038	1	6.913	.009*
Housing delivery strategy	.163	.050	3	10.713	.000*
Factor1 (SATLOCATION)	.051	.044	1	1.330	.249
Factor 2 (SATMAN)	.223	.044	1	25.139	.000*
Factor 3 (SATSIZE)	.452	.042	1	115.141	.000*
Factor 4 (SATTYPLOC)	.049	.042	1	1.400	.237
Factor 5 (SATSERVICE)	.294	.048	1	37.121	.000*
Factor 6 (SATHUC)	.198	.040	1	25.074	.000*
Factor 7 (SATSOCENV)	−.039	.048	1	.672	.413
SATNLVENLB	.128	.043	3	8.931	.000*
SATSCOOKST	−.041	.049	2	.688	.503
SATDISHOWK	−.100	.049	4	4.204	.002*
SATCOMAT	−.090	.047	1	3.739	.054

Notes: SATLOCATION = Satisfaction with Location of the Housing Estates, SATMAN = Satisfaction with Management of the Housing Estates, SATSIZE,= Satisfaction with Size of Residence, SATTYPLOC = Satisfaction with Type and Location of Residence in the Estates, SATSERVICE = Satisfaction with Housing Services, SATHUC = Satisfaction with Housing Unit Characteristics, SATSOCENV = Satisfaction with social Environment of the Housing Estate, SATNLVENLB = Satisfaction with Natural Lighting and Ventilation in Living and Bedrooms; SATSCOOKST = Satisfaction with the Sizes of Cooking and Storage Spaces; SATDISHOWK = Satisfaction with the distance between home and place of work; SATCOMAT Satisfaction with the level of communal activities in the Housing Estates.

* Significant at .05 level.

and expectations of the occupants. In fact, the result of this study suggests that the level of involvement of housing users or private sector organizations in housing provision process can enhance occupants' subjective life satisfaction in public housing. It is probably for the foregoing reason coupled with the fact that the respondents were most satisfied with housing unit characteristics that satisfaction with housing units also contributed significantly in predicting SLS in the housing estates.

One surprising result emerging from this study is the fact that satisfaction with location of the housing estates proximity to social infrastructure and urban services appeared not to be a significant predictor of SLS among the respondents. Despite the fact that adequate access to these facilities plays a key role in promoting social development, satisfaction with location of the housing estates (Factor 1) emerged as the residential component which respondents were least satisfied with; and thus, was not a significant predictor of SLS. One possible explanation for this is that since key social infrastructural facilities were not provided in most of the housing estates sampled; residents may have developed coping strategies over the years. As a result, they could not have seen this situation as posing serious challenge to their SLS in their current residences. Also it thus appears that the level of communal activities and socio-economic environment in the housing estates were not considered as critical issues in determining residents' satisfaction with life; consequently, satisfaction with the level of communal activities in, and satisfaction with social environment of the housing estate did not emerge as predictors of SLS in this study.

In all, findings of this study appear to be in line with findings of the existing studies (Galster, 1987; Lew & Park, 1998; Park, 2006; Theriault et al., 2010) indicating that residents' satisfaction with the different aspects of their housing environment has significant influence on their subjective well-being. Hence, this study can be considered as having contributed to bridging some gaps in the literature with respect to the link between satisfaction with the components of housing environment and subjective life satisfaction and the aspects of housing environment that are the strongest predictors of residents' subjective life satisfaction in public housing. It has also provided insight into the contribution of housing delivery strategy in predicting SLS among residents of public housing in the context of Ogun State, Nigeria. These findings notwithstanding, there are a number of limitations within the current study that are noteworthy. A major limitation of this study is that other parameters associated with SLS such as health, leisure, family life; spiritual life, culture and friendship among others were not investigated in our model. However, the primary purpose of our study was to shed light into the relation between satisfaction with housing environment and SLS in public housing. Another limitation of this study is that data on satisfaction with life in the study area were not collected before the survey of residents of public housing was carried out; and thus the current study is a cross-sectional survey which has a number of demerits. Also only one question was used to elicit respondents' perception of SLS in this research; hence it may be argued that one question is not adequate in capturing data on a complex construct like SLS in a study of this nature. Our study is also limited by focusing only on household heads in public housing estates constructed between 2003 and 2009 in urban areas of Ogun State. As a result, findings of the study cannot be generalized for all the residents of public housing in the study area. Finally, the study is limited in ignoring clustering effect in the estimation of standard error in the analysis of data; suggesting that standard errors obtained in the regression model can be biased. In any case, from this study; we have gained insight into residents' SLS and factors predicting it in newly constructed public housing in the study area.

Conclusion

This research on SLS in public housing in Ogun State Southwest Nigeria has shown that most of the respondents in the survey were generally satisfied with general life situation; suggesting that public housing is having positive impact on the life of residents in the study area. This study therefore presents a number of lessons for housing policy makers and programme designers as well as professionals involved in housing procurement in Nigeria and perhaps in other developing countries with similar urban housing challenge.

The first lesson from this study is that the study has affirmed our assumption that satisfaction with housing environment is a strong predictor of subjective life satisfaction. It has also revealed that subjective life satisfaction can be enhanced in public housing through measures that seek to promote home ownership, improve residents' income status, satisfaction with provision of utilities and size of main activity areas in the dwelling units as well as management and maintenance of common facilities in public housing estates. Therefore, architects and housing developers need to pay adequate attention to the design of main activity areas in housing units and also ensure adequate provision of potable water and electricity. The second lesson is that the use of multiple housing delivery strategies that encourage active participation of the private sector (individuals and organizations) in housing procurement can contribute to higher subjective life satisfaction among residents of different socio-economic groups in public housing. Finally, the study has contributed to extending our understanding of the key aspects of housing that deserve more attention in order to enhance occupants' satisfaction with public housing in Nigeria.

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