Demography India
Vol. XVII, No. 1 (1988) pp. 76-95

S. K. Jain and S. Krishnamoorthy

Social and Life-Cycle Correlates of Inconsistency : Evidence from the Cape Coast Project

1. Introduction

DESPITE numerous efforts directed towards improving the quality of age returns in censuses or surveys, the data are rarely free from age distortions in developing countries. The appraisal of such distortions can be made through various demographic techniques and direct checks, but the possible explanations for their occurrence, at best, can only be speculated (Ewbank, 1981). In societies where exact date of birth does not serve any purpose, it is not remembered and the respondents or the interviewers are required to estimate the ages of most of the members, they use their own yardsticks for reckoning age. It is generally believed that their informed guess of age is influenced by one or several characteristics, such as physical appearance, marital status, education, occupation of the individual. In addition, the attainment of menarche and number and age of children provide "further clues to age estimation among females (Goldman et al., 1979),

Multi-round demographic surveys offer an opportunity to investigate into the influence of some factors on the consistency of age recorded for the same individual at two or several points in time. These can further shed light on whether the Interviewers or the respondents utilize the criteria of demographic characteristics of the individuals in order to determine their ages. A recent study revealed that the absolute difference between the reported ages of the same individuals at two surveys increased with age and with third-party report-

ing, whereas it decreased with education of the individual and the quality of the interviewers (Byerlee and Terera, 1981). A further dimension of this study, which ha« not been attempted so far, is an examination of how a change in life cycle events such as marital status and children ever born or living, experienced by in individual between two survey rounds, brings about biases in age reporting. This paper is an attempt in this direction. Specifically, it aims to understand how age discrepancy corresponds to changes in marital status and for females whether it depends on changes in the number of children ever born or living.

2. Basic Data and Their Accuracy

The data utilized in this study are from the Cape Coast project, which was a longitudinal mortality and fertility survey conducted in rural areas of South-west Ghana during 1974-77 (Jain, 1982). Eight villages formed the study area and all households in these villages were contacted in each year at approximately the same time of the year. The base-line survey of 1974 included census-type questions on demographic and socio-economic variables. Three annual follow-up surveys were conducted which independently sought information on age, marital status and, in addition, from women their total children evei born and living at the time of each survey. A total population of 21,493 persons was counted in 1974, which rose to 22,711 persons in 1977.

In the base-line survey, 1974, when the respondents were not confident of their reported age, the age was estimated either using the calendar of national and regional events, or was estimated by the interviewers. It was found that 78 per cent of the respondents were confident of their ages, and ages roughly of equal percentages (11 %) of respondents had to be estimated by either of the two approaches. Age in the follow-up surveys was asked in a similar way.

The population in the follow-up surveys was matched against the enumerated population in the base-line survey according to the following criteria : matched persons must belong to the same village, same house number, same household number and the same name on original household listing. Matched people whose absolute age difference between the first and the subsequent survey exceeded 30 years (after allowing for the inter-survey interval) were excluded as it is likely that these are two different persons belonging to two generations with the same name. A total of 77 per cent of people was matched between the first and the second survey. This declined to 43 per cent between the first and the fourth survey (Table 1).

The basic demographic and social characteristics of the base and matched populations as of 1974 were compared and were found to be remarkably consistent (Table 2). This suggested that the matched populations had not generally been a select group but represented the entire cross-section of the base population. However, there was some indication that those people who lived on their own, were not born in the study villages, and were single, and women

TABLE 1—ENUMERATED AND MATCHED POPULATION BY SEX, 1974-77.
CAPE COAST PROJECT

	Males	*Females*	*Total*
Enumerated population			
1974 survey	10479	11014	21493
1975 survey	10488	11038	21526
197> survey	10804	11482	22286
1977 survey	10980	11731	22711
Matched population			
1974-75 comparison	8034	8424	16458
l974 -76 comparison	5995	6284	12243
1974-77 comparison	4569	4693	9262
Match rate			
1974-75 comparison	767	76.5	766
1974-76 comparison	57.2	56.7	57.0
1974-77 comparison	436	42.6	43.1

$$\text{Match rate} = \frac{\text{Number matched in a comparison}}{\text{1974 population}} \times 100$$

Matching criteria :

(i) Same area

(ii) Same house number

(iii) Same household number

(iv) Same name

(v) Same sex

(vi) Absolute age difference between two survey rounds not to exceed 30 years after allowing for the inter-survey intervals.

TABLE 2—CHARACTERISTICS OF THE POPULATION IN 1974 AND MATCHED POPULATION IN SEVERAL COMPARISONS—1974-75, 1974-76 AND 1974-77. CAPE COAST PROJECT

Characteristics of population	*Males*				*Females*			
	Comparisons				*Comparisons*			
	1974	*1974-75*	*1974-76*	*1974-77*	*1974*	*1914-75*	*1974-76*	*1974-77*
Total population	10479	8034	5995	4569	11014	8424	6248	4693
	(%)	(%)	(%)	(%)	(%)	(%)	(%)	(%)
Household type								
One person household	8.2	6.9	6.3	6.3	3.2	3.0	3.2	31
Husband-wife and children	31.1	30.9	31.3	32.6	28.1	27.6	26.9	27.5
Husband-wife, children and others	37.4	39.1	40.4	40.3	38.6	39.7	40.3	40.6
One parent and children	17.9	18.1	17.9	17.0	24.6	24.3	24.7	24.4
Others	5.4	5.0	4.1	3.9	5.5	5.4	4.9	4.4
Relationship to head of household								
Head	34.5	33.2	33.4	35.3	12.9	12.9	13.8	14.3
Spouse	0.3	0.2	0.3	0.2	24.6	24.7	25.2	26.3
Other related persons	63.4	65.2	65.5	64.0	61.2	61.3	60.3	58.7
Others	1.8	1.4	0.8	0.4	1.3	1.1	0.8	0.6
Age accuracy								
Confident of age	82.0	82.1	81.5	80.6	74.3	74.1	72.1	70.7
Calendar of events	10.0	10.1	10.4	10.8	13.4	13.7	14.5	15.1
Guess	7.9	7.7	8.2	8.6	12.3	12.2	13.5	14.2
Religion								
Christian	82.1	82.5	82.3	81.5	86.1	86.3	85.6	85.5
Others	17.9	17.5	17.7	18.5	13.9	13.7	14.4	14.2
Birthplace								
Same town where enumerated	75.6	79.7	83.5	85.0	79.9	82.6	85.1	85.6
Other	24.4	20.3	16.3	i 15.0	20.1	17.4	14.9	14.5

Table *1 (Conta. to page 80)*

Table 2 *(Contd from page 79)*

Age								
0-14	46.3	47.8	48.3	48.0	43.7	43.5	42.7	42.3
15-44	39.6	38.1	36.2	35.0	42.9	42.2	41.0	40.0
45-64	10.5	10.7	11.5	12.7	9.9	10.8	12.2	13.5
65 +	3.5	3.4	3.9	4.3	3.5	3.5	4.0	4.2
Father alive								
Yes	71.6	71 9	70.9	69.6	71.2	70.1	68.1	66.8
No	28.4	28 1	29.1	30.4	28.8	29.9	31.9	33.2
Mother alive								
Yes	81.0	81.4	80. 3	79.3	80.9	80.3	78.7	77.2
No	19.0	18.6	19.7	20.7	19.1	19.7	21.3	22.8
Education (Population aged 6+)								
None	33.8	34.1	35.2	36.7	60.2	61.5	62.8	64.2
Primary	28.6	30.0	31.0	31.1	21.1	20.8	20.5	20.3
Other	37.6	35.9	33.9	32.1	18.6	17.7	16.6	15.5
Marital Status (Population aged 12+)								
Single	46.7	47.1	46.1	43.8	26.2	25.4	24.4	23.0
Married	42.6	42.8	43.8	45.6	50.0	49.7	49.5	50.6
Widowed	1.4	1.2	1.3	1.3	5.2	5.4	5.9	6.3
Divorced/Separated	9.2	8.9	8.9	9.3	18.6	19.5	20.2	20.0
Children Ever Born (Women aged 12+)								
0-2	—	—		—	56.8	54.5	51.0	48.4
3-5	_	—	—	—	22.7	23.4	23.8	24,1
6+	_	_	—	—	20.5	22.1	25.2	27.5
Children Surviving (Women aged 12+)								
0-2	_	—	—	—	61.5	59.4	56.2	53.5
3-5	—	_	—	—	26.0	26.9	28.1	29.2
6+	—	_	—	—	12.5	13.7	15.7	17.3

Note : Total of percentages may not add to 100 because of the founding.

who had fewer children, were less represented in the matched populations. This might have been due to the mobility of such people from one house/ household to another, or out of the study villages.

The indices of age accuracy which gauge the quality of age returns, Whipple's index, Myers' index and the UN Secretariat index, for the base and matched populations as of 1974, do not differ much. This supports our previous assertion that the matched populations have not been a select group (Table 3).

3. Patterns of Age Inconsistency

The age inconsistency in the matched populations was examined within each age group in three ways: by looking at the percentage of the population returning their ages in the same five-year age group, the extent of the mean age difference and the absolute mean age difference between survey rounds.

TABLE 3—AGE-SEX ACCURACY INDICES FOR 1974 AND MATCHED POPULATIONS, 1974-75, 1974-76 AND 1974-77 COMPARISONS. CAPE COAST PROJECT

	Base year	*Comparisons*		
Index	*1974*	1974-75	*1974-76*	*1914-77*
Whipple's index Total	176	179	180	181
Males	166	165	168	169
Females	187	192	190	190
Myers' index				
Total	28	28	28	29
Males	26	25	25	26
Females	32	33	33	33
UN Secretariat index				
Age ratio score Males	15	11	11	12
Age ratio score Females	9	9	12	12
Sex ratio score	13	11	12	12
Index value	63	54	58	61

TABLE 4—PERCENT OF POPULATION COUNTED IN THE LOWER, SAME AND HIGHER AGE GROUPS BETWEEN TWO SURVEY ROUNDS, MEAN AND ABSOLUTE MEAN DIFFERENCE, 1974-77 COMPARISON. CAPE COAST PROJECT

	Males						*Females*					
Age group in 1974	*N*	*Lower age groups*	*Same age Groups*	*Higher age groups*	*Mean age difference*	*Absolute mean age difference*	*N*	*Lower age groups*	*Same age groups*	*Higher age groups*	*Mean age difference*	*Absolute mean age difference*
0 - 4	701	0.0	80.9	19.1	0.87	1.62	671	0.0	80.9	19.1	0.87	1.69
4-9	806	18.6	64.4	17.0	0.12	1.86	736	19.6	63.7	16.7	0.05	2.13
10-14	685	22.6	64.1	13.3	-0.42	2.05	578	22.1	62.6	15.2	0.01	2.16
15-19	448	26.6	594	14.1	-0.58	2.52	432	15.0	68.5	16.4	0.36	229
20-24	268	30.2	53.4	16.4	-0.72	2.98	292	26.4	52.4	21.2	-0.03	2.89
25-29	242	26.9	52.1	21.1	-0.50	3.73	327	29.4	54.4	16.2	-0.51	3.46
30-34	217	33.2	36.4	30.4	0.53	4.27	275	38.9	324	287	-0.12	4.43
35 -39	236	33.5	369	29.7	0.17	4.95	301	36.2	36.9	26.9	-0 14	5.33
40-44	189	35.4	36.9	28.0	0.33	4.99	251	49.4	27.1	23.5	-2.03	6.28
45-49	203	44.8	30-5	24.6	-032	6.70	217	50.7	253	24.0	-2.05	7.20
50-54	147	40.1	25.9	34.0	0.08	6.46	184	51.6	19.6	28.8	-1.92	7.36
55-59	128	42.2	28.1	29.7	-0.75	7.14	116	53.4	19.0	27.6	-2.16	7.87
60-64	104	40.4	30.8	28.3	-119	6.35	115	52.2	19.1	28.7	-3,07	8.51
65 -69	58	48.3	24.1	27.6	-1.07	8.62	74	63.5	16.2	20.3	-4.54	9.78
70-74	65	50.8	24.6	24.6	-2.54	6.54	60	61.7	11.7	26.7	-4.45	10.25
75-79	31	67.7	16.1	16.1	-7.42	10.39	22	81.8	45	13.6	-727	10.64
80 +	41	53.7	46.3	0.0	-7.32	9.95	42	59.5	40.5	0.0	-812	12.21
All	4569	24.9	55.1	20.2	-0.21	3.38	4693	27.8	52.0	20.2	-0.53	383

Note : The interval between the survey rounds has been allowed for.

Table 4 provides the details for the 1974-77 matched population, whereas Figure 1 displays the patterns of age inconsistency of the matched populations for the 1974-75, 1974-76, and 1974-77 comparisons.

Several observations can be made. The age reporting in the subsequent follow-up surveys (after due adjustment for the inter-survey interval) in the same rive-year age group as in the 1974 base-line survey declined from 60 and 57 per cent respectively for males and females for the 1974-75 comparison and to 55 and 52 per cent for the 1974-77 comparison (Figure 1 top panel). This meant that as the interval between the survey rounds increased, there was an increase in the inconsistency of age reporting. However, such a systematic decline was not noticed within five-yearly age groups (Figure 1, top panel).

The age consistency declined with advancing age of the respondents. It was highest among the children followed by the young adults and elderly persons. Overall, the age inconsistency was higher among women (Figure 1, top panel) than among men.

Reporting of ages in the lower age groups than in the higher age groups in the subsequent surveys tended to be common. Because of this, the mean age difference between two surveys (after due allowance for the inter-survey interval) was generally negative, higher among women than men, and increasing with an increase in the inter-survey intervals (Table 5).

TABLE 5—MEAN AND ABSOLUTE MEAN AGE DIFFERENCE BETWEEN REPORTED AGES AT TWO SURVEYS, TOTAL POPULATION BY SEX. 1974-75, 1974-76 AND 1974-77 COMPARISONS. CAPE COAST PROJECT 1974-77.

Sex	*Mean age difference*			*Absolute Mean age difference*		
	Comparisons			*Comparisons*		
	1974-75	*1974-76*	*1974-77*	*1974-75*	*1974 76*	*1974-77*
Males	0.11	-0.30	-021	2.95	3.00	3.38
Females	-0.10	-0.66	-0.53	313	3.40	3.88

$$\text{Mean age difference for a comparison} = \frac{\Sigma (X^f - X^b - I^{f-b})}{n}$$

$$\text{Absolute mean age difference for a comparison} = \frac{\Sigma \mid (X^f - X^b - I^{f-b}) \mid}{n}$$

Where : X^f — Age in the follow-up survey
x^b = Age in the base-line (1974) survey
I^{f-b} = Internal between the follow-up and base-line survey
n = Total matched population
$| |$ = Sign for abiolute value
Σ = Sign for summation.

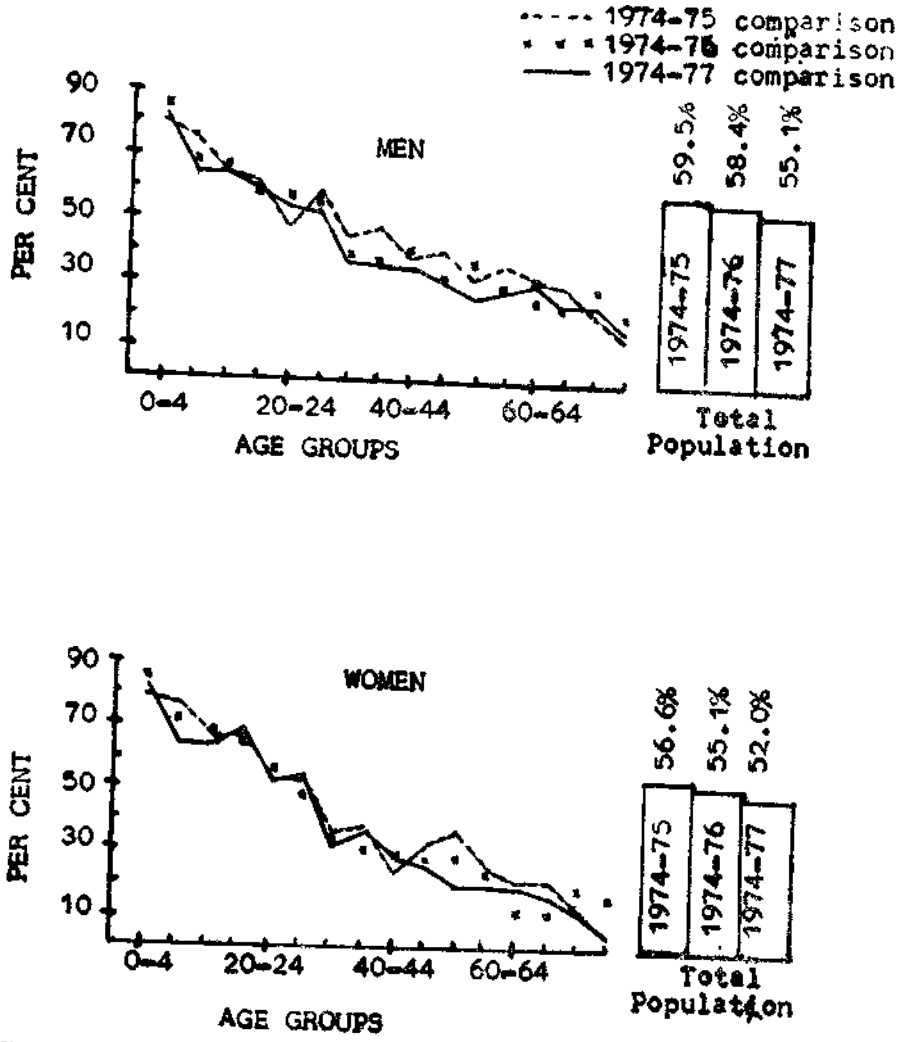

Figure 1 (*a*). Reporting of ages in the same five-year age groups in subsequent surveys,) 1974-75, 1974-76, 1974-77 comparisons, Cape Coast Project.

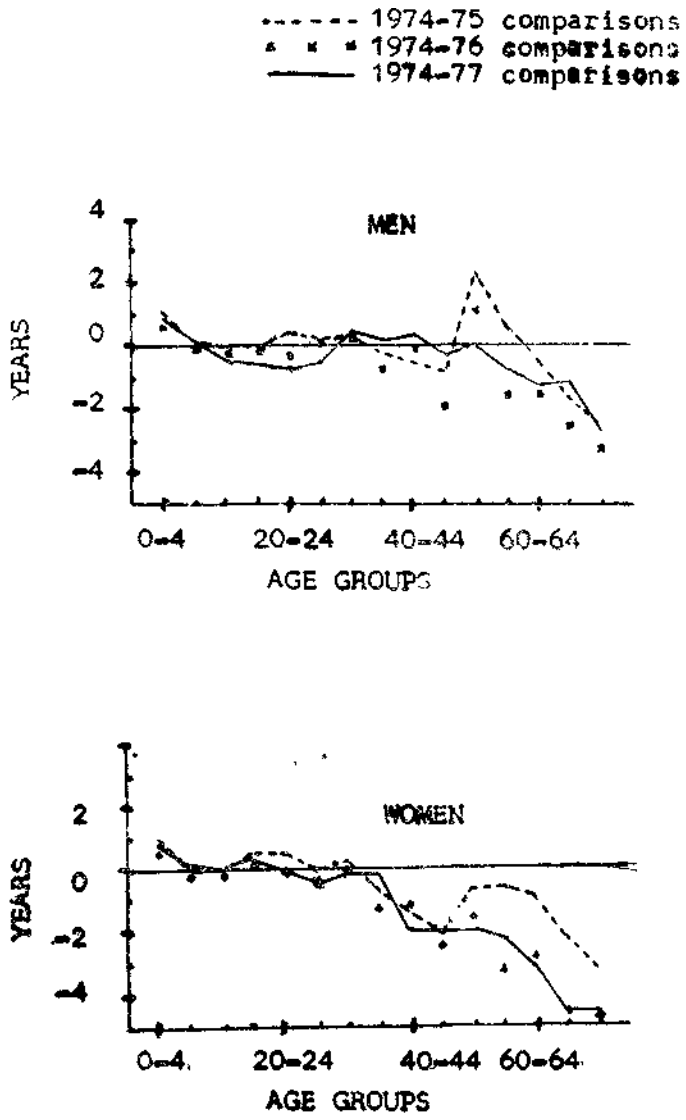

Fig. 1(b), Mean age difference between reported ages, 1974-75, 1974-76 and 1974-77 comparisons, Cape Coast Project.

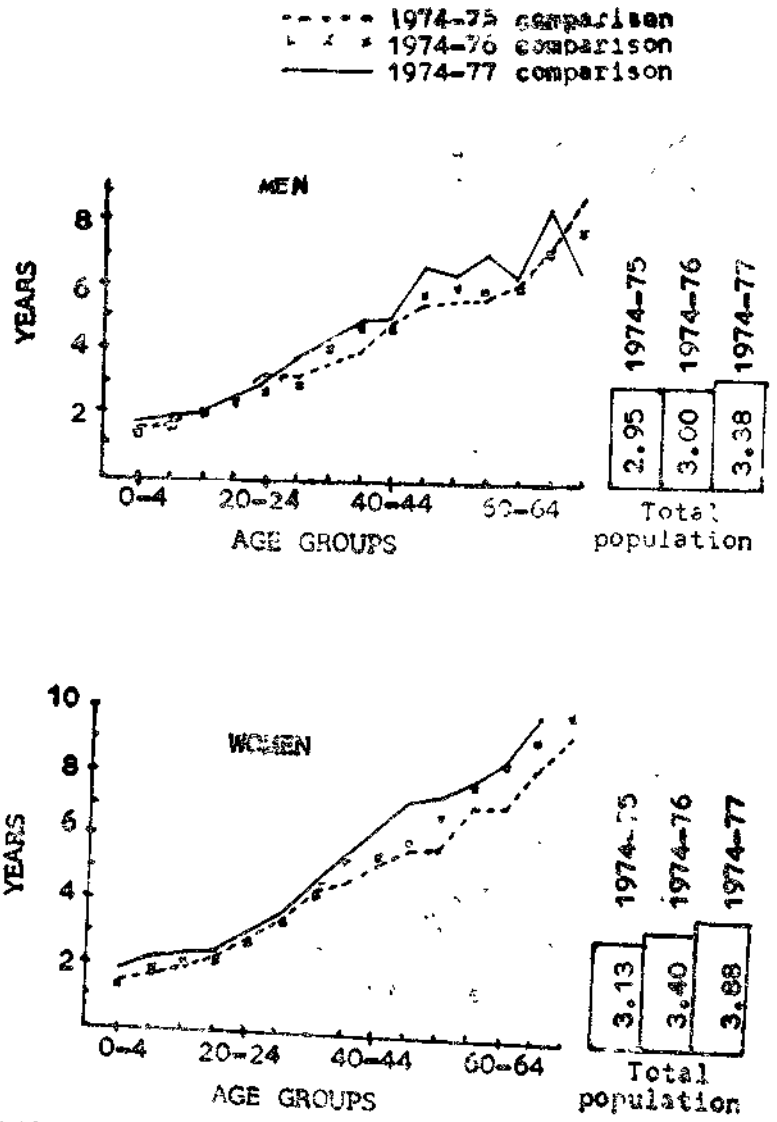

Fig. 1(c) Mean absolute age difference between reported ages, 1974-75, 1974-76 and 1974-77 Comparisons, Cape Coast Project.

The mean age difference classified by age of the respondent, however, gave a different picture (Figure 1, middle panel). It was relatively smaller up to age 40 among males and 60 among females, than for the later ages. Ages of children under 5, and of females in the age groups 15-19 and 20-24 were over-reported (a positive and large mean age difference) in the subsequent surveys.

The mean absolute age difference rose with an increase in age of the respondents (Figure 1, bottom panel) and with the inter-survey interval (Table 4 and Figure 1, bottom panel). This difference up to age group 25-29 was almost similar between males and females but after this age, as well as for the total population (Table 5), it was higher among females.

Thus, it is clear that the inconsistency between the recorded ages tended to rise with age and increase with inter-survey interval, and was more among females than males.

4. Factors Associated and Age Inconsistency

Following the approach adopted by Byerlee and Terera (1981), multivariate analysis was attempted, taking the absolute mean age difference between recorded ages at two surveys as the dependent variable and a total of nine variables on which data were collected in the 1974 survey as the independent variables. It should however, be stressed here that the Cape Coast project was not designed to check the consistency of age response, and therefore, the diversity of the independent variables is limited to the basic characteristics of the population. A comparison of the base and matched populations, with respect to these characteristics, was presented earlier (Table 2), but for the purpose of using the multiple regression analysis, these variables were re-grouped as follows.

Dependent Variable

Absolute Age Difference, This was the actual difference (ignoring the sign) in age reported at the successive surveys and the base survey after due allowance was made for the inter-survey interval. Thus, for the 1974-75 comparison, for an individual person it was :

Person's age in 1975—person's age in 1974—1

Independent Variables.

Type of Household Each person in the matched population was classified as to whether he/she lived in a nuclear family (code = 0) or not (code = 1). The nuclear family for the present purpose is defined as a family with a married couple and their unmarried children or a family with a single parent and unmarried children (Table 2).

Relationship to Head of Household. Each person's relationship to the head of the household : head = 0 or other = 1 (Table 2).

Child of Head. If the person was son/daughter of the head it was coded 1, otherwise 0.

Method of Age Estimation. If the age was confidently reported by the respondent (or the head of household) it was coded 0, otherwise 1 (Table 2).

Age in 1974. Reported age in the 1974 survey by single years was accepted without re-coding.

Primary School Education. If the person had achieved primary school education he/she was coded 1, otherwise 0.

Middle School Education. If the person had achieved middle school education he/she was coded 1, otherwise 0.

Religion. If the person was a Christian he/she was coded 1, otherwise 0.

Birthplace. If the person was born in the same village where he/she lived, he/she was coded 0, otherwise 1.

For each comparison, 1974-75, 1974-76, and 1974-77, nine separate multiple regressions, one each for a different sub-group of the population, were attempted. The results were strikingly similar for the three comparisons and, therefore, details of the 1974-77 comparison only are presented in this paper. Table 6 provides the values of the linear multiple regression with the absolute age difference as the dependent variable and several independent variables for the 1974-77 comparison.

The value of the square of the coefficient of multiple correlation *(R),* which is a measure of the degree of predictability of the selected regression model, varied between 22 and 27 per cent for the total population for the three inter-survey comparisons. When the model was separately fitted to various sub-groups of the population (total males, total females, males and females aged 0-14, 15-54 and 55+) with appropriate deletion or addition of the independent variables (see Table 6), the value of R^1 was more or less in the same range for total men and total women as for the total population, but for the populations in the various age-sex groups, it was indeed very low.

The analysis revealed that out of the eight independent variables considered, only four had significant relationship with the absolute age errors. These are : the relationship to *the* head of household; age in 1974; education and religion. It is interesting to note that the method of age estimation (respondent confident of the reported age and estimated by the interviewer) showed no significant relationship with age inconsistency in all comparisons except the age group of children aged 0-14 in the 1974-77 comparison (where a significant

TABLE 6— COEFFICIENTS OF SIMPLE LINEAR REGRESSION WITH THE ABSOLUTE AGE DIFFERENCE BETWEEN 1974-77 SURVEYS AS THE DEPENDENT VARIABLE. CAPE COAST PROJECT

	Total	*Males*	*Females*	*Age 0- 14*		*Age 15 - 54*		*Age 55 +*	
	sample	*only*	*only*	*Mates*	*Females*	*Males*	*Females*	*Males*	*Females*
Type of household	0.04	0.07	-0.06	—0.06	-0.17	-0.02	0.19	0.43	-0.12
	(0.09)	(0.12)	(0.13)	(0.11)	(0.14)	(0.22)	(0.20)	(0.66)	(0.72)
Relationship to head of household	0.42***	0.46**				1.25***		-2.80*	
	(0.13)	(0.22)				(0.32)		(1.62)	
Child of head				-033**	-0.09				
				(0.14)	(0.16)				
Method of age estimation	0.27**	0.29*	0.20	0.36**	0.49**	0.19	0.12	0.17	0.16
	(0.11)	(0.16)	(0.15)	(0.16)	(0.20)	(0.26)	(0.21)	(0.67)	(0.74)
Age in 1974	0.11***	0.10***	0.12***	0 10***	0.08***	0.13***	O.13***	0.10***	0 13***
	(0.003)	(0.005)	(0.004)	(002)	(0.02)	(0.01)	(0.01)	(0.03)	(0.04)
Primary education	-0.58***	-0.59***	-0 49***	-0.60***	-0.32*	-0.24	-0.80*	-127	-2.42
	(0.11)	(0.15)	(0.18)	(015)	(0.16)	(0.38)	(0.44)	(1.38)	(6.99)
Middle + higher education	-1.12***	-0.88***	-1.38***	-0.64**	-1.06***	-1.16***	-1.03***	-1.71	-1.58
	(0.11)	(0.15)	(0.19)	(029)	(0.35)	(0.27)	(0.28)	(1.09)	(6.96)
Religion	-041*'*	-0.52***	-0 38**	-0.17	-0.67***	-0.23	-0.44*	-1.88***	0.22
	(0.12)	(0.16)	(0.18)	(0.16)	(0.21)	(0.26)	(0 *26)*	(0.71)	(0.79)
Birth place	-0.25**	0.003	-0.45***	-0.02	-0.28	0.10	-0.29	-1 04	-1.42
	(0.12)	(0.17)	(0.17)	(0.19)	(0.21)	(0.25)	(024)	(0.85)	(1-47)
Constant	1. 32	1.44	1.70	1.84	2.32	0.38	0.85	2.52	1.31
Multiple *R* square	0.24	0.21	0.26	0.02	002	0.11	0.14	0.06	0.04
N	9262	4569	4693	2192	1985	1950	2279	427	429

Note : Figures in parentheses are standard errors.
*Significant **at** 10%. **Significant at 5%. ***Significant at 1%.

positive association was noted.). The primary and middle education of the people and their religion depicted a negative association with the age inconsistency,

5. Change in Life Cycle Events and Age Inconsistency

In addition to the age of the respondents, the Cape Coast project gathered independently information on their marital status, and in the case of females, their total number of children ever born and surviving at each of the surveys conducted annually between 1974 and 1977. How the change in marital status, and children ever born and surviving between the' survey rounds, influenced the consistency of age response is examined through the use of the multiple classification analysis (MCA). For this analysis it was considered appropriate to examine the actual rather than the absolute inconsistency in age reporting as the change in the life cycle events may contribute to errors in age in a specified direction. For example, when a single person continues to be single he/she might tend to under-report his/her age in the later instance. However, once married, he/she might tend to either state his/her correct age or even to over-report it. Therefore, from the absolute difference in age it is difficult to say whether the person under-reported age when he/she was single or over-reported age once married.

It is to be remembered here that in the Caps Coast project the marital status was recorded as given by the respondents; it is likely that some widowed/ divorced people may have reported themselves as single. Similarly, it is likely that some women reported lower parity in the later survey compared to an earlier one. For statistical purposes, such instances are errors, but for the purposes of this study, these add a further dimension. It is thus possible from such information to compare inconsistency in age data between those; who elected to call themselves never-married and those who considered themselves divorced, and for females whose number of children ever born and surviving regressed, remained the same or increased between the survey rounds.

For the MCA analysis, education, age in the base line survey, religion and the relationship to the head of household were used as covariates as these were found to be associated with inconsistency in age recording in the earlier regression analysis. MCA was performed separately for males and females in the age range of 15-45. The change in marital status was chosen to be the independent variable in the case of males. For females, in addition to the change in marital status, a change in children ever born (or the change in the number of living children) was also considered. The dependent variable in both sexes was the difference in age between the survey points duly adjusted for the inter-survey interval Therefore, a value of zero indicates consistency in the reported ages at two points in time, a negative value implies that the age return in the later survey was less than that recorded in the first survey

after adjusting for the time difference between the surveys. The results of the analysis for the 1974-75, 1974-76 and 1974-77 comparisons were similar and therefore, it was felt appropriate to provide the results for one of the comparisons only, namely 1974-77 (Table 7, 8 and 9).

Among males, on average, the age return in the 19/7 survey v>as 0.21 years less than what would be expected based on the 1974 returns (Table 7). Those who stayed single reported their ages m 1977 lower than what was to be expected based on their 1974 returns. Such an under-reporting in the second survey was found to be high among those whose marital status changed from married to single. These were the males who were either widowed or divorced between the survey rounds, but who elected to call themselves single at the later survey. Similar under-reporting in the later visit, though less in magnitude, was observed among those reported as widowed, divorced or separated in the first survey but who elected to be reported as single in the later survey.

TABLE 7-MULTIPLE CLASSIFICATION ANALYSIS OF THE EFFECTS OF CHANGE IN MARITAL STATUS ON AGE MIS-STATEMENT AMONG MALES. CAPE COAST PROJECT

Grand mean = — 0.21

Variables and category	*N*	*Unadjusted deviation*	*Eta*	*Adjusted/or co-variates*	*Beta*
Change in marital status between 1974 and 1977					
S - S*	675	-1.46		-1.77	
S - M	115	0.79		0.31	
S - W/D/SEP	26	2.36		1.86	
M -S	14	-5.36		-5.46	
M - M	877	0.98		1.21	
M - W/D/SEP	51	0.31		0.46	
W/D/SEP - S	47	-2.15		-1.74	
W/D/SEP - M	70	0.38		0.26	
W/D/SEP - W/D/SEP	73	1.50		2.30	
			0.21		0.24
Multiple *R* Square					0.07

Covariates are educational level, age in 1974, religion, and relationship to head of household.
*S — single, M — married, W/D/SEP — widowed, divorced or separated.

TABLE 8-MULTIPLE CLASSIFICATION ANALYSIS OF THE EFFECTS OF CHANGE IN MARITAL STATUS ON AGE MIS-STATEMENT AMONG FEMALES, CAPE COAST PROJECT

Grand mean = —0.51

Variables and category	*N*	*Unadjusted deviation*	*Eta*	*Adjusted for independents and co-variates deviation*	*Beta*
Change in marital status between 1974 and 1977					
S - S*	230	-0.34		-1.76	
S - M	118	1.07		-0.61	
S - W/D/SEP	43	1.10		-0.63	
M - S	30	-4.75		-4.09	
M - M	1228	-0.16		-0.00	
M - W/D/SEP	114	0.74		1.05	
W/D/SEP - S	33	-4.61		-3.92	
W/D/SEP - M	162	-0.69		-0.65	
W/D/SEP - W/D/SEP	299	1.40		2.50	
			0.16		0.20
Change in the number of children ever born					
Regressed	381	-2.38		-1.80	
No change	828	-015		-0.05	
Progressed	1048	0.99		0.70	
			0.18		0.14
Multiple *R* — square					0.08

Covariates are educational level, age in 1974 and religion.
*S — single, M - married, W/D/SEP - widowed, divorced or separated.

TABLE 9-MULT1PLE CLASSIFICATION ANALYSIS OF THE EFFECTS OF CHANGE IN MARITAL STATUS AND LIVING CHILDREN ON AGE MIS-STATEMENT AMONG FEMALES CAPE COAST PROJECT

Grand mean = —0.51

Variables and category	*N*	*Unadjusted deviation*	*Eta*	*Adjusted for independents and co-variates deviation*	*Beta*
Change in marital status between 1974 and 1977					
S - S*	230	-0.34		-2.10	
S - M	118	1.07		-0.54	
S - W/D/SEP	43	1.10		-0.48	
M - S	30	-4.75		-4.34	
M- M	1228	-0.16		0.06	
M - W/D/SEP	114	0.74		1.02	
W/D/SEP - S	33	-4.61		-4.16	
W/D/SEP — M	162	-0.69		-0.66	
W/D/SEP - W/D/SEP	299	1.40		2.52	
			0.16		0.20
Change in the number of living children					
Regressed	333	-2.15		-1.47	
No change	1011	0.04		0.23	
Progressed	913	0.74		0.29	
			0.15		0.09
Multiple *R* — square					0.08

Covariates are educational level, age in 1974 and religion.
*S — single, M — married, W/D/SEP — widowed, divorced or separated.

On the other hand, those who were single and married between the surveys over-reported their ages in the later surveys relative to their reported age in an earlier survey. However, the magnitude was small. Such over-reporting was found to be very high among those whose marital status changed from single to widowed/divorced/separated, those who continued to be married between the surveys, and those who continued to be widowed/divorced/separa-

ted. Such ageing between surveys was found to be larger for those who continued to be married than those who married between surveys.

These results were found to hold even after adjusting for the covariates. The explained variance was seven per cent, which was highly significant. The effect of change in marital status on age inconsistence was also highly significant. Thus it is clear that there is a notion of an ideal age at marriage among males and, therefore, those who continue to be single try to keep their age below or closer to the ideal as far as possible by under-reporting their ages in the subsequent surveys. Newly weds for the same reason do not increase their ages in the subsequent surveys. On the other hand, those who continue to be married over-report their ages (probably due to under-reporting during adolescent period). The social aging is thus slower during the adolescent period around the marriageable ages and faster when married or being widowed/ divorced/separated for a longer period.

Almost similar results were obtained as regards the effect of change in marital status on the consistency of age returns for females (Tables 8 and 9). In addition to change in marital status, the change in the number of children ever born was introduced as an independent variable in Table 8, and the number of living children in Table 9. Reduction in the number of children ever born though impossible in reality is possible because of under-reporting in the later survey which is most likely to be associated with the death of children.

A change in age was found to be clearly associated with a change in parity or the number of living children as expected. A negative change in parity (or in living children) resulted in a negative change in age.

The proportion of explained variance, the independent effect of change in the number of children ever born (surviving children) were all highly significant.

6. Conclusion

Our regression analysis indicated that inconsistency in age was not influenced by the method of age estimation, namely whether it was reported or estimated. Given this, the results from the MCA analysis indicate that both respondents and interviewers have the same tendency to adjust the respondents ages according to the current marital status, and a change in such a status and the number of children the female respondents have. The implication of this result for future surveys is that the interviewers need to be taught about the association between life cycle events and age, but they need to be cautioned of the possibilities of such procedures producing equally bad (good) age returns As expected and revealed by the present analysis, the education of the respondents will improve the quality of age returns in societies where literacy level is poor.

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