Contextual age: A better indicator of aging than chronological age

Dr. Rashmi Saxena, Assistant Professor
Shri Ramswaroop Memorial Group of Professional College,
Lucknow
rashmi_phd1979@rediffmail.com

Abstract
Contextual age is defined as one's quality of life in regard to environmental, social and health factors. A contextual age construct was developed and examined as a transactional, life position index of aging. Thus, the purpose of this study was to examine the influence of gender and age related difference on the eighteen-item contextual age index included six interrelated dimensions such as physical health, interpersonal interaction, mobility, life satisfaction, social activity and economic security on people of culturally diverse country like India. There were 300 participants ranging in age from 25-35, 45-65 and 65+ who took part in the study. It was hypothesized that females as compared to males are higher on contextual age. A survey method was used in this study and participants were required to complete the contextual age index scale. The results supported hypothesis. Further research and implications are discussed.

Key words: contextual age, gender, age

Introduction

Age is not merely a biological function of the number of years one has lived, or of the physiological changes the body goes through during the life course. It is also a product of the social norms and expectations that apply to each stage of life. Age represents the wealth of life experiences that shape whom we become. With medical advancements that prolong human life, old age has taken on a new meaning in societies with the means to provide high-quality medical care. However, many aspects of the aging experience also depend on social class, race, gender, and other social factors.

Contextual age is of great importance to the study of the elderly. Rubin and Rubin (1982) examined contextual age, and found it to be better indicator of aging than chronological age. In addition, several functional age perspectives maintain that an individual's physiological, psychological and social life conditions are more indicative of aging than is chronological age. The contextual age construct is obviously related to other functional age perspectives. Contextual age is a measure of how factors such as environment, social life, and psychological status affect an individual's quality of life. This measure may more appropriately determine the age of an individual simply the number of years an individual has lived. (Rubin and Rubin, 1982).

Contextual age is a construct that was developed to account for the inaccuracies resulting from only using chronological age in communication research and was developed as a transactional life-position index of aging. (Rubin and Rubin, 1986). Depending on contextual age people may also use mediated channels as functional alternatives (over interpersonal ones) for the fulfillment of interpersonal needs.

Although taking place within an individual person, ageing process are influenced by factors on different levels i.e. factors related to individual person, factors rooted in the environmental and

cultural levels and a societal context in which a person is living, e.g. (Wahl, Fange, Oswald, Gitln & lwarsson, 2009). The social environment, with a focus on cohort effects in social relations and the consideration of family relations and elders as care receivers; the home environment, with emphasis on housing and quality of life, relocation, and urban aging issues; the outdoor environment, with consideration of out-of-home activity patterns, car-driving behavior, and the leisure world of aging; the technological environment, with treatments of the role of the Internet and the potential of technology for aging outcomes; and the societal environment, with a focus on global aging, the new politics of old age, and older persons as market consumers.

Based upon such logic a hypothesis is formulated and tested in the present study:
H_1: In comparison to men women score higher on contextual age.
METHOD

Design

 The sample was divided into six groups by using the two classificatory variables of respondent's sex (male and female) and age (25 to 35 years, 45 to 65 years and 65+ years). All other variables were then examined as dependent variable through 2x3 ANOVAs to assess if significant variations exist among the groups due to sex and age.

Sample

A purposive sample of 300 respondents living in Lucknow was used for the present study. Half of these were males, the other half, females. Inclusion criteria consisted of having completed education till at least graduation, not being diagnosed with any illness at the time of the study and belonging to the middle socioeconomic status. The male and the female respondents were further subdivided into four age groups of 25-35 years, 45-65 years, and 65 years and above. In male sample 75% were graduate, 50% were post graduate and 25% were doing some professional courses whereas in female sample 95% were graduate, 45% were postgraduate and 10% were doing some professional courses. All of them were married and employed and their income lies between 10.000 to 30,000

Variables and Measures
Two sets of variables were used in the present study. The first set consisted of the classificatory variables of sex (males vs. females) and age (25-35 years, 45-65 years and 65+ years). These two variables together led to a division of the sample into six subgroups of 'young', 'middle-aged', and 'old' males and females.

A two page anonymous questionnaire with question derived from Rubin and Rubin (1982) is used in the present study to measure participant's scores on the six factors that comprise contextual age. Three statements per factor were listed. The scale has a total of 18 statements. Participants are asked to indicate their responses to the 18-item index on a 5 point Likert scale ranging from 1 (strongly agree) to 5 (strongly disagree).

The first factor refers to **physical health** and focuses on general physical health and medical problem. Total score on this sub-scale ranges from 3 to 15.

The second factor on the index is **interpersonal interaction.** This factor is related to the amount of contact the participant has with family and friends. Total score on this sub-scale ranges from 3 to 15.

The third factor on the index is **mobility.** This factor is related to how the participant is able to get out of his/her residence and travel.

The fourth factor on the index is **life satisfaction.** This is how successfully people feel they have aged, and the amount of happiness they have found over the years.

The fifth factor on the index is **social activity.** This factor refers to the amount of social involvement in which the participants engages.

Finally the sixth factor on the index refers to **economic security.** This involves the degree of financial stability that the participant has in life.

In combination, these six factors measure the contextual age of the participant. The contextual age index is derived by summating the numbers circled on the Likert scale for each statement. Higher scores indicate high contextual age, or declining physical health, few interpersonal interaction, very limited mobility, decreased life-satisfaction, etc. Lower scores conversely indicated a low contextual age and therefore a healthy physical condition, ample interactions with others, financial stability etc.

Procedure

The questionnaires were constructed consisting of a demographic data sheet besides the 18 items from the contextual age index. A Hindi version of contextual age index was prepared using the back translation method. Data were collected by administering the questionnaire in face-to-face personal interviews with the respondents. Initial part of the interview consisted of briefing the participants about the purpose of the study. Participants were requested to fill up a consent form to indicate an understanding that their participation in the study was voluntary and that they can pull out at any time should they wish to do so. Participants were given sufficient time to complete the questionnaires and their questions were answered by the researcher. The questionnaires were collected upon completion and the same were screened to evaluate their usability in the study. Response rate was 72%. Data were analyzed using SPSS version 11.

Results

The below seven tables contain findings regarding **Contextual age Index**. Contextual age refers to one's age with respect to social, environmental and health factors. Higher score on this variable indicate that an individual has declining physical health, fewer interpersonal interactions, limited mobility, decreased life satisfaction, etc. Lower scores conversely indicate a low contextual age or a healthy physical condition, ample interaction with others, financial stability, etc. Six aspects of contextual age index are assessed in the present study. These are physical health, interpersonal interaction, mobility, life satisfaction, social activity, financial sufficiency and overall contextual age index.

Table 1.33   Contextual Age Index – Physical Health (1)

A. Means and SDs

Age		Male	Female	Total
25-35 years	M	7.56	11.04	9.30
	SD	.884	.755	1.931
45-65 years	M	8.48	7.10	7.79
	SD	2.033	.303	1.604
65 & above	M	10.48	11.26	10.87
	SD	2.092	1.454	1.835
Total	M	8.84	9.80	9.32
	SD	2.133	2.143	2.188

B. Summary ANOVA

Source of Variation	SS	DF	MS	F	P
Age	474.380	2	237.190	117.929	-
Sex	69.120	1	69.120	34.366	-
Age x Sex	296.460	2	148.230	73.699	-

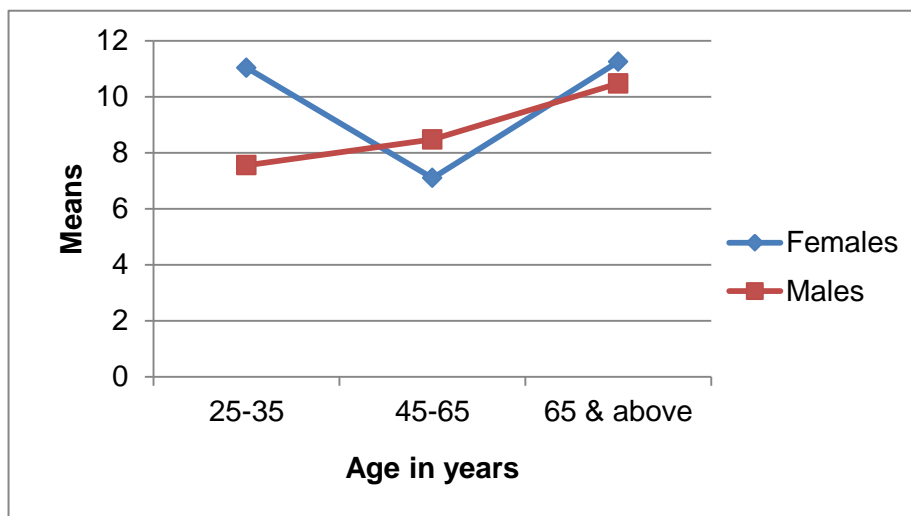### C. Graphical presentations of Means

Table 4.32 contains findings regarding the first aspect of **contextual age index – physical health.** Part B of this table shows that main effect of age and sex is significant. Means of older respondents is highest as compared to middle and younger respondents. It indicates that older respondents have poor physical health than younger and middle age respondents. Means for

females are 9.80 and for males are 8.80, F= 34.366, p<.001 indicating that as compared to males females have poor physical health.

The interaction effect of age and sex is also significant (F= 73.699 and p<.001). Remarkable gender difference is seen among respondents aged 25-35 years. Among younger respondents females score higher than males on physical health dimension of contextual age index and thus have poor physical health.

Table 1.34 Contextual Age Index – Interpersonal Interaction (2)

A. Means and SDs

Age		Male	Female	Total
25-35 years	M	8.74	9.48	9.11
	SD	1.614	1.147	1.442
45-65 years	M	7.34	10.80	9.07
	SD	2.592	.833	2.587
65 & above	M	12.06	13.14	12.60
	SD	1.900	1.069	1.627
Total	M	9.38	11.14	10.26
	SD	2.863	1.828	2.555

B.Summary ANOVA

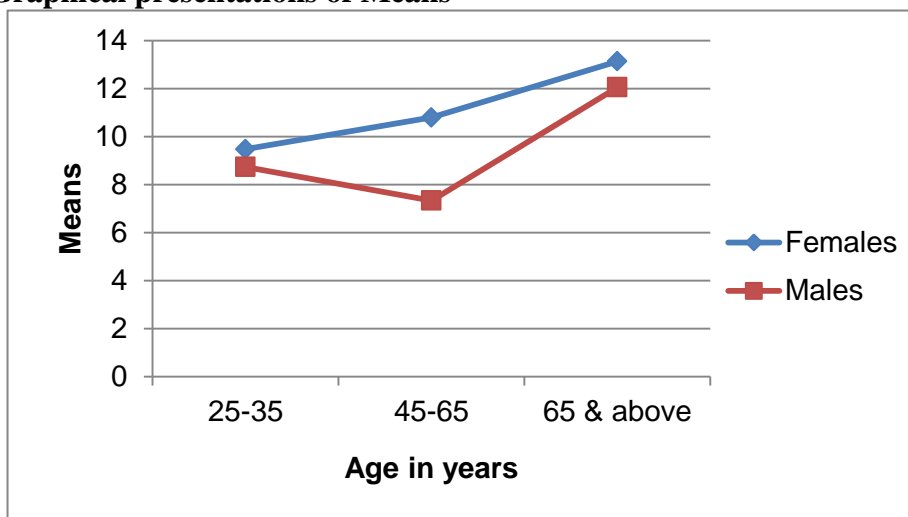| Source of Variation	SS	DF	MS	F	P
Age	821.420	2	410.710	153.203	-
Sex	232.320	1	232.320	86.660	-
Age x Sex	109.820	2	54.910	20.483	-

C.Graphical presentations of Means

Table 4.33 presents basic statistics for the second part of the **contextual age index – interpersonal interaction.** A significant main effect of age and sex is again noted here. On this variable older respondent scored more than younger and middle respondents. There is thus a clear indication that older respondents have fewer interpersonal interactions than younger and middle respondents. A significant main effect of sex shows that females (Mean= 11.14) have fewer interpersonal interactions than males (Mean= 9.38).

The interaction effect of age and sex (F= 20.483, p<.001) showed that there is a difference between means for older females and males (12.06 and 13.14) which suggests that females have less interpersonal interaction than males.

Table 4.34   Contextual Age Index – Mobility (3)

A. Means and SDs

Age		Male	Female	Total
25-35 years	M	10.88	11.08	10.98
	SD	.627	.944	.804
45-65 years	M	8.16	9.98	9.07
	SD	2.385	1.464	2.171
65 & above	M	9.66	8.46	9.06
	SD	1.547	1.249	1.523
Total	M	9.57	9.84	9.70
	SD	2.008	1.635	1.833

B. Summary ANOVA

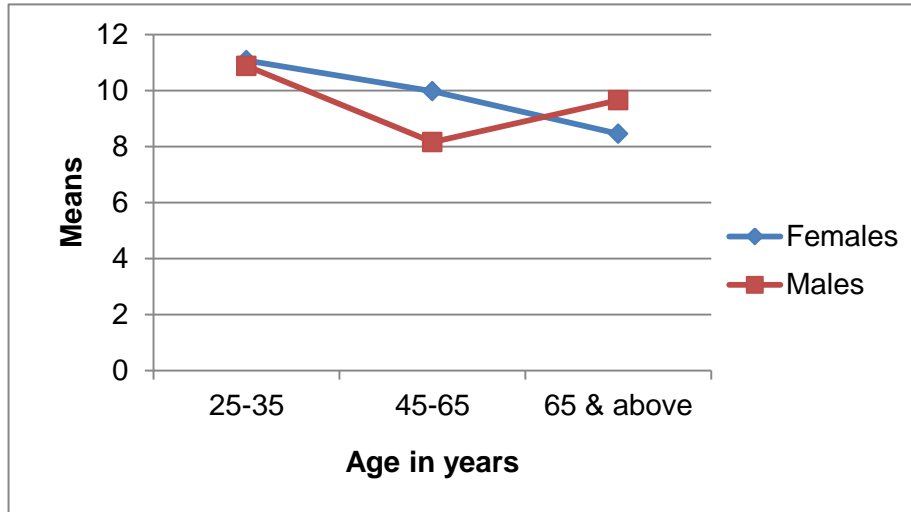| Source of Variation	SS	DF	MS	F	P
Age	244.487	2	122.243	56.129	-
Sex	5.603	1	5.603	2.573	<.001**
Age x Sex	114.207	2	57.103	26.220	-

C. Graphical presentations of Means

Table 4.34 presents findings regarding the third domain of **Contextual age index**. This is **mobility**. In Part B of the table a significant main effect of age is noted on this variable. Means for younger respondents is greater than middle and older respondents (Means= 10.98, 9.07 and 9.06, F ratio = 56.129, P<.001) indicating that as compared to older and middle respondents younger respondents are lower on mobility.

The interaction effect of age and sex is also significant (F=26.220, p<.001). Remarkable gender differences are seen among respondents aged 25-35 years. In this age group as compared to males females scored more on mobility related aging.

Table 4.35   Contextual Age Index – Life Satisfaction

A. Means and SDs

Age		Male	Female	Total
25-35 years	M	10.14	12.84	11.49
	SD	2.843	1.608	2.669
45-65 years	M	7.32	11.22	9.27
	SD	2.325	2.169	2.974
65 & above	M	6.70	8.66	7.68
	SD	1.992	2.708	2.562
Total	M	8.05	10.91	9.48
	SD	2.828	2.791	3.148

B. Summary ANOVA

Source of Variation	SS	DF	MS	F	P
Age	732.420	2	366.210	68.493	-

| Sex | 610.613 | 1 | 610.613 | 114.204 | - |
| Age x Sex | 47.927 | 2 | 23.963 | 4.482 | <.001** |

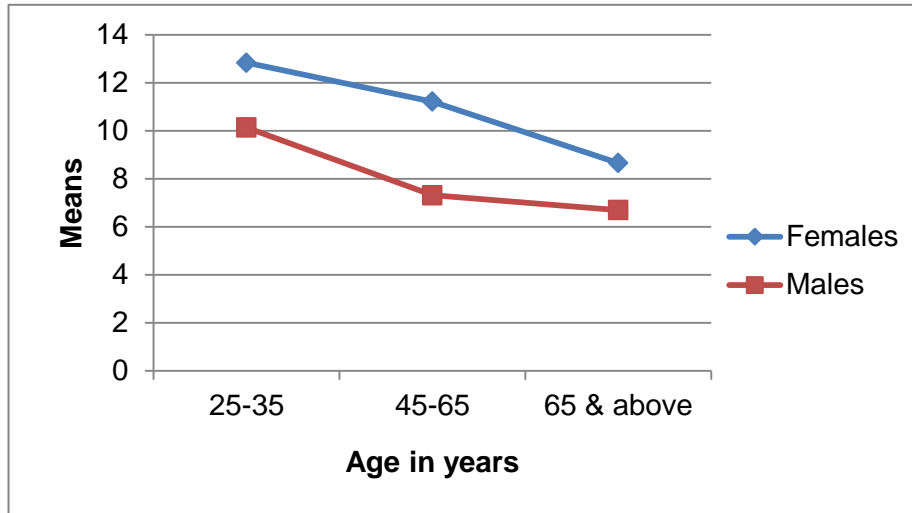### C. Graphical presentations of Means

Table 4.35 presents findings regarding the fourth domain of **contextual age index – Life satisfaction.** Part B of this table shows that on this variable the main effects of age and sex are significant. On this variable younger and middle respondents scored more than older respondents (Means=11.49, 9.27, 7.68, F=68.493, p<.001). It indicates that younger and middle respondents are less satisfied from their life as compared to older respondents. A significant main effect of sex shows that females (Mean=10.91) are also less satisfied from their lives than are males (Mean=8.05).

Table 4.36   Contextual Age Index – Social Activity

A. Means and SDs

Age		Male	Female	Total
25-35 years	M	8.20	5.08	6.64
	SD	2.458	1.085	2.456
45-65 years	M	7.46	6.98	7.22
	SD	2.581	.714	1.899
65 & above	M	8.76	10.92	9.84
	SD	2.811	1.338	2.444
Total	M	8.14	7.66	7.90
	SD	2.657	2.664	2.667

B. Summary ANOVA

Source of	SS	DF	MS	F	P

Variation					
Age	581.360	2	290.680	72.431	-
Sex	17.280	1	17.280	4.306	<.001**
Age x Sex	348.480	2	174.240	43.417	-

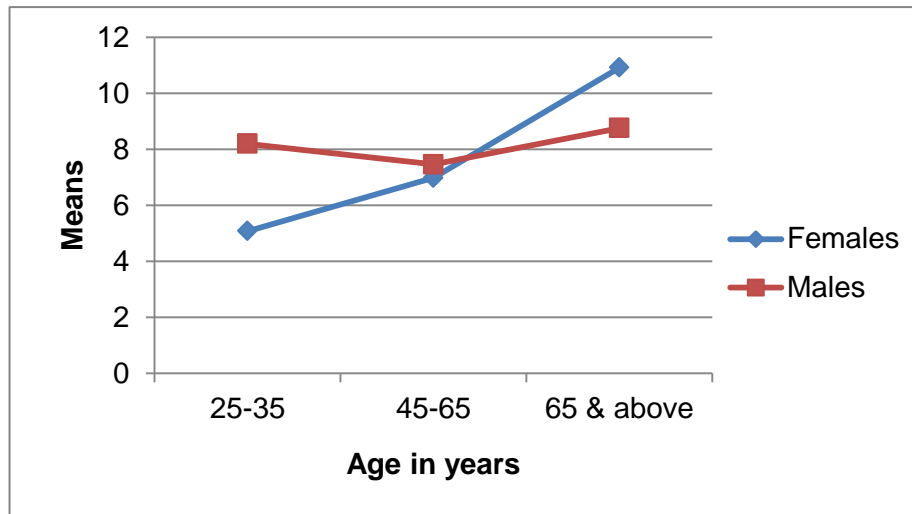### C. Graphical presentations of Means

Table 4.36 presents basic statistics for the fifth part of the **Contextual age index – social activity**. Part B of this table indicates that on this variable the main effect of age is significant. Means for older respondents is higher than that of middle and younger respondents (Means = 9.84, 7.22 and 6.64, F =72.431, P<.001) indicating that older respondents involve much less in social interaction as compared to younger and middle respondents. The interaction effect of age and sex is also significant (F=43.417, P<.001).

Table 4.37   Contextual Age Index – Financial

A. Means and SDs

Age		Male	Female	Total
25-35 years	M	7.20	6.14	6.67
	SD	1.229	1.616	1.525
45-65 years	M	8.32	6.06	7.19
	SD	2.369	1.077	2.154
65 & above	M	7.64	10.34	8.99
	SD	1.782	1.698	2.200
Total	M	7.72	7.51	7.62
	SD	1.897	2.492	2.213

B. Summary ANOVA

Source of Variation	SS	DF	MS	F	P
Age	296.427	2	148.213	52.471	-
Sex	3.203	1	3.203	1.134	<.001**
Age x Sex	334.827	2	167.413	59.268	-

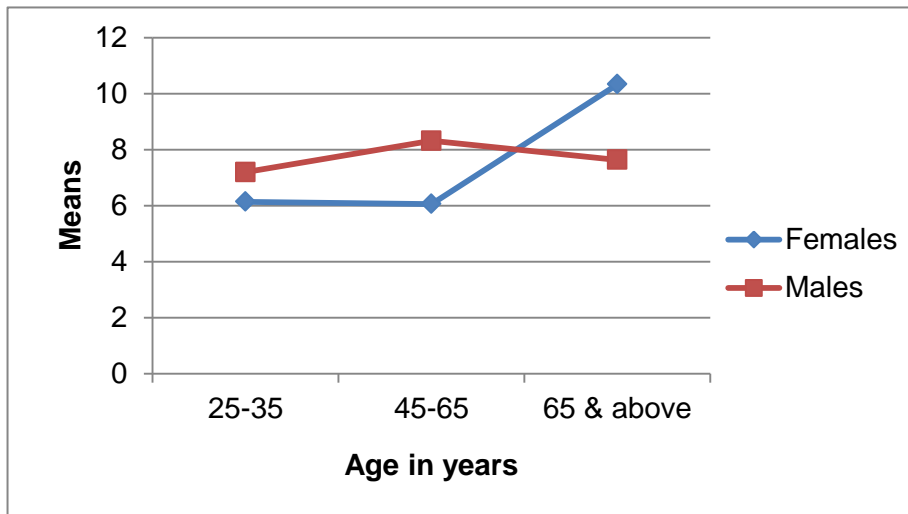### C. Graphical presentations of Means

Table 4.37 presents findings regarding the sixth domain of **Contextual age index-financial satisfaction**. Part B of this table shows that the main effect of age is significant on this variable. Means for older respondents is higher than that of middle and younger respondents (means = 8.99, 7.19 and 6.677, F= 52.471, P<.001) indicating that older respondents are less satisfied with their financial status as compared to middle and younger respondents. Satisfaction is always a balance between expected and obtained. Since older people are financially less satisfied, perhaps they are more dependent on their children for their financial needs that is why they are less satisfied with their finances than other two age groups.

The interaction effect of age and sex is also significant (F=59.268, p<.001). Remarkable gender differences is seen among respondents aged 65 and above years. In older respondents females are much less satisfied with their financial status than are males. perhaps much less finances are at the disposal of females. This may also possibly means that females experience little freedom as compared to men about financial transactions.

Table 4.38   Contextual Age Index – Total

A. Means and SDs

Age		Male	Female	Total
25-35 years	M	52.72	55.66	54.19

	SD	5.039	3.028	4.392
	M	47.08	52.14	49.61
45-65 years	SD	6.712	4.041	6.070
65 & above	M	55.30	62.78	59.04
	SD	6.695	3.966	6.641
Total	M	51.70	56.86	54.28
	SD	7.055	5.768	6.933

B. Summary ANOVA

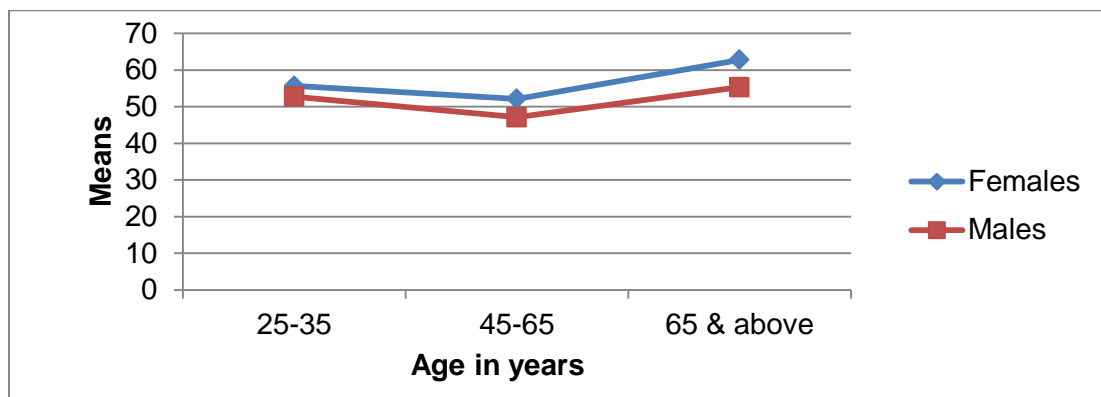| Source of Variation	SS	DF	MS	F	P
Age	4447.460	2	2223.730	85.259	-
Sex	1996.920	1	1996.920	75.563	-
Age x Sex	258.020	2	129.010	4.946	<.001**

C. Graphical presentations of Means

Table 4.38 contains details on the **contextual age index total**. Part A of this table indicates basic statistics for the contextual age index total whereas Part B indicates that on this variable the main effect of sex and age is significant. On this variable means of older respondents are higher than younger and middle respondents which indicate that older respondents are more contextually aged than are younger and middle respondents. Means for females (mean=56.86) are greater than that for males (mean=75.563) which also suggests that females are more contextually aged than males.

Discussion

"In comparison to men women are higher on contextual age" implying that at the same age women 'feel' older than men.

As compared to males, females in the present study were indeed found to be higher on contextual age. The 2x3 ANOVAs revealed that in comparison to males females scored higher on overall contextual age (Mean= 56.86 and 51.70, F= 75.563, p< .01) as well as in the three aspects of contextual age- physical health, interpersonal interaction and life satisfaction. Thus, in comparison to men, women were found to have poorer health and life satisfaction and less social interaction.

Thus, the hypothesis which stated that "In comparison to men, women are higher on contextual age" gets supported by the findings of the present study.

Contextual age is defined as one's quality of life in regard to environmental, social and health factors. In terms of physiological well being women report greater levels of disability than men (Arber and Cooper, 1999), and therefore may experience more constraints on their social activities and everyday lives. Women are also more likely than men to face later life from a position of economic disadvantage (Arber and Ginn, 1991). Advanced age, ill health and poverty are well documented predisposing factors for poor physical health, fewer interpersonal interactions and less life satisfaction among women as compared to men. The main reason for poor health in women could be that in most of the Indian families, in comparison to boys, girl child is relatively more deprived from healthy and nutritious food. Due to this women have always been physically weaker than men. Women in their childhood are more protected as compare to men. Girls have always been overprotected as their parents consider them as weaker than boys (with less protection strategies and abilities) and this overprotection continues even after marriage.

Although women tend to live longer than men, they also face higher risks of many chronic illness and symptoms such as anemia, migraines, thyroid, rheumatoid arthritis, and multiple sclerosis (McDonough and Walters, 2001, Verbrugge, 1989 and Wizemann and Parude, 2001). Women also have a higher likelihood of experiencing disability, (McNeil, 2001). Research consistently indicates that poorer health, whether measured by objective or subjective indicators are associated with adopting older identities (Barrett, 2003, Logan et al., 1992, Sherman, 1994 and Ward et al., 1988). These patterns would suggest that women have older identities than men. Women have higher morbidity rates but lower mortality rates. Psychological and lifestyle differences are likely to play a major role in mediating gender- related health differences. In industrialized societies women suffer more from poverty, stress from relationships, domestic violence, sexual discrimination, lower status work, concern about weight and the strain of dividing attention between competing roles of parent and worker. Financial barriers may prevent women, more than men, from engaging in healthier lifestyles and desirable behavior change (O'Leary and Helgeson, 1990).

Social support derived from friendship, intimate relationships and marriage, although significant, appears to be less positive value to women than to men. Although physical and mental wellbeing generally benefit from social support, women often provide more emotional support to their families than they receive. The burden of caring for an elderly, infirm or dementing family member also tends to be greater for females in the family than for males due to this they are less satisfied in their life (Grafstrom. 1994).

The elderly were the most respected members of the family in traditional Indian society. Taking care of them was mainly the responsibility of their children. However the growth of

individualism in modern life led to their alienation and isolation from family and society social network sizes decreases with age. In terms of interpersonal interaction and social activity the older respondents are lower on this dimension in comparison to younger and middle respondents. It is due to the fact that elderly are more likely to live with physical, psychological health problems, and social losses. Old age and psycho-social losses are highly interrelated, as well as developing health problems as age increases.

From the findings of ANNOVA it was also found that younger and middle respondents scored higher on life satisfaction which indicates that they are less satisfied from their life as compared to older respondents. Younger and middle aged people are the least happy and have the lowest levels of life satisfaction and the highest levels of anxiety. However, the trend reverses once respondents reach 60 and above tending to report the highest average levels of personal well being.

Older people may have more time for fun activities. In contrast, those in their middle and younger years may have more demands placed on their time and might struggle to balance work and family commitments.

Health problems are supposed to be the major concern of a society as older people are more prone to suffer from ill health than younger age groups. It is often claimed that ageing is accompanied by multiple illness and physical ailments.

Now a day, a number of concepts have been introduced by communication researchers in an effort to transcend the limitations of the chronological age concept. Among these is the idea of contextual age, which asserts that social and environmental factors are better indicators of aging than chronological age.
Contextual age transcended the limited heuristic nature of chronological age. Contextual age was shown to consider the individuality of aging, depending on life position indicators, and to be a more viable construct.

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