Research article

Moderated mediation roles of social connectedness and optimism on emotional intelligence and life satisfaction

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ABSTRACT

The processes and circumstances underlying the association between emotional intelligence and life satisfaction were investigated among rural older adults. The factor structure of the measures was also assessed to determine their capacity and suitability for use. Participants were 1053 (639 males and 414 females) older adults with a mean age of 71.34 (SD of 7.15) recruited from selected rural communities in southwestern Nigeria. Results of the factor analysis show that the measures are appropriate for use in the study settings. Emotional intelligence significantly predicts life satisfaction as a result of social connectedness among the samples used. Also, the effect holds better among older adults with higher dispositional optimism than those with lower dispositional optimism. The study outcomes underscore the importance of social connectedness and optimism on life satisfaction among older adults in rural communities.

1. Introduction

Since the concept first emerged in the literature in the 1990s (Salovey and Mayer, 1990; Mayer et al., 1990; Mayer & Salovey, 1993, 1997), emotional intelligence, simply defined as the adaptive use of emotions (Wing et al., 2006), has gained considerable attention. This is not unconnected with the fact that being able to understand and manage emotions (Castillo et al., 2019) has implications for important life outcomes (Kotsou et al., 2019). Among several other constructs in the literature (Lee and Chelladurai, 2018; MacCann et al., 2020; Partido and Owen, 2020), emotional intelligence has been theoretically associated with life satisfaction and well-being in general (Bedi and Bedi, 2017; Rey et al., 2019).

Life satisfaction has been defined as the subjective evaluation of the quality of one's own life, or the extent to which one is fulfilled, pleased or contented with one's life (Sousa and Lyubomirsky, 2001; Proctor et al., 2017). Later life in Nigeria is branded with many difficulties of which poverty is supreme (Boyi, 2019; Adisa, 2019). This is because many of the older persons do not have the needed energy to cater for their daily needs, thus depending on their children and grandchildren for their daily essentials (Adisa, 2019; Agunbiade, 2019). Social security that is available in most western nations for older adults is lacking in Nigeria (Anifalaje, 2017). At the same time, dependence on children is also complicated as most Nigerians are living below the poverty line (Dauda,

2017). The overall effect is seen in the level of satisfaction with life among older persons. The situation is far worrisome in Nigeria rural communities where basic social amenities and essentials of life are lacking (Tanyi et al., 2018; Mobolaji et al., 2018; Agunbiade, 2019).

There are sufficient studies in the literature on the association between emotional intelligence and satisfaction with life. The assumption is that better understanding and managing of emotions will lead to higher satisfaction with life and that happier people tend to be more satisfied with life (Bedi and Bedi, 2017). While this assumption may be true and as have been confirmed in many previous studies (Palmer et al., 2002; Sanchez-Alvarez et al., 2015; Delhom et al., 2017), the mechanisms, the processes and the conditions or circumstances underlying this association have not been fully explored. Also, such an investigation among Nigerian rural adults is completely missing. Some studies have investigated the mechanisms influencing the relationship between emotional intelligence and life satisfaction. Liu, Wang and Lü (2013) for instance have examined the roles of resilience and affect balance as mediators between emotional intelligence and life satisfaction, and established that resilience and affect balance play an indirect role in the association. Also, Kong et al., (2019) investigated the mediating role of social support, positive affect and negative affect in the link between emotional intelligence and life satisfaction, and established the indirect roles of the mediators in the association between emotional intelligence and life satisfaction. Other

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authors have also conducted similar studies (Kong et al., 2012; Runcan and Iovu, 2013; Kong and Zhao, 2013; Sun et al., 2013; Wollny et al., 2020). Available evidence suggests that the study that combines the processes (or mechanisms) of the association with the conditions (or circumstances) of the association in one study is sparse (Sun et al. 2014) just as the role of social connectedness and optimism is almost non-existent in the association. Also, most studies on emotional intelligence and life satisfaction have largely come from the Western and Asian countries with less emphasis on African settings particularly the rural older adults. It is thus, expected that this study will contribute to the literature by shedding more light on the emotional intelligence and life satisfaction link, and provide insight into the correlates and predictors of life satisfaction in the rural African setting. The outcome will better assist in policy formulation geared towards assisting older persons to live more satisfactory lives. Social connectedness is a subjective experience and it is about relationships. It concerns the experience of belonging to and relatedness between people (van Bel et al., 2009). Lee and Robbins (1995, p. 233) noted that "sense of connectedness help individuals to maintain human among humans" while those struggling with sense of connectedness feel "different and distant" from others. We assume that higher emotional intelligence will lead to better social connectedness in the community which in turn will lead to higher satisfaction with life. Also, we assume that this proposition will depend on the level of optimism, the anticipation that good rather than bad will come out of life dealings (Joshanloo et al., 2017), that is expressed by the individual concerned. A previous study has found an association between emotional intelligence, optimism and psychological well-being (Augusto-Landa et al., 2011). The objectives of this study, therefore, are to (i) determine the factor structure of the scales used in this study, (ii) determine the association between emotional intelligence and life satisfaction of rural older persons and investigate the mechanisms (or processes) and circumstances (or conditions) under which this relationship may hold, using social connectedness as the mediator and optimism as the moderator. The study assumes that emotional intelligence will affect life satisfaction through social connectedness among rural older adults but when optimism is high. The following hypotheses are formulated in the study.

2. Hypotheses

1 Emotional intelligence significantly predicts the level of life satisfaction of rural older persons
2 Emotional intelligence significantly predicts the level of social connectedness among rural older persons
3 Social connectedness significantly predicts life satisfaction among rural older persons
4 There is a significant indirect effect of emotional intelligence on life satisfaction through Social connectedness
5 the indirect effect of emotional intelligence on life satisfaction through Social connectedness is significantly higher among older adults who experience a higher level of dispositional optimism than their low optimism counterpart

3. Method

3.1. Participants

The study samples were 1053 older persons (639 males and 414 females) purposively selected in rural communities of southwest Nigeria. Their age ranges from 60 to 89 years with a mean age of 71.34 and standard deviation of 7.15. It should be noted that sick adults and those on routine medications were excluded from the study.

3.2. Research instruments

In this study, we measured social connectedness using the social wellbeing dimension of mental health continuum scale (Keyes, 1998, 2002). In the literature, the social wellbeing dimension assesses goals

relating to social integration, contribution, coherence, actualization and acceptance in the community (De Bruin and Du Plessis, 2015). We found the items on the measures of the social well-being dimension of the mental health continuum scale suitable (on the basis of face value and linguistic clarity; Keyes, 1998) and necessary validity and reliability measures were carried out to validate its suitability and capacity for use in this study. Sample items include "You feel like you're an important part of your community", "You feel close to other people in your community" etc. The reliability and validity of the mental health continuum scale and its dimension have been reliably established in the literature (Keyes et al., 2008; De Bruin and Du Plessis, 2015; Perugini et al., 2017). In this study, we found a Cronbach's alpha of .81.

Optimism was assessed using the three independent items (Yamaguchi et al., 2016) of the Life Orientation Test developed by Scheier and Carver (1985). The optimism items measured are: in uncertain times, I usually expect the best; I am always optimistic about my future; I expect more good things to happen to me than bad. These were measured on a 5-point Likert scale, ranging from 1 (strongly disagree) to 5 (strongly agree). Yamaguchi et al. (2016) reported a Cronbach Alphas of .68 and .60 for US and Japan samples respectively. A Cronbach's alpha of .81 was also reported in this study.

Life satisfaction was measured using the 7-point (Likert-type), 5-item satisfaction with life scale (Diener et al., 1985). The authors reported that the five items on the scale showed a good level of internal consistency. Sample items include: "In most ways, m life is close to my ideal", "The conditions of my life are excellent" etc. In the current study, a Cronbach alpha of .81 was found.

Emotional intelligence was measured using Wong and Law (2002) four dimensions, 16-item scale. Sample items include "I have a good sense of why I have certain feelings most of the time", "I always know my friends' emotions from their behaviour", "I always set goals for myself and then try my best to achieve them", and "I am able to control my temper and handle difficulties rationally." It has been reported that the four sub-scales of the scale have very good reliability estimates (Wong and Law, 2002; Libbrecht et al., 2014). A Cronbach's alpha of .91 was found in the current study.

3.3. Analysis strategy

Structural equation modelling was conducted to cross-validate the instruments used in this study and to answer whatever questions may be related to the measures used. Thus the factor analysis sought to determine the suitability and capacity of the measures using AMOS version 23. Inter-correlations among the study variables were carried out as a precondition for moderated mediation analysis using SPSS version 23. Conditional process macro (model 8) added as an add-on to SPSS was used for the moderated mediation effect.

3.4. Research procedure

Each participant consented and completed a questionnaire comprised of socio-demographic measures and measures of optimism, social connectedness, life satisfaction and emotional intelligence. This study was approved by the Ethics and Reviews Committee, Faculty of Social Sciences, Obafemi Awolowo University Ile-Ife, Nigeria referenced ISSR-A-19-043B. Respondents were met in their various settings. Instruments were administered in English and Yoruba languages only. Interpretations were carefully done with the assistant of a language interpreter before proceeding to the field.

4. Results

4.1. Measurement model

A Four-factor measurement model was proposed in this study and the confirmatory factor analysis was employed to evaluate the validity of the

model. Besides, the other three alternative models were also compared to the baseline model. Analysis of moment structure (AMOS version 23) using maximum likelihood estimation with bootstrapping techniques was employed. Various fit indices (CFI, GFI, RMSEA, TLI and AIC) were employed to evaluate model fit with all showing acceptable model fit.

The outcome of the bias-corrected confidence interval bootstrapping estimation used to test the robustness of the maximum likelihood algorithm to multivariate non-normality is presented in Figure 1 and Table 1. It is observed that the four-factor model (One second-order and three first-order factors) ($X^2 = 1322.72, df == 340, TLI = .924, CFI = .932, RMSEA = .052, AIC = 1454.72$) were found to be superior to the other three models as all the fit indices meet the cut-off criteria recommended by Hu and Bentler (1999). The other alternative models including one-factor model (all items loaded on second-order factor) ($X^2 = 4069.75, df == 346, TLI = .718, CFI = .742, RMSEA = .101, AIC = 4189.8$), two-factor model (two order factor emotional intelligence, optimism & life satisfaction merged) ($X^2 = 2969.99, df == 345, TLI = .801, CFI = .818, RMSEA = .085, AIC = 3091.99$), and three-factor model (two order factor emotional intelligence & optimism merged) ($X^2 = 1729.23, df == 343, TLI = .894, CFI = .904, RMSEA = .062,$

$AIC = 1855.23$) were all found to be poor as they all possess fit indices that are below the recommended acceptable value (Hu and Bentler, 1999).

Based on the superiority of the four-factor model over all other alternative models, the four-factor model was retained. Also, the result of the bias-corrected bootstrapping at a 95% confidence interval indicates that all the standardized factors loadings are statistically significant. This bootstrapping result indicates that the maximum likelihood estimation used in this study is robust against the non-normality nature of the data. All the factor loading at a 95% confidence interval as presented in Table 2 are statistically significant. The problem of common method bias was evaluated using CLF approach where all items loaded on their parent construct as well as one-factor scores for each of the variable were then computed.

4.2. Hypotheses testing

Before the main analyses, descriptive and correlational analysis among the study variables were carried out and the outcome is as found in Table 3. The results show satisfactory relationships among the
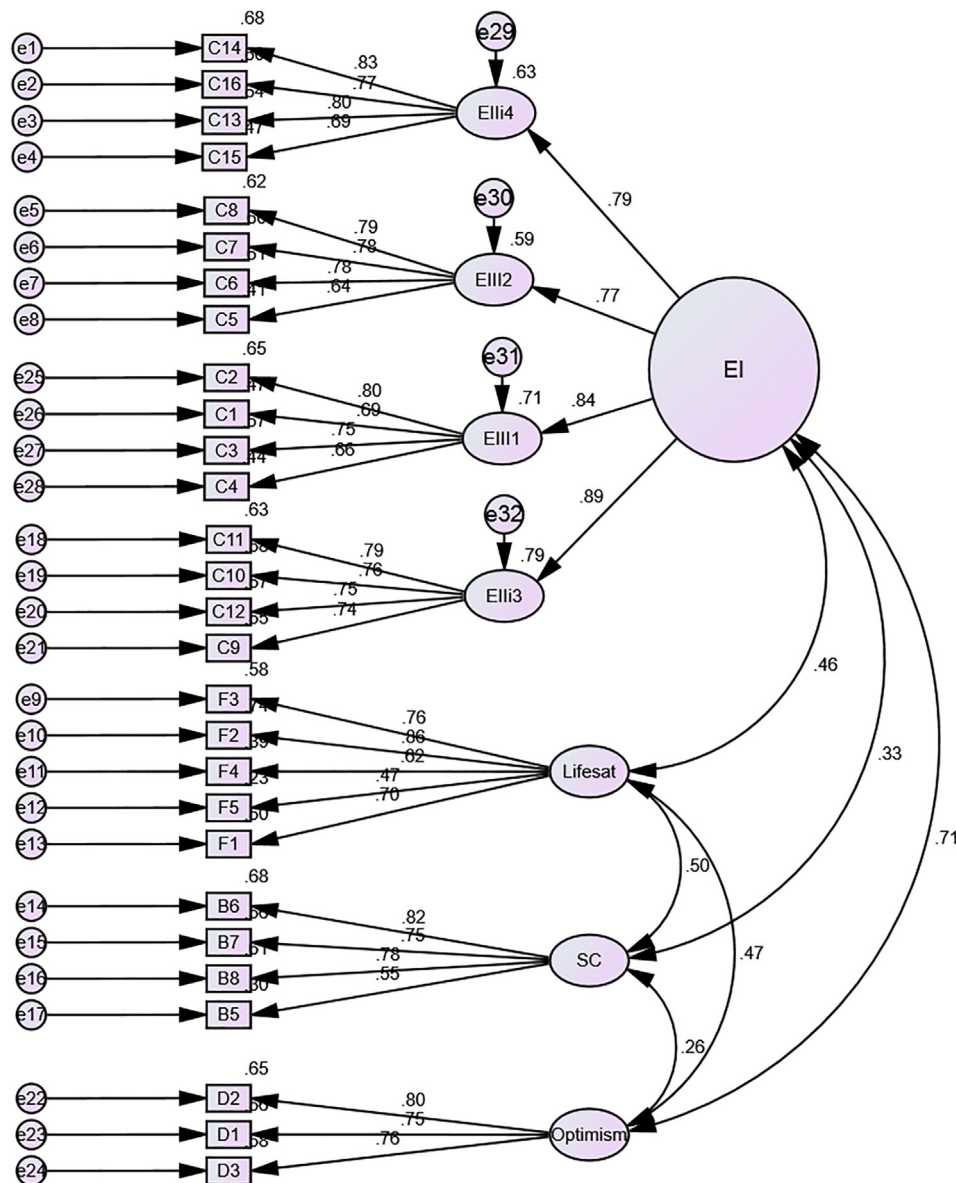

Figure 1. Confirmatory Factor analysis of the Model Factor Structure.

Table 1. Confirmatory factor analysis for the measures of variables.

Models	X^2	Df	TLI	CFI	RMSEA	AIC
Four-factor model	1322.72	340	.924	.932	.052	1454.72
Three-factor model	1729.23	343	.894	.904	.062	1855.23
Two-factor model	2969.99	345	.801	.818	.085	3091.99
One-factor model	4069.75	346	.718	.742	.101	4189.75

Four-factor model (one second-order, and three first-order), three-factor model (One second-order, optimism merged, two first-order), two-factor model (One second-order, optimism & life satisfaction merged, one first-order), one-factor model (All items merged with second-order factor).

Table 2. Standardized factor loading & Bootstrapping Confidence Interval (95%) of Four factors model (n = 1053).

Items	EI	Life	Optimism	SC	C.I LL	C.I UL	P
EI1	.843				.773	.898	.001
EI3	.890				.844	.928	.000
EI2	.770				.715	.820	.000
EI4	.791				.744	.835	.000
Life3		.762			.717	.798	.001
Life2		.858			.822	.889	.000
Life4		.625			.563	.680	.000
Life5		.475			.407	.539	.000
Life1		.704			.648	.754	.000
Optmism2			.803		.751	.846	.001
Optimism1			.745		.695	.792	.000
Optimism3			.760		.712	.802	.000
SC6				.825	.786	.855	.001
SC7				.746	.699	.785	.000
SC8				.784	.744	.822	.000
SC5				.552	.497	.601	.000
Alpha	.915	.811	.810	.810			
CR	.895	.820	.814	.821			
AVE	.981	.486	.593	.539			
MSV	.499	.249	.499	.249			

Note: EI: Emotional Intelligence, Life: Life satisfaction, SC: Social Connectedness; CR: Construct reliability, AVE: Average Variance Extracted, MSV: Maximum Shared Variance, C.I LL: Confidence interval Lower level, C.I UL: Confidence interval Upper level.

Table 3. Means, standard deviations and correlation among study variables (n = 1053).

Variables	$\bar{x}$		Age	EI	Opt	SC	LS
Age	71.34	7.15	1				
EI	4.92	.76	.14**	1			
Opt	4.62	.81	.11**	.72**	1		
SC	5.17	.19	.27**	.60**	.52**	1	
LS	5.18	.12	.13**	.67**	.70**	.54**	1

Note: EI: Emotional Intelligence, Opt: Optimism, SC: Social connectedness, ** = significant at 0.01%, * = 0.05% significant level (two-tailed).

variables. Direct and mediation analysis for indirect effect was executed using SPSS process macro developed by Hayes (2013). Process Macro model four was used to estimate simple mediation using 95% bias-corrected bootstrap (5000) confidence interval, the analysis summary is presented in Table 4.

The results shown in Table 4 and Figure 2 support the postulation of the first hypothesis that Emotional intelligence will significantly predict the level of life satisfaction of rural older persons. It is observed from the table that the total effect of emotional intelligence on life satisfaction was statistically significant *(B = .969, t = 28.078, p<.05)* indicating a 44.7% difference in the level of life satisfaction among this sample. The result also indicates that emotional intelligence positively predicts social connectedness *(B= .893, t = 23.162, p<.05)* and showed a variation of 39.0% in the level of sociability-related behaviours. Thus, it can be safely stated that the outcome agrees with the conjecture of the second

hypothesis that states that emotional intelligence positively predicts the level of social connectedness among rural older persons. The postulation of the third hypothesis was also accepted. The result shows that social connectedness positively predicts life satisfaction among rural older persons *(B = .215, t = 8.000, p<.05)*. The finding implies that engagement and participation in social activities and interaction tend to promote better life satisfaction. The fourth hypothesis postulates that there is a significant indirect effect of emotional intelligence on life satisfaction through Social connectedness. The result demonstrates that emotional intelligence indirectly predicts life satisfaction through social connectedness *(B = .793, C.I (.664 - .938)*.

The fifth hypothesis postulates that the mediating effect of emotional intelligence on life satisfaction through social connectedness will be significantly higher among rural older adults who experience a higher level of dispositional optimism than their low optimism counterpart. The

Table 4. A mediation model of Social Connectedness, Emotional Intelligent and Life satisfaction (n = 1053).

Antecedents	Consequent Factors											
	Mediator Model			Dependent Variable Model								
				Total effect			Direct effect			I.E (95% Boot C.I)		
Variables	B	t	P	B	T	P	B	t	P	B	LL	LU
Constant	.025	.109	.913	.189	.925	.355	.184	.925	.355	-	-	
EI	.893	23.162	.000	.969	28.078	.000	.778	18.87	.000	-	-	-
SC	-	-	-	-	-	-	.215	8.000	.000	.192	.137	.253
Age	.031	7.552	.000	.006	1.562	.119	-.001	-.251	.802	-	-	-
	F(4,1048) = 167.79 R = .625, R² = .390			*F(4,1048) = 211.81 R = .669, R² = .447*			*F(5,1047) = 192.43, R = .692, R² = .479*					

EI: Emotional Intelligence, SC: Social Connectedness, I.E = Indirect effect, C.I = Confidence Interval, Boot = Bootstrapping.
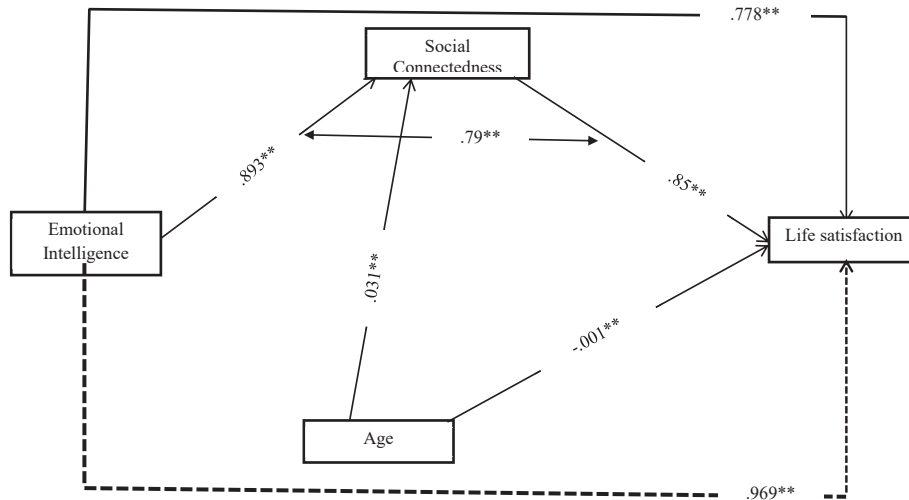

Figure 2. Mediation model of Life satisfaction.

analysis result in Table 4 supports the mediation hypothesis suggesting that social connectedness significantly mediate the relationship between emotional intelligence and life satisfaction among the study samples. Therefore, hypothesis five probes the condition of dispositional optimism under which this mediating effect stands. The conditional process macro model 8 was used to test this conditional mediating effect using 5000 bootstrap estimates with 95% bias-corrected confidence intervals. The analysis result is presented in Table 5, Figures 3 and 4 respectively.

Table 5. Moderated mediation model of Life satisfaction among rural older persons.

Models	B	SE	T	P	(C.I)LL	(C.I)UL
MV model						
Constant	4.462	.162	27.562	.000	4.145	4.780
EI	.707	.055	12.894	.000	.599	.815
Optimism	.311	.054	5.803	.000	.206	.416
EI*Optimism	.099	.034	2.925	.004	.033	.165
Age	.029	.004	7.316	.000	.022	.037
	F(6,1046) = 121.41	R = .641,	R² = .411.			
DV Model						
Constant	4.395	.171	25.636	.000	4.059	4.732
SC	.151	.025	6.062	.000	.102	.200
EI	.402	.048	8.451	.000	.309	.495
Optimism	.638	.044	14.552	.000	.552	.724
EI*Optimism	.102	.027	3.729	.000	.048	.156
Age	-.001	.003	-.193	.847	-.007	.006
	F(7,1045) = 195.27	R = .753	R² = .567			
Moderated Mediation effect Level of Optimism	B	Boot(SE)			Boot(LL)	Boot(UL)
Low	.095	.020			.058	.139
High	.119	.024			.075	.169
Index of MM	.015	.006			.005	.029

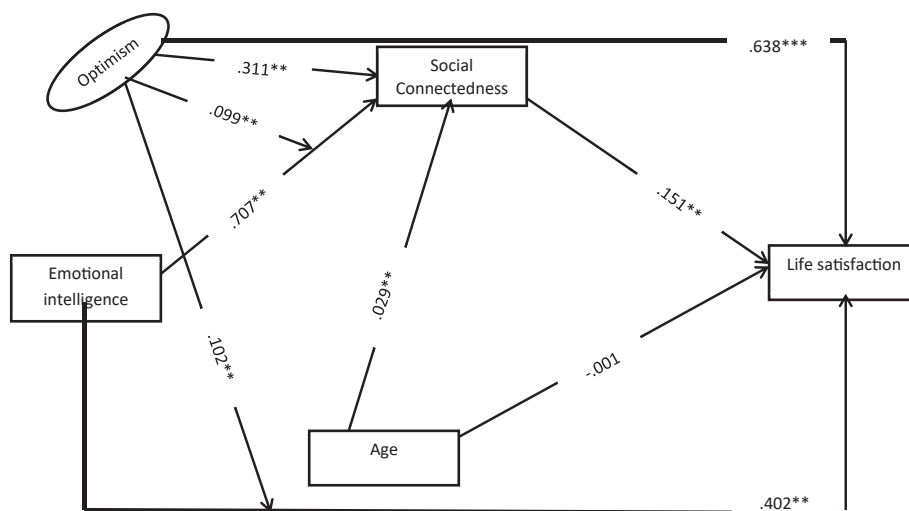MV = mediator variable, EI = emotional intelligence, DV = dependent variable.

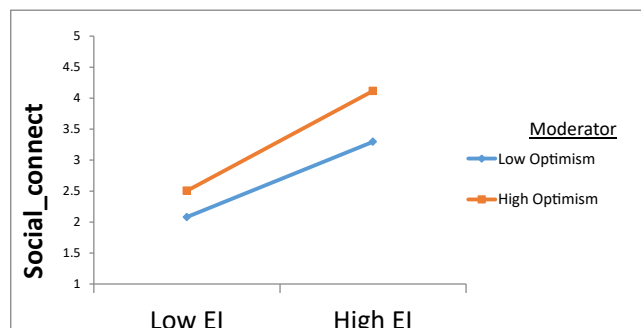**Figure 3.** Conditional Mediation model of life satisfaction.

Figure 4. Moderated Mediation model of life satisfaction.

It can be observed in Table 5, Figure 3 and Figure 4 that optimism strengthened the positive relationship between emotional intelligence and social connectedness with this relationship much stronger among older persons with higher levels of optimism than those with low optimism level. Further observation suggests that the conditional mediating effect of emotional intelligence on life satisfaction through social connectedness is significantly higher among older persons with a higher level of optimism *(B= .119, C.I (.075, .169)* than those with the low level of optimism *(B= .095, C.I (.058, .139)*. the index of moderated mediation was also found to be statistically significant *(B= .015, C.I (.005, .029)*.

5. Discussion

The outcome of this study has provided convincing shreds of evidence that all the scales used for the measurement of interest variables are reliable and valid measures, particularly in the study setting. This lends further credence to the outcomes generated in this study. Besides, from the study findings, there was further evidence to support the influence of emotional intelligence on life satisfaction, with results showing emotional intelligence accounting for about 44.7% variation in the level of life satisfaction among rural older adults. This finding is consistent with previous outcomes in earlier studies. Previously, studies have established the influence of emotional intelligence in determining positive life outcomes such as life satisfaction (Palmer et al., 2002; Bedi and Bedi, 2017; Kong et al., 2012). This, again, brings to the fore the importance of emotional intelligence in life satisfaction not only among students and professionals as found in earlier studies but also among neglected rural older adults. It shows that even though the necessities of life are absent, understanding and positive use of emotions among this sample assist in realizing a satisfying life.

Additionally, and as expected, emotional intelligence enhanced social connectedness among the samples investigated as the study findings revealed. This result re-emphasize that understanding and managing one's emotions and that of others will help in having better social connections with friends and neighbours in the community. In an earlier study, Lopes et al., 2004 had reported that as emotional intelligence increases among college students, the level of social interaction also increases indicating positive relationship. Further, Mavroveli et al. (2007) also ascertained that trait emotional intelligence is positively associated with peer-rated social competence in adolescence. This study, therefore, has further reinforced the positive link between emotional intelligence and social connectedness.

We also found, as predicted, that social connectedness will exert positive roles in the association between emotional intelligence and life satisfaction. The assumption which was confirmed was that being in touch with one's emotions will enhance positive social relationships which in turn will enhance life satisfaction among the samples. This finding was in line with the outcome of Kong et al. (2012) who recognized that social support from significant others fully mediated the relationship between emotional intelligence and life satisfaction among Chinese university students. In addition to supporting the previous outcomes, the finding of this study has extended the result to the mediating role of social connectedness, a related concept to social support.

Another finding of this study is the role of optimism in the indirect of emotional intelligence on life satisfaction through social connectedness. The study predicted and found that emotional intelligence enhances life satisfaction because being in touch with one's and others' emotion improves social connectedness and that this depends on the level of optimism among the study samples. Thus, the outcome showed that emotional intelligence will not just enhance life satisfaction through social connectedness, individuals also need to be optimistic about the outcomes. The moderating role of dispositional optimism on positive life outcomes has been inclusive. While some authors found a moderating role of optimism (Chang, 1998; Heo and Lee, 2010), others concluded from their data that optimism plays no role (Extremera et al., 2007; Hayes and Weathington, 2007). This may be attributed to differences in study locations, samples, and designs.

5.1. Conclusion and study implications

This study has further established a link between emotional intelligence and life satisfaction particularly among neglected rural older adults and probed the roles played by social connectedness and

dispositional optimism in this association. This, therefore, underscore the importance of social relationship occasioned particularly by the collectivist culture of the people of southwestern Nigeria. Notwithstanding, the study showed that for this association to work, there is a need for older adults to be optimistic about life. Thus, social connectedness among rural older adults should not be discouraged and professional talks on dispositional optimism should be initiated especially on local radio stations which is the most convenient medium of reaching the rural adults in the study area.

Declarations

Author contribution statement

Matthew Olasupo: Conceived and designed the experiments; Wrote the paper.

Dauda Kareem: Performed the experiments; Analyzed and interpreted the data.

Erhabor Idemudia: Contributed reagents, materials, analysis tools or data.

Funding statement

Data availability statement

The authors do not have permission to share data.

Declaration of interests statement

The authors declare no conflict of interest.

Additional information

No additional information is available for this paper.

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