

PERSONALITY AND WELL-BEING TRAITS OF AGRICULTURAL SCIENTISTS: ASSESSMENT, CORRELATIONS, AND PREDICTION

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Abstract *This study was conducted to investigate the personality traits of agricultural scientists and to find out their relationship with well-being attributes and to predict their happiness and life satisfaction. Data was collected from 622 respondents (424 males, 198 females; mean age 41.8 ± 6.3 years) by administering Big-Five Inventory (BFI-10), Oxford Happiness Questionnaire (OHQ), Satisfaction with Life Scale (SWLS), and Psychological Well-Being (PWB-18) questionnaires. Findings revealed significant gender differences in neuroticism and openness, favouring female scientists. Such gender differences were not observed in their scores on happiness, life satisfaction, and PWB. Most of the scientists reported higher levels of happiness (86.2% moderately to very happy), life satisfaction (68.9% satisfied to extremely satisfied), and PWB (57.4%). With age, extraversion, agreeableness, and conscientiousness increased, whereas neuroticism and openness decreased. Similarly, environmental mastery, positive relations, and total PWB improved with age. Except for neuroticism, personality traits were positively correlated with happiness, life satisfaction, and PWB. The regression model on happiness captured 63.7% of variation by considering personality traits (neuroticism being the strongest contributor) and traits of PWB (self-acceptance and environmental mastery being the largest contributors). In the model for life satisfaction, neuroticism, among the personality traits, self-acceptance, environmental mastery, positive relations, and purpose in life, among the PWB, captured 35.3% of the variation in life satisfaction. The implications of these findings in relation to the workplace environment are discussed.*

Keywords: *Personality Traits, Happiness, Life Satisfaction, Psychological Well-Being, Agricultural Scientists*

INTRODUCTION

A scientist is a person who conducts research and collects data to advance knowledge in a specific field. Scientists produce results for their academic peers as well as a broader readership. They produce academic knowledge while also addressing societal issues (De Fuentes & Dutrénit, 2012). The fact that scientific outputs yield socially and economically beneficial outcomes is a major reason for public support for science (Bozeman & Gaughan, 2007). It is envisaged that society should have sufficient awareness of their behaviour with respect to scientists' activity (Sato, 2016). However, compared to other details about them, such as historical narratives and philosophical foundations, the scientists' psychological qualities remain poorly known (Feist, 2006a). Psychological research on scientists is essential since it can reveal their true traits and could have ramifications for other scientific literature (Shadish et al., 1989). Understanding the

psychological traits of scientists can be useful to assess their job satisfaction (Lounsbury et al., 2012) and well-being (Sato, 2016), as well as improve their educational and recruitment initiatives (Feist & Gorman 1998; Ramesh & Rao, 2020).

Several researchers have looked into the personality of scientists as one of the psychological qualities. The personality of scientists plays an important role in their work environment. Personality refers to an individual's largely consistent ways of thinking, feeling, and acting. Beer and Brooks (2011) define personality as "distinctive characteristics or qualities that give the perception of how capable a person is in completing a certain task in comparison to others". Personality traits differ from learned skills in that they are general tendencies that should be reflected in many aspects of one's life (Costa et al., 1995). The Big-Five Personality model (McCrae & Costa, 1999) has been noted as one of the most comprehensive explanations with the greatest capacity to measure personality (McAdams &

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Donnellan, 2009), especially because it can stand as a basis for other derived models. This model postulates that the basic shape of personality would be composed of five higher-order dimensions, which researchers have replicated throughout a wide range of cultures and different demographic groups (Pytlik et al., 2002), and which have been verified on different criteria, including task performance (Salgado, 1995), work satisfaction (Judge et al., 2002), career fulfilment (Judge et al., 1999), life satisfaction (DeNeve & Cooper, 1998), and overall educational performance (Lounsbury et al., 2003).

Studies have reported that scientists concerned with innovative endeavours showcase a higher ranking at the personality trait of openness (e.g., Lounsbury et al., 2012; Grosul & Feist, 2014; Feist, 2006b). Based on the definition of openness in the five elements model (Barrick & Mount, 1991), the information suggests that scientists possess imaginative, cultured, curious, unique, extensive-minded, clever, and artistically sensitive traits. Such data might be useful in enhancing the know-how of scientists' psychology. In addition, more research is required related to other psychological attributes of scientists, which includes their motivations and intellectual health (Feist, 2006c).

LITERATURE REVIEW

Happiness or subjective well-being is a term that is used synonymously, referring to the subjective assessment of the quality of life, or in other words, the way humans evaluate their lives. These evaluations may include cognitive and affective elements and refer to existence as a whole and/or to a particular aspect of work and social domain (Diener et al., 1999). In previous studies, psychologists have specially targeted human unhappiness, viz., depression, anxiety, emotional disturbances, and so on, and omitted the study on positive aspects of human life (Seligman, 2003). In earlier research with Bradburn's (1969) discovery of the independence of positive and negative effects of happiness, psychological research started to have a look at the definitions, correlates, and predictors of happiness (e.g., Argyle, 2001; Seligman & Csikszentmihalyi, 2000). Argyle (2001) reported a tripartite conceptualisation of happiness comprising: (1) the mean level of satisfaction over a given period; (2) the frequency and degree of positive affect; and (3) the relative absence of negative affect.

Happiness is measured by the usage of self-report questionnaires that verify either global happiness or specific issue dimensions of happiness. Oxford Happiness Inventory (Argyle et al., 1989) is among the best scales used to assess both global traits of happiness and its precise dimensions. Happiness is especially associated with better life outcomes. Lyubomirsky, Sheldon, & Schkade (2005) concluded that happy individuals possibly appear as greater flourishing human beings. A happy individual is likely to perform better

in terms of marriage (Mastekaasa, 1994), income (Diener & Biswas, 2002), and good mental health (Koivumaa-Honkanen et al., 2004), and lives a longer life (Danner et al., 2001). Lyubomirsky, King & Diener (2005) also concluded from their study that happy people are more productive and successful.

The model of subjective well-being has been conceptualised into two parts: the emotional or affective part and the judgemental or cognitive part (Diener, 2000). The judgemental part has also been conceptualised as life satisfaction. Even though the affective aspect of subjective well-being has been researched extensively, the judgemental aspect was not studied extensively. The Satisfaction with Life Scale (SWLS; Diener et al., 1985) is a reputed tool to measure the judgemental component of subjective well-being (SWB). The SWLS is shown to be a valid and dependable measure of life satisfaction, applicable to a wide range of age groups and situations. Life satisfaction as measured by SWLS shows a high degree of temporal stability, and it is suggested as a complement to scales that focus on psychopathology or subjective well-being, as it assesses an individuals' conscious evaluative judgement of his or her satisfaction (Pavot & Diener, 1993).

Two different perspectives have been proposed regarding well-being studies and their role in the psychological domains of cognition, emotion, and motivation (Disabato et al., 2016). The subjective well-being perspective (SWB) specialises in the hedonic aspect of well-being, which is the pursuit of happiness and a good life. It includes comprehensive evaluations of positive emotions and the quality of life (Diener, 2000). The psychological well-being (PWB) concept specialises in eudemonic well-being (Waterman, 1993), which emphasises greater human ability and having a meaningful life. Ryff (1989) advanced a version of psychological (eudemonic) well-being that consists of six related, yet distinctive, attributes. This model of eudemonic well-being rests on the assumption that individuals make every effort to realise their potential through their inherent talents. The six dimensions of psychological well-being attributes comprise "self-acceptance, environmental mastery, purpose in life, positive relations with others, personal growth, and autonomy" (Ryff & Keyes, 1995; Ryff & Singer, 2008; Ryan et al., 2008). The psychological well-being attributes have been reported to have a strong relationship with personality traits, intellectual and physical health, healthy ageing, family, and occupational experiences (Ryff, 2014).

Even though a few studies were conducted to investigate the personality traits and well-being of scientists, to our knowledge, such studies were lacking on agricultural scientists, that is, understanding the psychological characteristics associated with their profession. Hence, the present investigation was initiated.

Present Study

Agricultural science is a multidisciplinary subject that includes basic and applied biological, social, and economic sciences. In agriculture, scientists actively seek to discover procedures that will increase livestock, crop yields, and food quality, besides protecting the environment (CAERT, 2006). The National Agricultural Research and Education System (NARES) in India primarily comprises a network of 101 research institutions working directly under the Indian Council of Agricultural Research (ICAR) and 71 agricultural universities, which is one of the biggest national agricultural research systems in the world. There are about 40,000 professionally trained scientific personnel employed in the NARES to look after research, education, and extension activities. These scientific personnel are specialised in about 90 different disciplines of agricultural sciences, covering field crops, horticulture, animal sciences, fisheries, engineering, and social sciences (ICAR, 2021).

Based on our review, we found that the research on the scientists' psychological traits and their well-being attributes is meagre, especially in the domain of agricultural sciences. Hence, the present investigation was conducted with the following objectives:

- To assess the personality traits, happiness, life satisfaction, and psychological well-being (PWB) of agricultural scientists.
- To find out the relationship between personality traits and well-being.
- To predict happiness and life satisfaction from personality and PWB attributes.

To our knowledge, this is the first investigation to assess the personality traits, happiness, life satisfaction, and PWB of agricultural scientists. It is very important since this can offer significant information to increase our knowledge about well-being attributes and the factors involved in the contribution of the well-being of scientists. Besides, the study may also support the role of personal attributes, in addition to organisational factors, to assess the determinants of research productivity of agricultural scientists in India (Paul et al., 2017). Applied research's interest in worker happiness is centred on the happy/productive employee thesis (Zelenski et al., 2008). The necessary framework to explain this relationship between well-being and job satisfaction/job performance was provided by the broaden-and-build model (Fredrickson, 1998 & 2001). The broaden-and-build theory in positive psychology suggests that positive emotions broaden one's awareness and encourage novel, exploratory thoughts and actions. Over time, this broadened behavioural repertoire builds useful skills and psychological resources.

METHODOLOGY

Sample

The present study was conducted on the research scientists working in the National Agricultural Research and Education System (NARES) in India. The participants include scientists working in various research institutes under the Indian Council of Agricultural Research (ICAR) and in State Agricultural Universities (SAUs). Most respondents in the study are participants in different training programmes organised by the National Academy of Agricultural Research Management (NAARM), Hyderabad, India, a training academy under ICAR, during the period 2020-21. Besides, data was also collected from the scientists from both ICAR and SAUs through an online survey using Google Forms during the same period. A total of 622 participants (198 females, 31.8%) responded to the study. The participants' age varied from 23 to 66 years, with an average of 41.8 years and a standard deviation of 6.36. Their educational levels varied from post-graduation to Ph.D. in their respective disciplines in agricultural and allied subjects. The participants have a professional experience ranging from 1 to 36 years, with an average of 13.2 years and a standard deviation of 8.42.

Measurement Tools

Big-Five Inventory-10 (BFI-10)

The BFI is a scale that measures a person on the major five domains of personality, viz., extraversion, agreeableness, conscientiousness, neuroticism, and openness (John & Srivastava, 1999). The BFI-10 comprises ten items taken from the BFI-44, two items for each personality trait. Each item is estimated with the same Likert scale as for the BFI-44, giving a number of 2 to 10 for every domain total score (Rammstedt & John, 2007). It is a short-scale version of the well-established BFI and was developed to produce a questionnaire for research settings with extreme time constraints. Previous analysis has clearly shown that the BFI-10 possesses psychological properties that are comparable in size and structure to those of the larger version of BFI; the alpha Cronbach coefficient values varied between 0.45 and 0.62 (Balgui, 2018; Gosling et al., 2003).

Oxford Happiness Questionnaire (OHQ)

The OHQ is often used to estimate happiness attributes comprising 29 items (Hills & Argyle, 2002). Participants are asked to reply to every one of them on a six-point Likert-type scale (ranging from 1 = strongly disagree to 6 = strongly agree), with higher scores indicating higher happiness.

The OHQ has been shown to possess adequate test-retest dependableness (7-week duration = 0.78; 5-months duration = 0.67) and moderate to high internal consistency with a typical Cronbach between 0.64 and 0.87 (Argyle et al., 1989).

Satisfaction with Life Scale (SWLS)

The SWLS is a five-item tool for estimating existing global life satisfaction, which comprises a cognitive judgement of an individual's quality of life (Diener et al., 1985). Participants responded on a Likert scale from 1 – highly disagree to 7 – highly agree. An example item is, 'I am satisfied with my current life'. Cronbach's values ranged from 0.89 to 0.91 across global regions (Di Fabio & Gori, 2020; Pavot & Diener, 1993).

Psychological Well-Being (PWB-18)

The Scales of PWB consist of six attributes of positive psychological functioning: "self-acceptance, positive relations with others, autonomy, environmental mastery, purpose in life, and personal growth" (Ryff, 1989). In this study, a shortened version of Ryff's PWB scale of 18 items, with three items per sub-scale was used, with a Cronbach's alpha of 0.75 (Ryff & Keyes, 1995). Participants were asked to respond to a seven-point Likert scale, giving a score of 1 (strongly agree) to 7 (strongly disagree).

Procedure

A Google Form questionnaire was administered to the participants of the survey by highlighting the purpose and

objectives of the survey, the confidentiality of data, and the instructions to be followed by the participants while responding to the items in the survey. The data collected includes the socio-demographic details of the participants, followed by the statements in each of the test tools used in the survey. The survey questionnaire was administered to the participants online. Tests were scored and tabulated, and the descriptive statistics were calculated. Cronbach's reliability coefficients were used to measure the internal consistency of the test items (Cronbach, 1951). The student's t-test was employed for gender-wise comparisons. Pearson correlation analysis and regression analysis were carried out to check and quantify the association between different study variables. All the analysis were carried out using R statistical programming language (R Core Team, 2021).

RESULTS

The mean scores of scientists on Big-Five personality traits, along with their standard deviation, t-values, and Cronbach alpha coefficients, are presented in Table 1. The gender differences showed an increase in scores for neuroticism ($t = 3.218$; $p < 0.001$) and openness ($t = 2.034$; $p = 0.042$) in favour of female subjects. The Cronbach alpha coefficients obtained varied from 0.27 for agreeableness to 0.54 for neuroticism. We have calculated the number of participants who scored more than the average in each trait on BFI-10 and the per cent population is depicted in Fig. 1(a). Among the participants, 61.5%, 86.3%, 83.1%, 25.7%, and 67.7% were found to obtain higher scores in extraversion, agreeableness, conscientiousness, neuroticism, and openness, respectively.

Table 1: Scores on Big-Five Inventory (BFI-10) Traits of Scientists

Personality Traits	Mean (n = 622)	Males (n = 424)	Females (n = 198)	T-Value	P-Value	α -Coefficient
Extraversion	7.16 $\pm$ 2.07	7.20 $\pm$ 2.01	7.07 $\pm$ 2.19	-1.006	0.315	0.38
Agreeableness	8.34 $\pm$ 1.61	8.29 $\pm$ 1.60	8.44 $\pm$ 1.65	1.166	0.244	0.27
Conscientiousness	8.24 $\pm$ 1.67	8.28 $\pm$ 1.72	8.16 $\pm$ 1.57	-0.740	0.459	0.45
Neuroticism	5.12 $\pm$ 2.13	4.94 $\pm$ 2.09	5.52 $\pm$ 2.16	3.218**	0.001	0.54
Openness	7.56 $\pm$ 1.88	7.44 $\pm$ 1.84	7.82 $\pm$ 1.96	2.034*	0.042	0.46

* $p < 0.05$, ** $p < 0.01$

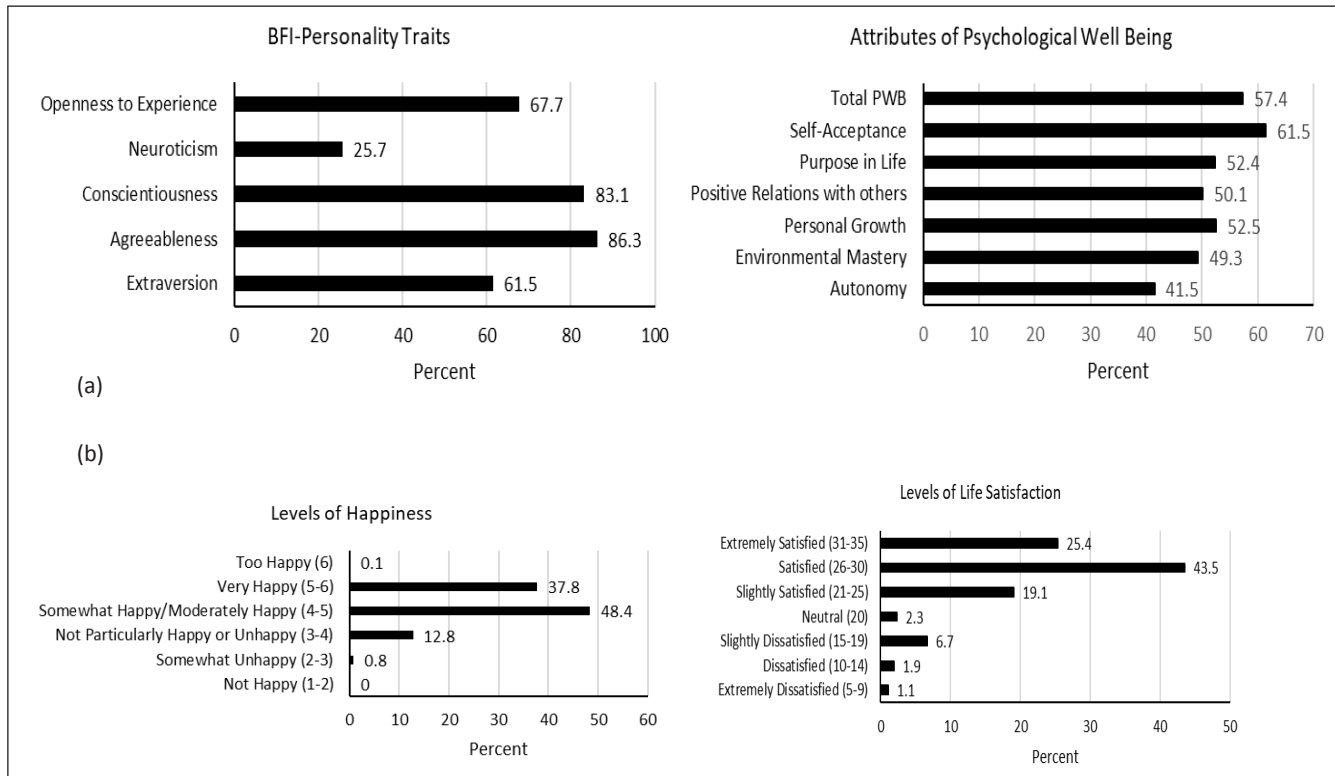
The scores on Oxford Happiness Questionnaire (OHQ) did not differ between male (4.70 ± 0.58) and female (4.67 ± 0.66) participants. The internal consistency of OHQ, as measured through the Cronbach alpha coefficient, was 0.89 (Table 2). Similarly, the scores on the Satisfaction with Life Scale (SWLS) were not different between male (26.80

± 5.64) and female (27.25 ± 4.78) participants, while the Cronbach alpha coefficient value of 0.79 was obtained for the scale. Gender differences were not observed in all the six attributes and the total score on Psychological Well-Being (PWB). The Cronbach alpha coefficients varied from 0.39 for 'purpose in life' to 0.55 for 'self-acceptance', and 0.75 for the total PWB scale.

Table 2: Scores on Oxford Happiness Questionnaire (OHQ), Satisfaction with Life Scale (SWLS), and Psychological Well-Being (PWB) of Scientists

Instrument	Variables	Mean (n = 622)	Males (n = 424)	Females (n = 198)	T-Value	α -Coefficient
OHQ	Happiness	4.69 $\pm$ 0.64	4.70 $\pm$ 0.58	4.67 $\pm$ 0.66	-0.495 ^{NS} (p = 0.620)	0.89
SWLS	Life Satisfaction	26.94 $\pm$ 5.38	26.80 $\pm$ 5.64	27.25 $\pm$ 4.78	0.689 ^{NS} (p = 0.490)	0.79
PWB	Autonomy	14.70 $\pm$ 3.12	14.61 $\pm$ 3.34	14.90 $\pm$ 3.13	0.921 ^{NS} (p = 0.357)	0.42
	Environmental Mastery	16.48 $\pm$ 3.31	16.48 $\pm$ 3.58	16.46 $\pm$ 3.16	-1.039 ^{NS} (p = 0.298)	0.44
	Personal Growth	18.02 $\pm$ 2.94	17.96 $\pm$ 3.09	18.14 $\pm$ 2.79	1.026 ^{NS} (p = 0.305)	0.53
	Positive Relations	16.16 $\pm$ 3.74	16.21 $\pm$ 3.84	16.06 $\pm$ 3.88	-0.628 ^{NS} (p = 0.529)	0.47
	Purpose in Life	14.49 $\pm$ 3.42	14.39 $\pm$ 3.63	14.69 $\pm$ 3.53	1.948 ^{NS} (p = 0.052)	0.39
	Self-Acceptance	17.49 $\pm$ 3.44	17.54 $\pm$ 3.57	17.40 $\pm$ 3.35	-0.250 ^{NS} (p = 0.802)	0.55
	Total PWB	97.36 $\pm$ 12.02	97.21 $\pm$ 12.74	97.68 $\pm$ 11.66	0.509 ^{NS} (p = 0.610)	0.75

NS = Not significant.


Fig. 1: (a) Respondents with Above-Average Score in BFI – Personality Traits and Attributes of Psychological Well-Being. (b) Distribution of Levels of Happiness and Life Satisfaction

In the study, a majority of participants (48.4%) were reported to be ‘somewhat happy/moderately happy’ (OHQ scores ranging from 4 to 5) and 37.8% were reported to be ‘very happy’ (OHQ score ranging from 5 to 6), while 12.8% were reported to be ‘not particularly happy or unhappy’, with a score less than 4 (Fig. 1(b)). In SWLS, 43.5% were reported to be ‘satisfied’ (scores ranging from 26 to 30) and 25.4% were reported to be ‘extremely satisfied’ (scores ranging from 31 to 35), while 19.1% were reported to be ‘slightly satisfied’ (scores ranging from 21 to 25). About 12% reported being ‘dissatisfied with life’, and scored less than 20.

We have calculated the number of participants who scored more than the average in each attribute of PWB and the per cent population, as depicted in Fig. 1(a). Among the participants, 41.5%, 49.3%, 52.5%, 50.1%, 52.4%, and 61.5% were found to obtain higher scores in autonomy, environmental mastery, personal growth, positive relations with others, purpose in life, and self-acceptance, respectively. Overall, 57.4% scored higher in total PWB among the sample.

Inter-correlations were calculated between the age of participants with their personality and well-being traits and Pearson’s coefficient of correlations, which are presented in Table 3. Among the personality traits, extraversion, agreeableness, and conscientiousness were positively correlated, while neuroticism and openness were negatively correlated, with age. However, these associations were stronger in the case of males than female participants. Both happiness and life satisfaction were not correlated with the age of either males or females. Environmental mastery, positive relations with others, and total score of PWB were positively correlated with age, and this association was found to be stronger in males compared to females.

Table 3: Inter-Correlation between Age and Personality/Well-Being Attributes

Attributes	Males (n = 424)	Females (n = 198)	Overall (n = 622)
Big-Five Personality Traits			
Extraversion	0.105*	0.031	0.067
Agreeableness	0.111*	0.036	0.075
Conscientiousness	0.272**	0.127	0.230**
Neuroticism	-0.021	-0.004	-0.044
Openness to Experience	-0.026	-0.056	-0.053
Oxford Happiness Index	0.090	0.021	0.073
Satisfaction with Life Score	0.053	0.061	0.048
Psychological Well-Being (PWB)			
Autonomy	0.079	-0.010	0.043
Environmental Mastery	0.123*	0.080	0.117**
Personal Growth	0.056	-0.023	0.023
Positive Relations with others	0.106*	0.100	0.107**
Purpose in Life	0.006	-0.069	-0.032
Self-Acceptance	0.051	-0.025	0.029
Total PWB	0.117*	0.018	0.082*

*p < 0.05, **p < 0.01

The inter-correlations between personality traits and well-being variables measured through three instruments in the study are presented in Table 4. Extraversion, agreeableness, conscientiousness, and openness make positive correlations ($r = 0.382, 0.322, 0.362$, and 0.235 , respectively) and neuroticism makes a negative correlation ($r = -0.480$), with happiness. Similarly, extraversion, agreeableness, and conscientiousness make positive correlations ($r = 0.145, 0.120$, and 0.189 , respectively) and neuroticism makes a negative correlation ($r = -0.283$), with life satisfaction. Unlike neuroticism, personality traits were positively correlated with all the attributes of PWB, except with purpose in life. Agreeableness and openness were the only personality traits that were positively correlated with purpose in life ($r = 0.098$ and 0.121 , respectively). Neuroticism is negatively associated with all the attributes of PWB.

Table 4: Inter-Correlations between Big-Five Personality Traits and Other Instruments

Instrument	Variable	E	A	C	N	O
OHQ	Happiness	0.382**	0.322**	0.362**	-0.480**	0.235**
SWLS	Life Satisfaction	0.145**	0.120**	0.189**	-0.283**	0.037
PWB	Autonomy	0.151**	0.097*	0.076	-0.136**	0.181**
	Environmental Mastery	0.290**	0.169**	0.284**	-0.350**	0.136**
	Personal Growth	0.148**	0.222**	0.158**	-0.188**	0.172**
	Positive Relations	0.356**	0.284**	0.199**	-0.264**	0.163**
	Purpose in Life	0.009	0.098*	0.058	-0.001	0.121**
	Self-Acceptance	0.231**	0.243**	0.259**	-0.337**	0.115**
	Total PWB	0.335**	0.312**	0.289**	-0.356**	0.246**

E = Extraversion, A = Agreeableness, C = Conscientiousness, N = Neuroticism, O = Openness

*p < 0.05, **p < 0.01

The results of the regression analysis for happiness and life satisfaction as a function of personality traits and attributes of PWB, along with gender and age, are presented in Table 5. Gender and age were not contributing significantly ($p > 0.1$) to predicting either happiness or life satisfaction. Personality traits were found to be significantly ($p < 0.05$) contributing towards happiness. Except for neuroticism, all other personality traits were found to have a positive contribution to happiness. Neuroticism has the highest (but negative) association with happiness. Among the attributes of psychological well-being, self-acceptance was found to have the highest significant ($p < 0.001$) positive association with happiness. This model is successful in capturing 63.7% of the variation in happiness.

Table 5: Regression Analysis of the Associations between Personality Traits and Psychological Well-Being with Happiness and Satisfaction with Life

Variables	Happiness			Satisfaction with Life		
	b	SE	p	b	SE	p
Intercept	1.565	0.191	< 0.001	13.718	2.157	< 0.001
Gender (Male)	-0.008	0.035	0.821	-0.610	0.392	0.120
Age	-0.001	0.002	0.644	0.009	0.019	0.640
Personality Traits						
Extraversion	0.026	0.008	0.002	-0.156	0.095	0.102
Agreeableness	0.024	0.010	0.019	-0.130	0.117	0.269
Conscientiousness	0.036	0.010	0.001	0.111	0.116	0.341
Neuroticism	-0.051	0.008	< 0.001	-0.198	0.094	0.035
Openness to Experience	0.023	0.009	0.010	-0.119	0.099	0.230
Attributes of Psychological Well-Being						
Autonomy	0.009	0.005	0.087	0.110	0.057	0.051
Environmental Mastery	0.035	0.005	< 0.001	0.271	0.061	< 0.001
Personal Growth	0.023	0.006	< 0.001	-0.011	0.067	0.869
Positive Relations with Others	0.022	0.005	< 0.001	0.126	0.056	0.026
Purpose in Life	-0.001	0.004	0.890	-0.209	0.051	< 0.001
Self-Acceptance	0.063	0.005	< 0.001	0.620	0.062	< 0.001
F	78.97			25.29		
p	< 0.001			< 0.001		
Adjusted R ²	0.637			0.353		

In the model for life satisfaction, only neuroticism was found to be a significant ($p < 0.05$) contributor to all the personality traits. Among the attributes of psychological well-being, self-acceptance, environmental mastery, and positive relations with others showed a significant ($p < 0.05$) positive contribution, whereas purpose in life showed a significant ($p < 0.001$) negative contribution. Autonomy and personal

growth were found to have no significant association with life satisfaction. The model successfully captured 35.3% of the variation in life satisfaction.

DISCUSSION

The alpha Cronbach coefficient values of 0.38 for extraversion, 0.27 for agreeableness, 0.45 for conscientiousness, 0.54 for neuroticism, and 0.46 for openness in BFI-10 (Table 1) are acceptable ranges, given that, on the one hand, three of them are over 0.45 (the minimum allowed for the two-item scales), except for extraversion and agreeableness, and on the other hand, on comparing them with alpha values reported by other BFI-10 validation studies (Balgiu, 2018; Carciofo et al., 2016; Crede et al., 2012; Thalmayer et al., 2011). Moreover, the personality traits measured through BFI-10 are found to be significantly correlated with happiness, life satisfaction, and PWB attributes (Table 4), resulting in its convergent validity. The results conform to the recent studies reported by Balgiu (2018), Rammstedt et al. (2021), and Ryser (2015).

Regarding gender differences, women recorded higher neuroticism and openness compared to men (Table 1). Females, on average, are more prone to anxiety and other negative emotions compared to males, resulting in higher scores in neuroticism, especially during late adulthood (Akyunus et al., 2021; Donnellan & Lucas, 2008; Soto et al., 2011). Contrary to the present results, most studies reported that females were somewhat less open, on average, than males (Akyunus et al., 2021; Chiorri et al., 2016). However, Soto et al. (2011) reported that males were found to be less open to aesthetics, on average, than females. Men reported themselves to be higher in assertiveness and openness to ideas, whereas women were higher in neuroticism, agreeableness, warmth, and openness to feelings (Costa et al., 2001). In a recent study, Kaiser et al. (2019) analysed global sex differences in personality and concluded that, on average, women score higher in agreeableness and neuroticism; there were smaller gender differences in conscientiousness, extraversion, and openness.

In the present study, 61.5%, 86.3%, 83.1%, 25.7%, and 67.7% of the scientists were found to obtain higher scores in extraversion, agreeableness, conscientiousness, neuroticism, and openness, respectively (Fig. 1(a)). Lounsbury et al. (2012) reported significantly higher levels of openness and lower levels of conscientiousness, emotional stability, and extraversion among the scientists, compared to non-scientists. In a study from India, scientists were found to have lower levels of extraversion and conscientiousness, and better levels of openness, compared to non-scientists (Ramesh, 2020).

In the present study, gender differences are not found in the happiness, life satisfaction, and PWB attributes of scientists

(Table 2). Further, a majority of the participants reported higher levels of happiness, life satisfaction (Fig. 1(b)), and PWB attributes (Fig. 1(a)). Earlier studies have shown that the men were slightly happier than the women; however, the magnitude of this distinction was very low (Haring et al., 1984). In an analysis of two international studies, Lucas & Gohm (2000) found that women felt more negative emotions in their life span compared to men, in most of the countries studied. In further studies, such gender variations in SWB have not been found. When such variations are observed, females sometimes report higher SWB; however, the variations usually disappear once other demographic variables are controlled (e.g., Inglehart, 1990). A meta-analysis study revealed that there were no significant gender differences concerning the SWB of the subjects (Cassondra et al., 2018). However, Kaushik & Kiran Babu (2021) found a big distinction between males and females on happiness in favour of females, whereas it had been found that there was no distinction in life satisfaction.

In the present study, extraversion, agreeableness, and conscientiousness increase with age, while neuroticism and openness decrease with age; and this relationship is found to be stronger in males than females (Table 3). Recent analysis on age variations within five personality attributes indicates that from initial adulthood to middle ages, conscientiousness and agreeableness increase with age, neuroticism decreases, and extraversion and openness remain constant (Asselmann & Specht, 2021; McCrae et al., 2000; Soto et al., 2011; Shchebetenko et al., 2020). Throughout early adulthood and up to the middle ages, extraversion will increase as many of us attempt to extend our social status by interacting with others both inside and outside of the workplace (Helson et al., 2006), and this extraversion increases largely by the time we reach middle age (Roberts, 1997). Both conscientiousness and agreeableness will increase with age as they develop and internalise abstract ethical and social principles that promote pro-social and accountable behaviours (Eisenberg et al., 1995; Eisenberg & Morris, 2004).

The negative trend of neuroticism with age is because a majority of people improve to manage their emotions as they grow and reduce stressful experiences (Helson & Soto, 2005; John & Gross, 2004). Moreover, most adults establish strong relationships that become satisfying over time, and this acts as a buffer against life stressors (Gorchoff et al., 2008). Therefore, we tend to expect that levels of neuroticism, anxiety, and depression would show a negative age trend.

Happiness, life satisfaction, and some traits in PWB (e.g., autonomy, personal growth, purpose in life, and self-acceptance) are not affected with age. However, environmental mastery, positive relations with others, and total PWB are positively related to age (Table 3). Though a little decline in life satisfaction with age is sometimes found, the relation is eliminated once alternative variables like

financial gain are controlled (e.g., Shmotkin, 1990). A lot of studies converge to point out that life satisfaction typically will increase, or does not drop, with age (Herzog & Richard Rodgers, 1981; Horley & Lavery, 1995). International studies conjointly supported that life satisfaction does not decline with age (Inglehart, 1990; Ratti & Sharma, 2021). Chen et al. (2013) reported that PWB attributes like environmental mastery tend to extend with age; however, purpose in life and personal growth tend to decrease with age, whereas self-acceptance has very little age variation.

Extraversion, agreeableness, conscientiousness, and openness are favourably associated, and neuroticism is negatively related, to happiness, life satisfaction, and total PWB (Table 4). These results are typically in line with the existing literature. As an example, extraversion, neuroticism, and conscientiousness are associated with different aspects of well-being (DeNeve & Cooper 1998; Schmutte & Ryff 1997; Sirgy, 2021) and may differentiate people who scored high on each PWB and SWB, from people who scored low on each (Keyes et al., 2002). Alves et al. (2019) reported that personality factors play an important role in personal and work happiness and life satisfaction by influencing networks and organisational trust.

In the regression analysis, personality factors and PWB attributes (except autonomy and purpose in life) can predict 63.7% of the variation in happiness (Table 5), whereas life satisfaction is predicted with neuroticism and PWB attributes (except autonomy and personal growth) by 35.3% variation. Recent studies confirmed that personality attributes are the strongest and most consistent estimators of both subjective and psychological well-being (Anglim & Horwood, 2021; Gupta & Parimal, 2020; Hicks & Mehta, 2018).

Studies show that all five personality factors were significantly correlated with PWB (Hicks & Mehta, 2018). In a research on students, the total score of PWB, as conceived by Ryff and Singer (1998), was predicted by all personality traits, with extraversion and conscientiousness having the greatest contribution (Balgui & Cotet, 2017). They reported that the strongest predictor for most well-being variables is neuroticism and the second predictor is conscientiousness. Suldo et al. (2015) reported that roughly 47 per cent of the variation in life satisfaction was accounted for by the Big-Five personality traits.

People with high neuroticism traits possess a low level of PWB because of irrational ideas and the inability to regulate their impulses and cope suitably with stress (Schmutte & Ryff, 1997; Ramesh, 2017). Findings from Costa & McCrae (1980) explained that satisfaction with life is said to have a relationship with a high level of extraversion and a low level of neuroticism. In a study on scientists, neuroticism was found to be negatively associated with emotional intelligence and happiness (Ramesh, 2020). Lynn & Steel

(2006) indicated that the data from 30 countries confirmed that the interaction between extraversion and neuroticism was a significant predictor of satisfaction with life, and such an association was not found significant with happiness.

Fredrickson's (1998, 2001) analysis on the broaden-and-build theory suggests that positive affect has a sway on our thought-action repertoire; this means that positive thoughts broaden one's perspective and permit the building of putting up with personal resources. For instance, the sensation of joy pushes one to expand one's creative frontiers. These long-enduring personal resources have adaptive importance as they equip a person to face potentially stressful situations. Wright and Cropanzano (2004) demonstrated that the interaction between PWB and task satisfaction/job performance are strongly associated and statistically significant. In today's society, worker PWB has both theoretical and applied relevancy. Using the positive psychology/positive organisational behaviour (POB) framework, it appears evident that promoting worker PWB is an intrinsic good that all ought to work.

CONCLUSION

From the study, it is inferred that a majority of agricultural scientists are happier and well satisfied by possessing personality traits required for a career in science, through which they get their happiness, life satisfaction, and PWB. Neuroticism in personality traits; self-acceptance, environmental mastery, and positive relations in PWB are the dominant contributors to the happiness and life satisfaction of scientists. The present results reaffirm and extend those results reported by the previous researchers, showing that scientists possess higher levels of openness and lower levels of neuroticism (Lounsbury et al., 2012), and have higher levels of subjective happiness and a sense of purpose in their life, in comparison with the non-scientists (Sato, 2016).

IMPLICATIONS

The implications of the study include selection, training, and creating possible organisational interventions to build a happy workforce environment, which is a pre-requisite for any scientific endeavour. Since personality and PWB are relatively stable over time and predict employee's happiness and productivity, these traits can also be used in the selection and recruitment criteria. Another option is to alter workers by providing training to be happier. There is sensible proof that varied sorts of stress management coaching will have a positive effect on employee happiness. A variety of ways exist wherever individual workers will proactively self-monitor or manage their perceptions, to reinforce positive and discourage negative displays of fleeting mood and feeling. The third approach to potential interventions

involves changing the surroundings, so that it promotes or does not impair worker PWB. Situational engineering would seem to be a promising technique in this; there is proof that operating conditions powerfully affect worker PWB. Like the selection and coaching approaches, situational engineering provides a range of choices for organisations to form a happier workforce. Studies have documented that providing visible social support in an organisation will not only reduce job-related stress, but also improve the employees' satisfaction as well as their happiness (Wright & Cropanzano, 2004).

LIMITATIONS

Some limitations of the study ought to be mentioned. First, considering the exploratory nature of this study, to our knowledge, this can be the primary investigation to assess the personality and well-being traits of agricultural scientists. Thus, the outcome cannot be generalised, because of the sample size and scarcity of variables examined as potential predictors of happiness and life satisfaction, and the restricted battery of tests employed in the present investigation to assess well-being. Second, we used shorter versions of BFI-10 and PWB-18, intending to reduce the testing time and to encourage the participants to respond despite their constraints. Third, further investigations are necessary to explore the role of other factors in predicting measures of well-being. Thus, additional research is required to clarify whether the current findings can be replicated using other tools for estimating well-being, which can be validated across cultures.

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