WEST AFRICAN JOURNAL OF ORTHODONTICS

Print ISSN: 2315-9634
E-ISSN: 3141-5822

VOLUME 11, NUMBER 2

December 2022

Personality traits and compliance with fixed appliance therapy



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OFFICIAL PUBLICATION OF ORTHODONTIC ASSOCIATIONS IN THE WEST AFRICAN SUB-REGION
"DENTISTRY'S FIRST SPECIALTY JOURNAL IN SUB SAHARAN AFRICA"

Impact of Personality Traits and Motivation on Compliance to Fixed Orthodontic Appliance Therapy among Nigerian Adolescents

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Abstract

Background: This study determined the influence of patients' personality traits and motivation on compliance to fixed orthodontic appliance therapy among Nigerian orthodontic patients.

Methods: The sample comprised 123 patients aged 10-19 years seeking orthodontic treatment for the first time in three Nigerian Teaching Hospitals. A self-administered questionnaire was used to assess patients' socio-demographics, personality traits, and factors influencing fixed orthodontic therapy. Data was analyzed using Statistical Package for Social Sciences, (SPSS version 16.0 for windows, SPSS inc, Chicago). Descriptive statistics and multivariate linear regression were used and the significance level was set at $p<0.05$.

Results: The most predominant personality trait was agreeableness at 49.6%, while the least was extraversion at 8.9%. There was no significant gender difference in motivation and personality trait scores among the patients. Empathy, friendliness/politeness, and commendation by orthodontists positively affected compliance with treatment ($p<0.05$). Delay in attending to patients by orthodontists was the most discouraging factor to treatment. Whilst the conscientious personality trait showed a significant negative association with motivation ($p<0.05$), the openness trait demonstrated a significant positive association with the general desire to improve patients' oral health related quality of life ($p<0.05$).

Conclusion: The most exhibited personality trait among the patients was agreeableness. Empathy, friendliness/politeness and commendation by orthodontists positively affected compliance ($p<0.05$). Whilst the conscientiousness trait showed a significant negative relationship with motivation, openness had a significant positive association with the general desire to improve patients' oral health and quality of life. Prolonged waiting time was the most discouraging factor to treatment.

Keywords: Personality traits, Motivation and compliance, Orthodontic treatment, Nigerian Adolescents

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ORIGINAL ARTICLE

Introduction

Fixed orthodontic appliance therapies are commonly used in the management of malocclusion, especially when complex cases and bodily movement of teeth are involved. From the professional point of view, orthodontic treatment, which should normally last about 2 years, is unnecessarily prolonged, thus leading to frustration on the part of the orthodontist.[1] Some of the factors that may delay treatment outcomes include patients' personality traits and motivation, which have been identified as important determinants of compliance in patients undergoing fixed orthodontic appliance therapy.[2,3]

Personality trait as a distinguishing characteristic feature has been shown to affect individual response to different events and social activities, including orthodontic treatment outcome.[4] Fixed orthodontic appliance therapy, on the other hand, is a time-demanding treatment procedure that requires the significant cooperation of patients.[5] It has been suggested that an effective way of predicting a patient's willingness to undergo certain orthodontic treatment is by the use of personality indexing.[6]

The personality characteristics of individuals are usually classified into five different groups,

including; openness, conscientiousness, extraversion, agreeableness, and neuroticism.[7] These characteristic traits are said to influence an individual's perception of treatment modality as well as a patient's response to clinical instructions during treatment.

A patient's motivation for treatment can either be intrinsic or extrinsic, resulting in self- motivation or motivation by the external environment. Psychological development during the pre-adolescent and adolescent stages may also influence a child's motivation, understanding, and adherence to orthodontic treatment procedures.[8] Similarly, extrinsic factors such as social stereotypes, family, educational background, and gender, as well as intrinsic factors like personality traits and temperament, are important factors in determining the level of cooperation during orthodontic treatment.[9] Furthermore, pressure from parents, peer groups, and interpersonal factors are also assumed to be important contributory factors to motivation for treatment.[10]

The personality of each individual patient as an intrinsic factor can influence motivation for orthodontic treatment.[11] Patients' personality characteristics and their relationship with family, peers, and orthodontists, as well as performance at school are closely linked with compliance.[3] They may also serve as valuable sources of information in predicting treatment outcomes and monitoring compliance.[3]

Indeed, very little is known about the effect of the personality traits of Nigerian orthodontic patients on their motivation towards, and compliance with, orthodontic treatment. This study was designed to determine the relationship between orthodontic patients' personality traits, motivation, and their compliance with fixed orthodontic appliance therapy.

Materials and methods

Ethical approval for the study was obtained from the Institute of Public Health, Obafemi Awolowo University Ile-Ife, with reference number IPH/OAU/12/822. The study was a descriptive cross-sectional survey conducted among adolescent patients undergoing fixed orthodontic appliance treatment at Obafemi Awolowo University Teaching Hospitals Complex, (OAUTHC) Ile-Ife, Lagos University Teaching Hospital (LUTH) Lagos and University College Hospital (UCH) Ibadan, all in the southwestern part of Nigeria, within six months period. The sample population comprised 123 randomly selected adolescent patients between the ages of 10 and 19 years and visiting the orthodontic clinic for the first time.

A pre-structured self-administered questionnaire (appendix A) consisting of fifty-seven questions in three domains was used to assess the level of compliance with professional etiquette and motivation for treatment. The first domain assessed the motivation of the patients to fixed orthodontic appliance treatment; the second domain consisted of questions assessing their compliance to instructions during treatment. Compliance was said to exist when a patient attended the clinic regularly at appointed times and dates without being scolded by the orthodontist but praised for good performance or conduct during treatment. On the other hand, non-compliance was referred to when a patient failed to attend the clinic regularly at appointed times and dates, or was often scolded by the orthodontist for bad behaviour. The third domain consisted of questions for assessing the personality traits of patients which comprised one of the most commonly used personality taxonomies often referred to as the Big Five.[12] The five identified groups are openness, conscientiousness, neuroticism, extraversion, and agreeableness. 'Openness' is the willingness to experience new things, being imaginative; 'neuroticism' indicates emotional instability; 'conscientiousness' indicates that the individual evaluates consequences before acting; 'agreeableness' shows the ability to get along with others and to be trustworthy, and 'extraversion' is an indication that the individual thrives in social situations.[13,14] The computation, assessment, and interpretation of personality traits was based on a 5-

point Likert's scale from strongly disagree [1] to strongly agree [5] according to John et al.[12]

Data was entered into a personal computer and analyzed using the statistical package for social sciences (SPSS version 16.0 for windows, SPSS inc, Chicago). The analysis was based on simple descriptive and analytical statistics, including chi-squared analysis and multivariate linear regression for patients' personality traits as well as the motivating or discouraging factors. The significant level was set at $p<0.05$.

Results

Table 1 shows the distribution of patients according to their socio-demographic characteristics in their hospitals. There was an almost equal distribution of patients across Obafemi Awolowo University Teaching Hospitals Complex (OAUTHC), University College Hospital (UCH) and Lagos University Teaching Hospital (LUTH) at 30.1%, 31.7% and 38.2% respectively. Females constituted about two-third (61.0%) of the patients. Most of the patients had secondary education (63.3%); 28.5% attained tertiary educational level while only 3.3% had primary school level education. Whilst the mean age of patients was 14.7±2.4 years (±SD), the mean duration of treatment was 18.2±15.5 months, with treatment duration ranging from one to 84 months.

Table 2 indicates the personality traits of patients according to gender, treatment compliance, and orthodontic treatment duration. The most common personality trait observed in both male and female genders was agreeableness at 56.3% and 45.3% respectively. The least expressed personality traits in male patients were extraversion and neuroticism (4.2%), while extraversion was the least found trait (12.0%) in the female orthodontic patients. There was no statistically significant difference in gender ($p>0.05$)

Majority of the compliant and non-compliant patients had agreeableness personality trait at 51.9% and 33.1% respectively. The least reported personality trait expressed in the compliance group was neuroticism (7.4%), while conscientiousness (6.7%) was the least expressed trait in the non-compliant group. No significant differences were observed between patients' personality traits and compliance ($p>0.05$).

Within the treatment duration periods, the agreeableness trait was very predominant in both 'normal' and 'long-term' treatment periods at 44.5% and 60.0% respectively. However, no significant difference was observed between the two treatment duration periods ($p>0.05$).

Table 3 shows the perceived motivating factors for patients' attendance at the orthodontic clinic according to gender and treatment compliance. Over three-quarters of male (93.8%) and female (82.7%) orthodontic patients were dissatisfied with their dental appearance, which was the primary reason for seeking orthodontic treatment. However, no significant gender difference was reported in the level of satisfaction with dental appearance among the patients. Also, there was no significant difference in the level of compliance between the compliance and non-compliance groups

The study showed that about two-thirds of the patients were motivated by the adaptability or satisfaction of the fixed appliance designs and techniques used. However, no statistically significant differences were observed between gender ($p>0.05$). There was effective communication between the orthodontists and gender as well as different compliance groups.

With regards to factors influencing compliance to treatment, the findings showed that empathy, commendation for good attitude or behaviour towards treatment and friendly disposition of the orthodontist significantly affected compliance to orthodontic treatment by patients ($p<0.05$).

Figure 1 shows the perceived personality figure or role model influencing patients towards seeking orthodontic treatment according to gender. Majority of the male and female orthodontic patients were motivated by their parents to seek orthodontic treatment (70.0%) while their peer group surprisingly

had the least impact (1.6%) in influencing treatment.

The discouraging factors against compliance to orthodontic treatment as perceived by patients are shown in Figure 2. The greatest discouraging factor militating against compliance is the delay in attending to patients by the orthodontists during appointments (47.2%), while the least factor was the poor condition of the clinic environment (7.3%).

Table 4 shows the regression model of patients' personalities according to motivational or discouraging factors to treatment. Conscientiousness was the only personality trait that had a significant negative association with personality or modeling figures in motivating orthodontic patients for treatment ($p<0.05$). Similarly, the openness dimension was significant in predicting compliance with orthodontic treatment ($p<0.05$). Other individuals' personality traits were not found to have a significant impact on motivation to fixed appliance therapy in this study.

Table 1: Distribution of patients according to socio-demographic characteristics

Variables	Frequency n(%)
Nigerian Teaching Hospital	
OAUTHC, Ile-Ife	37(30.1)
UCH, Ibadan	39(31.7)
LUTH, Lagos	47(38.2)
Gender	
Male	48(39.0)
Female	75(61.0)
Educational background	
Primary	4(3.3)
Secondary	84(63.3)
Tertiary	35(28.5)
Age (years)	
Mean+SD)	14.7±2.415
Median	15
Mode	12
Range	10-19
Treatment duration (months)	
Mean±SD	18.2±15.5
Median	15
Mode	12

Table 2: Distribution of patients' personality traits according to gender, treatment compliance and orthodontic treatment duration

	Extraversion	Agreeableness	Conscientiousness	Neuroticism	Openness
Male					
n(%)	2 (4.2)	27 (56.3)	7 (14.6)	2 (4.2)	11(20.8)
Female					
n(%)	9 (12.0)	34 (45.3)	11(14.7)	10 (13.3)	11(14.7)
p- value			0.21		
Compliance					
n(%)	9 (8.3)	56 (51.9)	17 (15.7)	8 (7.4)	18 (16.7)
Non- compliance					
n(%)	2 (13.3)	5 (33.3)	1(6.7)	4 (26.7)	3 (20.0)
p- value			0.13		
Treatment Duration					
≤ 18 months (normal)					
n(%)	9 (10.8)	37 (44.5)	11 (13.3)	9 (10.8)	17 (20.5)
>18 months (long)					
n(%)	2 (5.0)	24 (60.0)	7 (17.5)	3 (7.5)	4 (10.0)
p-value			0.32		

Table 3: Perceived motivating factors for treatment according to gender and compliance with treatment

Factors	Male n(%)	Female n(%)	p-value	Compliance n(%)	Non-compliance n(%)	p- value
Satisfaction with dental appearance						
Yes	3(6.2)	13(17.3)	0.075	14(13.0)	2(13.3)	0.97
No	45(93.8)	62(82.7)		94(87.0)	13(86.7)	
Effective communication on treatment progress						
Yes	47(97.9)	74(98.7)	0.75	106(98.1)	15(100.0)	0.60
No	1(2.1)	1(1.3)		2(1.9)	0(0.0)	
Empathy by the Orthodontist						
Yes	43(89.6)	73(97.3)	0.07	104(96.3)	12(80.0)	0.01
No	5(10.4)	2(2.7)		4(3.7)	3(20.0)	
Comfortability of treatment technique						
Yes	31(64.6)	59(78.7)	0.09	80(74.0)	10(66.7)	0.54
No	17 (35.4)	16(21.3)		28(26.0)	5(33.3)	

Commendation for showing positive attitude						
Yes	42(87.5)	68(90.7)	0.58	99(91.7)	11(73.3)	0.03*
No	6(12.5)	7(9.3)		9(8.3)	4(26.7)	
Friendly/polite disposition by the Orthodontist						
Yes	48(100.0)	74(98.7)	0.42	108(100)	14(93.3)	0.0075*
No	0(0.0)	1(1.3)		0(0.0)	1(6.7)	
TOTAL (%)	**48(100)**	**75(100)**		**108(100)**	**15(100)**	

*** p<0.05; significant**
Chi square

Table 4: Multivariate linear regression of personality traits of patients according to motivating or discouraging factors/

	Beta	SE	p-value
Satisfaction with dental appearance			
Intercept	2.044	0.13	0.000
Extraversion	-0.016	0.02	0.466
Agreeableness	-0.017	0.01	0.124
Conscientiousness	-0.017	0.02	0.274
Neuroticism	-0.027	0.03	0.316
Openness	-0.011	0.03	0.709
Motivational personality			
Intercept	4.737	0.48	0.000
Extraversion	-0.060	0.08	0.469
Agreeableness	0.002	0.04	0.955
Conscientiousness	-0.132	0.06	0.027
Neuroticism	0.080	0.10	*0.438
Openness	-0.001	0.11	0.996
Effective communication on treatment progress			
Intercept	1.050	0.05	0.000
Extraversion	-0.007	0.01	0.411
Agreeableness	0.000	0.00	0.961
Conscientiousness	0.004	0.01	0.553
Neuroticism	-0.001	0.01	0.923
Openness	-0.013	0.01	0.230
Friendly/polite disposition of the Orthodontist			
Intercept	1.015	0.03	0.000
Extraversion	-0.005	0.01	0.410
Agreeableness	0.000	0.00	0.945
Conscientiousness	-0.001	0.00	0.739
Neuroticism	-0.002	0.01	0.771
Openness	0.002	0.01	0.801

Empathy by the Orthodontist			
Intercept	1.081	0.09	0.000
Extraversion	-0.012	0.02	0.433
Agreeableness	-0.004	0.01	0.611
Conscientiousness	0.001	0.01	0.908
Neuroticism	0.007	0.02	0.711
Openness	0.004	0.02	0.859
Commendation for showing positive attitude			
Intercept	1.112	0.12	0.000
Extraversion	-0.013	0.02	0.509
Agreeableness	-0.003	0.01	0.796
Conscientiousness	-0.010	0.01	0.726
Neuroticism	0.017	0.02	0.501
Openness	0.010	0.03	0.848
Comfortability of treatment technique (appliance)			
Intercept	1.037	0.17	0.000
Extraversion	-0.007	0.03	0.804
Agreeableness	0.011	0.01	0.419
Conscientiousness	0.011	0.02	0.603
Neuroticism	0.065	0.04	0.068
Openness	0.043	0.04	0.264
General motivator seeking orthodontic treatment			
Intercept	1.371	0.16	0.000
Extraversion	0.024	0.03	0.374
Agreeableness	-0.004	0.01	0.786
Conscientiousness	-0.006	0.02	0.758
Neuroticism	-0.050	0.03	0.132
Openness	0.078	0.04	0.032*
Discouraging factors by patients			
Intercept	1.921	0.48	0.000
Extraversion	0.107	0.081	0.189
Agreeableness	-0.030	0.039	0.452
Conscientiousness	0.047	0.06	0.418
Neuroticism	0.040	0.10	0.690
Openness	0.034	0.11	0.756

* $p<0.05$; significant

Discussion

Several authors [15-17] have attempted to establish the important role of patients' cooperation, including motivation and compliance in the overall treatment outcome of orthodontic appliance therapy. However, only a few studies have investigated the relationship between the personality characteristics of patients and their potential adherence to orthodontic treatment procedures.[9,11] This study was set out to elucidate the association, if any, between personality traits, motivating and discouraging factors, as well as compliance to instructions during fixed orthodontic appliance therapy.

The study group was within the age group in which most orthodontic treatments are carried out by orthodontists. This is consistent with previous reports that the prevalence of malocclusion tends to increase between the ages of 11-16 years making the adolescent population the highest, regarding orthodontic consultation rate.[18,19] Also, the majority of these patients were females, which constituted about two-thirds of all patients in the study population. This pattern is also in agreement with previous studies [20-22] that showed the female gender as the highest seekers of orthodontic treatment. Roberts et al [23] reported that girls were more frequently treated than boys, while Holmes[24] in a related study, observed that girls perceived themselves as less attractive than boys, hence, seeking more treatment than their male counterparts.

The findings of this present study showed that though agreeableness was the most common personality characteristic reported in this group of patients, treatment compliance was hardly influenced by their personality traits. This outcome agrees with previous investigations which showed that the use of personality traits alone may not suffice for predicting compliance in orthodontic treatment.[9,25] Bos et al.[25] reported that a patient's personality traits alone cannot be used to predict compliance during orthodontic treatment. Furthermore, Amado and Sierra [9] found no significant differences in any of the five personality traits related to treatment compliance, though the authors reported that introverted patients were more inclined to comply with instructions during orthodontic treatment.

Normally, non-compliance with orthodontic instructions as a result of differences in personality characteristics by patients may affect orthodontic treatment outcomes concerning treatment duration. In the current study, the personality traits of the patients were neither significantly affected by gender, nor influenced by treatment duration. However, this is contrary to the work of Hansen et al[6] which showed that neuroticism was negatively associated with willingness to comply with certain orthodontic instructions, and by implication, may prolong orthodontic treatment duration. This is also consistent with observations of Umaki et al, [26] which showed that patients with high scores in neuroticism were more likely to demonstrate poor compliance.

In this present investigation, the majority of the male and female patients were not satisfied with their dental appearance, which may suggest their reason for seeking orthodontic treatment. This agrees with previous studies that demonstrated an improvement in dentofacial appearance as the major motivating factor for seeking orthodontic treatment. [27,28]

This study clearly demonstrates that empathy for the patient during treatment, including a commendation for right behavior and the friendly disposition of the orthodontist, positively affected compliance to orthodontic treatment. These findings are consistent with the suggestion by Mehra et al [2] that verbally praising patients for compliant behaviour was the best way to improve compliance to treatment. In addition, communication and education of patients on the consequences of poor compliance, including discussion on orthodontic treatment goals, were found to be popular ways of improving compliance. The authors further reported that negative methods such as ridiculing and scolding for poor compliance were the worst methods for improving patient compliance.

Studies have shown that extrinsic factors such as parental influences often affect a patient's decision to undergo fixed orthodontic treatment.[22,29] This current study reported that the most dominant personality figure or role model influencing patients' decision to seek orthodontic treatment was mainly the parents, while the patients' peer group surprisingly had the least influence on their decision. An earlier Nigerian study also reported that parental pressure especially that of mothers, tends to have a great impact on the children to accept orthodontic treatment.[27] Balwin[30] showed that the severity of malocclusion, actual disfigurement, and impairment of function frequently

motivated parents to seek orthodontic treatment for their children. This is consistent with other reported studies by Mehra et al[2] and Daniels et al.[31] Wedrychowska-Szulc and Syrynska[32] found that between 63-67 per cent of parents reported pressurizing their children to seek orthodontic treatment to avoid possible future claims of neglect. Furthermore, Pratelli and Gelbier[33] found that parents who desired orthodontic treatment for themselves or who were former orthodontic patients were more likely to approve of orthodontic care for their children.

In this current report, the most discouraging factor to orthodontic treatment was the delay in attending to patients by the practitioners. The waiting time could possibly affect future appointments in terms of general compliance and cooperation by the patients. Normally, orthodontic treatment is a lengthy clinical procedure and the first appointment takes about two hours to set up, subsequent review appointments usually take 15-20 minutes depending on the complexity of the case. Orthodontic practitioners are encouraged to organize and plan their appointment schedules in such a way that adequate time is allowed in-between patients' appointments, to prevent unnecessary treatment delays which may consequently have a negative impact on compliance. Another important discouraging factor during treatment in this study was pain and discomfort, which could affect orthodontic treatment outcomes. These are not common symptoms in orthodontic procedures. The presence of these symptoms, however, are consistent with reports by Utomi[34] and Gamhir et al [35] which found that pain and discomfort constituted the main discouraging factor for treatment, especially in the first four weeks of treatment.

When the multivariate linear regression model of a patient's personality trait was related to motivational or discouraging factors, the conscientiousness trait was the only personality characteristic that had a significant negative association with role modelling figures for motivating patients for orthodontic treatment. No obvious explanation could be advanced for this observation but this may be related to the fact that patients with conscientious personality traits tend to diligently evaluate and rationalize the consequences of orthodontic treatment before deciding to embark on treatment. Such individual patients may be difficult to convince because of the lengthy treatment time and demanding nature of the orthodontic treatment. In the same vein, Hansen et al [6] reported that conscientiousness and neuroticism exhibited a negative association with a single treatment modality.

With regards to the openness personality trait, there was a positive and significant relationship between the trait and compliance to treatment in this study. This is not surprising because the trait reflects the concept of open-mindedness which means the willingness of patients to experience new things, especially with regards to orthodontic treatment. Such patients are curious, creative, imaginative and likely to comply with orthodontic instructions. Hansen et al [6] however reported that openness is one of the few traits that failed to demonstrate an association with any of the orthodontic treatment modalities.

Conclusion

The most exhibited personality trait among the patients was agreeableness. Empathy, friendliness/politeness as well as commendation by orthodontists positively affected compliance ($p<0.05$).

Whilst the conscientiousness trait showed a significant negative relationship with motivation to treatment, openness had a significant positive association with the general desire to improve patient's oral health and quality of life. The most perceived discouraging factor to treatment was a delay in attending to patients by orthodontic practitioners.

Contribution to authorship :

OOD developed the concept of the research, OOD and OOE designed the study and participated in data collection and write-up. SOO and TOT contributed to data collection. All the authors approved the paper for publication.

Funding

Funded by the authors

Conflicts of interest

There are no conflicts of interest to be declared

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APPENDIX A

QUESTIONNAIRE

AGE RANGE (10-19YRS) ☐

AGE ☐ SEX ☐ DURATION OF TREATMENT (MONTHS) ☐

EDUCATIONAL LEVEL – TERTIARY ☐ SECONDARY ☐ PRIMARY ☐

SECTION A (1-10)

1. Were you happy with the appearance of your teeth before the treatment?
   Yes ☐ No ☐
2. Who initiated the appointment with the orthodontist?
   a) General dentist
   b) Peer group
   c) Medical doctor
   d) Patient
   e) Parents
   f) Others ----------
3. Is your orthodontist friendly? Yes ☐ No ☐
4. Is your orthodontist polite to you? Yes ☐ No ☐
5. Does your orthodontist communicate effectively about the treatment progress with you?
   Yes ☐ No ☐
6. Does your orthodontist show empathy i.e understands you and how you feel about the treatment?
   Yes ☐ No ☐
7. Are you always praised by your orthodontist for positive attitudes during the treatment?
   Yes ☐ No ☐
8. Is the appliance comfortable? Yes ☐ No ☐
9. Generally, what motivates you towards orthodontic treatment?

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10. What discourages you from attending the clinic?

a) Time wasting
b) I dislike the clinic environment
c) Pain during treatment
d) Others ----------

SECTION B (11-13)

11. Do you attend clinics at an appointed date and time? Yes ☐ No ☐

12. Has your orthodontist scolded you or ever charged you additional fee for poor compliance

Yes ☐ No ☐

13. Has your orthodontist praised you for excellent compliance?

Yes ☐ No ☐

SECTION C (14-57)

Here are a number of characteristics that may or may not apply to you. Please write a number next to each statement to indicate the extent to which you agree or disagree with that statement.

Disagree Strongly	Disagree a little	Neither agree nor disagree	Agree a little	Agree Strongly
1	2	3	4	5

I see myself as someone who...

____ 14. Is talkative
____ 15. Tends to find fault with others
____ 16. Does a thorough job
____ 17. Is depressed, blue
____ 18. Is original, comes up with new ideas
____ 19. Is reserved
____ 20. Is helpful and unselfish with others
____ 21. Can be somewhat careless
____ 22. Is relaxed, handles stress well
____ 23. Is curious about many different things
____ 24. Is full of energy
____ 25. Starts quarrels with others
____ 26. Is a reliable worker
____ 27. Can be tense
____ 28. Is ingenious, a deep thinker
____ 29. Generates a lot of enthusiasm
____ 30. Has a forgiving nature
____ 31. Tends to be disorganized
____ 32. Worries a lot
____ 33. Has an active imagination
____ 34. Tends to be quiet
____ 35. Is generally trusting
____ 36. Tends to be lazy
____ 37. Is emotionally stable, not easily upset
____ 38. Is inventive
____ 39. Has an assertive personality
____ 40. Can be cold and aloof
____ 41. Perseveres until the task is finished
____ 42. Can be moody
____ 43. Values artistic, aesthetic experiences
____ 44. Is sometimes shy, inhibited
____ 45. Is considerate and kind to almost everyone
____ 46. Does things efficiently
____ 47. Remains calm in tense situations
____ 48. Prefers work that is routine
____ 49. Is outgoing, sociable
____ 50. Is sometimes rude to others
____ 51. Makes plans and follows through with them
____ 52. Gets nervous easily
____ 53. Likes to reflect, play with ideas
____ 54. Has few artistic interests
____ 55. Likes to cooperate with others
____ 56. Is easily distracted
____ 57. Is sophisticated in art, music, or literature