

Sex Differences in Personality Traits in Egyptian Adolescents

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Abstract

The present study investigates sex differences in the Big Five personality traits among a sample of secondary school students aged 13 to 17 years in government schools of Alexandria, Egypt ($N = 1,489$). They responded to the Arabic Big Five Personality Inventory (ABFPI). Based on the effect size (d values), boys obtained significantly higher mean total scores than girls did for extraversion and conscientiousness, whereas girls had significantly higher mean scores than did boys for neuroticism and agreeableness. The largest sex difference was for neuroticism ($d = 0.63$). Results were interpreted in light of the characteristics of Egyptian society as a collectivist culture.

Keywords: Extraversion, Neuroticism, Agreeableness, Openness, Conscientiousness, Adolescents, Gender, Egypt.

Why can't a woman be more like a man?

— Allan Jay Lerner: *My Fair Lady*

1 Introduction

The aim of the present study was to probe the sex-related differences in personality among a sample of Egyptian adolescents. It is intended to complement a study of Egyptian university students ($N = 5,729$) on gender differences in personality traits (Abdel-Khalek, 2025). The present study aimed to replicate and extend this study in a secondary school student sample of Egyptian adolescents. This makes comparison between the two samples possible, which is hoped to contribute to our understanding of age-related changes in personality traits of young people. Based on the results obtained with university students, we expect sex differences also in adolescents of secondary school age.

Generally speaking, Egyptian studies on adolescents are scarce compared to studies on university students. There are also few Egyptian studies on sex differences, compared with the international literature. Being a “third world” country, Egypt is outside the WEIRD nations (Western, Educated, Industrial, Rich, Democratic) (Henrich et al., 2010). Most investigations of sex differences have been carried out with participants from WEIRD nations (e.g., Gray, 1992; Hyde, 2005). The current investigation addresses this gap in the literature by examining Egyptian adolescents in an Arab cultural context. This broadens the empirical base in this domain and enables cross-cultural comparisons. The present study probed the differences between school-attending male and female adolescents in the Big Five (BF) personality traits.

Below is a review of adolescence, the big five personality traits, previous studies, and the rationale of the present study.

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2 Adolescence

Adolescence is a formative period in a person's life, the transformation from a child into an adult. It is a transition from being a child who relies strongly on his or her parents' teachings to becoming an adult who makes his or her own informed decisions (Erikson, 1950). Between early childhood and the end of middle adolescence, children develop from being dependent on parents to becoming behaviorally and psychologically autonomous individuals, particularly in the interpersonal and societal contexts. As children progress through adolescence, they frequently tend to seek greater autonomy from authority figures by questioning and resisting values, rules, and norms that they perceive as imposed on them by adults (Smetana et al., 2006).

In this sense, adolescence is a transitional period that is characterized as "storm and stress" (Arnett, 1999). Major physical, biological, cognitive, and psychological changes occur in adolescence. These changes are likely to affect personality traits, including their gender differences.

Adolescence is the identity crisis stage of development, marked by sharp biological and psychological changes (Koepeke & Denissen, 2012). During adolescence, the role of personality is highly important because of its association with mental health and psychopathology (Kotov et al., 2010). Individual differences in adolescent personality have been shown to be important predictors of adult life outcomes such as social competence, academic and professional achievement, and physical and mental health, as well as longevity (Shiner & Caspi, 2003).

3 The Big Five Personality Traits

Personality is defined as relatively enduring patterns of thoughts, feelings, and behavior. Psychology of personality includes a wide range of theories (e.g., Ashton, 2022; Feist et al., 2020), one of which is the theory of personality traits, which posits that personality consists of several more-or-less stable attributes or traits. Personality traits are thinking, feeling or behaving tendencies. Personality traits have generated widespread interest among psychology researchers, applied psychologists, and even laypersons (McCrae, 2018).

The big five (henceforth BF) personality trait model is a well-established paradigm for the conceptualization of human personality. It is arguably the most widely accepted model of personality traits. This model of personality structure postulates that individual differences in personality attributes can be optimally described in terms of five factors: extraversion, neuroticism, agreeableness, openness to experience, and conscientiousness. In the past few decades, the BF personality model has been widely studied in different age groups, languages and cultures. World-wide it has become the most influential personality model.

Known for its high reliability and widespread use, the BF model has cemented its status as a universally recognized and highly valued measure across multiple disciplines worldwide (Alderotti et al., 2023; Marsh et al., 2010; McCrae, 2011). The BF has been consistently identified across different samples utilizing a variety of measurement instruments (John & Srivastava, 1999).

The BF personality traits model is well-recognized by its ability to explain individual differences of personality in all stages of human development (John et al., 2008). It has been demonstrated that the BF traits describe adolescent personality as well as they do adult personality (Digman & Inouye, 1986; John et al., 1994). This allows for the investigation of the development of these traits across the lifespan (Shiner & Caspi, 2003).

Polderman et al. (2015) reported a meta-analysis of twin correlations and variance components for 17,804 twin pairs, traits from 2,748 publications including 14,558,903 (more than 14 million from 39 different countries) partly dependent twin pairs. They found that the BF traits have a relatively high heritability of approximately 50% and a notably low influence of shared environment effects such as family, school, and socioeconomic status. However, heritability of personality depends on how it is measured, whether once or repeatedly over the life course, whether by self-report or other's report.

The Big Five factors present a satisfactory balance between bandwidth and fidelity, meaning they offer an economical description of personality while still allowing for meaningful prediction of important outcomes (Ones & Viswesvaran, 1996) such as health, well-being, education, psychopathology, etc. at all ages: in children, adolescents, adults, and elderly.

Personality is associated with many life outcomes, such as health, well-being, social relationships, and education (Roberts et al., 2007). Evidence suggests that the BF personality traits can reflect an individual's subjective perception of health and influence their health behaviours (Cao & Ji, 2024).

Cao and Ji (2024) studied the bidirectional relationship between self-rated health and the BF personality traits among 7,967 Chinese adolescents. They found that self-rated health significantly predicts subsequent extraversion, agreeableness, openness, conscientiousness (positively), and neuroticism (negatively). In addition, neuroticism is a significant negative predictor of self-rated health, whereas openness is a significant positive predictor.

In Germany, Heilmann et al. (2021) found that some BF personality traits indicate health and life satisfaction in early adolescence. Adolescents with high neuroticism had an elevated risk of both poor self-rated health and low life

satisfaction. In contrast, adolescents with high levels of conscientiousness had a reduced risk of poor health and low life satisfaction. High levels of extraversion and agreeableness also correlated with higher life satisfaction, but not with better self-reported health.

In a similar vein, Abdel-Khalek et al. (2023), using a sample of Egyptian university students ($N = 1,321$), found that self-rated physical health was significantly associated with all BF scores in men and women except for agreeableness among women. All significant correlations were positive, except neuroticism which was negative.

The BF comprises the following five factors:

- **Extraversion** is the degree to which a person orients his or her interest and energies toward the outer world of people and social interaction. It is associated with processes that generally lead to more positive emotional states and life events. It is related to life activity, more time spent with others. It describes an individual's tendency to be enthusiastic, sociable, active, assertive, excitement seeking, and optimistic.
- **Neuroticism** is a disposition to experience negative thoughts and more unpleasant emotional states, such as anxiety, depression, hostility, and vulnerability to stress. Neuroticism is the opposite of emotional stability, adjustment and mental health. High neuroticism scorers react with anxiety in stressful situations, have high scores on emotional sensitivity, worry, and psychosomatic symptoms and complaints.
- **Agreeableness** describes traits such as trust, altruism, cooperation, empathy, modesty, prosociality, and tender-mindedness.
- **Openness to experience** (or openness) is characterized by curiosity about the world, creativity, unconventionality in behavior, independent thoughts, adaptability, seeking new activities, trying new activities, and spiritual maturity.
- **Conscientiousness** includes impulse control, achievement striving, pursuing a goal, accuracy, organization, competence, order, self-discipline, and self-efficacy.

The salient question now is: What do the previous studies about sex differences in the BF personality traits among adolescents reveal?

4 Previous Studies

McCrae et al. (2002) found that girls obtained higher mean scores than did boys in neuroticism, extraversion, agreeableness, and openness, whereas Branje et al. (2007) indicated that boys obtained higher mean scores than girls did in extraversion and openness.

Allik et al. (2004) studied 2,650 adolescents from Estonia aged from 12 to 18 years. They found that there are personality differences between boys and girls in grades 6 to 12, and the mean level of openness increases while the levels of agreeableness and conscientiousness decreased between 12 and 18 years of age. They concluded that the self-reported personality trait structure matures and becomes sufficiently differentiated around age 14–15 and grows to be practically indistinguishable from adult personality by the age of 16.

In a large-scale study of adolescents, the direction of gender differences in observer reports was fairly uniform across 23 cultures from Africa, North and South America, Asia, and Europe: Girls, on average, scored higher than boys on all Big Five personality traits and most lower-order traits (De Bolle et al., 2015).

With a sample of 624 high school students in the US (age range 13–19), Suldo et al. (2014) indicated that girls reported higher levels than boys did on agreeableness, neuroticism, and extraversion. Imura and Taku (2017) recruited a sample of 310 students (age range 14–15 years) in the ninth grade of middle schools in Japan. They completed an online survey anonymously, using the Japanese translation of the Ten Item Personality Inventory. They found that girls displayed higher levels of conscientiousness than did boys, but the other four BF personality traits did not show any gender differences.

In India, Mandal and Mehera (2017) found that school-going rural adolescent girls score higher on agreeableness than boys, which implies that these girls are more concerned with others' well-being and have more kindness, co-operation, warmth, and consideration than boys. Furthermore, the school-going rural adolescent boys were friendlier and more talkative, jolly, interactive, assertive and gregarious than the girls. Gillespie et al. (2024) studied immigrant adolescents in Greece ($N = 1,252$). At age 12 to 13 years, girls reported significantly higher mean levels than did boys of all BF personality traits. Using 706 Indian adolescents, Karmakar et al. (2024) found that girls had significantly higher mean scores than did boys on extraversion and agreeableness.

McCrae et al. (2005) tested the universality of personality traits among college students in 50 cultures using the third person version of the revised NEO-PI. With a few exceptions, these data support the hypothesis that features of personality traits are common to all human groups.

Borkenau et al. (2013) studied the effects of sex on the variables in personality descriptions. They used 12,156 college student raters from 51 cultures who described a person they knew well on the third person version of the NEO-PI-R. In most cultures, male targets varied more than female targets, and ratings by female informants varied more than ratings by male informants. Furthermore, variances were higher in more developed, and effects of target sex were stronger in more individualistic societies.

McCrae et al. (2002) noted little agreement in the results. Furthermore, McCrae et al. (2010) stated that the magnitude of these differences was small, gender accounted for 1.4% of the variance in the BF, whereas culture accounted for 3.5%, which may be more relevant to the Western results. An overview of the results is presented in Table 1 and a summary in Table 2.

Table 1: Summary of 14 previous studies on sex differences in the BF among adolescents.

Country / study	Author(s)	N	High BF mean score	
			Boys	Girls
USA	Graziano et al. (1997)	317		N, A
American & Flemish	McCrae et al. (2002)	1,959 / 789		N, E, A, O
Estonia	Allik et al. (2004)	2,650		N, O, A, C
Dutch	Branje et al. (2007)	285	E, O	
Germany	Steinmayr & Spinath (2008)	342		N, E, O, A, C
USA	Suldo et al. (2014)	624		N, E, A
23 cultures	De Bolle et al. (2015)	4,850		N, E, O, A, C
Japan	Imamura & Taku (2017)	310		C
Rural India	Mandal & Mehera (2017)	400		A
Egypt	Abdel-Khalek (2019b)	250	E, O	N
Germany	Tetzner et al. (2023)	1,662		N, A, C
Egypt	Ali & Abdel-Khalek (2024)	485		N, A
Immigrants in Greece	Gillespie et al. (2024)	1,252		N, E, O, A, C
India	Karmakar et al. (2024)	706		E, A

Table 2: Summary of the 14 previous studies on the number (No.) and percentage of significant gender differences in the BF.

BF factor	Boys		Girls	
	No.	%	No.	%
Extraversion	2	14.3	6	42.9
Neuroticism	–	–	10	71.4
Agreeableness	–	–	11	78.6
Openness	2	14.3	5	35.7
Conscientiousness	–	–	6	42.9

A quick review of Table 1 indicates that the majority of high mean scores on the BF are among girls. Similarly, Table 2 shows that in most studies, girls have higher scores than boys in most BF traits, particularly in neuroticism and agreeableness. These studies on sex differences in personality traits among adolescents reveal conflicting findings. Inconsistencies in the findings may be due to differences in study designs, small sample sizes, cultures, assessment instruments, and unrepresentative samples.

5 The Present Study

Studies about sex differences in the BF personality traits using Egyptian participants, particularly adolescents, are few despite the big number of international studies involving English-speaking and Western participants. As such, the general aim of this current investigation was to extend the current knowledge base and fill in this gap in the literature by collecting data from Arabic speaking, mainly Muslim high school students from Egypt, an underrepresented population in the international scientific literature. This would enable the researchers to detect cross-cultural similarities and

differences. Table 2 suggests expected patterns for the BF gender differences among adolescents. The present investigation aimed to test this pattern in Egyptian adolescents.

6 Material and Method

6.1 Participants

A convenience sample of 644 boys and 845 girls (total $N = 1,489$) participated in this study. All of them were Egyptian students from different secondary schools in Alexandria city, Egypt. Their ages ranged from 13 to 17 (boys: $M = 14.6$, $SD = 0.7$; girls: $M = 14.1$, $SD = 1$).

6.2 The Arabic Big Five Personality Inventory (ABFPI)

The ABFPI (Abdel-Khalek, 2018a, 2019a, 2020) was developed based on an international item pool of 455 items in order to measure the five factors: Neuroticism, Extraversion, Agreeableness, Openness, and Conscientiousness. The scale was developed by administering items for each factor to a separate sample of college students (total $N = 1,161$). For each factor, the item-remainder correlations were calculated. The 20 items with the highest correlations with the remaining items for each factor were retained. Then, using another sample ($N = 450$), the correlations between these 20 items and the total score on the same factor of the NEO-FFI (Costa & McCrae, 1992) were computed. The six items with the highest correlations with the NEO-FFI were retained for each of the five factors, ensuring good criterion-related validity. The application of item response theory (Thissen & Steinberg, 2009) resulted in the elimination of five items. Finally, a confirmatory factor analysis was conducted for the ABFPI (Hussein & Abdel-Khalek, 2021).

The final inventory consisted of 25 short statements, five items for each factor. The order of the BF factors is as follows: ENAOC, the only reversed item is number 5. The items of the scale were to be answered on a four-point Likert type scale as follows: 1 (*No*), 2 (*Some*), 3 (*Much*), and 4 (*Always*) (see the Appendix). The total score for each factor could range from 5 to 20, with higher scores indicating a higher level of the trait. The inventory has acceptable to high alpha reliabilities (see Table 3) and criterion-related validities (Abdel-Khalek, 2019a, 2020).

A back-translation technique of the ABFPI items was applied (Brislin, 1970, 1980; International Test Commission, 2001) with good results. The items of the English version of the ABFPI were edited by a native English-speaking Professor (David Lester). The ABFPI was developed to be suitable for adults and adolescents. Many authors used adult instruments to assess the BF in young people (Vicentini et al., 2025).

All the ABFPI items except one consist of positively-keyed response format. Schmitt et al. (2007) pointed out that it is possible that in some cultures people have a stronger tendency to agree with test items regardless of their content — a response bias known as acquiescence bias. This response bias may affect the personality trait scores. On the ABFPI, an affirmatively-worded strategy was used because, based on actual observation in testing sessions, a large portion of participants tend to have problems in understanding the double negatives. Carver and Scheier (2000) stated that “negatively worded items often turn out to be harder to understand or more complicated to answer than positively worded items” (p. 47). Similarly, Schriesheim and Hill (1981) concluded that negatively worded items impair response accuracy.

As a remedy to the problem of understanding double negatives, some researchers use negatively worded items (e.g., “I feel blue”) in happiness scales and then recode the responses. Based on Baumeister et al.’s (2001) paper entitled: “Bad is stronger than good”, this procedure is problematic as there is evidence that items describing negative emotions tend to evoke much stronger responses than items describing positive emotions. People tend to underestimate the frequency of positive but not negative affect. These researchers concluded that “bad emotions generally produce more cognitive processing and have other effects on behavior that are stronger than positive emotions” (p. 334).

Alansari (1997) administered an Arabic translation of the NEO-FFI-S (Costa & McCrae, 1992) to three samples of Kuwaiti college students ($N = 3,789$). He concluded that this inventory was neither valid nor reliable and its BF factor structure was not replicable. The present researcher suggests the cause of these results was related to the negatively worded items in this inventory.

6.3 Procedure

All participants were volunteers and gave their verbal consent to participate in the study. In addition, ethical approval was obtained from the school authorities. The issues of informed consent, confidentiality and privacy were respected. The ABFPI was administered anonymously to boys and girls separately, in their classrooms during school hours. Each testing session contained the whole class. There were no refusals. Testers had an MA or PhD in psychology.

6.4 Statistical Analysis

SPSS (SPSS, Inc., 2020) was used to compute descriptive statistics and *t* tests. The magnitude of differences (effect size) was defined by *d*, a measure of how many standard deviations apart the two means are: a *d* of 0.2, 0.5, and 0.8 represent a small, medium, and large effect size, respectively (Cohen, 1994).

7 Results

Table 3 sets out the reliability of the ABFPI. The time interval for the test-retest was 7–14 days. As shown in this table, Cronbach’s alpha and test-retest reliability ranged between 0.76 and 0.92, indicating from acceptable to high reliabilities among this Egyptian sample of adolescents (*N* = 60). As to criterion-related validity, several previous studies (Abdel-Khalek, 2020) had validated it against a gold-standard criterion (NEO-FFI; Costa & McCrae, 1992).

Table 3: Reliability of the ABFPI among adolescents.

BF	Alpha r_{11}	Retest
Extraversion	.76	.92
Neuroticism	.77	.82
Agreeableness	.76	.76
Openness	.77	.86
Conscientiousness	.81	.85

Table 4 sets out the descriptive statistics of the ABFPI for boys and girls, the *t* values and the *d* for effect size (see also Figure 1). As indicated in Table 4, all *t* values for the sex difference were statistically significant and all *d* values except for openness were at least “small” by Cohen’s (1994) definition. Based on the *d* values, there were significant differences in the BF favouring boys and girls, respectively, for extraversion and conscientiousness (boys) and for neuroticism and agreeableness (girls). The most significant difference between boys and girls was for neuroticism, based on the *d* value of 0.63.

Table 4: Mean (*M*), standard deviation (*SD*), *t* value and *d* for effect size of the differences between boys (*n* = 644) and girls (*n* = 845) in the BF.

BF	Boys		Girls		<i>t</i>	<i>p</i>	<i>d</i>
	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>			
Extraversion	13.69	3.31	12.99	3.44	3.95	0.001	0.21 [†]
Neuroticism	9.80	3.25	11.81	3.17	11.98	0.001	0.63 ^{††}
Agreeableness	15.78	2.93	16.42	2.65	4.40	0.001	0.23 [†]
Openness	14.34	3.16	13.80	3.26	3.20	0.01	0.17
Conscientiousness	14.60	3.22	13.72	3.25	5.19	0.001	0.27 [†]

[†] “small” effect size

^{††} “medium” effect size

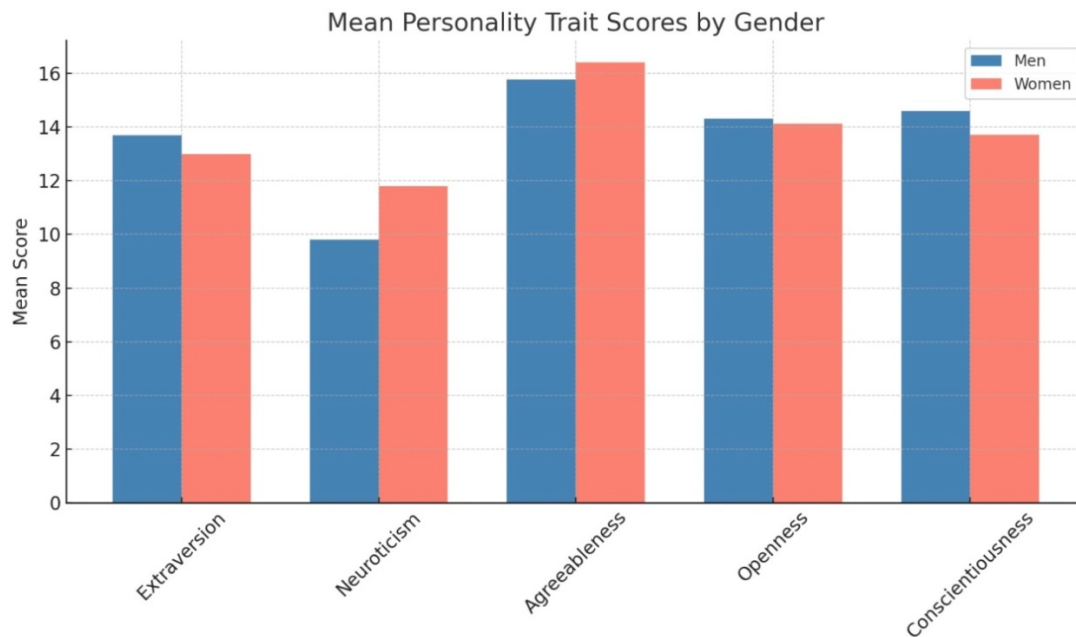


Figure 1: Mean personality trait scores by gender.

8 Discussion

At the international level, scientific studies on sex differences have a long history spanning more than a century of research (Ellis et al., 2008), including studies on personality traits, cognitive abilities, social behaviors, among other subjects. However, the majority of these studies have been conducted in Western, English speaking, and WEIRD countries (Henrich et al., 2010). The Arabic studies on sex differences in personality traits are few. Furthermore, most of these studies have been conducted on adults. Therefore, the present study on sex differences in the BF personality traits among Egyptian adolescents is important to narrow down a scientific gap in this domain.

The salient result of the present investigation is that the strongest sex difference is in neuroticism ($d = 0.63$) in favor of girls. This finding is consistent with many previous studies reported in Tables 1 and 2. That is, 10 out of 14 previous studies (71.4%) reported higher mean total scores on neuroticism for girls than for boys. The participants in these 14 previous studies were recruited from different countries, with sample sizes up to 4,850 (De Bolle et al., 2015), as well as different BF psychometric tools. This resembles the results on adults which reached the same conclusion: Women obtain higher mean total scores than men on neuroticism (e.g., Abdel-Khalek, 2018b, 2019b; Abdel-Khalek & Eysenck, 1983; Alansari, 1997; Costa et al., 2001; Escorial & Navas, 2007; Eysenck & Eysenck, 1975; Feingold, 1994; Lynn & Martin, 1997).

What are the reasons for girls to obtain a higher mean total score than boys on neuroticism? Different theories and points of view, both biological (Seeman, 1997) and socio-cultural (social learning, cognitive-developmental, and gender schema; Jacklin, 1989), have been suggested to explain sex differences in neuroticism, anxiety and negative affect.

In the Arab countries, researchers hypothesized that both child-rearing practices and orthodox Arab traditions have an impact. Al-Subaie and Alhamad (2000) maintained that “there is a growing conflict between the traditional female role of getting married and bearing children and the new endeavors of gaining education and working outside the home” (p. 207). Following a similar pattern, Fakhr-El-Islam (2000) stated:

Tradition maintain a hierarchical order in the family, in which dominance of male over female and older over younger is observed. A son is given more freedom, authority, and responsibility than a daughter. The preference of Arabs for male children is surpassed by only a few cultures, for example, the Chinese, who have a saying “it is better to raise geese than daughters” as stated by Tseng and McDermont in 1981, and who also share the belief that a woman determines the sex of her babies. The traditionally disadvantaged status of Arab women emphasizes submission and dependency as important feminine attributes in the upbringing of girls (p. 123).

The aforementioned explanations of the gender differences do not mean that socio-cultural factors are the only reasons for this statistically significant difference in neuroticism. The high percentage of previous studies which

revealed higher mean total scores on neuroticism among girls (71% as well as the present study) indicate the likely involvement of species-wide biological factors in addition to locally important cultural factors.

Only 10 out of the 14 previous studies in Table 2 (71%) indicated higher mean total scores on neuroticism among girls than boys. That is, 29% of these previous studies did not reveal gender difference in neuroticism. Why did not all the studies reveal this gender difference on neuroticism? There are many probable reasons: study designs, small sample sizes, the psychometric properties of the assessment tests, cultures, mental health levels of the respondents, and social desirability among other factors.

The second significant sex difference in the current investigation, following neuroticism, based on the effect size, is for conscientiousness in favor of boys ($d = 0.27$). This result is not consistent with the 14 previous studies on adolescents in Table 2, in which girls obtained a higher mean score on conscientiousness than did boys in six studies (42.9%), whereas none of the studies revealed that boys had the higher mean score on conscientiousness. This result should be seen in light of cultural factors in a collectivistic society like Egypt.

Boys in the present study also obtained higher mean total score than did girls on extraversion ($d = 0.21$). This finding is not congruent with the 14 previous studies on adolescents in Table 2, of which 42.9% produced higher mean scores on extraversion for girls, vis-à-vis 14.3% with higher scores for boys. However, the present result of higher extraversion among boys is in agreement of Lynn and Martin's (1997) results on adults. They found that men have higher mean total scores than women on the extraversion scale of the Eysenck Personality Questionnaire in 30 out of 37 countries (81%). Generally speaking, in Egypt as a collectivistic patriarchal society, it is most probable to see men and boys as more extravert than women and girls. Women and girls in the Arab societies orient their interests and energies toward the inner world. They possess less motivation for social interaction and outer sensation seeking. Personal observations tend to support this impression.

Girls in the present study obtained a higher mean total score than did boys on agreeableness ($d = 0.23$). This finding is congruent with 11 of the 14 previous studies in Table 2 (78.6%). None of the studies in this table found higher mean scores on agreeableness for boys than for girls. It is particularly noteworthy that the present result on agreeableness among female adolescents is consistent with the same finding in adults. That is, 75% of 32 previous studies reported that women had higher mean total scores than did men on agreeableness. To date, no research on adults has documented men obtaining higher mean agreeableness scores than did women (Abdel-Khalek, 2025). Interestingly, on the HEXACO, men score higher than women on Agreeableness. The reason for this is that questions measuring angry hostility are scored as part of Neuroticism in the Big Five system, but as the negative pole of Agreeableness in the HEXACO.

In general, agreeableness in the Big Five system is concerned with others' well-being. It includes kindness, empathy, pleasantness, and a desire to preserve interpersonal harmony (John & Srivastava, 1999). According to Costa and McCrae (1992), the six facets of agreeableness are trust, straightforwardness, altruism, compliance, modesty, and tendermindedness (pp. 17–18). Based on the results of the present study on adolescents, as well as the previous study on Egyptian adults, it seems that these sub-traits and facets of agreeableness are prototypical for girls and women.

There were both agreements and differences between the present results on Egyptian adolescents and the international findings. The main agreement is for the higher mean total score of girls on neuroticism and agreeableness. None of the international results found the opposite (see Table 2). However, there were also differences between the present findings on Egyptian adolescents and the international results. Most of the international studies found that girls had higher mean total scores than did boys on extraversion and conscientiousness. However, the present study found the opposite. Klimstra et al. (2009) suggested that conflicting results on gender differences in personality traits might be explainable by differences between populations or cultures. De Bolle et al. (2015) stated:

Studies of sex differences conducted in different cultures might well show divergent results. Every culture has distinct gender roles for males and females, but the specific behaviors and attitudes considered appropriate for the sexes may widely differ. In general, parents, peers, and social institutions encourage (and excuse) "manly" behavior in boys and "ladylike" in girls (p. 173).

Several theories have been introduced to elucidate the causes of sex differences in personality traits in general, including endocrine and neurobiological mechanisms, social environmental-psychological theories, social role theory, among other theories (Del Giudice, 2015; Guimond, 2008; Kaiser et al., 2020; Lippa, 2010; Schmitt et al., 2017). These theories can be classified into biological and social theories (Steinmayr & Spinath, 2008).

8.1 Limitation

Despite specific strengths of the present study, namely the large sample size of participants and the acceptable to good psychometric properties of the ABFPI, some limitations have to be acknowledged. Foremost among these is the convenience and non-probability sampling method to recruit participants. In addition, this sample was selected from

one Egyptian city, Alexandria, the second largest city in Egypt. A next step would be to select a sample from different geographical regions in Egypt.

Any claims that boys have significant higher / lower scores than girls on personality traits must be reserved, because sex differences in adolescence are not a fixed value but an age-related variable (Laidra et al., 2017).

8.2 Conclusion

In a large sample of Egyptian adolescents ($N = 1,489$) to study sex differences in the BF personality traits, girls obtained higher mean scores than boys did on neuroticism and agreeableness. This result is consistent with the majority of international studies. Conversely, Egyptian boys had higher mean scores than did girls on extraversion and conscientiousness, which disagrees with the international studies. The conflicting results on the last mentioned BF personality traits might be viable to study the age trends as influenced by culture. The Egyptian culture is collectivistic, whereas most of the international results were based on English-speaking participants and those living in WEIRD countries, meaning individualistic cultures.

8.3 Future Research

Regarding the sex differences in personality traits among Egyptians, in 2025 a paper has been published by Abdel-Khalek with a large sample size of adults ($N = 5,729$). A comparison between the results of that paper with the present investigation on adolescents would be very suitable. Furthermore, a collection of new data on Egyptian elderly would be viable to study the age trends of sex differences in personality traits among Egyptians. These are two projects for the future.

Another point: The presumed collectivism of Egypt still needs empirical evidence. This is a point for further investigation. Furthermore, cultural explanations for sex differences need more support because it appears that sex differences in less developed patriarchal societies are not larger, but smaller than in WEIRD countries (Schmitt et al., 2008).

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Appendix

The Arabic Big-Five Personality Inventory (ABFPI)

Instructions: Please read each of the following statements carefully, and decide how much it describes your feelings and behavior. Indicate how it applies to you in general, by circling one of the following words in front of each statement.

Item	Always	Much	Some	No
1. I like to socialize with people.				
2. I have many friends.				
3. I am a social person.				
4. I really enjoy talking to people.				
5. I tend to be introvert.				
6. I am an anxious person.				
7. I suffer from pains and aches.				
8. I feel sad.				
9. I feel tense.				
10. I feel lonely.				
11. I care about others' feelings.				
12. I am sympathetic with others.				
13. I indeed care about others.				
14. I like helping others.				
15. I am friendly with others.				
16. I like new ideas.				
17. I like artwork.				
18. I am open to new experiences.				
19. I like to do new and creative things.				
20. I have wide interests.				
21. Time is important to me.				
22. I strive to be distinguished.				
23. I am an organized and disciplined person.				
24. I work hard and well.				
25. I have a strong motivation for success.				