

**THE IMPACT OF VISION LOSS ON PERSONALITY TRAITS****Konstantinos S. Papadopoulos****Eleni Koustriava****Maria Charalampidou****Ioanna Gerapostolou***University of Macedonia*

*The aim of this study is to explore the differences in personality traits amongst adults with blindness, adults with low vision and sighted adults. Moreover, the relationship between the four scales of Eysenck's personality questionnaire and the demographic characteristics of participants with visual impairments was examined. There are no statistically significant differences amongst the three groups in scales P, N and E. However, the sighted adults have a lower score on the L scale. The older individuals with visual impairment reveal less extraversion and greater neuroticism. Moreover, the women with visual impairments show greater neuroticism than the men with visual impairments.*

One of the most influential models in the field of personality is founded on three factors, namely Psychoticism (P), Extraversion (E), and Neuroticism (N) (Eysenck & Eysenck, 1975, 1985). The Eysenck Personality Questionnaire (EPQ) contained questions in each of the 4 scales which measure introversion/extraversion (E), neuroticism (N), psychoticism (P) and lie (L).

According to the Eysenck Personality Profiler (Eysenck, Barrett, Wilson & Jackson, 1992), the seven personality traits comprising extraversion were defined as activity, sociability, expressiveness, assertiveness, achievement orientation, dogmatism, and aggressiveness. The seven personality traits comprising neuroticism were defined as low self-esteem, unhappiness, anxiety, dependency, hypochondriasis, guilt, and obsessiveness. The seven personality traits comprising psychoticism were defined as risk-taking, impulsiveness, irresponsibility, manipulation, sensation-seeking, masculinity, and unreflectiveness (Francis & Jackson, 2004). Genetic factors may contribute to the variance of these three personality traits in proportion of about 50% or more, while within-family environmental factors seem to be influential as well (Eysenck, 1990). Moreover, many other researchers have argue for the genetic base of the E (Eaves & Eysenck, 1975), P, N (Birley et al., 2006) scales of EPQ and the influence of shared environmental factors in L (Lie) scale of EPQ, through twin studies (Heath, Eaves, & Martin, 1989; Heath, Jardine, Eaves, & Martin, 1988, 1989).

What needs to be asked in this point is in what degree visual impairments influences Extraversion, Psychoticism and Neuroticism? Adaptation to visual impairment entails adjustment of one's self, values and life goals in order someone to meet the challenges arisen by the impairment. This process may be particularly strenuous especially after being sighted for many years (Boerner, Wang, & Cimarolli, 2006). Visual impairment may have a serious effect on people's daily functioning, social relationships and quality of life (Boerner et al., 2006), and may also challenge their physical capacities as well as their psychological capacities to adjustment (Harrington & McDermott, 1993).

Few studies have been done in order to examine the personality traits of the adults with visual impairments. Thus, there are limited findings available for a comprehensive review. In general, there is an obvious shortage not only in the application of the personality test in the persons with visual impairments, but also in the evaluation of the results since there have been few attempts to standardize the test in order to adapt them to the persons with visual impairments (Haymes, Guest, Heyes, & Johnston, 1996; Warren, 1984). Furthermore, there are no norms for persons with visual impairments (Swallow, 1982). A further criticism regarding the use of personality questionnaires is the claim that

they are open to various forms of misinterpretation of the answers – the participants may proceed to a conscious or random misinterpretation of the answers (Furnham, 1990).

Despite the difficulties in applying and interpreting the personality questionnaires, some researchers have attempted to make a comparison between different groups of people with visual impairments (eg. men/women, blindness/low vision), as well as a comparison amongst the people with visual impairments and the sighted people. No evidence for significant differences in personality traits between individuals with visual impairments and sighted individuals has been detected in research studies (Harrington & McDermott, 1993). Some writers strongly believe *the blind person's personality* to be qualitatively different than that of the sighted individual, while others stand by the belief that there is no essential difference (Warren, 1984).

In regards to extraversion, Warren (1984) reviewed various research projects for which different tests were used with contradictory results in certain cases. According to this review: a) children with blindness generally present lower extraversion scores than sighted children b) adolescents and young adults with blindness do not show any statistically significant differences in comparison with their sighted peers, c) males with visual impairments (blindness or low vision) seems to be more extrovert than females with visual impairments (Warren, 1984). As far as neuroticism is concerned, researchers' findings are in greater agreement. Specifically, findings show that adolescents and young adults with blindness appear to be more neurotic than their sighted counterparts (Warren, 1984). Comparing both sexes, females with blindness (adolescents and young adults) are defined as being more neurotic than males with blindness (Warren, 1984). Moreover, no differences in neuroticism between adolescents with residual vision and adolescents with total blindness have been observed (Warren, 1984).

The results from the study done by Adrian, Miller and De l'Aune (1982) suggested that individuals with visual impairments show psychological pathology on the dimensions of depression, psychasthenia, and schizophrenia. The researchers above used CPI (California Personality Inventory) and MMPI (Minnesota Multiphasic Personality Inventory) as research tools in order to evaluate a sample of 128 adults with congenital visual impairments (both blindness and low vision).

Klinkosz, Sekowski and Brambring (2006) used the Polish version of the NEO-FFI Personality Inventory (a sort version of the NEO PI-R) in order to evaluate Polish university students with visual impairments (blindness and low vision). The purpose of the study was to examine if there is any correlation between academic achievements and personality traits. The analysis showed that the female students with visual impairments had less neuroticism and higher score in the other 4 scales of the NEO-FFI (Extraversion, Openness, Agreeableness, Conscientiousness) compared to female students of the sighted control group. The males with visual impairments – especially the participants with blindness – had, in most cases, higher scores than their sighted peers. In the extraversion scale the students with blindness (males and females) had a significantly higher score in comparison to both the sighted students and the students with low vision. In the scale regarding neuroticism, males (with or without visual impairments) had a noticeably lower score than females, but the latter had a better score in all the other scales than the former. The ability to see or not did not influence the score on the neuroticism scale.

The use of the Eysenck Personality Questionnaire (EPQ) in sighted individuals revealed the influence of age and gender in personality traits. Lynn and Martin (1997) examined gender differences in Neuroticism (N), Extraversion (E), and Psychoticism (P) in 37 countries using EPQ. They found that men were consistently lower than women in N and generally higher on P and E. McCrae and his colleagues (2004) detected a negative correlation between age and extraversion as well as a negative correlation between age and neuroticism, using NEO-PI-R. Furthermore, age is negative correlated with the psychoticism scale of EPQR-A (the Revised and Abbreviated form of EPQ) (Gibson, McKelvie, & DeMan, 2008).

Alexopoulos & Kalaitzidis (2004) conducted a study amongst the Greek population (a sample group of 946 sighted individuals), aged 16-73 (mean = 19.71) for which the EPQ-R (short scale) was used. The majority of the participants were high school and university students. The mean scores in the four scales (Extraversion, Neuroticism, Psychoticism and Lie) were the follows:  $E = 8.85$ ,  $N = 6.75$ ,  $P = 2.75$ , and  $L = 5.33$ . The men have a considerably higher score than the women on the Psychoticism scale (P) as well as on the Introversion/Extraversion scale (E). On the other hand, the women have a higher score on the Neuroticism scale (N) and the Lie scale (L).

### *Study*

The research presented in this article focuses on: a) investigation of possible differences in the personality traits amongst sighted adults and adults with visual impairments and b) investigation of the possible relationships between the personality traits of adults with visual impairments and their vision status (blindness vs. low vision), age, gender, and how recently the visual impairment occurred. Taking the genetic base of the personality traits described through EPQ-R into consideration, we hypothesized that there would not be significant (if any at all) difference between adults with visual impairments and sighted adults. We also hypothesized that males with visual impairments would score lower in N scale and higher in P and E than females with visual impairments and that age would be negative correlated with E, P and N.

### **Method**

#### *Participants*

Ninety adults with visual impairments (blindness or low vision) and 70 sighted adults took part in the research. The participants with visual impairments were selected from the members of the Panhellenic Association of the Blind. Initially, we contacted by phone a random selection of 180 individuals with visual impairments (60 individuals with blindness or severe visual impairments and 120 individuals with low vision) in order to invite them to participate in the study. From the total of 180 invited participants, 110 individuals agreed finally to participate. However, the following adjustments had to be made: a) the group of individuals who were blind had to match with the group of individuals with low vision in terms of age, and gender, and b) participants with additional disabilities were excluded. In the end, 30 individuals with blindness and 60 with low vision participated in the present study.

The sighted participants were selected on the basis that they matched with the group of participants with visual impairments in terms of age and gender. The sighted adults, 47 men and 23 women, were between the ages of 19-54 ( $M = 30.81$ ,  $SD = 9.07$ ). The participants with visual impairments, 60 men and 30 women, were aged 19-54 ( $M = 30.66$ ,  $SD = 10.18$ ).

The participants with visual impairments were divided into two categories: a) individuals with blindness or severe visual impairments (braille readers or users of a text-to-speech software or a screen reading software) and b) individuals with low vision (readers of large prints or of typically print texts with the use of low vision aids). Of the 90 participants with visual impairments, 30 were individuals with blindness or severe visual impairments and 60 were individuals with low vision. The participants with blindness or severe visual impairments, 20 men and 10 women, were aged from 19 to 53 years old ( $M = 30.80$ ,  $SD = 9.59$ ). The participants with low vision, 40 men and 20 women, were aged from 19 to 54 years old ( $M = 30.59$ ,  $SD = 10.23$ ).

#### *Instruments*

The measures used in the present study assessed demographic/personal data, and personality traits.

*Demographic data.* The following demographic data was collected from participants with visual impairments: visual acuity, visual field, and reading media (braille, large prints, lens, screen magnifier, screen reader, CCTV), gender, age, and age at loss of sight. Sighted respondents provided demographic data on gender, age and educational level. Moreover, a new variable was created named *how recently the visual impairment occurred*. The results were formed by subtracting the age at which loss of sight occurred from the participant's age.

*Personality traits.* The Eysenck Personality Questionnaire-Revised Short Scale (EPQ-R short scale) (Eysenck & Eysenck, 1991) were used. This questionnaire has been translated into the Greek language by Alexopoulos & Kalaitzidis (2004). The EPQ-R sort scale is a sort version of the EPQ-R, which is the most recent scale developed by Eysenck (Alexopoulos & Kalaitzidis, 2004). The questionnaire contained 48 questions, 12 questions in each of the 4 scales which measure introversion/extraversion (E), neuroticism (N), psychoticism (P) and lie (L).

*Reliability.* With reference to typical population, the reliability and validity of the questionnaire were previously examined in Alexopoulos and Kalaitzidis's study (2004). The internal consistency reliabilities (Cronbach's alpha) regarding P, E, N, and L, respectively, were as follows:  $\alpha = .47$ ,  $\alpha = .78$ ,  $\alpha = .73$ , and  $\alpha = .69$ . Test-retest correlations were 0.44 for P, 0.92 for E, 0.91 for N, and 0.87 for L, respectively.

In the present study, the internal consistency reliabilities (Cronbach's alpha), for the sample of adults with visual impairments were 0.42 for P, 0.83 for E, 0.71 for N, and 0.73 for L, respectively. Moreover, test-retest correlations were computed for part of the sample of adults with visual impairments. Test-retest correlations were 0.50 for P, 0.89 for E, 0.88 for N, and 0.81 for L, respectively.

#### *Procedure*

In the present study, the ethical principles of Declaration of Helsinki (World Medical Association, 2010) were followed. Additionally, consent was obtained from the individuals, using the appropriate forms and according to the procedure suggested by the World Medical Association (2010).

The researcher was experienced in conducting reviews to individuals with visual impairments. The researcher read out the questions to each participant (sighted or participant with visual impairments) separately and then he wrote down the answers given by the participant. Each participant was alone with the reviewer in a quiet room during the procedure.

### **Results**

#### *Differences between the groups*

The means and the standard deviations of the 4 scales (P, N, E, and L) of the EPQ-R Short Scale were calculated for each group of participants separately (see Table 1) based on the condition of their eyesight (sighted, individuals with blindness, individuals with low vision).

**Table 1 Means and Standard Deviations in Relation to Vision Status**

Group	P		N		E		L	
	M	SD	M	SD	M	SD	M	SD
Blindness	3.40	1.63	5.23	3.13	7.80	3.55	<b>6.20*</b>	2.93
Low vision	3.07	1.44	4.88	2.32	8.08	3.02	<b>6.33**</b>	2.56
Vision	3.69	1.81	5.39	2.63	9.06	3.02	5.01	2.41

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

The implementation of ANOVA showed that there are statistically significant differences amongst the three groups only in the L scale ( $F = 4.869$ ,  $p < .01$ ). The application of the Bonferroni post-hoc test showed that the sighted adults have a lower score on the L scale, both from adults with blindness ( $p < .05$ ) as well as from adults with low vision ( $p < .01$ ).

#### *Differences within the group of adults with visual impairments*

We also explored the factors which might affect the scores of adults with visual impairments in each of the 4 scales. The method of linear multiple regression analysis was implemented, using the variables vision status, gender, age, and how recently the visual impairment occurred, as predictors.

*Introversiion/Extraversiion.* The analysis yielded an adjusted  $R^2$  of .081 ( $F = 2.958$ ,  $p < .05$ ). A significant individual predictor of extraversion was age ( $\beta = -.411$ ,  $p < .01$ ). According to the results, extraversion declines with the increase in age. Gender, vision status, and how recently the visual impairment occurred were not significant individual predictors of extraversion (see Table 2).

**Table 2. Multiple Regression for Variables as Predictors of Extraversion**

Variable	B	Std. Error	Beta	t	p
Vision status	.338	.690	.050	.491	.625
Gender	-.666	.686	-.099	-.971	.334
Age	-.129	.041	-.411	-3.142	.002
How recently the V.I. occurred	.037	.032	.154	1.168	.246

Note. Adjusted  $R^2 = .081$ ,  $p < .05$ .

*Neuroticism.* The analysis yielded an adjusted  $R^2$  of .061 ( $F = 2.547$ ,  $p < .05$ ). Significant individual predictors of neuroticism were gender ( $\beta = .210$ ,  $p < .05$ ) and age ( $\beta = .292$ ,  $p < .05$ ). According to the results, the women showed a higher score on the neuroticism scale. Furthermore, the scores on the neuroticism scale increase as the age increases. Vision status and how recently the visual impairment occurred were not significant individual predictors of neuroticism (see Table 3).

*Psychoticism.* The analysis yielded an adjusted  $R^2$  of .019 ( $F = 1.424$ ,  $p = .233$ ). No variable was a significant individual predictor of psychoticism.

**Table 3 Multiple Regression for Variables as Predictors of Neuroticism**

Variable	B	Std. Error	Beta	t	p
Vision status	-.373	.570	-.068	-.655	.514
Gender	1.155	.567	.210	2.038	.045
Age	.075	.034	.292	2.208	.030
How recently the V.I. occurred	-.019	.026	-.096	-.718	.475

Note. Adjusted  $R^2 = .061$ ,  $p < .05$ .

*Lie.* The analysis yielded an adjusted  $R^2$  of  $-.030$  ( $F = 0.344$ ,  $p = .848$ ). No variable was a significant predictor of lie.

### Discussion

According to the results of the analysis, there are no statistically significant differences amongst the three groups (individuals with blindness, individuals with low vision and sighted individuals) in scales P, N and E. This result clearly supports our hypothesis about the absence of differences between the groups.

However, the sighted adults have a lower score on the L scale, both from adults with blindness and from adults with low vision. There is a possibility that the presence of the researcher may have influenced the answers from the subjects with visual impairments. If this is true, the results in the other scales may have also been influenced. Another possibility that could interpret the high score of the participants with visual impairments in L scale is that they might have tried to retain or to present a conformist social image of themselves. What could account for such an attitude may be the fact that because persons with visual impairments grow up in a disadvantaged group of society - a minority, they face serious difficulties in having an independent life in a modern society (Reid, 2000). In every case, it would be useful to assess the validity of the participants' self-reports through peer report data (Wolf, Angleitner, Spinath, Riemann, & Strelau, 2004).

The means of the 4 scales (P, N, E, L) that were calculated in this study it is inappropriate to be compared with the respective means of Alexopoulos and Kalaitzidis (2004) study, because the majority of the participants in Alexopoulos and Kalaitzidis's research were high school and university students, aged in average 19.7 years.

In the present study, the older individuals with visual impairments reveal less extraversion and greater neuroticism. Similarly, there is research with sighted participants in which the negative correlation between age and extraversion is obvious (Costa, Herbst, McCrae, & Siegler, 2000; Farmer et al., 2002). On the other hand, the findings of this research are in conflict with the research findings which took place involving sighted adults where neuroticism is negatively correlated to age (Costa et al., 2000; Farmer et al., 2002).

In this research, the women with visual impairments show a higher score on the neuroticism scale than the men. The findings were similar to research done on a population of individuals with visual impairments (Klinkosz et al., 2006), as well as on sighted individuals (Aluja, Garcia, & Garcia, 2002; Budaev, 1999; Costa, Terracciano, & McCrae, 2001; Farmer et al., 2002; Lynn & Martin, 1997; Wilson & Doolabh, 1992). For example, elevated neuroticism scores in female subjects have been reported previously by Katz and McGuffin (1987).

### Limitations

Researchers commonly modify the way in which the tests are administered, which have been designed to test sighted individuals – they administer the test orally and simultaneously record the answers. This specific procedure was followed in the present study as well. This procedure does not allow the participants with visual impairments to do the test in the same manner as the sighted participants (Haymes et al., 1996). It certainly would have been preferable for the answers to the questionnaire to have been able to be completed using alternative methods, in order to avoid the presence of the researcher. For example, the individuals with blindness could have answered the questionnaire by using a computer and screen reading software. Recent attempts have been made to implement these alternative forms of presentation in order to be used by individuals with visual impairments (see Papadopoulos & Goudiras, 2004). Moreover, the method involving a cassette recorder along with a braille answer sheet could be used (Johnson, 1989), which allows the participants with visual impairments to complete his test on his own. More recently (Reid, 2000), alternative test application methods were put forward, such

as incorporating low vision aids, CCTV (closed-circuit television) and OCR (optical character reader), which can improve the credibility of the results.

### References

- Adrian, R. J., Miller, L. R., & De l'Aune, W. R. (1982). Personality assessment of early visually impaired persons using the CPI and the MMPI. *Journal of Visual Impairment & Blindness*, *76*, 172-178.
- Alexopoulos, D., & Kalaitzidis, I. (2004). Psychometric properties of Eysenck Personality Questionnaire-Revised (EPQ-R) Short Scale in Greece. *Personality and Individual Differences*, *37*, 1205-1220. doi:10.1016/j.paid.2003.12.005
- Aluja, A., Garcia, O., & Garcia, L. F. (2002). A comparative study of Zuckerman's three structural models for personality through the NEO-PI-R, ZKPQ-III-Q, EPQ-RS and Goldberg's 50-bipolar adjectives. *Personality and Individual Differences*, *33*, 713-725. doi:10.1016/S0191-8869(01)00186-6
- Birley, J. A., Gillespie, A. N., Heath, C. A., Sullivan, F. P., Boomsma, I. D., & Martin, G. N. (2006). Heritability and nineteen-year stability of long and short EPQ-R Neuroticism scales. *Personality and Individual Differences*, *40*, 737-747. doi:10.1016/j.paid.2005.09.005
- Boerner, K., Wang, S. W., & Cimarolli, V. R. (2006). The Impact of Functional Loss: Nature and Implications of Life Changes. *Journal of Loss and Trauma*, *11(4)*, 265-287. doi:10.1080/15325020600662625
- Budaev, S. V. (1999). Sex differences in the Big Five personality factors: testing an evolutionary hypothesis. *Personality and Individual Differences*, *26*, 801-813. doi:10.1016/S0191-8869(98)00179-2
- Costa, P. T., Herbst, J. H., McCrae, R. R., & Siegler, I. C. (2000). Personality at midlife: stability, intrinsic maturation, and response to life events. *Assessment*, *7(4)*, 365-378. doi:10.1177/107319110000700405
- Costa, P. T. Jr., Terracciano, A., & McCrae, R. R. (2001). Gender Differences in Personality Traits Across Cultures: Robust and Surprising Findings. *Journal of Personality and Social Psychology*, *81(2)*, 322-331. doi:10.1037/0022-3514.81.2.322
- Eaves, L. J., & Eysenck, H. J. (1975). The nature of extraversion: A genetical analysis. *Journal of Personality and Social Psychology*, *32(1)*, 102-112. doi:10.1037/h0076862
- Eysenck, H. J. (1990). Genetic and environmental contributions to individual differences: The three major dimensions of personality. *Journal of Personality*, *58(1)*, 245-261. doi:10.1111/j.1467-6494.1990.tb00915.x
- Eysenck, H. J., Barrett, P., Wilson, G., & Jackson, C. (1992). Primary trait measurement of the 21 components of the PEN system. *European Journal of Psychological Assessment*, *8*, 109-117.
- Eysenck, H. J., & Eysenck, S. B. G. (1975). *Manual of the Eysenck Personality Questionnaire (Junior & Adult)*. London: Hodder and Stoughton.
- Eysenck, H. J., & Eysenck, M. W. (1985). *Personality and Individual Differences*. New York: Plenum.
- Eysenck, H. J., & Eysenck, S. B. G. (1991). *Manual of the Eysenck Personality Scales (EPS Adult)*. London: Hodder and Stoughton.
- Farmer, A., Redman, K., Harris, T., Mahmood, A., Sadler, S., Pickering, A., & McGuffin, P. (2002). Neuroticism, extraversion, life events and depression. The Cardiff Depression Study. *The British Journal of Psychiatry*, *181*, 118-122. doi:10.1192/bjp.181.2.118
- Francis, L. J., & Jackson, C. J. (2004). Which version of the Eysenck Personality Profiler is best? 6-, 12- or 20-items per scale. *Personality and Individual Differences*, *37(8)*, 1659-1666. doi:10.1016/j.paid.2004.03.001
- Furnham, A. (1990). The fakeability of the 16PF, MBTI and FIRO-B personality measures. *Personality and Individual Differences*, *11(7)*, 711-716. doi:10.1016/0191-8869(90)90256-Q
- Gibson, L. K., McKelvie, J. S., & DeMan, F. A. (2008). Personality and culture: A comparison of Francophones and Anglophones in Québec. *The Journal of Social Psychology*, *148(2)*, 133-165. doi:10.3200/SOCP.148.2.133-166
- Harrington, R. G., & McDermott, D. (1993). A model for the interpretation of personality assessments of individuals with visual impairments. *Journal of Rehabilitation*, *59*, 24-29.
- Haymes, S. A., Guest, D. J., Heyes, A. D., & Johnston, A. W. (1996). The Relationship of Vision and Psychological Variables to the Orientation and Mobility of Visually Impaired Persons. *Journal of Visual Impairment & Blindness*, *90*, 314-324.
- Heath, A. C., Eaves, L. J., & Martin, N. G. (1989). The genetic structure of personality III: Multivariate genetic item analysis of the EPQ scales. *Personality and Individual Differences*, *10(8)*, 877-888. doi:10.1016/0191-8869(89)90023-8
- Heath, A. C., Jardine, R., Eaves, L. J., & Martin, N. G. (1988). The genetic structure of personality. I: Phenotypic factor structure of the EPQ in an Australian sample. *Personality and Individual Differences*, *9(1)*, 59-67. doi:10.1016/0191-8869(88)90030-X

- Heath, A. C., Jardine, R., Eaves, L. J., & Martin, N. G. (1989). The genetic structure of personality - II: Genetic item analysis of the EPQ. *Personality and Individual Differences, 10(6)*, 615-624. doi:10.1016/0191-8869(89)90221-3
- Johnson, D. G. (1989). An unassisted method of psychological testing of visually impaired individuals. *Journal of Visual Impairment & Blindness, 83*, 114-118.
- Katz, R., & McGuffin, P. (1987). Neuroticism in familial depression. *Psychological Medicine, 17(1)*, 155-161. doi:10.1017/S0033291700013052
- Klinkosz, W., Sekowski, A., & Brambring, M. (2006). Academic Achievement and Personality in University Students Who Are Visually Impaired. *Journal of Visual Impairment & Blindness, 100(11)*, 666-675.
- Lynn, R., & Martin, T. (1997). Gender differences in extraversion, neuroticism, and psychoticism in 37 nations. *The Journal of Social Psychology, 137(3)*, 369-373. doi:10.1080/00224549709595447
- McCrae, R. R., Costa, T. P., Hřebíčková, M., Urbánek, T., Martin, A. T., Oryol, E. V., Rukavishnikov, A. A., & Senin, G. I. (2004). Age differences in personality traits across cultures: Self-report and observer perspectives. *European Journal of Personality, 18(2)*, 143-157. doi:10.1002/per.510
- Papadopoulos, K., & Goudiras, D. (2004). Visually Impaired Students and University Examinations. *British Journal of Visual Impairment, 22(2)*, 66-70. doi:10.1177/0264619604046640
- Reid, J. (2000). **Initial Evaluations of Mainstream Personality Tests for Use with Visually Impaired Adults in Vocational Assessment and Guidance.** *Journal of Visual Impairment & Blindness, 94(4)*, 229-231.
- Swallow, R. (1982). Fifty assessment instruments commonly used with blind and partially seeing individuals. *Journal of Visual Impairment & Blindness, 75*, 65-72.
- Warren, D. H. (1984). *Blindness and Early Childhood Development* (2<sup>nd</sup> ed.). NY: American Foundation for the Blind.
- Wilson, D. J., & Doolabh, A. (1992). Reliability, factorial validity and equivalence of several forms of the Eysenck Personality Inventory/Questionnaire in Zimbabwe. *Personality and Individual Differences, 13(6)*, 637-643. doi:10.1016/0191-8869(92)90234-G
- Wolf, H., Angleitner, A., Spinath, F. M., Riemann, R., & Strelau, J. (2004). Genetic and environmental influences on the EPQ-RS scales: a twin study using self- and peer reports. *Personality and Individual Differences, 37(3)*, 579-590. doi:10.1016/j.paid.2003.09.028
- World Medical Association (2010). *WMA Declaration of Helsinki - Ethical Principles for Medical Research Involving Human Subjects*. Retrieved April 3, 2010, from <http://www.wma.net/en/30publications/10policies/b3/index.html>