

# Online Implementation of an IPIP Five Factor Personality Inventory.

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## **Preface**

These pages describe an ongoing project to validate a freely available personality inventory for use on the WWW. This will permit online researchers to assess a broader range of constructs than has been the case with the single-trait measures which have mainly been used to date (e.g. [Buchanan and Smith, 1999](#); [Davis, 1999](#); [Pasveer and Ellard, 1998](#); [Schwarzer, Mueller and Greenglass, 1999](#)).

The test materials and underlying philosophy of this project are derived from the International Personality Item Pool ([Goldberg, 1999a](#)). If you are not familiar with that work, you should visit the [IPIP website](#) now.

This document does not constitute a full report of our work, but aims to give interested researchers sufficient information to use the instrument in their own work if so desired. An initial presentation of some of this data was made at the 1999 Society for Computers in Psychology annual meeting ([Buchanan, Goldberg and Johnson, 1999](#)) and a full report is being prepared for publication in the peer-reviewed psychological literature. If you wish to cite this preliminary report, please use the format: Buchanan, T. (2001). *Online implementation of an IPIP Five Factor Personality Inventory* [On-line]. Available: <http://users.wmin.ac.uk/~buchant/wwwffi/introduction.html>

## **Description of project to date**

### **Motivation**

This project aims to establish the validity of a generally useful personality inventory for administration via the WWW (see, e.g., [Buchanan & Smith, 1999](#); [Buchanan, 2000](#); [Krantz & Dalal, 2000](#) for accounts of why such validation is necessary), and to make it available for use by online researchers.

### **What the test is intended to measure**

The current dominant model in theory and research on personality proposes that personality is best described in terms of a hierarchical model with five main domains (e.g. [Goldberg, 1990](#); [Costa & McCrae, 1992](#); [Digman, 1990](#)). Within each domain there are sub-factors (sometimes called "facets"). The precise nature of the hierarchical model, and the facets within each domain, is still open to debate, and different flavours of Five Factor / Big Five type models have been described in the literature.

This inventory is intended to assess the five domains of the Five Factor Model (as described by [Costa & McCrae, 1992](#)) - Openness, Conscientiousness, Extraversion, Agreeableness and Neuroticism. It is based on an IPIP inventory developed by [Goldberg \(1999b\)](#). That instrument was chosen for two main reasons: it addresses the same domain constructs as the NEO-PI, a

widely used commercially-published inventory; and secondly, it is short - likely to be a bonus in online research, where participants who become bored by lengthy forms will simply drop out.

### Description of Inventory

As described by [Buchanan, Goldberg and Johnson \(1999\)](#), an online version of [Goldberg's \(1999b\)](#) 50-item inventory measuring the domain constructs of the Five Factor Model was created and placed online. Participants, who found it through search engines, completed the inventory and answered additional questions, then submitted their forms for scoring. This was done automatically, and individual feedback generated.

In the feedback, participants saw descriptions of the constructs measured by the inventory, and an indication of how their score compared (low, medium or high, calculated on the basis of percentiles) to those of other people who had taken the test. [Appendix 1](#) below shows an extract from a typical feedback page.

2448 responses were acquired. On the basis of factor analyses, a number of items were dropped from the inventory to improve the factor structure of the instrument. All data presented below, and the test items in [Appendix 2](#), relate to this revised inventory. Reliability (see Table 1 below) for the five domain scales was acceptable, and there were (on the basis of correlations with self-reports of relevant behaviours) encouraging preliminary indications of validity - see [Buchanan, Goldberg and Johnson \(1999\)](#) for more details.

Factor	Number of Items	Cronbach's Alpha
O	7	.74
C	10	.84
E	9	.88
A	7	.76
N	8	.83

Table 1: Reliability of Scales

### Scores on Inventory

The data presented below should give an idea of the kind of scores one would expect people to get on the revised inventory. These should not be considered "norms" as such - different groups of Internet users, recruited through different techniques, are likely to have different patterns of scores. The data below thus relate only to the specific self-selected group of users who found the inventory by searching for the text string "online test" or "personality test" through a search engine, and were motivated to complete the test: people who were actually looking for tests to do. It is likely that these will differ, in terms of personality variables, from a "random sample" of Internet users (should such a thing be possible).

	Men	Women
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Number of participants	991	1457
Openness	Mean = 25.52 SD = 5.52	Mean = 26.9 SD = 4.90
Conscientiousness	Mean = 32.53 SD = 7.47	Mean = 33.84 SD = 7.25
Extraversion	Mean = 28.21 SD = 7.67	Mean = 29.66 SD = 7.59
Agreeableness	Mean = 25.23 SD = 4.81	Mean = 26.84 SD = 4.60
Neuroticism	Mean = 21.57 SD = 6.76	Mean = 22.95 SD = 6.68
Table 2: Scores on Inventory		

## How to use the Inventory

### Who can use it?

The test materials are free for anyone to use for **non-commercial purposes** (research or teaching). No permission is required, but we would appreciate knowing the results of any research conducted using the instrument.

### How do you use it?

The simplest way to use the inventory is to implement it as an html form. The test items and scoring key are presented in [Appendix 2](#) below. Depending on the project, and whether feedback is given to participants, different scoring / data acquisition routines may be appropriate. For a general outline of the mechanisms involved, see (e.g.) [Schmidt \(1997a\)](#). Advice on how to do online research in practice, and software which may be useful, can be found at the following external sites:

- Michael Birnbaum's [SurveyWIZ](#) program (as documented in [Birnbaum, 2000](#))
- William Schmidt's [WWW Survey Assistant](#), as documented in [Schmidt \(1997b\)](#), and links to useful articles on online research.
- Paul Kenyon's teaching support web pages also contain information on [how to put questionnaires on the Internet](#).

The SurveyWiz site may be especially useful: as well as a source of valuable advice, it is a tool which makes it very easy to create an online questionnaire and use it to acquire data.

### Future plans

At the time of writing, extensions to this project are being planned:

- Replication with a different sample, recruited through other means, to test for effects of self-selection (c.f. "multiple site entry technique" - [Reips, 2000](#)).
- Check test-retest reliability.

Results of these efforts will be published as and when they are available.

## Appendix 1: Sample Feedback from Inventory

Figure 1 below reproduces an excerpt of the feedback given to participants in the study reported by [Buchanan, Goldberg and Johnson \(1999\)](#). Note that the scores and statements about scores being high, low or average would change depending on how the respondent filled in the form.

### Feedback

The test that you have just taken is based on the Five Factor Model of personality. There is a broad consensus amongst personality theorists that this model, which describes five major 'domains' or traits, is the best current description of the structure of personality. The five major dimensions, and your scores on them, are described below. Try to interpret your results on the basis of the overall pattern, rather than just concentrating on particular scores.

#### Factor I : Extraversion (AKA Surgency)

This trait reflects preference for, and behavior in, social situations. People high in extraversion are energetic and seek out the company of others. Low scorers (introverts) tend to be more quiet and reserved. Compared to other people who have taken this test, your score on this dimension (27) is *about average*.

#### Factor II : Agreeableness (AKA Friendliness)

This trait reflects how we tend to interact with others. People high in agreeableness tend to be trusting, friendly and cooperative. Low scorers tend to be more aggressive and less cooperative. Compared to other people who have taken this test, your score on this dimension (21) is *relatively low*.

#### Factor III : Conscientiousness (AKA Will or Dependability)

This trait reflects how organized and persistent we are in pursuing our goals. High scorers are methodical, well organized and dutiful. Low scorers are less careful, less focussed and more likely to be distracted from tasks. Compared to other people who have taken this test, your score on this dimension (29) is *relatively low*.

#### Factor IV : Neuroticism (AKA Emotional Stability)

This trait reflects the tendency to experience negative thoughts and feelings. High scorers are prone to insecurity and emotional distress. Low scorers tend to be more relaxed, less emotional and less prone to distress. Compared to other people who have taken this test, your score on this dimension (25) is *about average*.

### **Factor V : Openness (AKA Culture or Intellect)**

This trait reflects 'open-mindedness' and interest in culture. High scorers tend to be imaginative, creative, and to seek out cultural and educational experiences. Low scorers are more down-to-earth, less interested in art and more practical in nature. Compared to other people who have taken this test, your score on this dimension (21) is *relatively low*.

A word of caution - your score on each scale was interpreted relative to a large (2448) sample of other people who have done the test: 'relatively low' means your score was in the bottom 30%, 'relatively high' in the top 30%, and 'about average' somewhere in the middle.

However, it is known that different groups of people (e.g. men and women) are likely to score differently on various measures. Therefore, the people you were compared to in generating the feedback may not have been people exactly like you. We are continuing to gather data which will enable a more accurate interpretation of responses. The information you have given us will help in this process.

Figure 1: Sample Feedback Screen

## Appendix 2: Test Items and Scoring Key

Table 3 below presents the items in the inventory, the factors (Openness, Conscientiousness, Extraversion, Agreeableness and Neuroticism) they load on, and the direction of loading (a +ve loading indicates that someone who agrees with the item scores higher on the construct that someone who disagrees; the opposite is true for -ve loadings).

Item Number	Item Text	Factor	Direction
1	Tend to vote for conservative political candidates.	O	-ve
2	Have frequent mood swings.	N	+ve
3	Am not easily bothered by things.	N	-ve
4	Believe in the importance of art.	O	+ve
5	Am the life of the party.	E	+ve
6	Am skilled in handling social situations.	E	+ve
7	Am always prepared.	C	+ve
8	Make plans and stick to them.	C	+ve
9	Dislike myself.	N	+ve
10	Respect others.	A	+ve
11	Insult people.	A	-ve
12	Seldom feel blue.	N	-ve
13	Don't like to draw attention to myself.	E	-ve
14	Carry out my plans.	C	+ve
15	Am not interested in abstract ideas.	O	-ve
16	Make friends easily.	E	+ve
17	Tend to vote for liberal political candidates.	O	+ve
18	Know how to captivate people.	E	+ve
19	Believe that others have good intentions.	A	+ve
20	Do just enough work to get by.	C	-ve
21	Find it difficult to get down to work.	C	-ve
22	Panic easily.	N	+ve
23	Avoid philosophical discussions.	O	-ve
24	Accept people as they are.	A	+ve
25	Do not enjoy going to art museums.	O	-ve

26	Pay attention to details.	C	+ve
27	Keep in the background.	E	-ve
28	Feel comfortable with myself.	N	-ve
29	Waste my time.	C	-ve
30	Get back at others.	A	-ve
31	Get chores done right away.	C	+ve
32	Don't talk a lot.	E	-ve
33	Am often down in the dumps.	N	+ve
34	Shirk my duties.	C	-ve
35	Do not like art.	O	-ve
36	Often feel blue.	N	+ve
37	Cut others to pieces.	A	-ve
38	Have a good word for everyone.	A	+ve
39	Don't see things through.	C	-ve
40	Feel comfortable around people.	E	+ve
41	Have little to say.	E	-ve
Table 3: The Inventory			

Suggested response format is a 5 point scale (easily operationalised using radio buttons). To obtain the score on each factor, simply adjust each item score for direction and sum across the relevant items. An example of what the inventory would look like when implemented online, along with suggested administration instructions, is given in Figure 2 below.

# Instructions

On the following pages, there are phrases describing people's behaviors. Please use the rating scale below to describe how accurately each statement describes *you*. Describe yourself as you generally are now, not as you wish to be in the future. Describe yourself as you honestly see yourself, in relation to other people you know of the same sex as you are, and roughly your same age. So that you can describe yourself in an honest manner, your responses will be kept in absolute confidence. Please read each statement carefully, and then fill in the bubble that corresponds to your reply.

	Very Inaccurate	Moderately Inaccurate	Neither Inaccurate nor Accurate	Moderately Accurate	Very Accurate
1. Tend to vote for conservative political candidates.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
2. Have frequent mood swings.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
<i>... etc for other items...</i>					

Bottom of Form

Figure 2: Excerpt from Inventory as used in practice

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