



# Technical Supplement for the UK version of the CPI 260<sup>®</sup> instrument



Produced by OPP Ltd, June 2005



CPI 260 and the CPP and CPI 260 logos are registered trade marks of CPP, Inc. OPP<sup>®</sup> is licensed to use the trade marks in Europe.  
OPP is a registered trade mark of OPP Ltd.

# Introduction

The CPI 260<sup>®</sup> instrument is a 260-item questionnaire, designed to assess aspects of personality which ordinary people use to understand their own behaviour and that of others. It has been designed to measure favourable and positive aspects of personality, and is therefore primarily designed for use with “normal” populations. It should be emphasised that it is not a clinical instrument and should not be used as such; the questionnaire was designed for use with more or less “well-adjusted” individuals. The CPI 260 was developed from the well established California Psychological Inventory (CPI) and assesses the same dimensions of personality.

Before the CPI 260 was developed, the “standard” version of the CPI was the CPI 434, which contains 434 questions. This is time-consuming to administer and users of the questionnaire expressed a need for a version of the instrument which would assess the same dimensions of personality, but which would contain fewer questions and take less time to administer. The CPI 260 was designed to meet this need, and in doing so it measures all 29 scales in an assessment that requires 40% less time to complete.

Table 1 lists the 29 scales included in the CPI 260 instrument. The 29 scales are organised into 20 folk scales, 3 structural scales, and 6 special purpose scales. The folk scales are further grouped into four broad categories or classes based on their meanings. The special purpose scales add discrimination for specific applications. The structural scales define the personality model underlying the instrument.

**Table 1: CPI 260 scales**

<b>CPI 260 Scale name</b>	<b>Description</b>
Do Dominance	Dominance is about comfort with, and preference for, taking charge of people and things.
Cs Capacity for status	Capacity for Status is a relatively broad scale that focuses on the characteristics related to the attainment of high status, and on the desire to occupy high status. These include ambition for social status and challenge.
Sy Sociability	Sociability is concerned with the extent to which the individual enjoys and seeks out opportunities to be with others.
Sp Social presence	Social presence provides an indication of how comfortable an individual is when they find themselves at the centre of attention in social gatherings.
Sa Self-acceptance	Self-acceptance is concerned with confidence in personal decision-making and asserting one’s own viewpoint.
In Independence	Independence is concerned with a sense of self-sufficiency and the degree to which one is comfortable coping without the help or support of others.
Em Empathy	Empathy is concerned with perceived empathy in terms of the extent to which an individual is likely to impress others as being a warm, responsive, empathetic person.
Re Responsibility	Responsibility is concerned with a willingness to persist with relatively dull and mundane tasks, and to follow through where there may not seem to be much intrinsic satisfaction or personal pay-off.
So Social conformity	Social conformity is concerned with how individuals relate to authority. High scorers typically respect conventional authority and have a need to do things the right way, whereas low scorers will not readily accept rules and social norms and can find it hard to conform.
Sc Self-control	Self-control is concerned with impulse control and assesses the tendency to “look before you leap” (as opposed to leaping before you look).
Gi Good impression	The Good impression scale is concerned with the extent to which an individual takes care of and monitors their behaviour in order to present a favourable impression to others.

CPI 260 Scale name		Description
Cm	Communality	At a descriptive level, Communality provides a measure of how conventional the individual considers himself or herself. However, it is most useful in assessing random responding and unusual response patterns to the questionnaire. The scale consists of items which either almost everyone endorses, or which almost no-one endorses. A high score therefore suggests that the respondent does not see himself or herself as particularly unusual or different from others, whereas a low score suggests that the respondent has answered many questions in a atypical way.
Wb	Well-being	The Well-being scale looks at a person's general happiness and sense of well being.
To	Tolerance	Tolerance is concerned with assessing the extent to which an individual has a positive, open-minded attitude towards others.
Ac	Achievement via conformance	Achievement via Conformance is concerned with identifying the potential of an individual to perform within a structured setting.
Ai	Achievement via independence	Achievement via Independence is concerned with identifying the potential of an individual to perform within an unstructured setting.
Cf	Conceptual fluency	Conceptual fluency is concerned with the degree to which intellectual abilities are efficiently deployed.
Is	Insightfulness	Insightfulness looks at the degree to which one engages in, and is capable of, analysing the behaviour and motivations of others in psychological terms.
Fx	Flexibility	Flexibility is concerned with tolerance of and comfort with ambiguity and uncertainty.
Sn	Sensitivity	In earlier versions of the CPI, this scale was known as 'Femininity/Masculinity (F/M)', and distinguished between stereotypically feminine behaviours and stereotypically male behaviours. This remains the core meaning of the scale. High scorers are generally more sensitive, whereas low scorers are generally more tough-minded.
Mp	Managerial potential	Managerial potential aims to identify people with an interest in management and who have effective interpersonal skills and good judgment.
Wo	Work orientation	Work orientation aims to identify people with a dutiful work ethic, a strong sense of commitment to their jobs, and little need for overt recognition.
Ct	Creative temperament	Creative temperament aims to identify people with an imaginative, creative temperament, with both the need and potential for visualising new and different ways of doing things.
Lp	Leadership	Leadership aims to identify people who have good leadership skills, who aspire to positions of leadership, and who will be accepted as leaders by others.
Ami	Amicability	Amicability aims to identify people who are amicable, friendly and considerate of others, who try to avoid conflicts, and who seldom become angry or irritated.
Leo	Law enforcement orientation	Law enforcement orientation aims to identify people who view law enforcement and societal rules favourably, and who are well-suited for work in the law enforcement field.
v.1	vector 1	Vector 1 corresponds roughly to the factor called extroversion, self-confidence, self-assurance and social poise. The two ends of the scale can be defined as <i>participating</i> and <i>private</i> , or as <i>externality</i> and <i>internality</i> .
v.2	vector 2	Vector 2 corresponds roughly to the factor called adjustment by social conformity, self-control, disciplined effectiveness, and personal integrity. The two ends of the scale can be defined as <i>accepting</i> and <i>questioning</i> , or as <i>norm-favouring</i> and <i>norm-accepting</i> .
v.3	vector 3	Vector 3 registers the sense of personal attainment. High scores indicate a high level of realisation of the person's potential, low scores indicate a low level of realisation.

## **Folk scales**

The first class of folk scales measures interpersonal aspects of the person, such as self-confidence, poise, ascendancy, and social effectiveness. The seven scales are Dominance (Do), Capacity for Status (Cs), Sociability (Sy), Social Presence (Sp), Self-acceptance (Sa), Independence (In), and Empathy (Em). Scores consistently above 50 on these scales suggest outgoing, socially competent individuals. Lower scores are indicative of a more socially reticent, non-assertive style.

The second class of scales measures internal values and normative expectations like maturity, personal values, self-control, and sense of responsibility. The seven scales are Responsibility (Re), Social Conformity (So), Self-control (Sc), Good Impression (Gi), Communality (Cm), Well-being (Wb), and Tolerance (To). Scores consistently above 50 on these scales suggest a cautious, controlled individual. Lower scores are indicative of a more carefree, action-oriented individual.

The third class of scales measures achievement needs and cognitive tendencies including motivation, persistence, and organization. The three scales are Achievement via Conformance (Ac), Achievement via Independence (Ai), and Conceptual Fluency (Cf). High scores above 50 on these three scales suggest a driven person with superior ability to access their intellectual resources. Lower scores are indicative of a reluctant individual with less ability to draw on their own resources except when dealing with the most concrete and tangible of matters.

The fourth class of scales assesses stylistic preferences for things such as insightfulness, adaptability, and sensitivity. The three scales are Insightfulness (Is), Flexibility (Fx), and Sensitivity (Sn). High scores above 50 on these three scales suggest an individual who can be described as perceptive, open minded, and attuned to their surroundings. Scores below 50 on these scales are indicative of someone with a more closed stance who functions best in a stable, predictable environment.

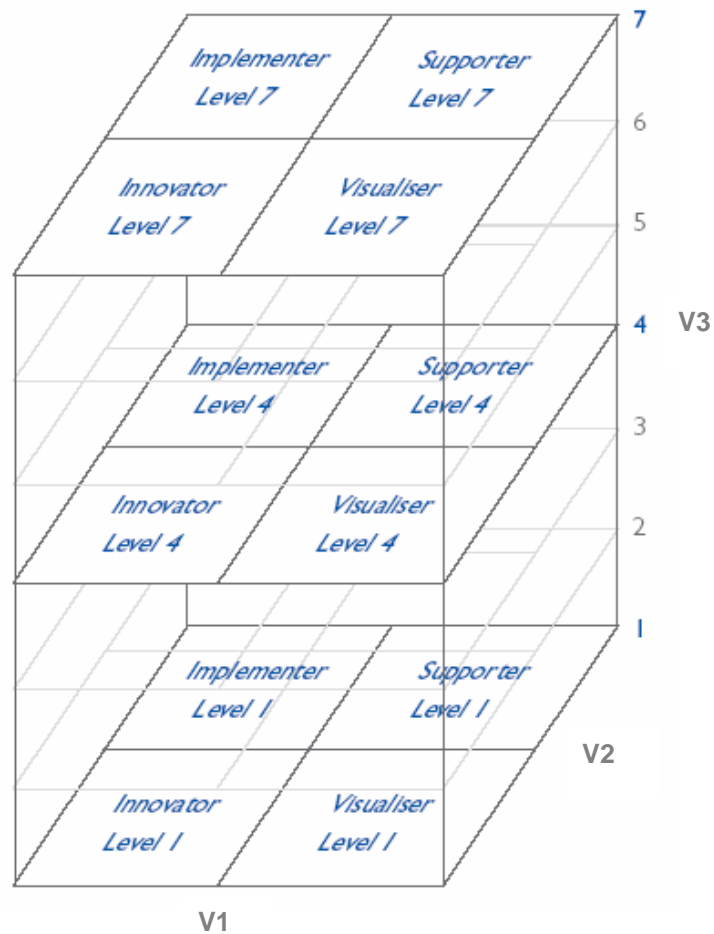
## **Special purpose scales**

The special purpose scales are additional scorings of the instrument that may serve useful in specific applications. For example, the Managerial Potential scale was developed in an attempt to identify persons who would be successful in management positions. Unlike the folk scales and the structural scales, the special purpose scales are not universally applicable. However, the special purpose scales frequently prove helpful in confirming or further clarifying interpretation.

## **Structural scales**

The three structural scales provide for the "cuboid model" of personality underlying the instrument (see Figure 1). Together, the Participating versus Private (v.1) and Approving versus Questioning (v.2) scales define four general life style themes or types of people. The four types are Implementer (i.e. Participating, Approving), Supporter (i.e. Private, Approving), Innovator (i.e. Participating, Questioning), and Visualiser (i.e. Private, Questioning). The third structural scale measures level of Fulfilment (v.3). This third dimension classifies individuals across seven levels of self-realisation within the four life style themes. The seven levels go from frustration at levels 1 and 2 to ordinary levels of satisfaction at levels 3, 4, and 5 to superior feelings of efficacy at levels 6 and 7.

**Figure 1: The Cuboid Model**



### Type and Level Results

Accurate decisions about scoring of the structural scales are critical to their effectiveness. Based on previous versions of the CPI instrument (see Gough & Bradley, 1996), it was expected that approximately 25% of individuals in the normative sample would be found in each of the four types or life style themes. On the third dimension of Fulfilment, it was expected that individuals would follow the established distribution with percentages for each of the seven levels of 8, 12, 19, 22, 19, 12, and 8. Note that the expected distributions are the theoretical ideal and that previous versions of the CPI instrument have roughly approximated them in practice.

Type and level results for the normative sample were very close to the expected values. Type classification of the 2001 individuals yielded 20% Implementers (n=408), 23% Supporters (n=459), 29% Innovators (n=584), and 28% Visualisers (n=550). Classification on level of Fulfilment yielded 7.1% at level 1 (n=143), 11.4% at level 2 (n=229), 17.3% at level 3 (n=347), 23.7% at level 4 (n=474), 22.1% at level 5 (n=443), 11.0% at level 6 (n=221), and 7.2% at level 7 (n=144).

When used in the context of other information about a person, the CPI 260 is designed to describe and predict their behaviour. The instrument has been used to predict:

- Work motivation and performance
- Attainment of leadership positions
- Educational progress (including "drop-out" from education)
- Scholastic achievement
- Interpersonal style and effectiveness
- Social maturity
- Creativity

Specific uses in organisations include:

- Recruitment and selection
- Succession planning
- Managerial and leadership development
- Counselling and career development
- Research.

# Development of the CPI 260<sup>®</sup> Instrument

In 2000 a research initiative was begun in parallel in the UK and the US. The aims of the research were to produce a version of the CPI which was considerably shorter than the CPI 434 but which:

- contained all 20 folk concept scales, plus the three structural scales and the six special purpose scales.
- was considerably shorter than the CPI 434 while as far as possible maintaining:
  - Breadth of coverage or “bandwidth” of the scales
  - Reliability of the scales

A further aim was to produce separate US and UK versions which maintained local idioms but which were nevertheless as similar as possible to each other. In doing this, existing versions of the CPI were reviewed for any possible biases, with consideration given to removing of some of the less face valid or more “obscure” items, without compromising the special qualities of the CPI

The development process is described in detail below.

## Details of the Development Process

In 2000, both US and UK researchers had separately prepared 250-item research versions from the CPI 434. The items for these research versions had been selected by a number of different methods:

- Factor analysis of CPI-434 data at the item level
- Selection of items which had been shown to discriminate well between criterion groups
- Rejection of items which showed undue biases or which appeared biased
- Internal consistency analysis

When the US and UK items were compared, it was found that 231 items were held in common, with 19 items different.

All the selected US and UK items were then compiled and reviewed by a joint US and UK panel for any possible issues of bias or perceived unfairness with regard to gender, race or disability. This led to a number of changes to US items which had already been carried out to UK items in an earlier review. Having removed or re-worded any problematic items, the remaining items were analysed, scale by scale, in order to produce a set of items for the final version. The data sets used for this purpose were:

- US: A large sample of 6,000 individuals from a wide variety of backgrounds taken from the databases of Consulting Psychologists Press (CPP). Further details are given in Gough and Bradley (1996).
- UK: The UK 1997 CPI standardisation group, which was considered to be representative of the UK general population. The composition of this group, and how it was sampled, is summarised later in this document, and described in more detail in Cook, Leigh and McHenry (1997).

The goal of this analysis was to:

- Ensure that each scale still measured the same folk concepts as before.
- Retain items which had in the past been shown to work well. This was particularly important for scales produced by the criterion-keyed method.
- Maintain the “bandwidth” of each scale. It was felt to be important not to sacrifice the breadth of the scale in order to inflate internal consistency reliability. This criterion meant

that some scales were allowed to have up to 26 items, and all scales had a minimum of 20 items.

- Ensure that each scale did still discriminate between individuals. Scales should show a range of scores and different items should be answered in different ways by different individuals. This was achieved in a number of ways, for example by looking at the variance of items and scales. While a reduction of almost half in the number of items must mean some loss of subtlety, this should be kept to a minimum.
- Maintain acceptable levels of internal consistency reliability. Internal consistency analysis, using Cronbach's alpha, formed part of the item selection process.
- Maintain the same factor structure at scale level. Factor analyses (principal axis factoring with oblique rotation) were carried out to determine this, and the results fed back into the item choice process.

At the end of this process, a set of 260 items remained to form the new version of the CPI. Overall, the process was highly successful in maintaining the meanings of the scales.

The extent to which one can generalize the established validity and interpretive guidelines from the CPI 434 instrument to the CPI 260 instrument hinges on the relationship between the two forms. Table 2 below shows the correlation between CPI 434 scores and CPI 260 scores from the UK standardisation dataset.

**Table 2: Correlation between CPI 434 and CPI 260 scales**

	Correlation
<b>Do</b>	.96
<b>Cs</b>	.94
<b>Sy</b>	.97
<b>Sp</b>	.96
<b>Sa</b>	.97
<b>In</b>	.95
<b>Em</b>	.93
<b>Re</b>	.94
<b>So</b>	.95
<b>Sc</b>	.98

	Correlation
<b>Gi</b>	.95
<b>Cm</b>	.70
<b>Wb</b>	.93
<b>To</b>	.95
<b>Ac</b>	.96
<b>Ai</b>	.96
<b>Cf</b>	.96
<b>Is</b>	.96
<b>Fx</b>	.97
<b>Sn</b>	.81

	Correlation
<b>Mp</b>	.96
<b>Wo</b>	.91
<b>Ct</b>	.95
<b>Lp</b>	.94
<b>Ami</b>	.96
<b>Leo</b>	.90
<b>v.1</b>	.94
<b>v.2</b>	.94
<b>v.3</b>	.94

There is a high degree of agreement between the CPI 434 and CPI 260. The median correlation is 0.95, and with the exception of Sensitivity (Sn) and Communality (Cm) no correlation drops below 0.9. This indicates a very strong relationship between the two instruments.

The Sensitivity scale has changed slightly from when it was the Femininity/Masculinity (F/M) scale in the CPI 434. It is now more of a measure of sensitivity than of stereotypically masculine and feminine traits, which explains the slightly lower correlation for this scale. As a control scale, Communality does not measure folk concepts in the same way as the other scales, so this is not a major concern either.

## Normative Data

The two UK norm groups currently available for the CPI 260 are all based on data collected in 1996 by the Office of National Statistics (ONS), who use a random sampling method. One group is a nationally representative sample of the general UK population, for people of working age. The other is a subset of this larger group, and consists of people who described their occupational level as middle (or upper middle) management.

All participants were asked completed a questionnaire consisting of the CPI 434 and a 76-item biographical questionnaire. Returned questionnaires were checked for omissions and were rejected if more than 20 questions were left unanswered. The CPIs were also scored for Communality, and rejected if the raw score indicated an unduly high number of unusual responses. From the responses, CPI 260 scale scores were calculated. This was possible due to the fact that all the CPI 260 items were contained within the CPI 434.

Further details of both UK norm groups are shown in Table 3 below.

**Table 3: Composition of UK norm groups**

	<b>UK population norm group (n=2001)</b>	<b>UK managerial norm group (n=443)</b>
<b>Gender</b>		
Male	836 (42%)	199 (45%)
Female	1149 (58%)	243 (55%)
<b>Age</b>		
16-29	462 (23%)	76 (17%)
30-49	999 (51%)	259 (59%)
50-65	512 (26%)	104 (24%)
<b>Occupational Level</b>		
Top	13 (1%)	-
Senior executive	39 (3%)	-
Upper middle management	104 (7%)	104 (23%)
Middle management	339 (23%)	339 (77%)
First level	194 (13%)	-
Employee	773 (53%)	-
<b>Ethnicity</b>		
White	1912 (96%)	423 (96%)
Minority	82 (4%)	19 (4%)
<b>Age when left full-time education</b>		
<15	89 (4%)	54 (12%)
16 – 18	1438 (72%)	201 (46%)
19 – 25	295 (15%)	165 (38%)
>26	76 (4%)	14 (3%)
Still in education	89 (4%)	6 (1%)
<b>Employment status</b>		
Employed	1156 (59%)	331 (76%)
Self-employed	135 (7%)	-
Unemployed	419 (22%)	60 (14%)
Retired	187 (10%)	46 (11%)
Never worked	56 (3%)	-

The raw score means and standard deviations from the two norm groups are reported in Table 4.

**Table 4: Scale mean scores and standard deviations for UK norm groups**

Scale	UK population norm group (n=2001)	
	Mean	SD
Do	16.47	6.65
Cs	11.96	4.40
Sy	13.63	4.47
Sp	16.97	4.26
Sa	12.61	3.98
In	12.22	4.16
Em	11.97	3.53
Re	13.78	3.51
So	20.28	4.23
Sc	15.38	5.15
Gi	13.74	4.68
Cm	19.51	1.75
Wb	14.75	3.42
To	11.22	3.81
Ac	18.04	4.35
Ai	13.93	4.54
Cf	17.91	4.99
Is	11.56	3.28
Fx	9.58	4.09
Sn	13.44	3.51
Mp	12.98	4.41
Wo	15.22	3.36
Ct	13.76	4.52
Lp	21.54	6.49
Ami	16.84	4.51
Leo	17.31	3.26
v1	12.38	4.39
v2	11.72	3.70
v3	15.88	5.72

Scale	UK managerial norm group (n=443)	
	Mean	SD
Do	19.71	6.32
Cs	14.19	4.05
Sy	15.20	4.23
Sp	18.02	3.83
Sa	14.23	3.48
In	14.16	3.71
Em	13.45	3.39
Re	15.33	3.26
So	21.74	3.82
Sc	16.16	5.01
Gi	14.79	4.76
Cm	19.92	1.54
Wb	16.03	3.00
To	12.95	3.59
Ac	20.19	3.96
Ai	16.62	3.86
Cf	20.84	4.26
Is	13.36	3.07
Fx	10.09	3.88
Sn	13.05	3.41
Mp	15.85	4.02
Wo	16.63	3.04
Ct	15.23	4.29
Lp	25.23	6.06
Ami	18.30	4.34
Leo	18.42	3.25
v1	10.98	4.40
v2	12.59	3.55
v3	18.42	5.38

## Scale Reliability

Scale reliability is concerned with the extent to which the score on a scale reflects the individual's true score. The higher the reliability of the instrument or scale, the more accurately it will measure the individual's true score.

Internal consistency is one way of estimating reliability, and is concerned with the content of the items themselves. It looks at the consistency with which items are answered, in order to estimate the degree to which all the items relate to the same underlying construct. Internal consistency estimates will therefore be affected by the scope of the items within the scale. The more disparate the item content, the lower the internal consistency reliability will be. Indeed, due to the fact that they are not designed to measure homogeneous dimensions<sup>1</sup>, the CPI 260 scales will tend to exhibit lower internal consistency reliability than other instruments whose scales have a narrower focus or "bandwidth" and are more homogeneous.

Table 5 compares the number of items used to measure each of the scales in the 434-item CPI and the CPI 260 instruments, and also reports the internal consistency reliability estimates (alpha coefficients) for the scales, based on the data collected from the UK general population norm group.

**Table 5: Reliability statistics for the CPI 260 and the 434-item version**

Scale	Number of items		Alpha Coefficient	
	CPI 260	CPI 434	CPI 260	CPI 434
Do	32	36	.87	.85
Cs	26	28	.74	.71
Sy	23	32	.79	.79
Sp	29	38	.70	.73
Sa	23	28	.71	.69
In	23	30	.77	.72
Em	25	38	.59	.64
Re	23	36	.65	.69
So	30	46	.70	.74
Sc	28	38	.79	.82
Gi	27	40	.77	.79
Cm	22	38	.39	.56
Wb	20	38	.74	.83
To	20	32	.74	.75
Ac	29	38	.72	.72
Ai	25	36	.77	.77
Ie	30	42	.77	.77
Py	22	28	.59	.59
Fx	22	28	.74	.72
Sn	28	32	.55	.67
Mp	25	34	.74	.79
Wo	23	40	.66	.75
Ct	29	42	.74	.74
Lp	36	70	.85	n/a
Ami	28	36	.76	n/a
Leo	29	42	.43	n/a
v1	20	34	.83	.85
v2	20	36	.71	.77
v3	31	58	.82	.87

<sup>1</sup> Instead, the scales are designed to measure 'folk' concepts which, by their very nature, are not restricted to one particular psychological construct.

The reliability estimates range from a low of .39 for the Communality scale to a high of .87 for Dominance. The median reliability estimate across the 29 scales is .74, suggesting that the scales measure clearly defined concepts. Although some may cite high internal consistency estimates as evidence of superior personality measures, the reader is reminded that the scales on the CPI 260 instruments are empirically constructed and multidimensional. For example, the Communality scale was found in the development of the 434-item CPI instrument to contain 10 factors with eigenvalues of 1.00 or greater. This finding is best explained by the fact that the Communality scale is really an empirically developed validity scale. That is, the Communality scale is not a content scale that measures any particular construct, but rather is a subset of items answered in a consistent direction by a very high percentage of the normative sample and used to identify when an individual's responses to the instrument are not within the common pattern. Similarly, the Law Enforcement Orientation scale is based solely on an empirical item analysis contrasting persons and their performance in police work with that of 14 other occupational groups.

## Summary

Overall, the results in this report support the CPI 260 instrument as a reliable and valid short-form of the California Psychological Inventory (CPI) instrument, with the added quality of having retained items that meet the demands of professionals in organisational settings. The type and level findings, as well as that of the invalidity indicators, were consistent with previous versions of the CPI instrument. Similarly, comparisons of internal consistency estimates and scale score means between the CPI 260 instrument and previous versions of the CPI instrument indicated a very strong relationship between the two tools. This evidence suggests that the new, briefer instrument is equivalent to, and can be expected to perform in ways that are similar to, the longer and more well established CPI 434 instrument.

## References:

- Cook, Leigh and McHenry (1997). CPI™ -434 Manual UK Data Supplement (2<sup>nd</sup> ed). Palo Alto, CA: CPP, Inc.
- Gough, H. G. (1957). Manual for the California Psychological Inventory™. Palo Alto, CA: CPP, Inc.
- Gough, H. G. (1987). The California Psychological Inventory™ administrator's guide. Palo Alto, CA: CPP, Inc.
- Gough, H. G., (2002). CPI™ bibliography. Palo Alto, CA: CPP, Inc.
- Gough, H. G., & Bradley, P. (1996). CPI™ manual (3rd ed.). Palo Alto, CA: CPP, Inc.
- McAllister, L. W. (1996). A practical guide to CPI™ interpretation (3rd ed.). Palo Alto, CA: CPP, Inc.