The FIRO-B® instrument

European Data Supplement

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Contents

Part One

Chapter 1: Introduction 5
Chapter 2: Reliability and validity 7
Reliability 7
Effect of different frames of reference on FIRO-B scores 10
Validity 11
Conclusion 21
Chapter 3: UK normative data for the FIRO-B instrument 23
UK general population 23
UK managerial samples 25
Chapter 4: Gender differences in the FIRO-B instrument 31

Part Two

Chapter 5: Introduction 33
Overview 33
Summary statistics and reliabilities across all European language versions 33
Chapter 6: Data from the European English language questionnaire 37
Demographic data 37
Scale properties 40
Group differences 45
Chapter 7: Data from the Danish language questionnaire 59
Demographic data 59
Scale properties 59
Group differences 63
Chapter 8: Data from the Dutch language questionnaire 67
Demographic data 67
Scale properties 67
Group differences 71
Chapter 9: Data from the French language questionnaire 77
Demographic data 77
Scale properties 77
Group differences 81
Chapter 10: Data from the German language questionnaire 85
Demographic data 85
Scale properties 85
Group differences 89
Chapter 11: Data from the Spanish language questionnaire 93
Demographic data 93
Scale properties 93
Group differences 97
Chapter 12: Data from the Swedish language questionnaire 101
Demographic data 101
Scale properties 102
Group differences 107
Chapter 13: Bibliography and references 113

Part One

Chapter 1: Introduction

OPP Ltd is the European distributor of the FIRO-B® instrument, and in 1996 it embarked on a programme to develop and launch a version of the questionnaire, standardised for the UK market. This version of the questionnaire has been available in European English since 1997. Since 2005, the questionnaire has been translated into several other European languages, these being Danish, Dutch, French, German, Spanish and Swedish.

This European data supplement has been written to provide FIRO-B users with a single source of information containing a summary of the research data gathered for European language versions of the FIRO-B questionnaire. As such, it includes a combination of new (previously unpublished) research, alongside information drawn from existing sources. The aim has been to produce a single, easily accessible resource that will better serve multilingual use of the instrument, written in a format that will allow it to be easily updated as more data become available. This supplement is intended to be used alongside the FIRO-B User's Guide, which is occasionally cross-referenced.

The supplement has been split into two parts. Part One provides reliability, validity and normative data from the original European English version of the questionnaire. Part Two contains more recent data, providing separate chapters for each European language version of the questionnaire.

The data described within this supplement show the psychometric properties of the instrument to be credible, and demonstrate a high degree of consistency across the various European language versions of the FIRO-B questionnaire.

Chapter 2: Reliability and validity

Reliability refers to the consistency, dependability or reproducibility of measurements obtained from a measuring instrument. A measuring instrument that is reliable is one that will give very much the same relative scores for a group of people under different conditions or situations. Validity, on the other hand, refers to the instrument's ability to measure what it was intended to measure.[1]

Refer to the FIRO-B User's Guide technical properties chapter for more information about the basis of reliability and validity.

Reliability[2]

There are three main types of reliability:

- Internal consistency reliability
- Test–retest reliability
- Alternate form reliability.

In relation to the FIRO-B instrument, data will be reported here concerning the internal consistency and test–retest reliability of the questionnaire. There is no directly comparable alternate form of the FIRO-B questionnaire.

Internal consistency

Gluck (1983) carried out split-half reliability studies for the FIRO-B scales by using the odd-even technique and then calculating the Spearman rank correlation coefficients. These coefficients are then corrected, using the Spearman-Brown Prophecy Formula, for the change in test length caused by the split-half, since test reliability is a function of the test length as measured by the number of items.

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[2] This section including Table 2.1 reproduced from *FIRO-B® User's Manual* with kind permission of CPP, Inc.

The original FIRO-B questionnaire was based on a US sample of 1000 subjects. OPP has collected data for a UK standardisation of the FIRO-B instrument, and the reliabilities obtained were as follows:

Table 2.1: Split-half reliability coefficients for the recalibrated FIRO-B instrument for UK managers (n=1191)

Scale	Corrected coefficient (Spearman-Brown Formula)
Expressed Inclusion	0.86
Wanted Inclusion	0.93
Expressed Control	0.90
Wanted Control	0.84
Expressed Affection	0.62
Wanted Affection	0.73

All six scales reached acceptable levels of reliability, with four out of six achieving excellent split-half reliability.

While a split-half analysis is the usual way of establishing the internal consistency of a test, for Guttman scales, including the FIRO-B questionnaire, it is more appropriate to look at ***reproducibility***. Reproducibility is also a more stringent criterion for reliability, since it requires not only that all items measure the same dimension, but also that they all occur in a discernible order. Coefficients of ***scalability*** are employed alongside those of reproducibility to measure the risk that reproducibility coefficients are simply an artefact of the sample on which they are based. As a guide, 0.50 is generally taken as an acceptable coefficient of scalability.

The usual criterion of reproducibility is that 90% of all responses are predictable from knowledge of the overall scale score. The reproducibility of all scales achieved the 0.90 standard or better (varying between 0.90 and 0.94), as shown in Table 2.2. These reproducibility scores are the coefficients of internal consistency for the FIRO-B instrument.

Table 2.2: Reproducibility and scalability coefficients of UK version for a UK sample (n=1392)

Scale	Reproducibility	Scalability
Expressed Inclusion	0.93	0.51
Wanted Inclusion	0.93	0.53
Expressed Control	0.94	0.66
Wanted Control	0.93	0.59
Expressed Affection	0.91	0.57
Wanted Affection	0.90	0.60

Test–retest reliability

Table 2.3 gives test–retest reliability coefficients among a sample of 112 adults over a two- to four-week period (reported in Gluck, 1983). The mean coefficient of the six scales is .77, which is quite acceptable.

Table 2.3: Reliability (test–retest) of US FIRO-B scales (n=112)

Scale	r
Expressed Inclusion	0.76
Wanted Inclusion	0.80
Expressed Control	0.71
Wanted Control	0.75
Expressed Affection	0.78
Wanted Affection	0.82

Beak (2008) conducted a study to look at the test–retest reliability of the European English version of the FIRO-B instrument over a five-month period. This was conducted separately for two groups of people; those instructed to think about their behaviour at home when responding, and those instructed to think about their behaviour at work. Formally this is known as looking at the results across different frames of reference. The test–retest reliability coefficients are shown for the two groups in Table 2.4 below.

Table 2.4: Reliability (test–retest) of UK FIRO-B scales

Scale	Frame of reference	
	Home (n=54)	Work (n=63)
Expressed Inclusion	0.70	0.66
Wanted Inclusion	0.73	0.43
Expressed Control	0.67	0.72
Wanted Control	0.51	0.54
Expressed Affection	0.79	0.64
Wanted Affection	0.65	0.60

Due to the lengthy time period between administrations, the reliability coefficients are not as high as we might expect, especially amongst the work frame-of-reference group. Further research, using a larger sample, should give more conclusive results.

However, these data, alongside the other measures of internal consistency, suggest that the items do provide a fairly consistent measure of each of the six sub-scales and that, without at least a lapse of six months or a structured intervention to purposely change or adjust his or her behaviour, an individual's scores should remain constant.[3]

Effect of different frames of reference on FIRO-B scores

It has been found (Orlans et al, 1983) that the frame of reference that respondents use when completing the FIRO-B questionnaire has an effect on scores. Subjects completed the questionnaire twice, once with a 'home' frame of reference and once thinking of themselves in a 'work' context. With a home frame of reference, scores on Inclusion and Affection were higher. This had been predicted, as the home context can be assumed to be a generally 'safer' environment, with higher levels of trust. With a work frame of reference, Expressed Control was higher. Again this was predicted (being related to greater expectations of responsibility-taking and decision-making). Thus the results suggest that patterns of behaviour are influenced

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by expectations of the situation and that individuals appear to adapt their behaviour to different situations.[4]

Beak (2008) replicated this study on a UK sample, and found the results supported the findings of Orlans et al (1983), in the sense that the mean Expressed Affection scores increase for the home frame of reference. However whilst the mean Expressed Control scores did increase from home to work they did not do so by as much as found by the Orlans study, which may be a reflection of using the UK as opposed to the US version of the instrument.

These studies do need to be replicated on a larger sample, but the results do suggest that it is important to ensure during administration that respondents are using the most appropriate frame of reference – what this is will depend on how the results will be applied. For example, if using the FIRO-B instrument for selection one would be wise to administer it and make explicit that the candidate should consider their behaviour at work specifically when answering the questions.

For further information on administering the FIRO-B questionnaire, please see the 'Administration and scoring' chapter of the FIRO User's Guide.

Validity

There are four main types of validity:

- Face validity
- Content validity
- Construct validity
- Criterion-related validity.[5]

This supplement will focus on construct validity. For further details of the other types of validity, and research data gathered for the FIRO-B

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instrument, please refer to the FIRO-B User's Guide technical properties chapter.

Construct validity[6]

Construct validity relates to instruments that are designed to assess an underlying theoretical construct. As the FIRO-B instrument is based on Schutz's theory of interpersonal need, this form of validity is relevant and important. Establishing the construct validity of a test is typically a long and laborious process and involves gathering any data that clarify the nature of the construct. Construct validity can be shown through (a) demonstrating internal consistency (see pages 7–9 of this supplement); (b) gathering information, such as correlations with other tests, which confirm the meaning of the construct (ie 'convergent validity'); and (c) 'discriminant validity', the ability of a test to show that it is different from other, but related, constructs.

Construct validity is often studied by considering the relationships between scores for the test with those for other personality measures. It should be borne in mind that other tests were not designed to assess exactly the same things as the FIRO-B questionnaire. This means that one would not expect the relationships between measures to be especially strong. For instance, one would expect some connection between Extraversion–Introversion on the MBTI® instrument and Inclusion. However, these are not directly interchangeable constructs, and the degree to which they measure different things places an upper limit on the strength of the relationship.

FIRO-B instrument and the MBTI questionnaire

The results in Table 2.5 show, consistently, the kinds of relationships that would be predicted on the basis of the FIRO-B and MBTI theories underlying the respective measures. The results are shown separately for a large, nationally representative sample, and for a smaller subset of this sample

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that only includes individuals whose occupational level was described as middle management or above.

As expected, Extraversion was related to higher scores on Expressed and Wanted Inclusion and Expressed and Wanted Affection in the FIRO-B instrument. Thinking was significantly related to higher scores on Expressed Control, while Feeling correlated significantly with Expressed Affection.

Table 2.5: Correlations between FIRO-B scale scores and MBTI Step I™ continuous scores[7]

UK general population sample (n=1512)

Myers-Briggs Type Indicator®	eI	wI	eC	wC	eA	wA
Extraversion–Introversion	-0.41**	-0.38**	-0.13**	0.07**	-0.36**	-0.27**
Sensing–iNtuition	0.12**	0.19**	0.18**	0.02	0.10**	0.03
Thinking–Feeling	0.10**	0.10**	-0.24**	0.18**	0.25**	0.23**
Judging–Perceiving	0.02	0.07**	0.00	-0.02	0.00	0.00

Significant at: *p<0.05, **p<0.01

UK managerial sample (n=424)

Myers-Briggs Type Indicator®	eI	wI	eC	wC	eA	wA
Extraversion–Introversion	-0.42**	-0.42**	-0.12*	0.06	-0.41**	-0.35**
Sensing–iNtuition	0.19*	0.26**	0.12*	-0.07	0.12*	0.13**
Thinking–Feeling	0.21**	0.21**	-0.25**	0.21**	0.28**	0.30**
Judging–Perceiving	0.04	0.16**	-0.04	-0.06	0.02	0.07

Significant at: *p<0.05, **p<0.01

This was a direct and almost perfect replication of a much larger study conducted in the US (Schnell et al, 1994) on a sample of over 20,000 managers.[8]

[7] MBTI Step I continuous scores (Myers and McCaulley, 1985, p. 9) place an individual's score on each dimension onto a continuous scale with a mid-point of 100. To calculate continuous scores, Preference Clarity Index (PCI) scores for each dimension are either subtracted or added to 100, depending on which direction the overall preference is. PCI scores in the direction of E, S, T or J are subtracted from 100. PCI scores in the direction of I, N, F or P are added to 100. This means that negative correlations are associated with E, S, T and J and positive correlations are associated with I, N, F and P.

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To test the hypothesis proposed by Schnell and Hammer (1993) that the strength of the Overall Score (sum of all rows or columns on the FIRO-B scores table) is representative of the clarity of preference within the E–I dimension, the correlation between the Overall Score and the E–I continuous score was calculated amongst the managerial sample. The correlation was found to be significant at -.50 ($p<.001$, $n=360$). This confirms both the broadness of the Extraversion concept, and the fact that the FIRO-B questionnaire focuses on social behaviours.

Analyses were also conducted to look at how psychological Type relates to the average Overall Score on the FIRO-B instrument. Table 2.6 shows the average Overall Scores for each of the 16 Types.

Table 2.6: Average FIRO-B Overall Scores for each psychological Type

Type	Mean Overall Score (SD)	N
ENTP	30.11 (6.05)	9
ENFP	30.08 (6.22)	26
ESFJ	29.73 (7.45)	41
ENFJ	29.47 (5.48)	15
ESFP	28.00 (5.84)	16
INFJ	27.14 (6.20)	7
ESTP	26.95 (5.68)	22
ESTJ	26.93 (6.30)	42
ENTJ	26.56 (4.89)	18
INTJ	26.11 (4.34)	9
INFP	25.00 (5.57)	13
ISFJ	24.48 (5.09)	40
ISFP	24.14 (4.63)	7
ISTJ	22.15 (5.59)	60
INTP	21.69 (6.22)	13
ISTP	21.09 (7.00)	22

The table confirms that (with the exception of INFJs) Extraverted Types tend to have greater interpersonal needs than Introverted Types. The next split is in terms of Thinking and Feeling. Amongst those with a preference for Extraversion, all Feeling Types have greater interpersonal needs than do all Thinking Types (with the exception of ENTPs). This is also the case amongst those with a preference for Introversion, with the exception of INTJs who have the second highest interpersonal needs amongst those with a preference for Introversion.

Table 2.7 shows the highest FIRO-B scores for each MBTI Type. Mean scores on the six FIRO-B dimensions were obtained for all psychological Types, and the strongest interpersonal need dimension is listed first in each cell. A second dimension is listed if the difference between the highest two interpersonal needs was less than one.

Table 2.7: Highest FIRO-B cell scores for each psychological Type

ISTJ Expressed Control Wanted Control	**ISFJ** Wanted Control Expressed Inclusion	**INFJ** Expressed Control Expressed Inclusion	**INTJ** Expressed Control Expressed Inclusion
ISTP Expressed Control	**ISFP** Wanted Control Expressed Inclusion* Expressed Control	**INFP** Wanted Affection Wanted Control	**INTP** Expressed Control Expressed Inclusion
ESTP Expressed Control Expressed Inclusion	**ESFP** Expressed Inclusion Wanted Affection	**ENFP** Expressed Inclusion Expressed Control	**ENTP** Expressed Control Expressed Inclusion
ESTJ Expressed Control Expressed Inclusion	**ESFJ** Expressed Inclusion Wanted Affection	**ENFJ** Expressed Inclusion Expressed Control	**ENTJ** Expressed Control Expressed Inclusion

*Expressed Inclusion and Expressed Control scores equally high in this case.

For the majority of Types, Expressed Inclusion (13 instances) and Expressed Control (12 instances) were amongst the top one or two FIRO-B scores. Four of the Introversion Types included Wanted Control amongst their top FIRO-B scores, and three of the Feeling Types included Wanted Affection.

This differs notably from the sample studied by Schnell at al (1994), where Wanted Affection was amongst the top two FIRO-B scores for all Types. Indeed, the authors of that study expressed their surprise that Affection needs were so prominent, reinforcing attempts to help leaders show more appreciation and support for their staff. It is possible, however, that the specific nature of their sample group (participants in the CCL Leadership Development Program) may have had an impact on this result.

Tables 2.8 and 2.9 show psychological Types with the highest and lowest mean scores for each FIRO-B cell. Within each cell in Table 2.8, Types are

listed in descending order, with the Type with the highest need score listed first. Within each cell in Table 2.9, Types are listed in ascending order, with the Type with the lowest need score listed first.

Table 2.8: Ranking of psychological Type with highest mean scores within FIRO-B dimensions

	Inclusion	Control	Affection
Expressed	ESFP ENFP	INTJ ENTJ	ESFJ ENFP ENTP
Wanted	ENFP ESFJ INFJ ENTJ	INFJ ISFJ ENFJ	ESFJ ENFP INFP ENTP ESFP

Table 2.9: Ranking of psychological Type with lowest mean scores within FIRO-B dimensions

	Inclusion	Control	Affection
Expressed	ISTP ISTJ	INFP ISFJ ESFP	INTP ISTP
Wanted	ISTJ	INTP	ISTP INTP

It can be seen that MBTI Types that combine Extraversion and Feeling tend to exhibit consistently high Inclusion and Affection needs (but not necessarily particularly high Control needs). Conversely, Types that combine Introversion and Thinking tend to exhibit low needs in all the categories except Expressed Control.

FIRO-B instrument and the 16pf® questionnaire

Dancer and Woods (2006) explored the correlations between FIRO-B scores and 16pf factor scores amongst over 4000 individuals who took the questionnaires as part of executive assessments in the US. The correlations are shown in Table 2.10. Note that, due to the large sample size, many of the correlations are statistically significant despite being quite small in real terms.

Table 2.10: Correlations between FIRO-B and 16pf factor scores (n=4,405)

16pf factor scale		eI	wI	eC	wC	eA	wA
Primary factors							
A	Warmth	0.36**	0.25**	0.10**	0.02	0.37**	0.30**
B	Reasoning	0.06**	0.08**	0.12**	0.07**	0.04*	0.09**
C	Emotional Stability	0.21**	0.10**	0.11**	-0.08**	0.16**	0.09**
E	Dominance	0.13**	0.08**	0.40**	-0.17**	0.05**	0.01
F	Liveliness	0.41**	0.40**	0.09**	-0.01	0.33**	0.24**
G	Rule-Consciousness	0.06**	0.03	-0.04**	-0.01	0.08**	0.07**
H	Social Boldness	0.39**	0.25**	0.24**	-0.09**	0.33**	0.22**
I	Sensitivity	0.03	0.00	-0.11**	0.06**	0.09**	0.07**
L	Vigilance	-0.15**	-0.09**	-0.01	-0.03*	-0.17**	-0.15**
M	Abstractedness	-0.04**	-0.01	0.11**	0.08**	-0.03	-0.03
N	Privateness	-0.31**	-0.27**	-0.05**	-0.05**	-0.42**	-0.31**
O	Apprehension	-0.08**	-0.01	-0.11**	0.18**	-0.03	0.02
Q1	Openness to Change	0.14**	0.09**	0.15**	-0.00	0.14**	0.07**
Q2	Self-Reliance	-0.47**	-0.35**	-0.06**	-0.04**	-0.30**	-0.25**
Q3	Perfectionism	0.05**	0.03	0.02	-0.09**	0.07**	0.04*
Q4	Tension	-0.15**	-0.10**	0.13**	-0.01	-0.17**	-0.10**
Global factors							
EX	Extraversion	0.53**	0.45**	0.09**	0.04*	0.47**	0.37**
ANX	Anxiety	-0.10**	-0.01	0.06**	0.04*	-0.11**	-0.06**
TM	Tough-Mindedness	0.05**	0.01	-0.06**	-0.05*	0.08**	0.07**
IND	Independence	0.13**	0.06**	0.40**	-0.19*	0.04*	-0.03*
SC	Self-control	0.04**	0.08**	-0.03	0.08	0.15**	0.11**

Significant at: *p<0.05, **p<0.01

Looking at correlations with the 16pf instrument, many of the strongest relationships are with FIRO-B Expressed behaviours, particularly Expressed Inclusion and Expressed Affection.

A very similar pattern of results is found between the 16pf Primary Factors and both of these scales, with Warmth, Liveliness and Social Boldness correlating highly with both in a positive direction, and Privateness and Self-Reliance correlating with both in a negative direction. These five 16pf factors are the ones that combine to form the higher-order, Global Factor called Extraversion. Not surprisingly therefore, both Expressed Inclusion and Expressed Affection also correlate quite highly with the global Extraversion factor itself. This suggests that these scales show clear links with personality traits that influence the way in which individuals relate to others.

The primary factor found to correlate most highly with Expressed Control is Dominance, which is to be expected. This corresponds with a clear link between the Expressed Control and the global Independence scale, suggesting that those who score highly on Expressed Control are likely to be those who will want to go their own way/take charge of situations as opposed to cooperating and collaborating.

There are relatively few strong correlations between 16pf primary factors and Wanted behaviours, with the strongest being between Wanted Inclusion and Liveliness (positive direction) and Self-Reliance (negative direction), and between Wanted Affection and Warmth (positive direction) and Privateness (negative direction). Wanted Control showed few clear links with any of the 16pf primary factors.

Looking at the 16pf global factors, it can be seen that both Wanted Inclusion and Wanted Affection correlate quite highly with Extraversion. Interestingly, the Wanted Control scale correlates negatively with global Independence, suggesting that those who score highly on Wanted Control are likely to favour a more cooperative and accommodating approach to situations, as opposed to the more persuasive and determined approach taken by high scorers on Expressed Control.

The 16pf questionnaire measures broad personality factors that have a clear link to our likely behaviour. As such, we would expect to see relationships between 16pf factors and expressed behaviours on the FIRO-B instrument. However, the 16pf factors also relate to aspects of personality that drive behaviours aimed at meeting intrinsic needs, eg a need for variety or change, hence the correlations with Wanted behaviours.

FIRO-B instrument and the Adjective Checklist (ACL)

The UK general population sample completed a 164-item Adjective Checklist (ACL). Each person was asked to indicate whether each of the adjectives was like them or not.

Correlating FIRO-B results and Adjective Checklist (ACL) choices produces a range of relationships that lend support to the constructs underlying each of the scales in the FIRO-B instrument – for example, Inclusion with ACL items such as sociable and talkative, Expressed Control with items such as assertive and outspoken, etc.[9]

Remember, these data relate to how individuals see themselves rather than how others see them.

Table 2.11: Correlations between FIRO-B scales and Adjective Checklist items. OPP UK general population sample (n=1,632)

Adjective Checklist item	eI	wI	eC	wC	eA	wA
Adventurous	0.23	0.21				
Aggressive			0.24			
Aloof					–0.17	–0.19
Assertive			0.22			
Cold					–0.20	
Confident				–0.22		
Energetic	0.21					
Enthusiastic	0.23				0.20	
Has wide interests	0.26					
Opinionated			0.22			
Outgoing	0.27	0.23			0.18	
Outspoken			0.22			
Patient			–0.20			
Pleasure-seeking		0.23				
Quiet	–0.21	0.22				
Self-centred			0.21			
Sociable	0.33	0.24			0.23	0.22
Submissive				0.22		
Talkative	0.25	0.25			0.24	
Weak-willed				0.22		
Withdrawn	–0.21					

Correlations shown are significant at $p<0.05$.

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FIRO-B scale intercorrelations[10]

Finally, the extent to which the FIRO-B scales represent separate and distinct psychological constructs may be inferred from the extent to which they intercorrelate. The amount that the scores on each of the six scales overlap (ie the level of intercorrelation) is of key importance when interpreting the full profile. Intercorrelations between scale scores for two UK samples, Tables 2.12(a) and (b) below, to a large extent replicate the results of studies reported by Schutz and Gluck.

Table 2.12: Intercorrelations among FIRO-B scales

(a) UK managerial sample (n=1,191)

	eI	wI	eC	wC	eA
eI					
wI	0.51**				
eC	0.10**	0.10**			
wC	0.11**	0.08**	–0.11		
eA	0.39**	0.38**	0.06*	0.07*	
wA	0.31**	0.44**	0.05	0.06*	0.55**

Significant at: *p<0.05, **p<0.01

(b) UK general population sample (n=1,683)

	eI	wI	eC	wC	eA
eI					
wI	0.59**				
eC	0.19**	0.24**			
wC	0.11**	0.12**	0.21**		
eA	0.39**	0.44**	0.03	0.05*	
wA	0.34**	0.49**	–0.10**	0.05*	0.58**

Significant at: *p<0.05, **p<0.01

There is a significant correlation between Inclusion and Affection, and a significant correlation between the Expressed and Wanted scales of each dimension. This means that there is a degree of redundancy in the scales, ie to some extent there is an overlap in what they are assessing. Schutz has stated his belief that, overall, the intercorrelations are sufficiently small to warrant having all six sub-scales. This is because he believes that

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predictions about specific individuals would be hampered by reducing the number of scales. Nevertheless, it is important to be aware of the fact that the FIRO-B instrument contains non-independent scales.

Conclusion

Considered from any perspective, the FIRO-B questionnaire has shown itself over time to be both a robust and, given appropriate usage and interpretation, sensitive measure of interpersonal needs as defined by Schutz. The range of studies conducted, which produce evidence of all the usual forms of validity, makes the FIRO-B instrument one of the most thoroughly researched measures of its kind. It is worth bearing in mind, however, that there is always scope for additional investigation, and you are invited to contact OPP Ltd for advice and support should you be considering a study of your own.[11]

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Chapter 3: UK normative data for the FIRO-B instrument[12]

It is always best to collect your own sample data wherever possible and, once of reasonable size (ie in excess of 50 cases), this should be used as your local normative or reference group. Remember that care must be taken when using any normative group for ***interpersonal*** comparison that the two groups should be equivalent for that purpose. If this local normative group facility is not available, the data given in this section should be used as a guideline.

The following norms are available:

UK general population

Total sample

Breakdowns by:

Gender

- Males
- Females

Educational level (ie age at completion of education)

- <15 years
- 16–18 years
- 19–21 years
- 22–25 years

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Organisational level

- Combined managerial
- Top/senior executive
- Upper/middle management
- Middle management
- First level management
- Employee

Industry sector

- Manufacturing
- Construction
- Retail
- Property sales/management
- Education
- Health/social work

UK managerial samples

Total sample

Breakdowns by:

Gender

- Males
- Females

Company

- International research and development company
- Metallurgical company
- Biochemical research company
- International chemicals companies
- International food and drinks company
- Communications company

Table 3.1: FIRO-B means and standard deviations for UK general population sample[13]

Total sample (n=1411)

Scale	Mean	Std Dev
eI	4.87	1.54
wI	3.22	2.04
eC	4.47	1.86
wC	4.38	1.73
eA	3.29	1.92
wA	4.13	2.10

[13] Tables 3.1 reproduced from *FIRO-B® User's Manual* with kind permission of CPP, Inc.

UK general population sample broken down by gender

Males (n=589)		
Scale	Mean	Std Dev
eI	4.79	1.65
wI	3.24	2.11
eC	4.87	1.83
wC	4.28	1.73
eA	3.07	1.97
wA	4.00	2.26

Females (n=788)		
Scale	Mean	Std Dev
eI	4.94	1.46
wI	3.27	2.02
eC	4.17	1.79
wC	4.48	1.72
eA	3.49	1.91
wA	4.27	1.97

UK general population sample broken down by educational level (ie age at completion of full-time education)

<15 years (n=310)		
Scale	Mean	Std Dev
eI	4.52	1.53
wI	2.73	1.85
eC	3.78	1.98
wC	3.91	1.87
eA	3.13	1.82
wA	4.01	1.97

16-18 years (n=694)		
Scale	Mean	Std Dev
eI	4.86	1.51
wI	3.15	1.95
eC	4.47	1.76
wC	4.48	1.69
eA	3.24	1.89
wA	4.03	2.05

19-21 years (n=137)		
Scale	Mean	Std Dev
eI	5.03	1.60
wI	3.62	2.24
eC	5.21	1.86
wC	4.73	1.45
eA	3.49	2.16
wA	4.41	2.26

22-25 years (n=129)		
Scale	Mean	Std Dev
eI	5.37	1.56
wI	3.89	2.00
eC	5.24	1.51
wC	4.70	1.77
eA	3.61	2.15
wA	4.55	2.20

UK general population sample broken down by organisational level

Combined managerial (n=508)		
Scale	Mean	Std Dev
eI	5.04	1.50
wI	3.39	1.92
eC	5.22	1.66
wC	4.53	1.58
eA	3.37	2.04
wA	4.14	2.14

Top/senior executive (n=48)		
Scale	Mean	Std Dev
eI	4.98	1.62
wI	3.00	1.90
eC	5.56	1.78
wC	4.42	1.26
eA	2.93	2.04
wA	3.47	2.16

Upper/middle management (n=76)		
Scale	Mean	Std Dev
eI	4.95	1.48
wI	3.55	1.80
eC	5.57	1.70
wC	4.31	1.62
eA	3.51	2.25
wA	4.00	2.29

Middle management (n=258)		
Scale	Mean	Std Dev
eI	5.06	1.53
wI	3.37	1.93
eC	5.07	1.57
wC	4.68	1.60
eA	3.32	1.98
wA	4.27	2.04

First level management (n=118)		
Scale	Mean	Std Dev
eI	4.98	1.42
wI	3.47	1.90
eC	5.02	1.62
wC	4.41	1.72
eA	3.54	2.10
wA	4.18	2.21

Employee (n=534)		
Scale	Mean	Std Dev
eI	4.81	1.56
wI	3.22	2.14
eC	4.09	1.76
wC	4.40	1.68
eA	3.24	1.81
wA	4.26	2.09

UK general population sample broken down by industry sector

Manufacturing (n=133)		
Scale	Mean	Std Dev
eI	4.70	1.59
wI	3.07	2.19
eC	4.19	2.05
wC	4.08	1.76
eA	3.26	2.01
wA	4.09	2.10

Construction (n=49)		
Scale	Mean	Std Dev
eI	4.66	1.82
wI	3.44	2.16
eC	4.45	1.95
wC	4.23	2.02
eA	3.13	1.74
wA	4.31	1.96

Retail (n=100)		
Scale	Mean	Std Dev
eI	4.89	1.55
wI	3.07	2.21
eC	4.12	1.88
wC	4.40	1.78
eA	3.14	1.87
wA	3.97	1.94

Property sales/management (n=66)		
Scale	Mean	Std Dev
eI	5.03	1.51
wI	3.38	1.97
eC	5.14	1.72
wC	4.71	1.73
eA	3.58	1.86
wA	4.22	2.18

Education (n=56)		
Scale	Mean	Std Dev
eI	5.08	1.64
wI	3.17	2.05
eC	4.53	1.85
wC	4.57	1.30
eA	3.37	1.83
wA	4.18	2.18

Health/social work (n=91)		
Scale	Mean	Std Dev
eI	4.97	1.65
wI	3.05	1.97
eC	4.11	1.71
wC	4.75	1.84
eA	3.40	2.02
wA	4.08	1.89

Table 3.2: FIRO-B means and standard deviations for UK managerial sample[14]

Total sample (n=1165)

Scale	Mean	Std Dev
eI	4.48	1.83
wI	3.00	3.13
eC	4.69	2.63
wC	2.36	1.66
eA	3.30	1.85
wA	4.65	2.00

UK managerial sample broken down by Gender

Males (n=1016)		
Scale	Mean	Std Dev
eI	4.42	1.83
wI	2.91	3.11
eC	4.90	2.58
wC	2.37	1.66
eA	3.25	1.89
wA	4.62	2.02

Females (n=149)		
Scale	Mean	Std Dev
eI	4.84	1.74
wI	3.59	3.29
eC	3.34	2.59
wC	2.27	1.61
eA	3.64	1.77
wA	4.78	1.84

UK managerial sample broken down by company

International R&D company (n=366)		
Scale	Mean	Std Dev
eI	4.69	1.88
wI	3.46	3.21
eC	3.58	2.50
wC	2.47	1.85
eA	3.43	1.74
wA	4.72	1.97

Metallurgical company (n=101)		
Scale	Mean	Std Dev
eI	4.93	1.64
wI	3.25	2.99
eC	3.48	2.49
wC	2.13	1.30
eA	3.53	1.79
wA	4.71	1.89

Biochemical research company (n=68)		
Scale	Mean	Std Dev
eI	4.34	1.80
wI	2.88	3.00
eC	3.72	2.32
wC	2.69	1.46
eA	3.13	1.62
wA	4.79	1.34

International chemicals company A (n=243)		
Scale	Mean	Std Dev
eI	4.06	1.82
wI	2.19	3.02
eC	5.35	2.40
wC	2.47	1.69
eA	3.05	1.95
wA	4.51	2.22

[14] Tables 3.2 reproduced from *FIRO-B® User's Manual* with kind permission of CPP, Inc.

International chemicals company B (n=119)		
Scale	Mean	Std Dev
eI	4.63	1.67
wI	3.22	3.08
eC	5.60	2.20
wC	2.14	1.51
eA	3.27	1.92
wA	4.73	2.06

International food and drinks company (n=62)		
Scale	Mean	Std Dev
eI	4.60	1.68
wI	3.77	3.20
eC	5.63	2.56
wC	2.06	1.47
eA	3.65	1.93
wA	5.02	1.86

Communications company (n=213)		
Scale	Mean	Std Dev
eI	4.33	1.93
wI	2.68	3.05
eC	5.85	2.50
wC	2.24	1.61
eA	3.25	1.91
wA	4.44	1.99

Chapter 4: Gender differences in the FIRO-B instrument[15]

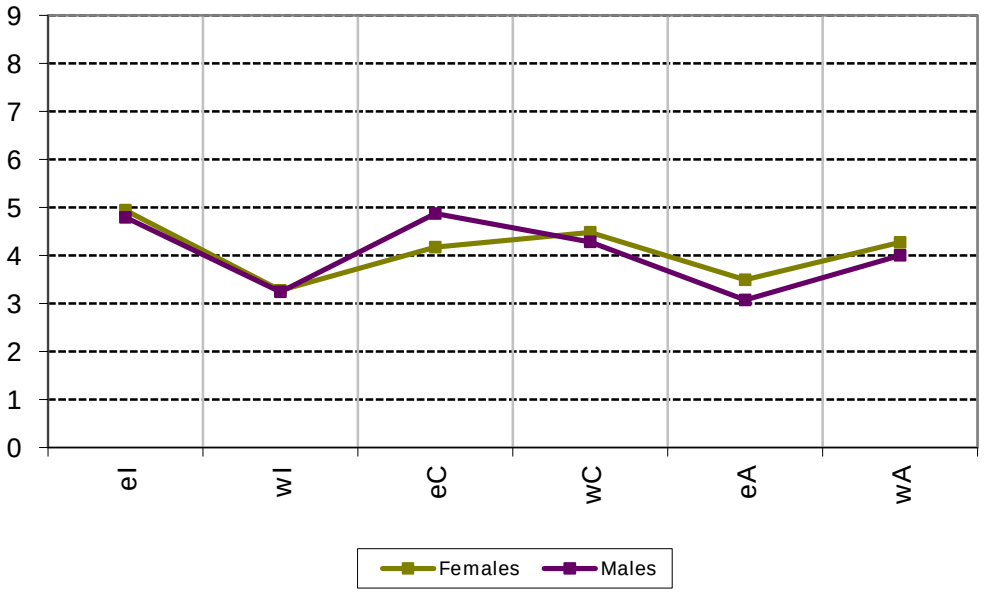
Gender differences in the UK were investigated using t-test statistics. Analysis was conducted on two levels: the general population, and a group of UK managers. In Tables 4.1 and 4.2, the last column indicates those scales where there is a significant difference between males and females. The differences are represented graphically in Figures 4.1 and 4.2.

Table 4.1: Gender differences in scale scores – UK general population

	Females (n=788)		Males (n=589)		Difference (F–M)[16]
FIRO-B scale	Mean	SD	Mean	SD	
Expressed Inclusion (eI)	4.94	1.46	4.79	1.65	0.15
Wanted Inclusion (wI)	3.27	2.02	3.24	2.11	0.03
Expressed Control (eC)	4.17	1.79	4.87	1.83	-0.70**
Wanted Control (wC)	4.48	1.72	4.28	1.73	0.20*
Expressed Affection (eA)	3.49	1.91	3.07	1.97	0.42**
Wanted Affection (wA)	4.27	1.97	4.00	2.26	0.27*

Difference significant at: *p<0.05, **p<0.01 (based on an independent samples t-test).

Figure 4.1: Gender differences in scale scores – UK general population



[15] This paragraph reproduced from *FIRO-B® User's Manual* with kind permission of CPP, Inc.
[16] A positive value indicates that female mean scores are higher, and a negative value indicates that male mean scores are higher.

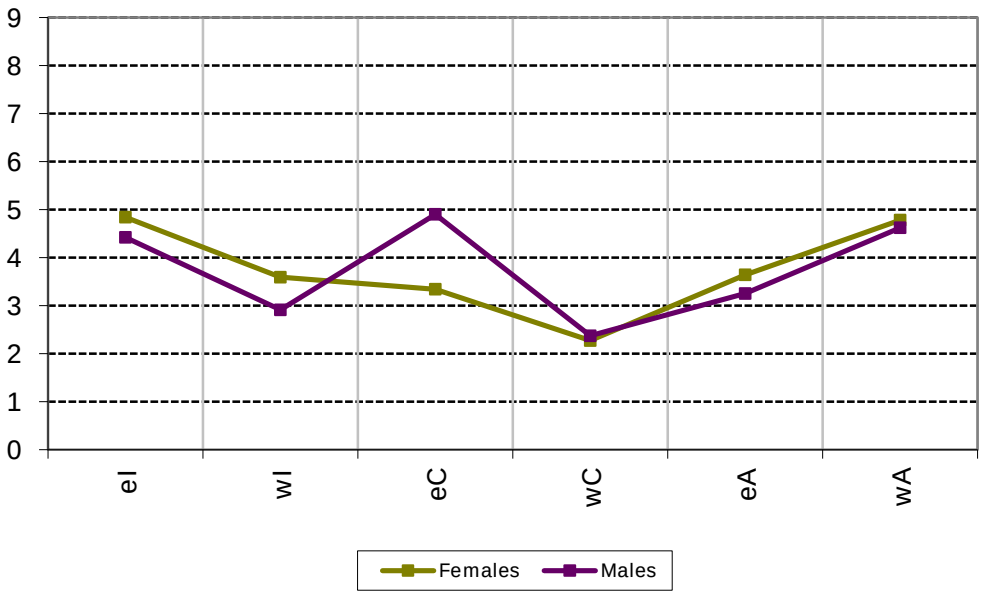
Of the six scales, four showed significant differences in mean scores with males scoring higher on Expressed Control and females scoring higher on Wanted Control, Expressed Affection and Wanted Affection.[17]

Table 4.2: Gender differences in scale scores – UK managerial sample

	Females (n=149)		Males (n=1016)		Difference (F–M)[18]
FIRO-B scale	Mean	SD	Mean	SD	
Expressed Inclusion (eI)	4.84	1.74	4.42	1.83	0.42**
Wanted Inclusion (wI)	3.59	3.29	2.91	3.11	0.68*
Expressed Control (eC)	3.34	2.59	4.90	2.58	-1.56**
Wanted Control (wC)	2.27	1.61	2.37	1.66	-0.10
Expressed Affection (eA)	3.64	1.77	3.25	1.89	0.39*
Wanted Affection (wA)	4.78	1.84	4.62	2.02	0.16

Difference significant at: *p<0.05, **p<0.01 (based on an independent samples t-test).

Figure 4.2: Gender differences in scale scores – UK managerial sample



For the managerial samples, four scales demonstrate significant gender differences. Males score higher on Expressed Control, while females score higher on Expressed Inclusion, Wanted Inclusion and Expressed Affection.[19]

[17] This paragraph reproduced from *FIRO-B® User's Manual* with kind permission of CPP, Inc.
[18] A positive value indicates that female mean scores are higher, and a negative value indicates that male mean scores are higher.
[19] This paragraph reproduced from *FIRO-B® User's Manual* with kind permission of CPP, Inc.

Part Two

Chapter 5: Introduction

Overview

This second part of the data supplement contains data collected since the initial publication of the FIRO-B instrument in English (European). As such it includes updated data for the following language versions:

- English (European)
- Danish
- Dutch
- French
- German
- Spanish
- Swedish

This chapter contains a comparative overview of the findings of these language versions. There is then a chapter for each of these language versions which contains data on the reliability of that language version, descriptive statistics and information on group differences.

Summary statistics and reliabilities across all European language versions

The following tables show summary statistics and internal consistency reliability for the European language versions of the FIRO-B instrument. Table 5.1 below shows the mean and standard deviation for each of the six scales across each of the European language versions.

Table 5.1: Scale means and standard deviations

	Expressed Inclusion		Wanted Inclusion		Expressed Control		Wanted Control		Expressed Affection		Wanted Affection	
	Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD
English (39,847)	5.63	1.33	4.11	1.91	6.13	1.45	4.96	1.41	4.31	2.25	4.95	1.96
Danish (1,624)	5.83	1.14	3.27	1.58	5.97	1.30	5.41	1.33	2.92	2.19	3.36	1.78
Dutch (724)	5.68	1.18	4.44	1.85	6.13	1.50	5.64	1.47	5.21	2.15	6.52	2.06
French (1,234)	5.80	1.27	4.50	1.90	6.17	1.53	5.00	1.63	4.41	2.33	5.30	2.04
German (849)	5.40	1.45	4.22	1.97	6.01	1.51	4.71	1.20	4.98	2.19	5.41	2.03
Spanish (1,558)	5.28	1.37	4.32	1.75	6.59	1.50	5.58	1.54	5.58	2.46	5.85	2.06
Swedish (430)	5.32	1.45	4.16	1.91	5.59	1.59	5.68	1.60	5.34	2.21	6.01	1.71

Of the six scales, the mean scores for Expressed and Wanted Inclusion and Expressed and Wanted Control are not very different, suggesting that the needs for Inclusion and Control are similar across European cultures. With the Expressed and Wanted Affection scales, however, there are greater differences, suggesting that the need for Affection differs more across European cultures.

Reliability – internal consistency

The reliability of a test or questionnaire relates to how consistent and precise it is. Internal consistency reliability addresses the question of whether all the questions in a scale measure the same construct. A common measure of internal consistency reliability is coefficient alpha (Cronbach, 1951). The alpha coefficients for each of the European language version questionnaires are shown in Table 5.2.

Table 5.2: Internal consistency reliability – alpha coefficients

	Coefficient Alpha					
	Expressed Inclusion	Wanted Inclusion	Expressed Control	Wanted Control	Expressed Affection	Wanted Affection
English	0.84	0.95	0.91	0.84	0.87	0.86
Danish	0.84	0.93	0.92	0.87	0.84	0.75
Dutch	0.82	0.94	0.90	0.89	0.84	0.89
French	0.82	0.95	0.89	0.86	0.86	0.84
German	0.79	0.94	0.91	0.84	0.84	0.88
Spanish	0.84	0.94	0.81	0.83	0.87	0.87
Swedish	0.83	0.95	0.90	0.88	0.83	0.81
Median Score	0.83	0.94	0.9	0.86	0.84	0.86

It is generally agreed that internal consistency reliability should achieve a value of at least 0.7 for a test to be considered to be reliable. On this basis, all the dimensions of all the language versions show good internal consistency reliability.

Chapter 6: Data from the European English language questionnaire

In addition to the data described in chapters 2 to 4 of this data supplement, two additional sets of psychometric data have been gathered for the European English language version of the instrument over recent years, based on the following groups of respondents.

Demographic data

Group 1

The data in this sample group is based on responses from 39,847 respondents who completed the FIRO-B questionnaire in European English via OPP's online assessment platform between January 2007 and February 2016.[20] This sample is considered to be representative of the groups of people with whom the European English FIRO-B instrument has been and will be used for applications such as management development, coaching, counselling and team development. As such, it is likely to represent a cross-section of the European English-speaking professional and managerial population.

Of these respondents, 59.5% were male and 40.5% were female. Age ranged from 15 to 93 years, with a mean and median of 41.

Nationality was given by all of the respondents. Of these, 73% were British and 4% were Irish. Many other nationalities were represented, but each formed 4% or less of the total group.

Table 6.1: Nationality

Nationality	Percentage
British	73.2%
Irish	4.4%
Other	22.4%

Ethnic origin was provided by 89% of respondents. Of these, 69% were White-British. Many other ethnic origins were represented.

[20] OPPassessment allows personality questionnaires such as the FIRO-B instrument to be administered via email and/or completed online.

Table 6.2: Ethnic Origin

Ethnic origin	Percentage
White-British	68.7%
White-Irish	4.9%
White – Other European	19.7%
Indian	1.9%
Black-African	0.4%
Black-Caribbean	0.4%
Pakistani	0.4%
Chinese	0.2%
Bangladeshi	0.1%
Other	4.2%

The majority of the group were in full-time employment:

Table 6.3: Employment status

Employment status	Percentage
Full-time	88.5%
Part-time	4.6%
Self-employed	5.3%
Homemaker	0.1%
Retired	0.1%
Unemployed	1.4%

The majority of the group were of managerial level or above, with the largest single group being upper middle management (25%):

Table 6.4: Occupational level

Occupational level	Percentage
Top level	6.0%
Senior executive	22.1%
Upper middle management	25.3%
Middle management	19.3%
First level management/supervisor	9.3%
Employee	13.9%
Other	4.0%

A range of work areas were represented:

Table 6.5: Work areas

Work area (job type)	Percentage
HR, training, guidance	14.4%
Finance	12.6%
Sales, customer service	11.2%
Business services	8.6%
Health, social services, etc	8.3%
Science, engineering	7.4%
IT	5.7%
Education	2.7%
Admin or secretarial	2.4%
Research and development	2.0%
Land, sea or air transport	0.9%
Leisure, personal service	0.8%
Military, police, prison, fire	0.6%
Skilled operative	0.5%
Unskilled operative	0.1%
Other private sector	6.1%
Other public sector	7.2%
Other	8.5%

Group 2

The data in this sample group are based on responses from 317 respondents who completed the questionnaire over a two-year period between August 2005 and December 2007. This data was collected as part of the project to collect data for the new European language versions of the instrument under development at the time.

Of these, 195 (62%) were female and 122 (39%) were male. Ages ranged from 18 to 80, with a mean age of 36 years. 304 (96%) of the individuals stated that their country of residence was the United Kingdom, with the remaining 13 (4%) residing in Ireland.

The present employment status of the group is summarised in Table 6.6.

Table 6.6: Employment status

Employment status	Number	Percentage
Working full-time	221	69.7%
Working part-time	40	12.6%
Not working for income	21	6.6%
Retired	1	0.3%
Full-time student	16	5.0%
Other	18	5.7%

Scale properties

Descriptive statistics

Table 6.7 below shows the mean and standard deviation for each of the six scales for the two groups. There is a high degree of similarity amongst the mean scores for both groups. The largest difference, on Expressed Control, only reaches just over a third of a standard deviation.

Table 6.7: Scale means and standard deviations

Scale	Mean		Std Dev	
	Group 1	Group 2	Group 1	Group 2
Expressed Inclusion (eI)	5.63	5.22	1.33	1.39
Wanted Inclusion (wI)	4.11	4.36	1.91	2.16
Expressed Control (eC)	6.13	5.58	1.45	1.61
Wanted Control (wC)	4.96	4.91	1.41	1.78
Expressed Affection (eA)	4.31	4.09	2.25	2.20
Wanted Affection (wA)	4.95	4.91	1.96	2.02

The frequency distributions of the scales are shown in Figures 6.1 to 6.6. Again, these are similar across both groups.

Figure 6.1: Expressed Inclusion (eI) score frequency distribution

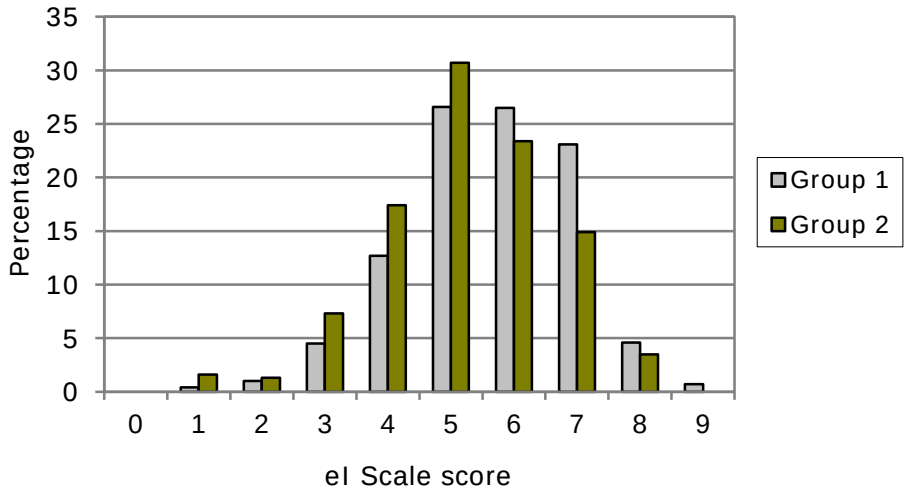


Figure 6.2: Wanted Inclusion (wI) score frequency distribution

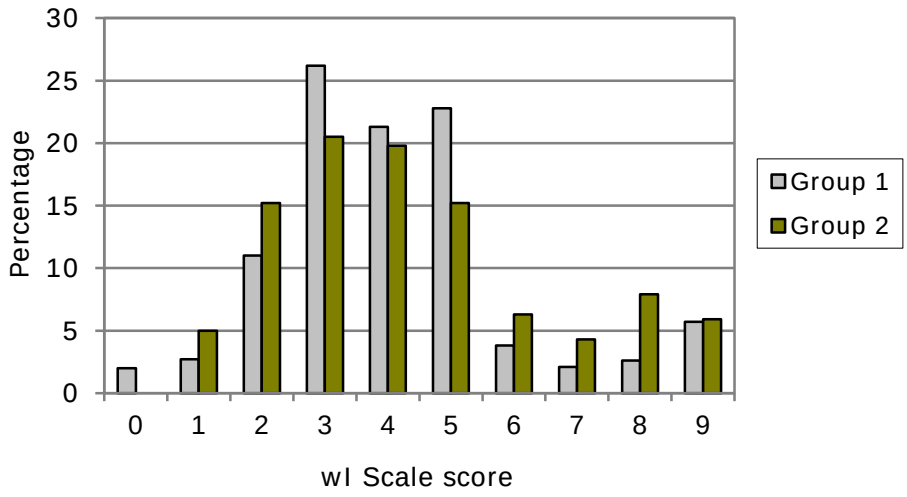


Figure 6.3: Expressed Control (eC) score frequency distribution

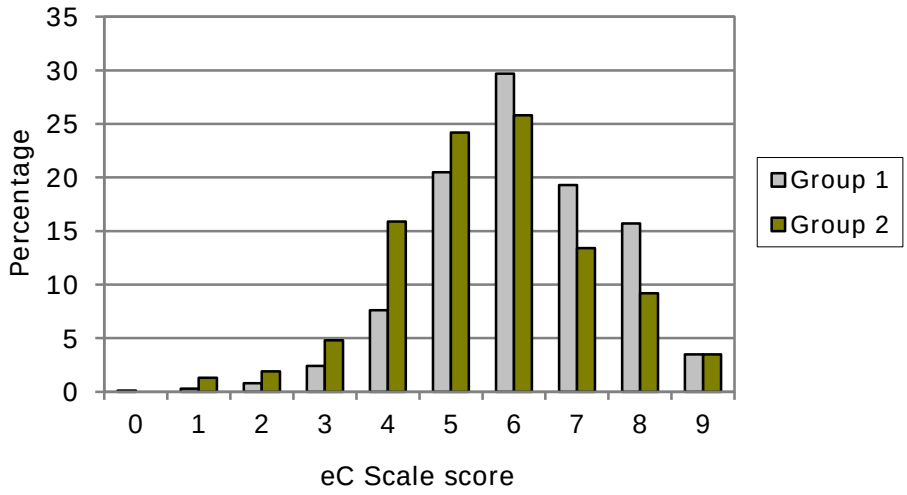


Figure 6.4: Wanted Control (wC) score frequency distribution

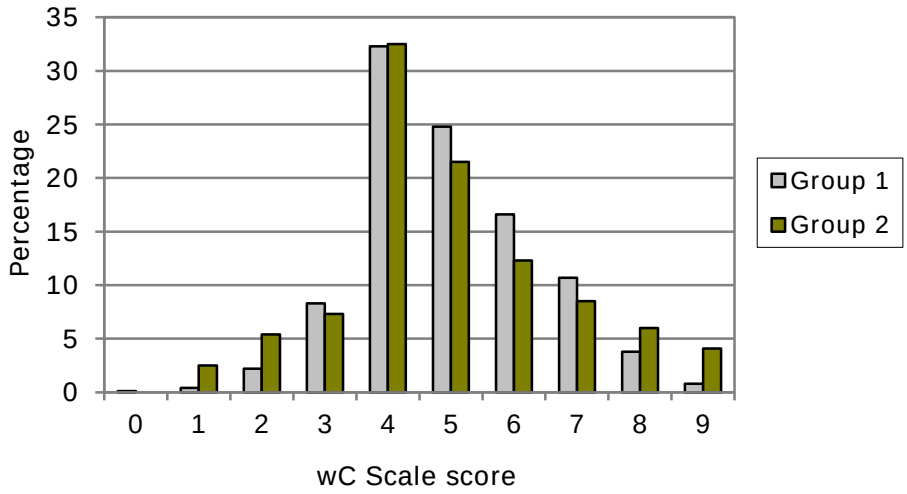


Figure 6.5: Expressed Affection (eA) score frequency distribution

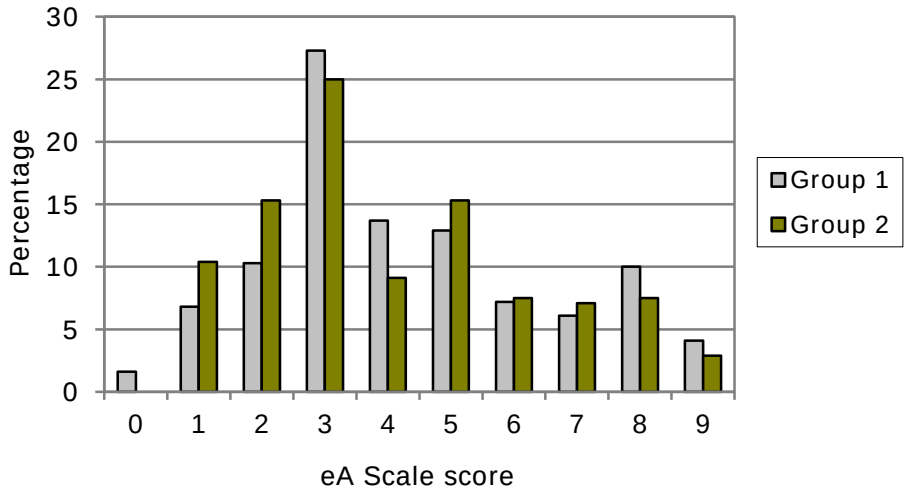
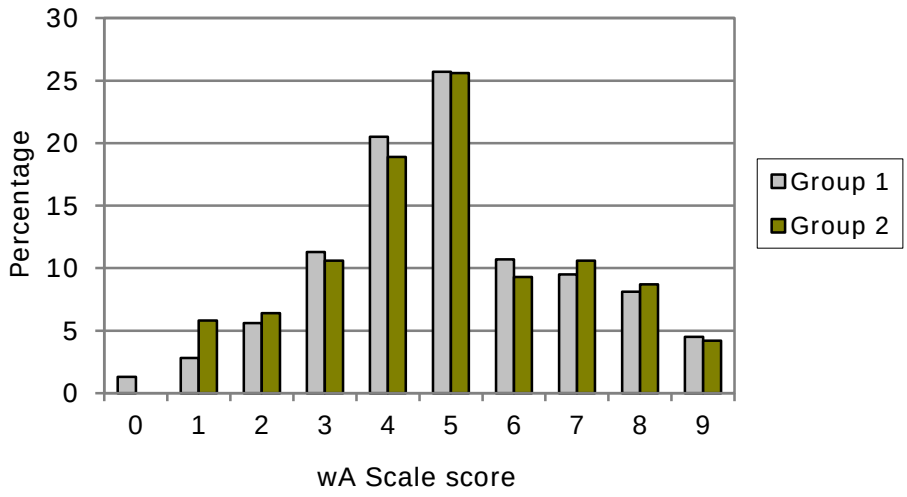


Figure 6.6: Wanted Affection (wA) score frequency distribution



Reliability – internal consistency

The reliability of a test or questionnaire relates to how consistent and precise it is. Internal consistency reliability addresses the question of whether all the questions in a scale measure the same construct. A common measure of internal consistency reliability is coefficient alpha (Cronbach, 1951). The alpha coefficients for the European English questionnaire are shown in Table 6.8.

Table 6.8: Internal consistency reliability – alpha coefficients

Scale	Coefficient alpha	
	Group 1	Group 2
Expressed Inclusion (eI)	0.84	0.85
Wanted Inclusion (wI)	0.95	0.95
Expressed Control (eC)	0.91	0.92
Wanted Control (wC)	0.84	0.89
Expressed Affection (eA)	0.87	0.87
Wanted Affection (wA)	0.86	0.85

It is generally agreed that internal consistency reliability should achieve a value of at least 0.7 for a test to be considered to be reliable[21]. On this basis, all the dimensions of the questionnaire show good internal consistency reliability across both groups.

Scale intercorrelations

The intercorrelations between the FIRO-B scales are shown in Table 6.9.

Table 6.9: Scale intercorrelations

Group 1

Scale	eI	wI	eC	wC	eA	wA
Expressed Inclusion (eI)						
Wanted Inclusion (wI)	0.46**					
Expressed Control (eC)	0.09**	0.16**				
Wanted Control (wC)	0.11**	0.11**	-0.02**			
Expressed Affection (eA)	0.39**	0.38**	0.06**	0.09**		
Wanted Affection (wA)	0.29**	0.50**	0.02**	0.09**	0.61**	

**Significant at p<0.01, *Significant at p<0.05 .

Group 2

Scale	eI	wI	eC	wC	eA	wA
Expressed Inclusion (eI)						
Wanted Inclusion (wI)	0.37**					
Expressed Control (eC)	0.02	0.07				
Wanted Control (wC)	0.09	0.06	-0.09			
Expressed Affection (eA)	0.43**	0.45**	-0.01	-0.01		
Wanted Affection (wA)	0.24**	0.55**	-0.02	0.11	0.57**	

**Significant at p<0.01, *Significant at p<0.05 .

There is a significant and large correlation between Inclusion and Affection, and a significant correlation between the Expressed and Wanted scales of

[21] For example, see Nunnally (1978) or Kline (2000).

each dimension, with the exception of Expressed and Wanted Control where there is very little correlation.

Group differences

Group differences amongst individuals who completed the European English questionnaire were explored on the basis of gender, age, education level, employment status, and work area.

Gender

The means and standard deviations of the FIRO-B scales are shown separately for males and females in Table 6.10, along with the difference in mean scores. This is represented graphically in Figure 6.7.

Table 6.10: Gender differences in scale scores

Group 1

	Females (n=16,133)		Males (n=23,714)		Difference (F–M)[22]
FIRO-B scale	Mean	SD	Mean	SD	
Expressed Inclusion (eI)	5.65	1.33	5.62	1.33	0.03*
Wanted Inclusion (wI)	4.17	1.97	4.06	1.86	0.11**
Expressed Control (eC)	5.82	1.52	6.34	1.36	-0.52**
Wanted Control (wC)	4.91	1.39	4.99	1.43	-0.09**
Expressed Affection (eA)	4.48	2.15	4.20	2.30	0.28**
Wanted Affection (wA)	5.04	1.88	4.89	2.02	0.15**

Group 2

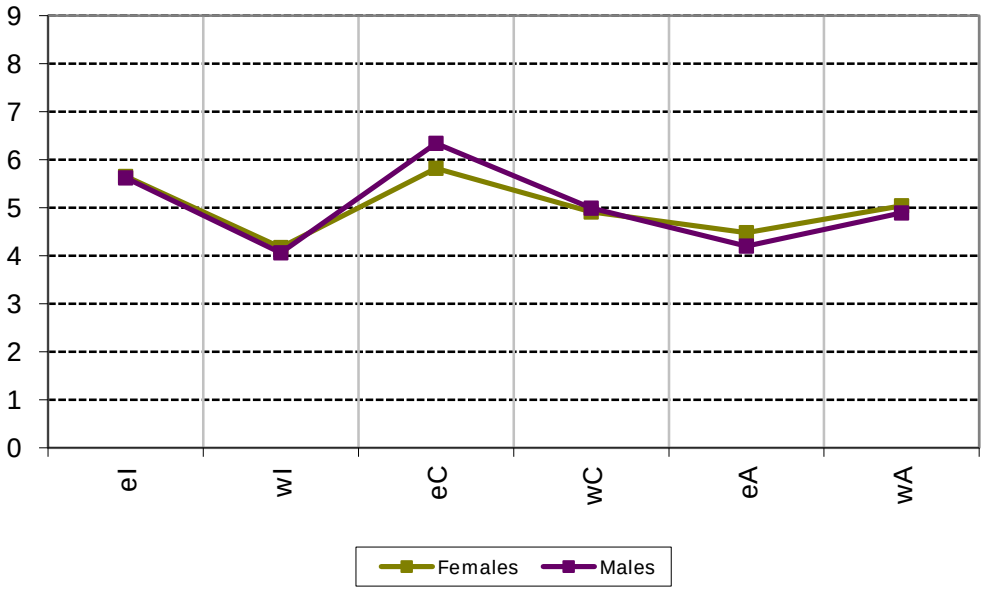
	Females (n=194)		Males (n=122)		Difference (F–M)[22]
FIRO-B scale	Mean	SD	Mean	SD	
Expressed Inclusion (eI)	5.28	1.41	5.11	1.36	0.17
Wanted Inclusion (wI)	4.44	2.24	4.23	2.04	0.21
Expressed Control (eC)	5.33	1.56	5.98	1.60	-0.65**
Wanted Control (wC)	5.04	1.69	4.70	1.89	0.34
Expressed Affection (eA)	4.40	2.16	3.59	2.17	0.81**
Wanted Affection (wA)	5.10	2.02	4.58	1.98	0.52*

Difference significant at: *p<0.05, **p<0.01 (based on an independent samples t-test).

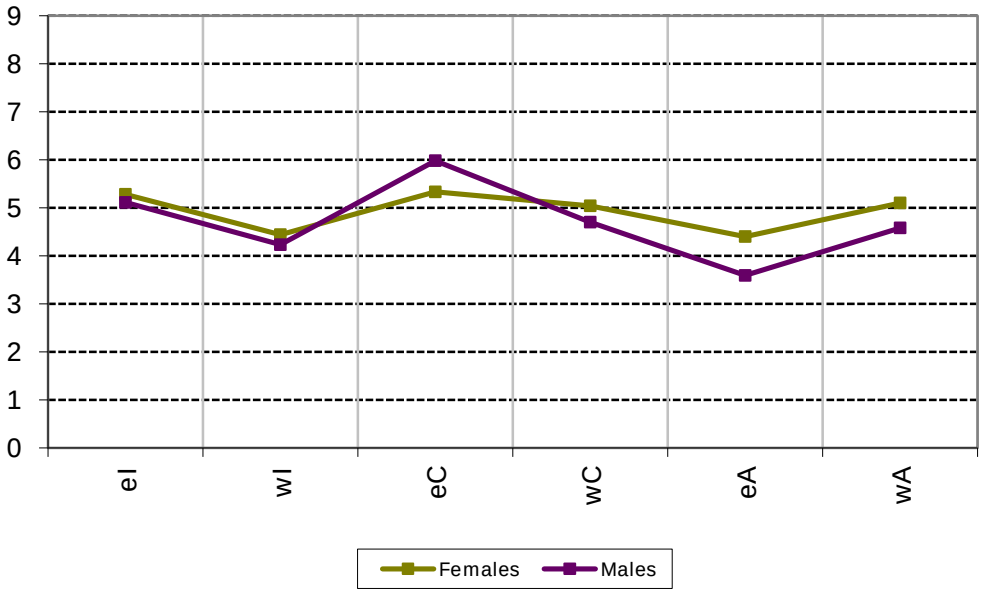
[22] A positive value indicates that female mean scores are higher, and a negative value indicates that male mean scores are higher.

Figure 6.7: Gender differences in scale scores

Group 1



Group 2



Of the six scales, two showed significant and large differences in mean scores in both groups, with females scoring higher on Expressed Affection and Wanted Affection and males scoring higher on Expressed Control.

Age

Correlations between scale scores and age are shown in Table 6.11.

Table 6.11: Age differences in scale scores

Scale	Correlation with age	
	Group 1	Group 2
Expressed Inclusion (eI)	-0.12**	-0.09
Wanted Inclusion (wI)	-0.16**	-0.22**
Expressed Control (eC)	0.05**	0.10
Wanted Control (wC)	-0.05**	0.02
Expressed Affection (eA)	-0.11**	-0.11
Wanted Affection (wA)	-0.08**	-0.05

Significant at: *p<0.05, **p<0.01

Of the six scales, only Wanted Inclusion showed a significant correlation with age across both groups. While there are other significant correlations with age in Group 1, this is a reflection of the large sample size. The correlations are small, accounting for little variance, and are of limited practical significance.

The negative correlation suggests that, on average, younger respondents were likely to have a greater need to be included than were older respondents.

Education level

Specific educational qualifications were not collected for either sample. However, the age at which individuals left full-time education was recorded for Group 1. Though there were significant correlations found between all the FIRO scales and the age at which individuals left full-time education, these were not large enough to be meaningful. The largest correlation, between the age at which individuals left full-time education and Wanted Control, was only 0.1.

Employment status

Table 6.12 shows the scale means and standard deviation for each employment status category where there are sufficient numbers of people for analysis. This is represented graphically in Figure 6.8.

The data from Group 1 showed a number of statistically significant differences, but none of these differences were large in real terms. This is reflected in the Group 2 data, which is based on a smaller sample size, where no significant differences were found between full-time and part-time workers.

The only real observable pattern across the two samples is that Expressed Control scores tend to be higher amongst full-time workers than part-time workers, and the Expressed Affection and Wanted Affection scores tend to be higher amongst part-time workers. This corresponds with the gender differences observed for these scales and is likely to be a reflection of the larger number of women working in part-time roles compared to men in this sample.

Table 6.12: Scale scores by employment status

Group 1

Scale	Working full-time (n=32,142)		Working part-time (n=1,670)		Self-employed (n=1,918)		Sig
	Mean	SD	Mean	SD	Mean	SD	
Expressed Inclusion (eI)	5.63	1.33	5.74	1.26	5.52	1.31	**
Wanted Inclusion (wI)	4.11	1.91	4.16	1.92	3.98	1.82	**
Expressed Control (eC)	6.18	1.43	5.59	1.48	6.06	1.43	**
Wanted Control (wC)	4.98	1.42	4.97	1.40	4.76	1.32	**
Expressed Affection (eA)	4.29	2.26	4.58	2.07	4.45	2.25	**
Wanted Affection (wA)	4.93	1.97	5.17	1.77	5.12	1.95	**

Group 2

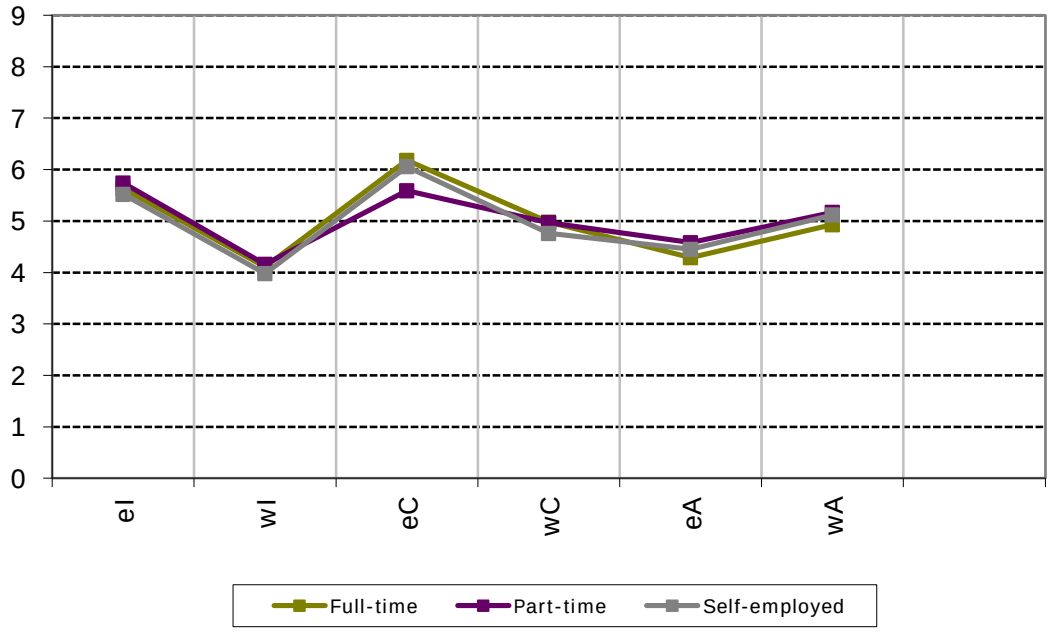
Scale	Working full-time (n=221)		Working part-time (n=40)		Difference (FT-PT)[23]
	Mean	SD	Mean	SD	
Expressed Inclusion (eI)	5.21	1.37	5.53	1.34	-0.32
Wanted Inclusion (wI)	4.32	2.08	4.54	2.33	-0.22
Expressed Control (eC)	5.75	1.56	5.30	1.57	0.45
Wanted Control (wC)	5.03	1.76	4.83	1.75	0.20
Expressed Affection (eA)	3.94	2.09	4.38	2.31	-0.44
Wanted Affection (wA)	4.84	2.03	5.13	1.91	-0.29

Difference significant at: *p<0.05, **p<0.01 (based on an independent samples t-test).

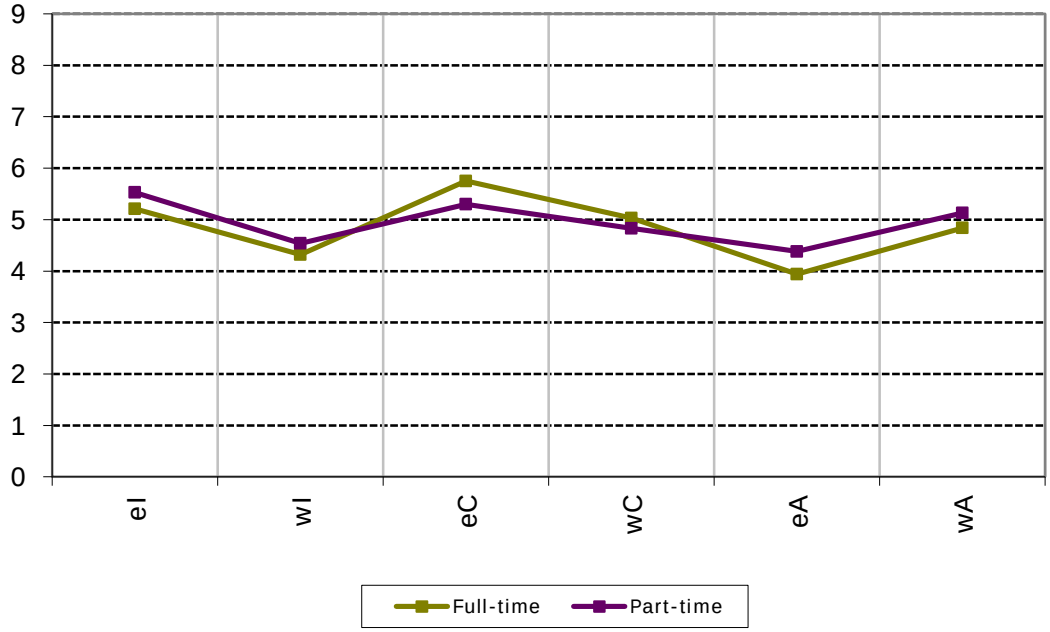
[23] A positive value indicates that full-time employee mean scores are higher, and a negative value indicates that part-time employee mean scores are higher.

Figure 6.8: Employment status differences in scale scores

Group 1



Group 2



Occupational level

Table 6.13 shows the scale means and standard deviation for different occupational levels. The findings can be summarised as follows.

- No clear patterns were found regarding the Expressed Inclusion and Wanted Inclusion scales. The mean scores on both scales were very consistent across different occupational levels.
- Scores on the Expressed Control scale increased with occupational level, meaning that those in higher-level occupations tended to score higher. The differences from one occupational level to the next were not particularly large, but the combined affect across levels meant that people towards the top of organisations tended to score considerably higher than those in lower-level occupations.
- Scores on the Wanted Control scale generally decreased with occupational level, meaning that those in lower-level occupations tended to score higher. However, the differences were smaller than those observed for Expressed Control.
- Scores on the Expressed Affection scale were found to be fairly consistent across all levels, except Employee level, where they were higher. This is likely to be at least partially the result of the higher proportion of women in roles of this level amongst this group.
- Scores on the Wanted Affection scale were found to be fairly consistent across middle levels, but higher at Employee level and lower at Top level. Again, this is likely to be at least partially the result of the higher proportion of women in roles amongst the Employee group and also of higher proportions of men in roles amongst the Top level group.

In addition to looking at differences across occupational levels within this group, it was also possible to compare mean scale scores for various levels

within this group with comparable data collected for the instrument when it was first developed back in 1996.

Interestingly it was found that, for equivalent occupational levels, mean scores on all the scales were higher for the respondents who completed the questionnaire between 2007–2016, than for those who completed it a decade or so earlier. The extent of the differences varied across scales and occupational levels, but was typically in the region of one quarter to three quarters of a standard deviation.

These differences are illustrated for two key occupational levels in figure 6.9. These groups were selected because they contained the largest number of people in the smaller of the two comparison groups (the 1996 sample). However, the same patterns were also found for other occupational levels.

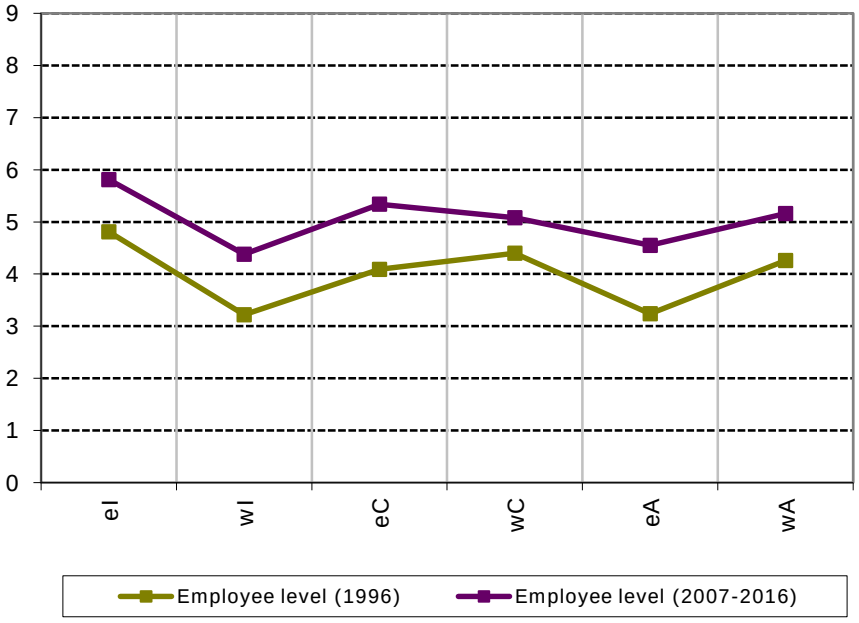
Table 6.13: Mean scale scores by occupational level

FIRO-B dimension	Top level (n=2,137)		Senior Executive (n=7,835)		Upper Middle Management (n=8,992)		Middle Management (n=6,863)		First Level Mgt /Supervisory (n=3,291)		Employee (n=4,926)		Sig.
	Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD	
Expressed Inclusion (eI)	5.56	1.36	5.61	1.30	5.60	1.30	5.62	1.33	5.67	1.35	5.81	1.39	**
Wanted Inclusion (wI)	4.07	1.86	4.03	1.78	4.05	1.83	4.10	1.86	4.19	2.01	4.38	2.19	**
Expressed Control (eC)	6.58	1.39	6.52	1.33	6.34	1.33	6.12	1.35	5.88	1.45	5.34	1.56	**
Wanted Control (wC)	4.80	1.43	4.85	1.33	4.96	1.38	5.02	1.41	5.06	1.49	5.08	1.54	**
Expressed Affection (eA)	4.33	2.28	4.26	2.23	4.27	2.23	4.24	2.23	4.32	2.28	4.55	2.30	**
Wanted Affection (wA)	5.00	1.99	4.89	1.92	4.89	1.93	4.89	1.96	4.98	2.03	5.16	2.03	**

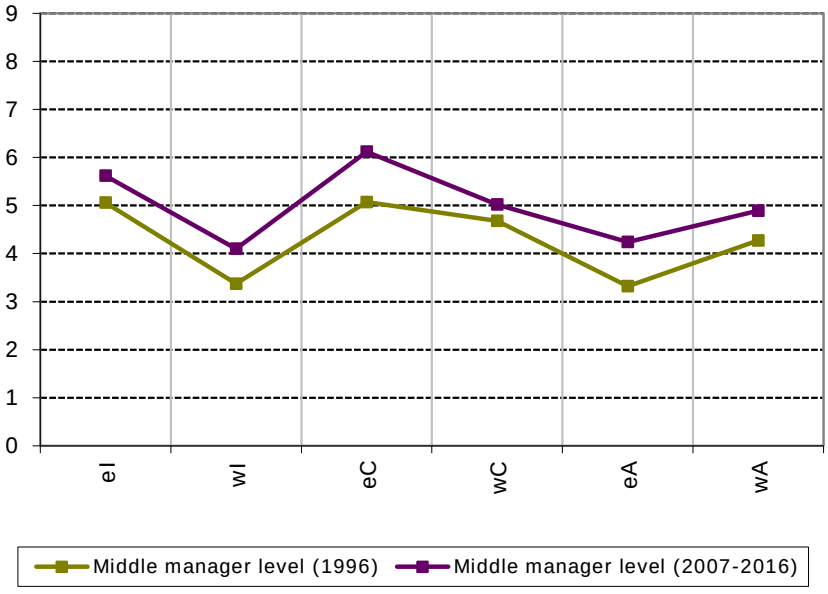
Significant at: *p<0.05, **p<0.01 (based on a one-way analysis of variance).

Figure 6.9: Differences in mean scale scores over time

Employee level



Middle manager level



It is not known for sure why this difference has been found, but one suggestion is that it has resulted from the fact that the 2007–2016 respondents would in most cases have completed the instrument as part of some kind of HR intervention. As such, they may have felt that it was in their interest to respond to the questionnaire in a more socially desirable way, hence inflating the scores slightly. The respondents who completed the questionnaire in 1996 did so as part of the project to develop the European English version of the questionnaire, so would not have felt under any pressure to respond in a particular way.

An alternative explanation is that the differences reflect a genuine shift in responses to the questionnaire over time. It would be interesting to explore this issue further at some stage.

Work area

Information regarding the area of work people engage in was collected for Group 1. Many different categories were used but, for the purposes of analysis, the focus was on the six which occurred most commonly. These were as follows:

- HR, training, guidance
- Finance
- Sales, customer service
- Business services
- Health, social services, etc
- Science, engineering

Table 6.14 shows the scale means and standard deviation for these six work areas. Whilst statistically significant differences were found across groups, it is difficult to identify any clear patterns. Within each scale, mean score differences across work areas tended to be in the region of 0.50 or less.

This equates to between approximately one quarter and one third of a standard deviation, and hence is quite small.

Readers who are interested in personality differences across work areas might like to refer to the MBTI Step I and MBTI Step II™ European Data Supplements (available to download from the OPP website), which provide details of differences in terms of MBTI preferences and Step II facet scores.

Table 6.14: Mean scale scores by work area

Step II facet scale	HR, training, guidance (n=5,218)		Finance (n=4,572)		Sales, customer service (n=4,069)		Business services (n=3,134)		Health, social services (n=3,018)		Science, engineering (n=2,699)		Sig.
	Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD	
Expressed Inclusion (eI)	5.58	1.33	5.71	1.30	5.74	1.33	5.71	1.34	5.56	1.31	5.65	1.36	**
Wanted Inclusion (wI)	4.10	1.90	4.24	1.88	4.16	1.89	4.24	1.90	3.76	1.82	4.19	1.89	**
Expressed Control (eC)	5.88	1.41	6.27	1.39	6.31	1.40	6.25	1.37	5.93	1.48	6.32	1.35	**
Wanted Control (wC)	4.96	1.38	5.02	1.43	4.97	1.45	5.00	1.43	4.87	1.37	5.11	1.41	**
Expressed Affection (eA)	4.52	2.22	4.33	2.37	4.59	2.33	4.45	2.34	3.96	1.93	4.12	2.27	**
Wanted Affection (wA)	5.12	1.94	4.97	2.01	4.99	2.04	5.09	1.97	4.66	1.68	4.91	2.03	**

Significant at: *p<0.05, **p<0.01 (based on a one-way analysis of variance).

Chapter 7: Data from the Danish language questionnaire

Demographic data

The data in this supplement is based on responses from 1628 respondents, who completed the Danish version of the questionnaire via OPP's online assessment platform over a nine-year period between November 2007 and January 2016.

Of these, 622 (38%) were female and 1006 (62%) were male. Ages ranged from 19 to 68, with a mean age of 44 years. All the individuals gave their nationality as Danish.

The present employment status of the group is summarised in Table 7.1.

Table 7.1: Employment status

Employment status	Number	Percentage
Working full-time	1386	93.1%
Working part-time	27	1.8%
Self-employed	50	3.4%
Home maker	2	.1%
Unemployed	23	1.5%

Scale properties

Descriptive statistics

Table 7.2 below shows the mean and standard deviation for each of the six scales.

Table 7.2: Scale means and standard deviations

Scale	Mean	Std Dev
Expressed Inclusion (eI)	5.83	1.14
Wanted Inclusion (wI)	3.27	1.58
Expressed Control (eC)	5.97	1.30
Wanted Control (wC)	5.41	1.33
Expressed Affection (eA)	2.92	2.19
Wanted Affection (wA)	3.36	1.78

The frequency distributions of the scales are shown in Figures 7.1 to 7.6:

Figure 7.1: Expressed Inclusion (eI) score frequency distribution (n=1628)

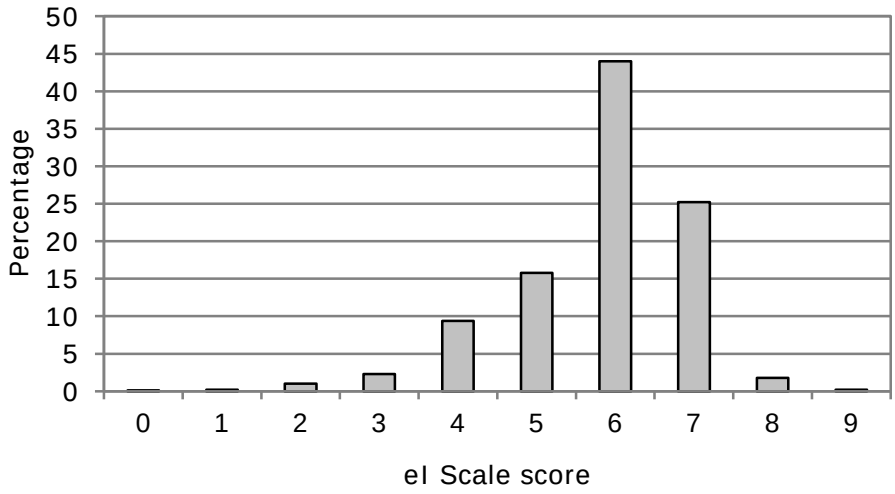


Figure 7.2: Wanted Inclusion (wI) score frequency distribution (n=1628)

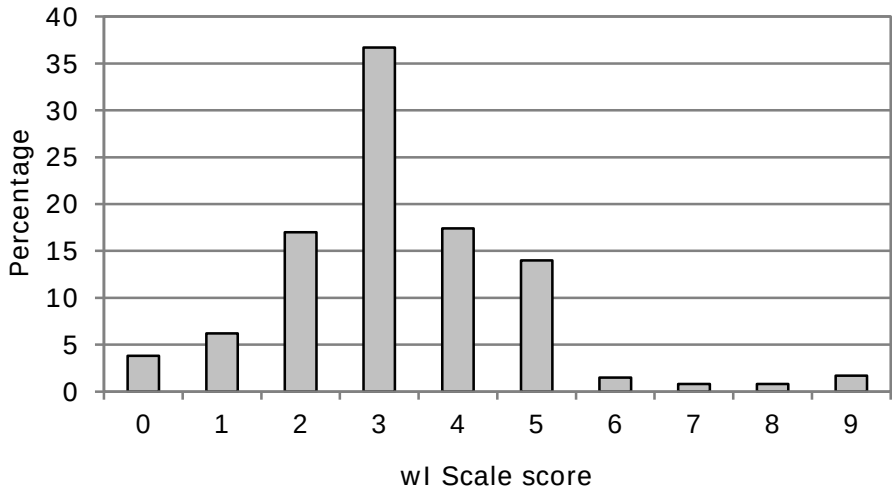


Figure 7.3: Expressed Control (eC) score frequency distribution (n=1628)

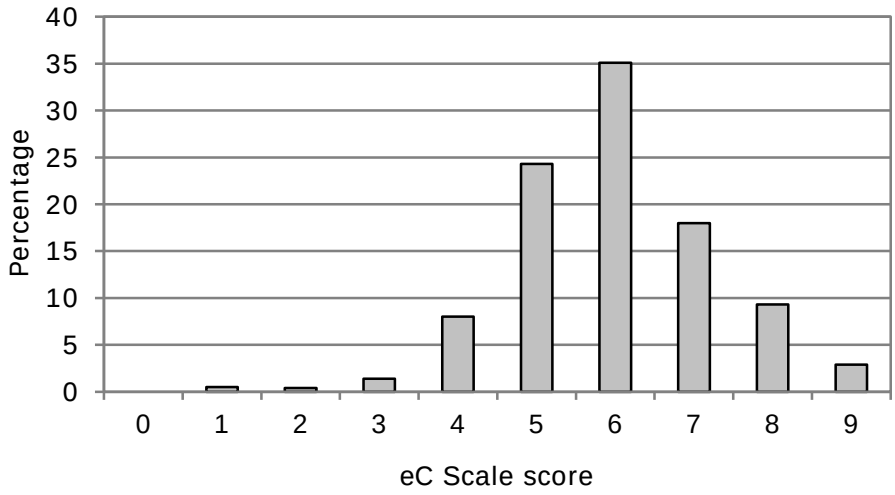


Figure 7.4: Wanted Control (wC) score frequency distribution (n=1628)

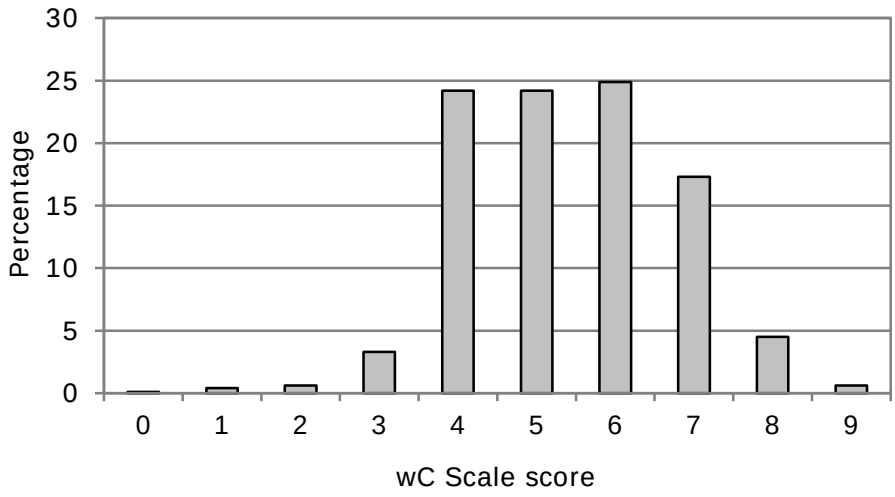


Figure 7.5: Expressed Affection (eA) score frequency distribution (n=1628)

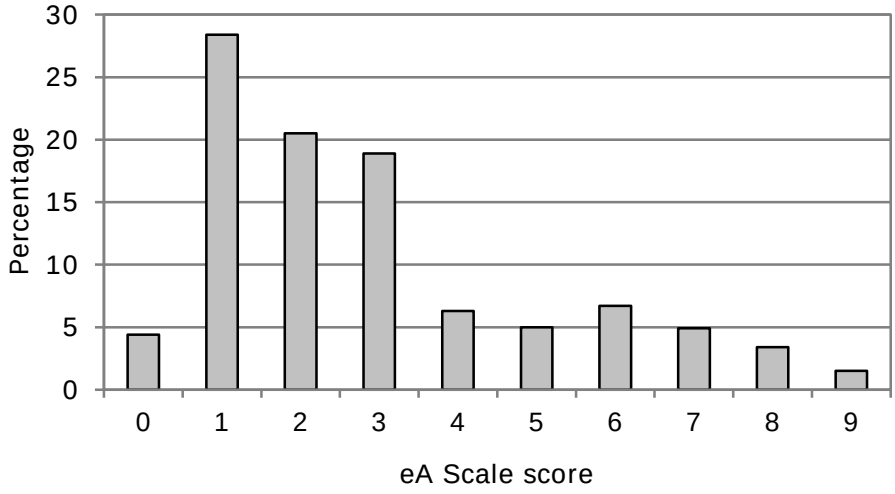
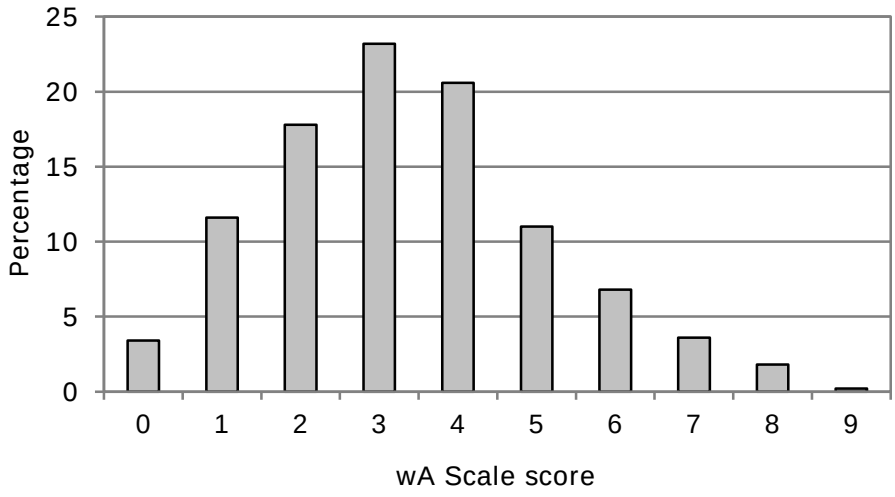


Figure 7.6: Wanted Affection (wA) score frequency distribution (n=1628)



Reliability – internal consistency

The reliability of a test or questionnaire relates to how consistent and precise it is. Internal consistency reliability addresses the question of whether all the questions in a scale measure the same construct. A common measure of internal consistency reliability is coefficient alpha (Cronbach, 1951). The alpha coefficients for the Danish questionnaire are shown in Table 7.3.

Table 7.3: Internal consistency reliability – alpha coefficients

Scale	Coefficient alpha
Expressed Inclusion (eI)	0.84
Wanted Inclusion (wI)	0.93
Expressed Control (eC)	0.92
Wanted Control (wC)	0.87
Expressed Affection (eA)	0.84
Wanted Affection (wA)	0.75

It is generally agreed that internal consistency reliability should achieve a value of at least 0.7 for a test to be considered to be reliable.[24] On this basis, all the dimensions of the questionnaire show good internal consistency reliability.

Scale intercorrelations

The intercorrelations between the FIRO-B scales are shown in Table 7.4:

Table 7.4: Scale intercorrelations

Scale	eI	wI	eC	wC	eA	wA
Expressed Inclusion (eI)						
Wanted Inclusion (wI)	0.39**					
Expressed Control (eC)	0.10**	0.09**				
Wanted Control (wC)	0.09**	0.19**	-0.10**			
Expressed Affection (eA)	0.35**	0.27**	0.06*	0.31		
Wanted Affection (wA)	0.21**	0.31**	-0.02	0.04	0.57**	

**Significant at p<0.01, *Significant at p<0.05.

There is a significant and large correlation between Inclusion and Affection, and a significant correlation between the Expressed and Wanted scales of each dimension.

Group differences

Group differences amongst individuals who completed the Danish questionnaire were explored on the basis of gender, age and employment status.

[24] For example, see Nunnally (1978) or Kline (2000).

Gender

The means and standard deviations of the FIRO-B scales are shown separately for males and females in Table 7.5, along with the difference in mean scores. This is represented graphically in Figure 7.7.

Table 7.5: Gender differences in scale scores

	Females (n=622)		Males (n=1006)		Difference (F–M)[25]
FIRO-B scale	Mean	SD	Mean	SD	
Expressed Inclusion (eI)	5.87	1.09	5.80	1.16	0.07
Wanted Inclusion (wI)	3.41	1.73	3.18	1.48	0.23*
Expressed Control (eC)	5.68	1.25	6.15	1.30	-0.47**
Wanted Control (wC)	5.38	1.31	5.42	1.34	-0.04
Expressed Affection (eA)	3.36	2.29	2.65	2.07	0.71**
Wanted Affection (wA)	3.77	1.74	3.11	1.76	0.66**

Difference significant at: *p<0.05, **p<0.01 (based on an independent samples t-test).

Figure 7.7: Gender differences in scale scores

Of the six scales, four showed significant differences in mean scores with females scoring higher on Wanted Inclusion, Expressed Affection and Wanted Affection and males scoring higher on Expressed Control.

[25] A positive value indicates that female mean scores are higher, and a negative value indicates that male mean scores are higher.

Age

Correlations between scale scores and age are shown in Table 7.6:

Table 7.6: Age differences in scale scores

Scale	Correlation with age
Expressed Inclusion (eI)	-0.10**
Wanted Inclusion (wI)	-0.13**
Expressed Control (eC)	-0.01
Wanted Control (wC)	-0.06*
Expressed Affection (eA)	-0.04
Wanted Affection (wA)	-0.06*

Significant at: *p<0.05, **p<0.01

Of the six scales, four showed a significant correlation with age. However, in real terms, all the correlations were quite small with the exception, perhaps, of that with Wanted Inclusion.

The negative correlation suggests that on average, younger respondents were likely to have a greater need to be included than were older respondents.

Employment status

Table 7.7 shows the scale means and standard deviation for each employment status category where there are sufficient numbers of people for analysis (27 or more, in this instance). This is represented graphically in Figure 7.8.

Whilst there are some observable differences across groups on several of the scales, due to the large effect size of the working full-time sample, most of these differences are negligible. The only two statistically significant differences taking into account the large effect size (a difference of >.5 in SD between groups) were found between individuals working full-time and part-time, and also between individuals working full-time and individuals who were self-employed, on the Expressed Affection scale. The mean scores amongst the part-time and self-employed groups were significantly higher

respectively than amongst the working full-time group.[26] These results should also be treated with caution due to the relatively small sample sizes for the working part-time and self-employed groups.

Table 7.7: Scale scores by employment status

Scale	Working full-time (n=1386)		Working part-time (n=27)		Self-employed (n=50)	
	Mean	SD	Mean	SD	Mean	SD
Expressed Inclusion (eI)	5.83	1.14	6.07	1.24	5.60	1.16
Wanted Inclusion (wI)	3.26	1.58	3.96	2.24	3.18	1.86
Expressed Control (eC)	6.01	1.30	5.89	1.40	5.58	1.49
Wanted Control (wC)	5.41	1.33	5.63	1.08	5.34	1.27
Expressed Affection (eA)	2.86	2.15	4.15	2.68	3.66	2.68
Wanted Affection (wA)	3.34	1.78	4.48	1.67	4.02	1.96

Figure 7.8: Employment status differences in scale scores

[26] Significant at $p<0.05$ (based on a one-way analysis of variance).

Chapter 8: Data from the Dutch language questionnaire

Demographic data

The data in this supplement is based on responses from 724 respondents, who completed the Dutch version of the questionnaire via OPP's online assessment platform over a nine-year period between August 2007 and January 2016.

Of these, 316 (44%) were female and 408 (56%) were male. Ages ranged from 21 to 69, with a mean age of 41 years. 610 (84%) individuals gave their nationality as Dutch, whilst 114 (16%) gave their nationality as Belgian.

The present employment status of the group is summarised in Table 8.1.

Table 8.1: Employment status

Employment status	Number	Percentage
Working full-time	505	78.1%
Working part-time	83	12.8%
Self-employed	49	7.6%
Retired	1	0.2%
Unemployed	9	1.4%

Scale properties

Descriptive statistics

Table 8.2 below shows the mean and standard deviation for each of the six scales.

Table 8.2: Scale means and standard deviations

Scale	Mean	Std Dev
Expressed Inclusion (eI)	5.68	1.18
Wanted Inclusion (wI)	4.44	1.85
Expressed Control (eC)	6.13	1.50
Wanted Control (wC)	5.64	1.47
Expressed Affection (eA)	5.21	2.15
Wanted Affection (wA)	6.52	2.06

The frequency distributions of the scales are shown in Figures 8.1 to 8.6:

Figure 8.1: Expressed Inclusion (eI) score frequency distribution (n=724)

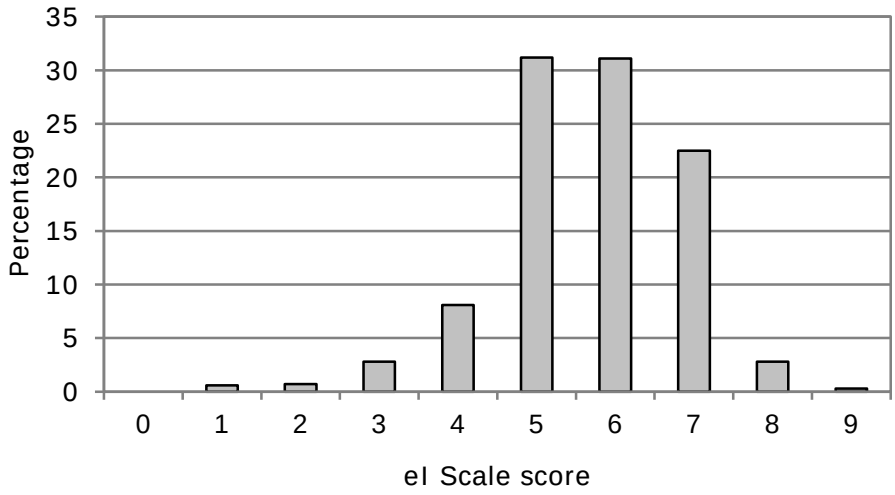


Figure 8.2: Wanted Inclusion (wI) score frequency distribution (n=724)

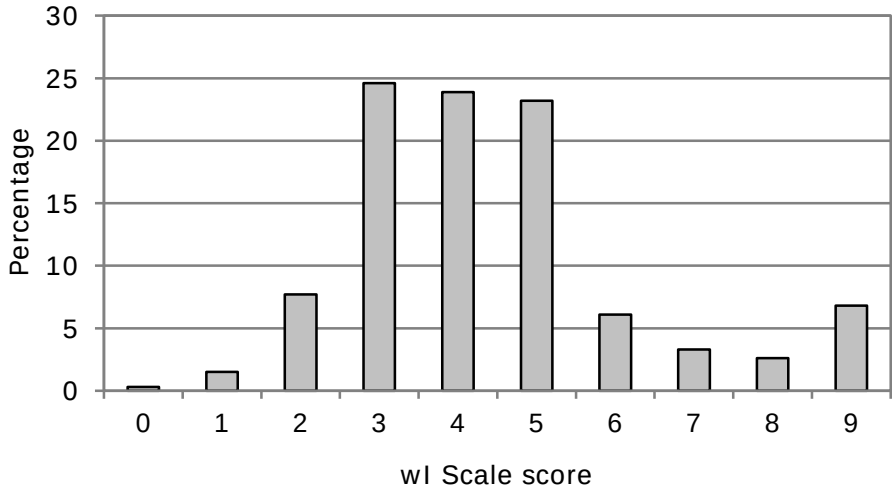


Figure 8.3: Expressed Control (eC) score frequency distribution (n=724)

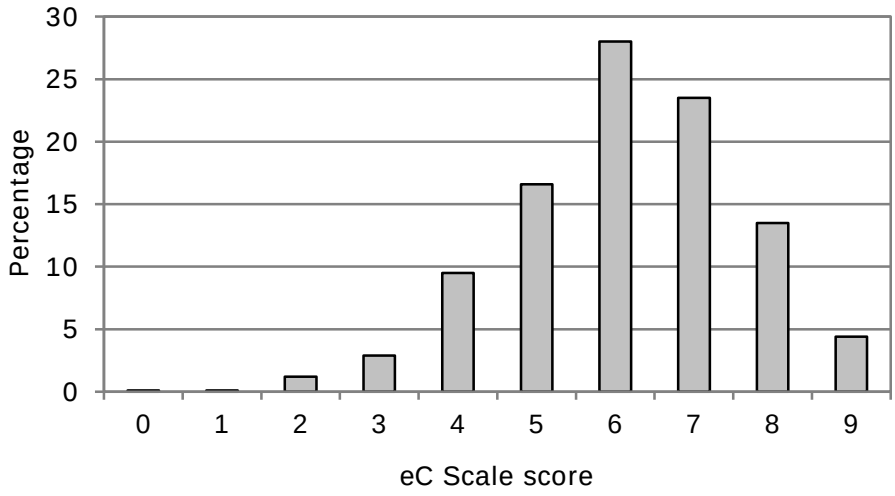


Figure 8.4: Wanted Control (wC) score frequency distribution (n=724)

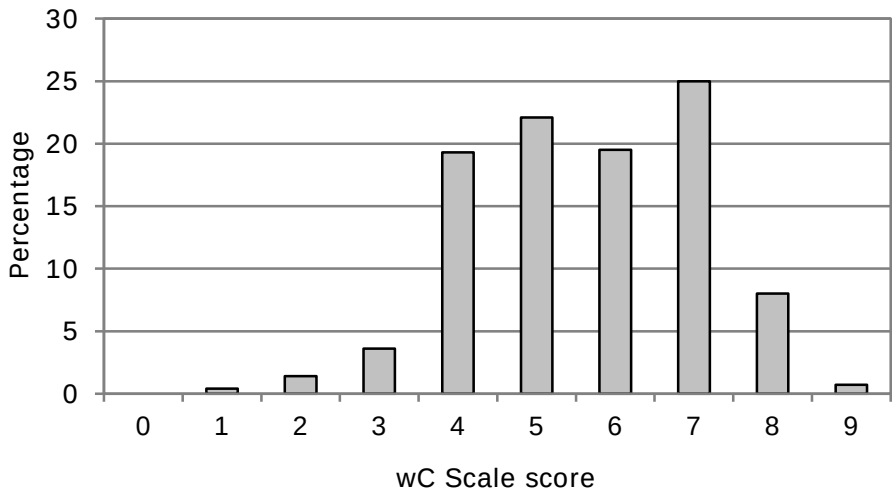


Figure 8.5: Expressed Affection (eA) score frequency distribution (n=724)

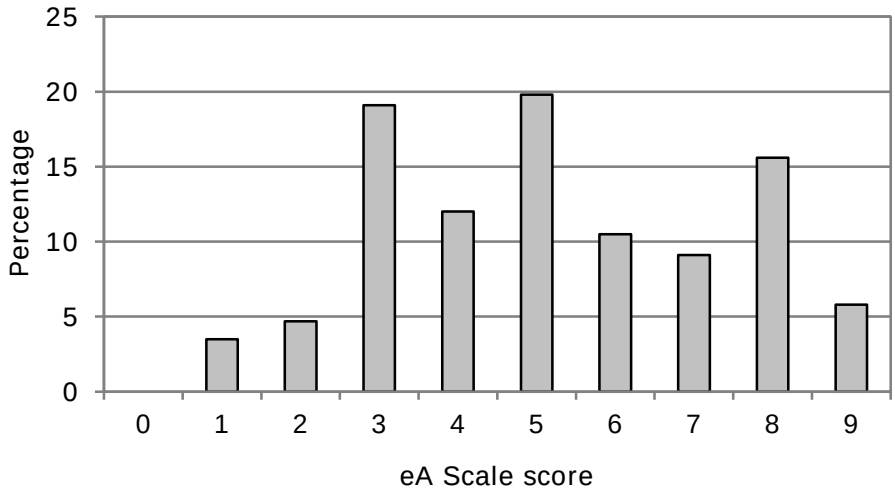
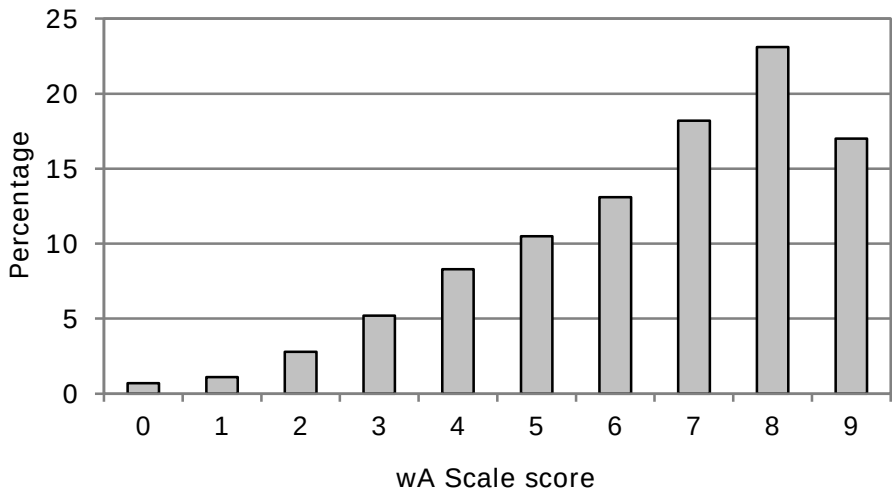


Figure 8.6: Wanted Affection (wA) score frequency distribution (n=724)



Reliability – internal consistency

The reliability of a test or questionnaire relates to how consistent and precise it is. Internal consistency reliability addresses the question of whether all the questions in a scale measure the same construct. A common measure of internal consistency reliability is coefficient alpha (Cronbach, 1951). The alpha coefficients for the Dutch questionnaire are shown in Table 8.3.

Table 8.3: Internal consistency reliability – alpha coefficients

Scale	Coefficient alpha
Expressed Inclusion (eI)	0.82
Wanted Inclusion (wI)	0.94
Expressed Control (eC)	0.90
Wanted Control (wC)	0.89
Expressed Affection (eA)	0.84
Wanted Affection (wA)	0.89

It is generally agreed that internal consistency reliability should achieve a value of at least 0.7 for a test to be considered to be reliable.[27] On this basis, all the dimensions of the questionnaire show good internal consistency reliability.

Scale intercorrelations

The intercorrelations between the FIRO-B scales are shown in Table 8.4:

Table 8.4: Scale intercorrelations

Scale	eI	wI	eC	wC	eA	wA
Expressed Inclusion (eI)						
Wanted Inclusion (wI)	0.34**					
Expressed Control (eC)	0.13*	0.14**				
Wanted Control (wC)	0.09*	0.01	-0.10**			
Expressed Affection (eA)	0.37**	0.28**	-0.01	-0.01		
Wanted Affection (wA)	0.29**	0.48**	-0.02	0.03	0.46**	

**Significant at p<0.01, *Significant at p<0.05.

There is a significant correlation between Inclusion and Affection, and a significant correlation between the Expressed and Wanted scales of each dimension.

Group differences

Group differences amongst individuals who completed the Dutch questionnaire were explored on the basis of gender, age, employment status and country of residence.

[27] For example, see Nunnally (1978) or Kline (2000).

Gender

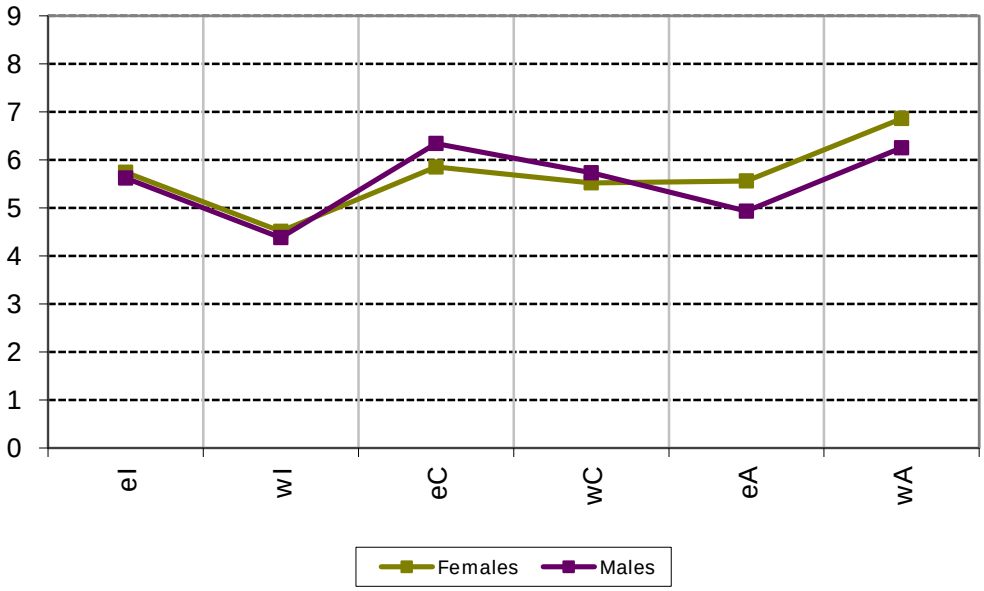
The means and standard deviations of the FIRO-B scales are shown separately for males and females in Table 8.5, along with the difference in mean scores. This is represented graphically in Figure 8.7.

Table 8.5: Gender differences in scale scores

	Females (n=159)		Males (n=106)		Difference (F–M)[28]
FIRO-B scale	Mean	SD	Mean	SD	
Expressed Inclusion (eI)	5.74	1.08	5.62	1.25	0.12
Wanted Inclusion (wI)	4.51	2.01	4.38	1.72	0.13
Expressed Control (eC)	5.85	1.53	6.34	1.44	-0.49**
Wanted Control (wC)	5.52	1.47	5.73	1.46	-0.21
Expressed Affection (eA)	5.56	2.07	4.93	2.17	0.63**
Wanted Affection (wA)	6.86	1.98	6.25	2.09	0.60**

Difference significant at: *p<0.05, **p<0.01 (based on an independent samples t-test).

Figure 8.7: Gender differences in scale scores



Of the six scales, three showed significant differences in mean scores with females scoring higher on Expressed Affection and Wanted Affection, and males scoring higher on Expressed Control.

[28] A positive value indicates that female mean scores are higher, and a negative value indicates that male mean scores are higher.

Age

Correlations between scale scores and age are shown in Table 8.6:

Table 8.6: Age differences in scale scores

Scale	Correlation with age
Expressed Inclusion (eI)	-0.08*
Wanted Inclusion (wI)	-0.13**
Expressed Control (eC)	0.07
Wanted Control (wC)	-0.00
Expressed Affection (eA)	-0.08*
Wanted Affection (wA)	-0.10**

Significant at: *p<0.05, **p<0.01

Of the six scales, four showed a significant correlation with age. However, in real terms, all the correlations were quite small with the exception, perhaps, of the one with Wanted Inclusion.

The negative correlations suggest that age is to some extent inversely related to scores on the Inclusion and Affection scales, meaning that younger respondents were more likely to achieve higher Expressed and (more especially) Wanted Inclusion, and higher Expressed and (more especially) Wanted Affection scores, than older respondents.

Employment status

Table 8.7 shows the scale means and standard deviation for full-time and part-time workers. This is represented graphically in Figure 8.8.

Two statistically significant differences were found between groups. On the Expressed Control scale, this was found between individuals working full-time and part-time. The mean score amongst full-time workers was significantly higher than amongst the part-time workers group. On the Wanted Control scale, this was found between individuals working full-time and self-employed individuals. The mean score amongst full-time workers was significantly higher than amongst the self-employed group.[29] However,

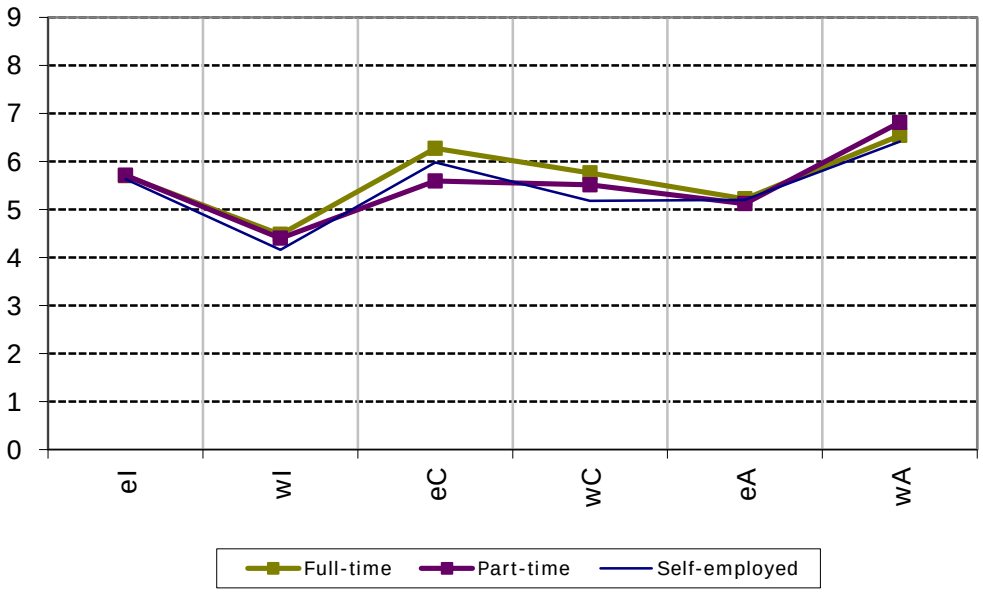
[29] (Significant at p<0.05 (based on a one-way analysis of variance).

these results should be treated with caution due to the relatively small sample sizes for the working part-time and self-employed groups.

Table 8.7: Scale scores by employment status

Scale	Working full-time (n=505)		Working part-time (n=83)		Self-employed (n=49)	
	Mean	SD	Mean	SD	Mean	SD
Expressed Inclusion (eI)	5.70	1.20	5.71	0.94	5.63	1.35
Wanted Inclusion (wI)	4.48	1.81	4.40	2.00	4.16	1.66
Expressed Control (eC)	6.27	1.47	5.59	1.39	5.98	1.65
Wanted Control (wC)	5.76	1.46	5.51	1.39	5.18	1.62
Expressed Affection (eA)	5.22	2.23	5.12	1.78	5.20	2.09
Wanted Affection (wA)	6.54	2.07	6.81	1.85	6.41	1.88

Figure 8.8: Employment status differences in scale scores



Country of residence

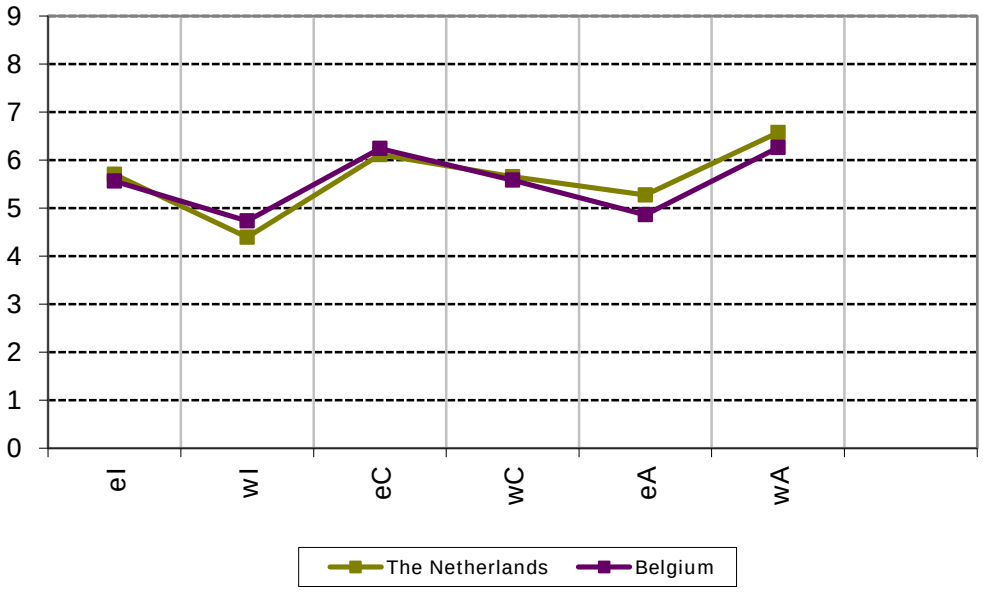
The means and standard deviations of the FIRO-B scales are shown separately for respondents living in Belgium and The Netherlands in Table 8.8, along with the difference in mean scores. This is represented graphically in Figure 8.9.

Table 8.8: Scale scores by country of residence

	The Netherlands (n=610)		Belgium (n=114)		Difference (N–B)[30]
FIRO-B scale	Mean	SD	Mean	SD	
Expressed Inclusion (eI)	5.70	1.12	5.56	1.46	0.14
Wanted Inclusion (wI)	4.39	1.81	4.73	2.04	-0.34
Expressed Control (eC)	6.11	1.52	6.24	1.40	-0.13
Wanted Control (wC)	5.65	1.45	5.58	1.56	0.07
Expressed Affection (eA)	5.27	2.13	4.86	2.23	0.41
Wanted Affection (wA)	6.57	2.03	6.26	2.21	0.30

Difference significant at: *p<0.05, **p<0.01 (based on an independent samples t-test).

Figure 8.9: Scale scores by country of residence



None of the six scales showed any significant difference in mean score between respondents living in the Netherlands and respondents living in Belgium.

[30] A positive value indicates that mean scores from The Netherlands are higher, and a negative value indicates that mean scores from Belgium are higher.

Chapter 9: Data from the French language questionnaire

Demographic data

The data in this supplement is based on responses from 1,234 respondents, who completed the French version of the questionnaire via OPP's online assessment platform over a six-year period between November 2010 and February 2016.

Of these, 555 (45%) were female and 679 (55%) were male. Ages ranged from 20 to 65, with a mean age of 41 years. 1129 (91%) of the individuals gave their country of residence as France, 58 (5%) gave their country of residence as Belgium and 47 (4%) gave their country of residence as Switzerland. The present employment status of the group is summarised in Table 9.1.

Table 9.1: Employment status

Employment status	Number	Percentage
Working full-time	757	90.3%
Working part-time	26	3.1%
Self-employed	45	5.4%
Retired	1	0.1%
Unemployed	9	1.1%

Scale properties

Descriptive statistics

Table 9.2 below shows the mean and standard deviation for each of the six scales.

Table 9.2: Scale means and standard deviations

Scale	Mean	Std Dev
Expressed Inclusion (eI)	5.80	1.27
Wanted Inclusion (wI)	4.50	1.90
Expressed Control (eC)	6.17	1.53
Wanted Control (wC)	5.00	1.63
Expressed Affection (eA)	4.41	2.33
Wanted Affection (wA)	5.30	2.04

The frequency distributions of the scales are shown in Figures 9.1 to 9.6:

Figure 9.1: Expressed Inclusion (eI) score frequency distribution (n=1234)

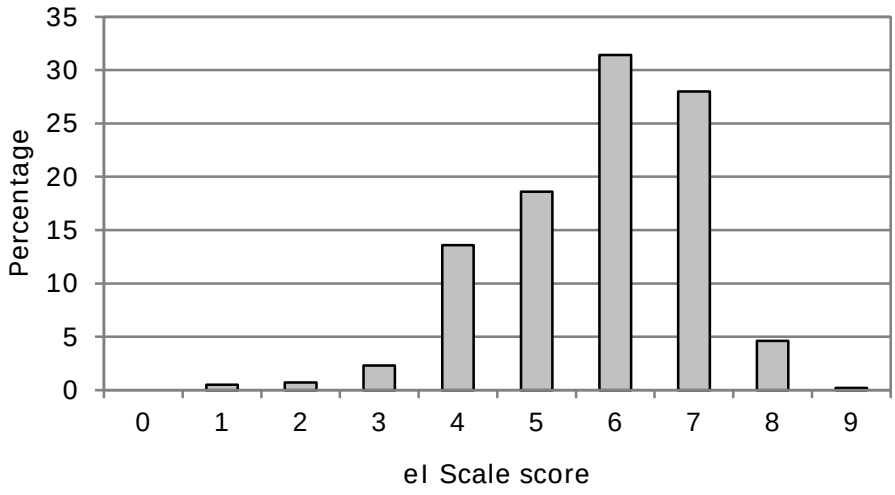


Figure 9.2: Wanted Inclusion (wI) score frequency distribution (n=1234)

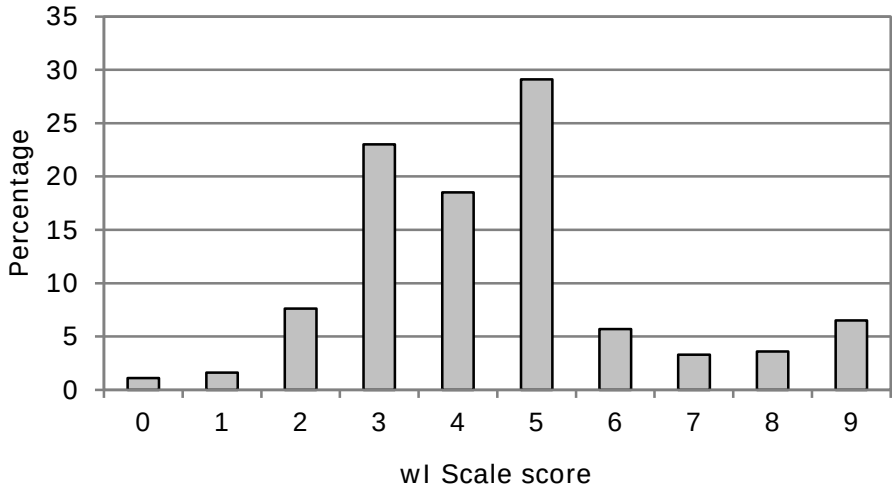


Figure 9.3: Expressed Control (eC) score frequency distribution (n=1234)

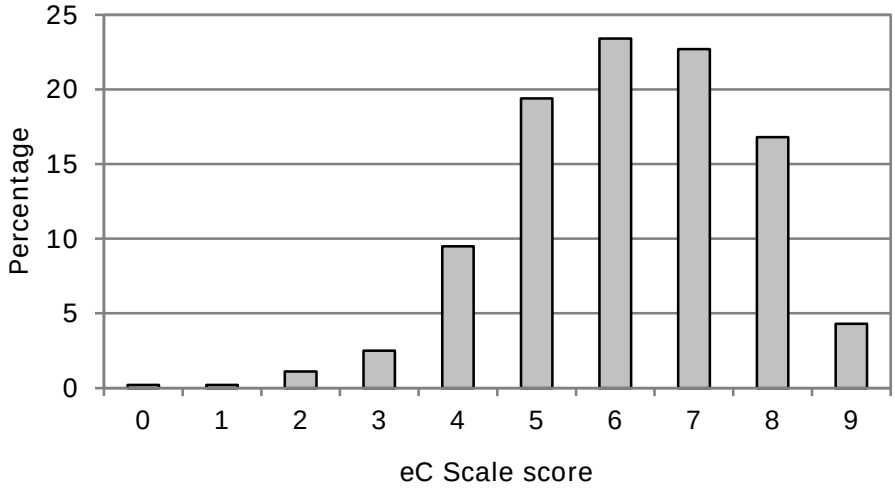


Figure 9.4: Wanted Control (wC) score frequency distribution (n=1234)

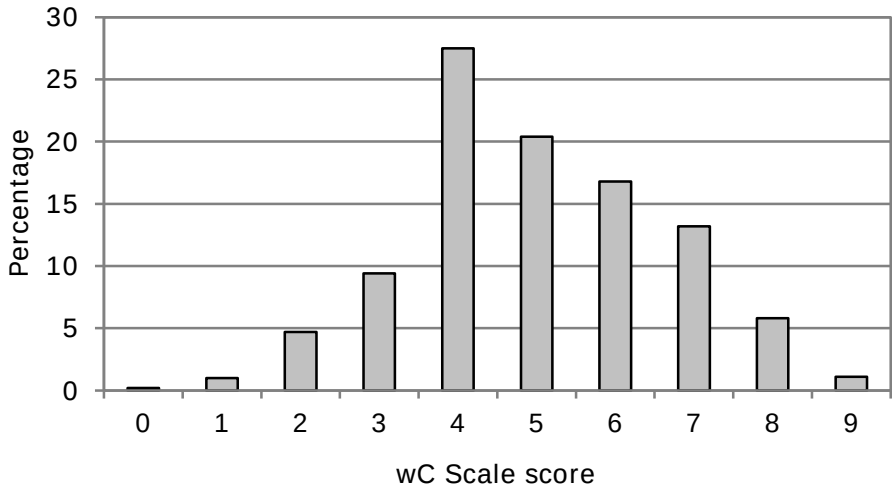


Figure 9.5: Expressed Affection (eA) score frequency distribution (n=1234)

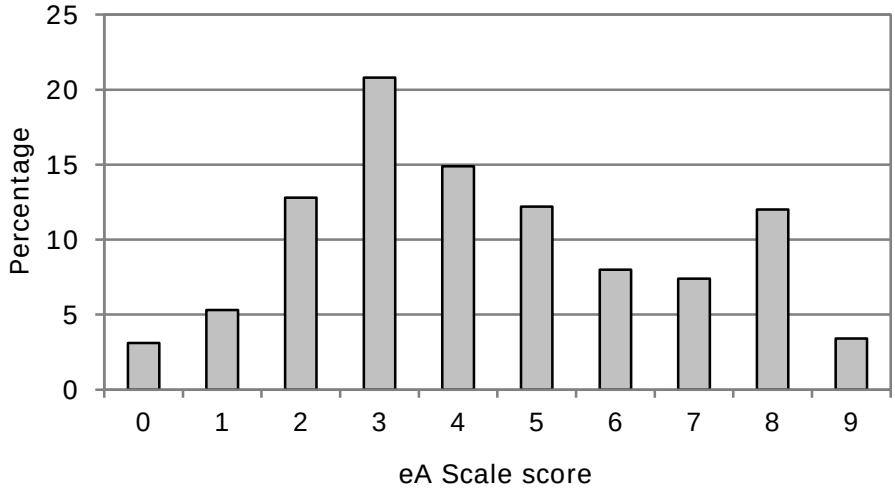
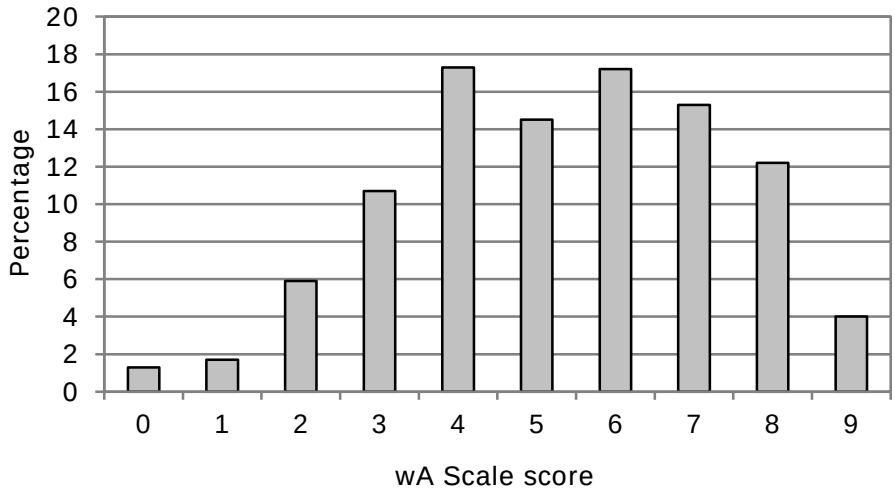


Figure 9.6: Wanted Affection (wA) score frequency distribution (n=1234)



Reliability – internal consistency

The reliability of a test or questionnaire relates to how consistent and precise it is. Internal consistency reliability addresses the question of whether all the questions in a scale measure the same construct. A common measure of internal consistency reliability is coefficient alpha (Cronbach, 1951). The alpha coefficients for the French questionnaire are shown in Table 9.3.

Table 9.3: Internal consistency reliability – alpha coefficients

Scale	Coefficient alpha
Expressed Inclusion (eI)	0.82
Wanted Inclusion (wI)	0.95
Expressed Control (eC)	0.89
Wanted Control (wC)	0.86
Expressed Affection (eA)	0.86
Wanted Affection (wA)	0.84

It is generally agreed that internal consistency reliability should achieve a value of at least 0.7 for a test to be considered to be reliable.[31] On this basis, all the dimensions of the questionnaire show good internal consistency reliability.

Scale intercorrelations

The intercorrelations between the FIRO-B scales are shown in Table 9.4.

Table 9.4: Scale intercorrelations

Scale	eI	wI	eC	wC	eA	wA
Expressed Inclusion (eI)						
Wanted Inclusion (wI)	0.37**					
Expressed Control (eC)	0.16**	0.17**				
Wanted Control (wC)	0.14**	0.12**	-0.02			
Expressed Affection (eA)	0.36**	0.41**	0.07*	0.11**		
Wanted Affection (wA)	0.19**	0.50**	0.05	0.10**	0.56**	

**Significant at p<0.01, *Significant at p<0.05.

There is a significant correlation between Inclusion and Affection, and a significant correlation between the Expressed and Wanted scales of each dimension, with the exception of Expressed and Wanted Control where there is very little correlation.

Group differences

Group differences amongst individuals, who completed the French questionnaire, were explored on the basis of gender, age and employment status.

[31] For example, see Nunnally (1978) or Kline (2000).

Gender

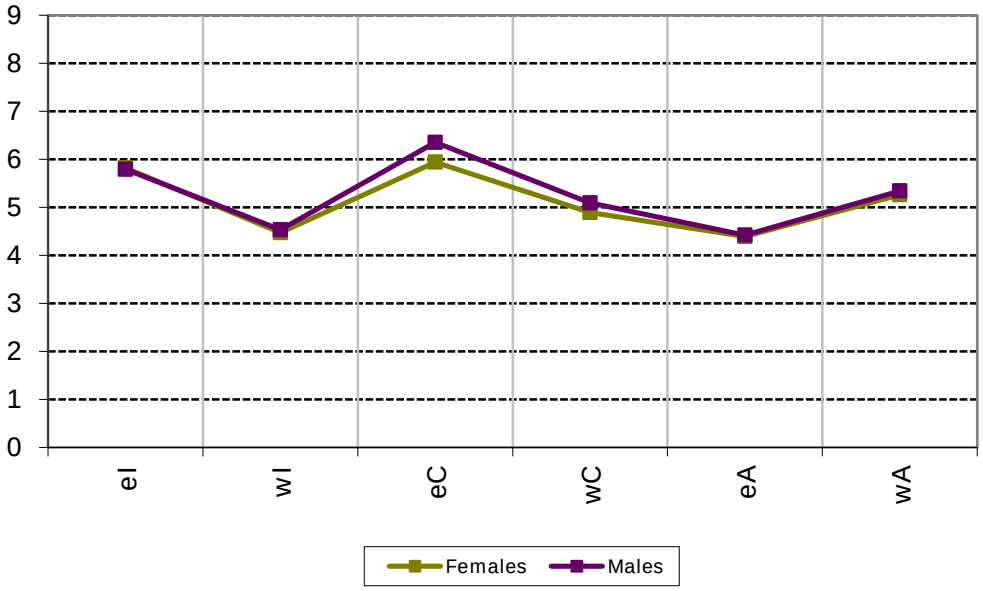
The means and standard deviations of the FIRO-B scales are shown separately for males and females in Table 9.5, along with the difference in mean scores. This is represented graphically in Figure 9.7.

Table 9.5: Gender differences in scale scores

	Females (n=555)		Males (n=679)		Difference (F–M)[32]
FIRO-B scale	Mean	SD	Mean	SD	
Expressed Inclusion (eI)	5.82	1.21	5.79	1.32	0.03
Wanted Inclusion (wI)	4.47	1.88	4.53	1.93	-0.06
Expressed Control (eC)	5.94	1.63	6.35	1.42	-0.41**
Wanted Control (wC)	4.89	1.65	5.09	1.61	-0.20*
Expressed Affection (eA)	4.39	2.29	4.42	2.36	-0.03
Wanted Affection (wA)	5.26	2.04	5.34	2.04	-0.08

Difference significant at: *p<0.05, **p<0.01 (based on an independent samples t-test).

Figure 9.7: Gender differences in scale scores



Of the six scales, two showed significant differences in mean scores, with males scoring higher on Expressed Control and Wanted Control.

[32] A positive value indicates that female mean scores are higher, and a negative value indicates that male mean scores are higher.

Age

Correlations between scale scores and age are shown in Table 9.6.

Table 9.6: Age differences in scale scores

Scale	Correlation with age
Expressed Inclusion (eI)	-0.01
Wanted Inclusion (wI)	-0.06
Expressed Control (eC)	-0.03
Wanted Control (wC)	0.02
Expressed Affection (eA)	-0.05
Wanted Affection (wA)	-0.01

Significant at: *p<0.05, **p<0.01

None of the six scales showed any significant correlation with age.

Employment status

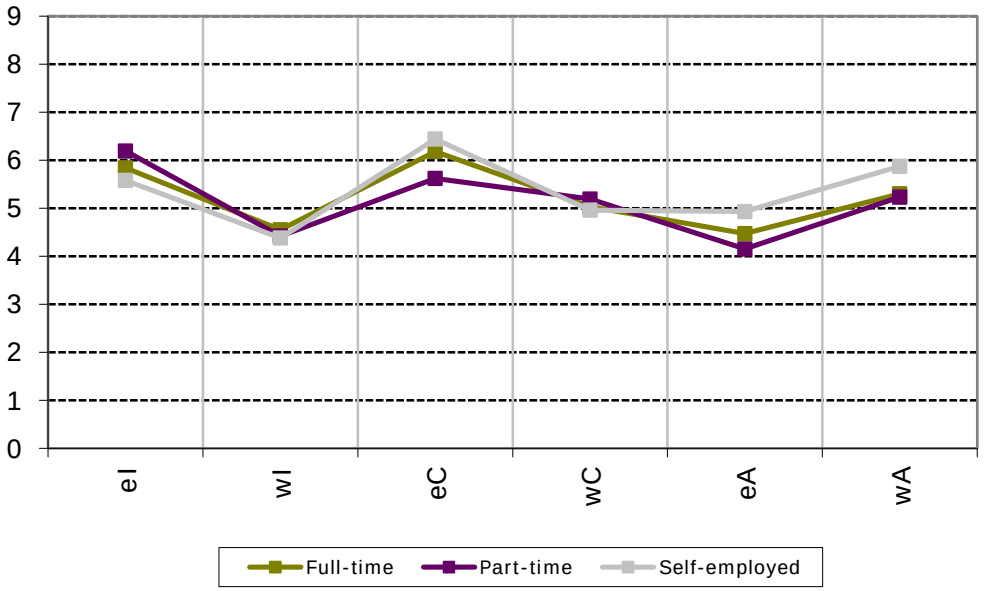
Table 9.7 shows the scale means and standard deviation for each employment status category where there are sufficient numbers of people for analysis (30 or more, in this instance). This is represented graphically in Figure 9.8.

The data shows the mean scores across groups to be very similar for all six scales, with no statistically significant differences.

Table 9.7: Scale scores by employment status

Scale	Working full-time (n=757)		Working part-time (n=26)		Self-Employed (n=45)	
	Mean	SD	Mean	SD	Mean	SD
Expressed Inclusion (eI)	5.84	1.25	6.19	1.06	5.58	1.25
Wanted Inclusion (wI)	4.55	1.97	4.42	1.94	4.38	1.48
Expressed Control (eC)	6.18	1.54	5.62	1.50	6.44	1.62
Wanted Control (wC)	5.03	1.59	5.19	2.06	4.96	1.61
Expressed Affection (eA)	4.47	2.35	4.15	2.34	4.93	2.36
Wanted Affection (wA)	5.30	2.03	5.23	2.12	5.87	2.02

Figure 9.8: Employment status differences in scale scores



Chapter 10: Data from the German language questionnaire

Demographic data

The data in this supplement is based on responses from 849 respondents who completed the German version of the questionnaire via OPP's online assessment platform over a nine-year period between May 2007 and January 2016.

Of these, 230 (27%) were female and 619 (73%) were male. Ages ranged from 18 to 78, with a mean age of 42 years. 727 (86%) of the individuals stated that their nationality was German, 79 (9%) stating their nationality was Swiss and 43 (5%) stating their nationality was Austrian.

The present employment status of the group is summarised in Table 10.1

Table 10.1: Employment status

Employment status	Number	Percentage
Working full-time	705	91%
Working part-time	19	2.5%
Self-employed	50	6.5%

Scale properties

Descriptive statistics

Table 10.2 below shows the mean and standard deviation for each of the six scales.

Table 10.2: Scale means and standard deviations

Scale	Mean	Std Dev
Expressed Inclusion (eI)	5.40	1.45
Wanted Inclusion (wI)	4.22	1.97
Expressed Control (eC)	6.01	1.51
Wanted Control (wC)	4.71	1.20
Expressed Affection (eA)	4.98	2.19
Wanted Affection (wA)	5.41	2.03

The frequency distributions of the scales are shown in Figures 10.1 to 10.6:

Figure 10.1: Expressed Inclusion (eI) score frequency distribution (n=849)

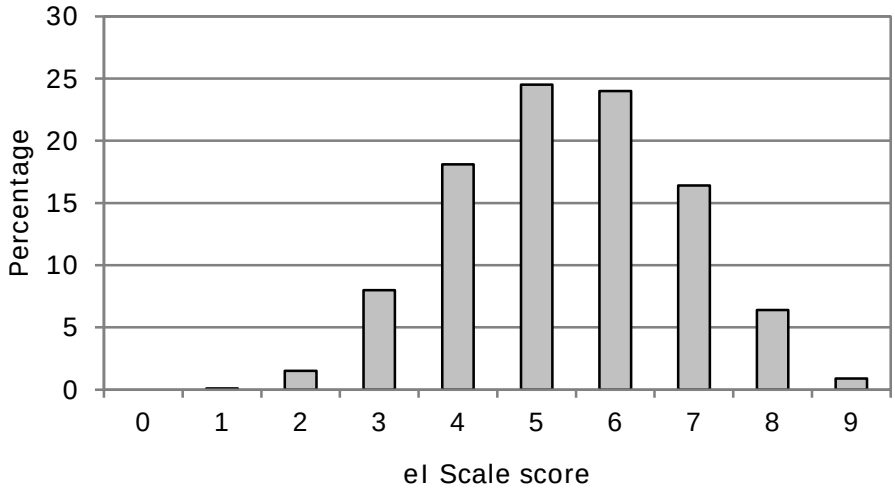


Figure 10.2: Wanted Inclusion (wI) score frequency distribution (n=849)

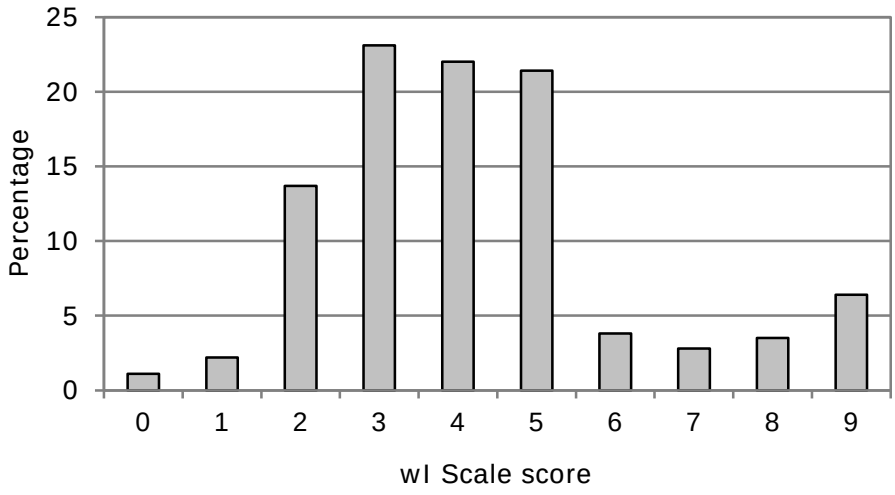


Figure 10.3: Expressed Control (eC) score frequency distribution (n=849)

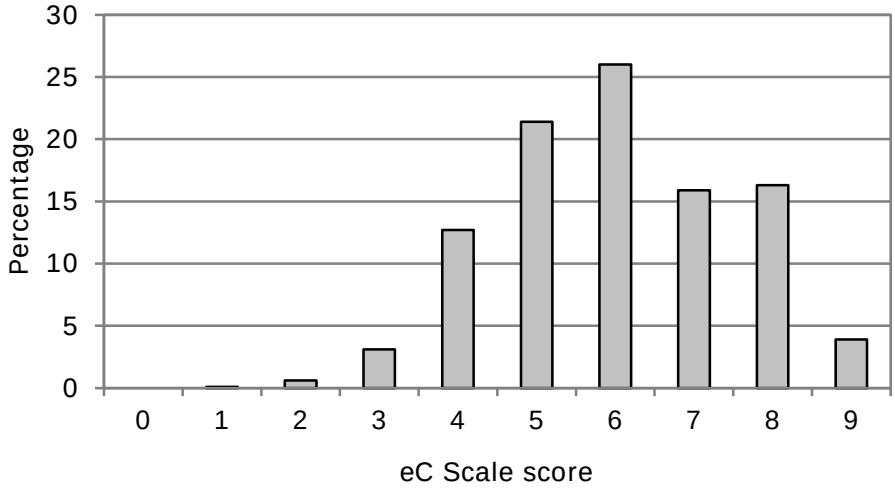


Figure 10.4: Wanted Control (wC) score frequency distribution (n=849)

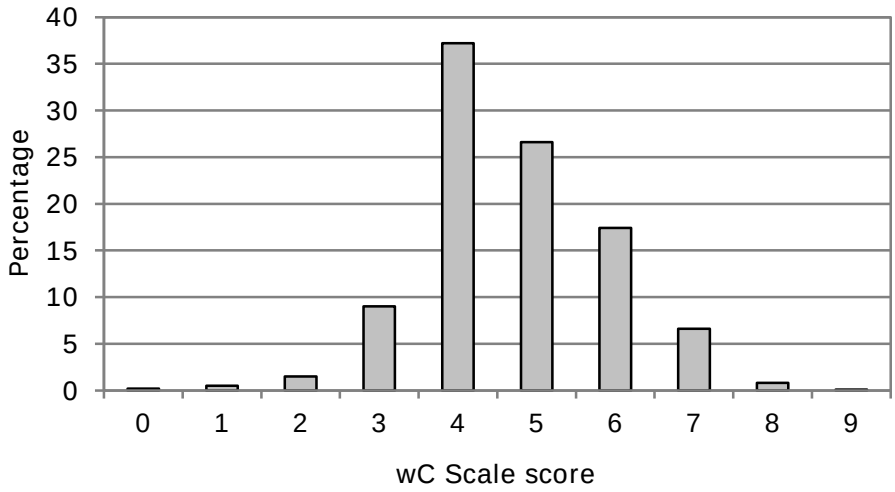


Figure 10.5: Expressed Affection (eA) score frequency distribution (n=849)

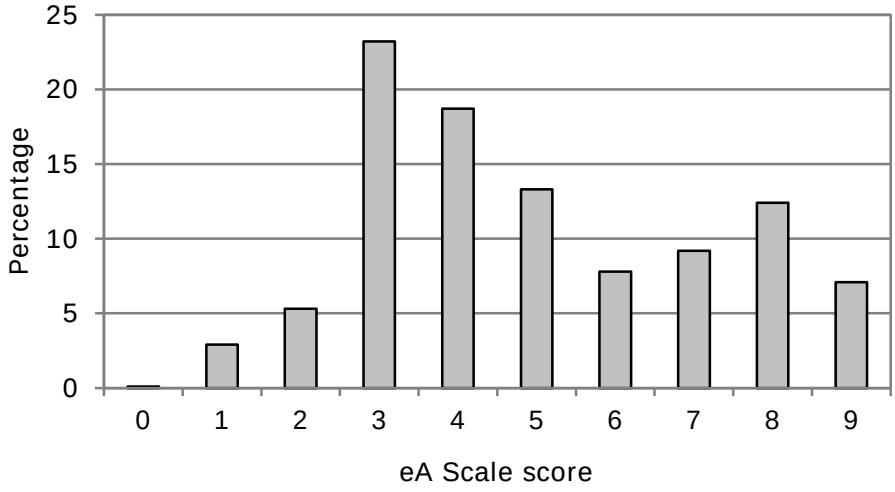
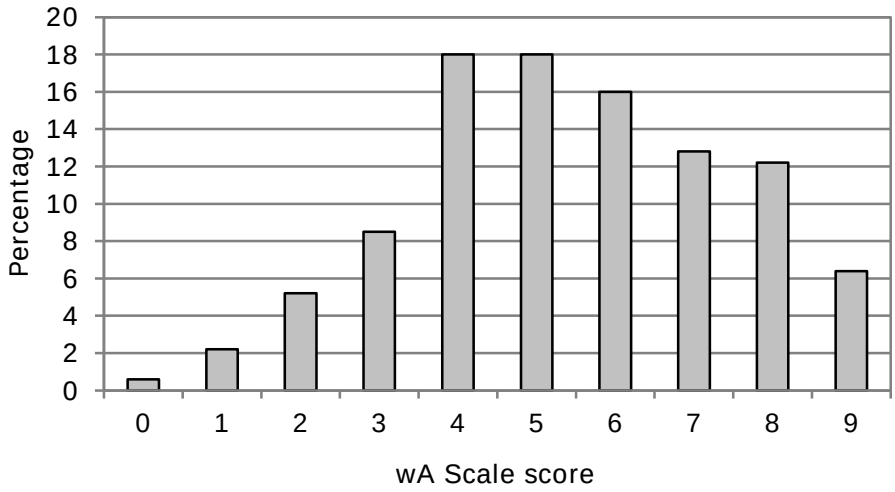


Figure 10.6: Wanted Affection (wA) score frequency distribution (n=849)



Reliability – internal consistency

The reliability of a test or questionnaire relates to how consistent and precise it is. Internal consistency reliability addresses the question of whether all the questions in a scale measure the same construct. A common measure of internal consistency reliability is coefficient alpha (Cronbach, 1951). The alpha coefficients for the German questionnaire are shown in Table 10.3.

Table 10.3: Internal consistency reliability – alpha coefficients

Scale	Coefficient alpha
Expressed Inclusion (eI)	0.79
Wanted Inclusion (wI)	0.94
Expressed Control (eC)	0.91
Wanted Control (wC)	0.84
Expressed Affection (eA)	0.84
Wanted Affection (wA)	0.88

It is generally agreed that internal consistency reliability should achieve a value of at least 0.7 for a test to be considered to be reliable.[33] On this basis, all the dimensions of the questionnaire show good internal consistency reliability.

Scale intercorrelations

The intercorrelations between the FIRO-B scales are shown in Table 10.4.

Table 10.4: Scale intercorrelations

Scale	eI	wI	eC	wC	eA	wA
Expressed Inclusion (eI)						
Wanted Inclusion (wI)	0.45**					
Expressed Control (eC)	0.08*	0.08*				
Wanted Control (wC)	0.13**	0.03	-0.12**			
Expressed Affection (eA)	0.43**	0.41**	0.09**	0.07*		
Wanted Affection (wA)	0.32**	0.54**	-0.00	0.06	0.58**	

**Significant at p<0.01, *Significant at p<0.05.

There is a significant correlation between Inclusion and Affection, and a significant correlation between the Expressed and Wanted scales of each dimension, with the exception of Expressed and Wanted Control where there is very little correlation.

Group differences

Group differences amongst individuals who completed the German questionnaire were explored on the basis of gender, age and employment status.

[33] For example, see Nunnally (1978) or Kline (2000).

Gender

The means and standard deviations of the FIRO-B scales are shown separately for males and females in Table 10.5, along with the difference in mean scores. This is represented graphically in Figure 10.7.

Table 10.5: Gender differences in scale scores

	Females (n=230)		Males (n=619)		Difference (F–M)[34]
FIRO-B scale	Mean	SD	Mean	SD	
Expressed Inclusion (eI)	5.34	1.47	5.43	1.45	-0.08
Wanted Inclusion (wI)	4.37	2.14	4.17	1.90	0.20
Expressed Control (eC)	5.55	1.60	6.18	1.44	-0.63**
Wanted Control (wC)	4.79	1.14	4.68	1.23	0.11
Expressed Affection (eA)	5.10	2.17	4.94	2.19	0.16
Wanted Affection (wA)	5.67	2.17	5.32	1.97	0.35*

Difference significant at: *p<0.05, **p<0.01 (based on an independent samples t-test).

Figure 10.7: Gender differences in scale scores

Of the six scales, two showed significant differences in mean scores with females scoring higher on Wanted Affection, and males scoring higher on Expressed Control.

[34] A positive value indicates that female mean scores are higher, and a negative value indicates that male mean scores are higher.

Age

Correlations between scale scores and age are shown in Table 10.6.

Table 10.6: Age differences in scale scores

Scale	Correlation with age
Expressed Inclusion (eI)	-0.16**
Wanted Inclusion (wI)	-0.15**
Expressed Control (eC)	0.03
Wanted Control (wC)	-0.14**
Expressed Affection (eA)	-0.04
Wanted Affection (wA)	-0.13**

Significant at: *p<0.05, **p<0.01

Of the six scales, four showed a significant correlation with age. This is considerably more than has been found with other language versions of the questionnaire. The fact that they are negative correlations means that younger respondents tended to score higher on all these scales than older respondents.

Employment status

Table 10.7 shows the scale means and standard deviation for each employment status category where there are sufficient numbers of people for analysis (30 or more, in this instance). This is represented graphically in Figure 10.8.

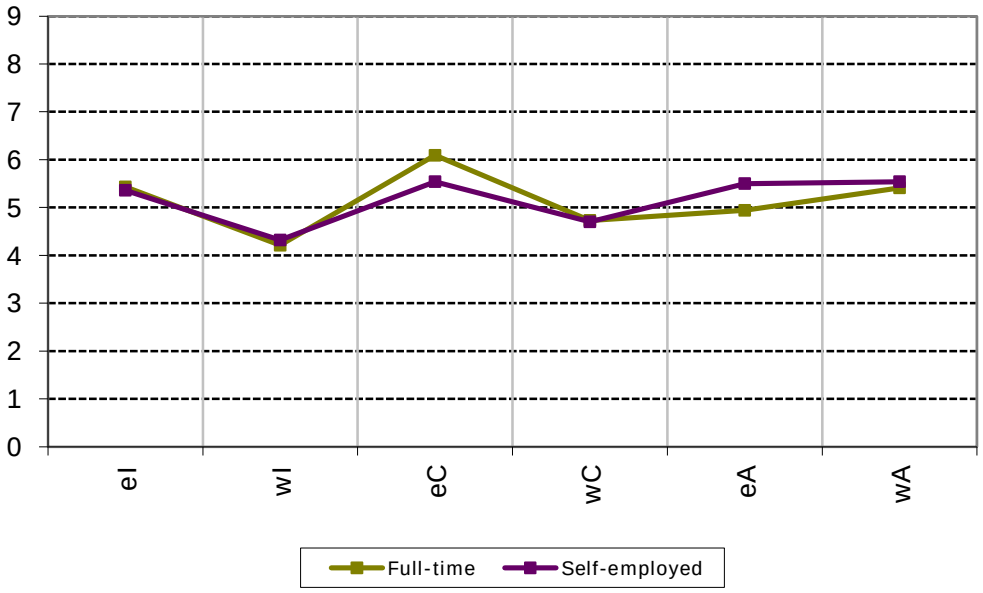
The data showed no statistically significant differences across groups for any of the scales.

Table 10.7: Scale scores by employment status

Scale	Working full-time (n=705)		Self-employed (n=50)		Difference (FT-SE)[35]
	Mean	SD	Mean	SD	
Expressed Inclusion (eI)	5.43	1.43	5.36	1.69	0.07
Wanted Inclusion (wI)	4.21	1.95	4.32	2.12	-0.11
Expressed Control (eC)	6.09	1.49	5.54	1.70	0.55*
Wanted Control (wC)	4.73	1.22	4.70	1.28	0.03
Expressed Affection (eA)	4.94	2.19	5.50	2.23	-0.56
Wanted Affection (wA)	5.41	2.02	5.54	2.26	-0.13

Difference significant at: *p<0.05, **p<0.01 (based on an independent samples t-test).

Figure 10.8: Employment status differences in scale scores



[35] A positive value indicates that full-time employee mean scores are higher, and a negative value indicates that self-employed mean scores are higher.

Chapter 11: Data from the Spanish language questionnaire

Demographic data

The data in this supplement is based on responses from 1558 respondents, who completed the Spanish version of the questionnaire via OPP's online assessment platform over a seven-year period between August 2009 and January 2016.

Of these, 640 (41%) were female and 918 (59%) were male. Ages ranged from 19 to 77, with a mean age of 41 years. All the individuals stated that their nationality was Spanish.

The present employment status of the group is summarised in Table 11.1.

Table 11.1: Employment status

Employment status	Number	Percentage
Working full-time	1096	92.9%
Working part-time	16	1.4%
Self-employed	43	3.6%
Home maker	1	0.1%
Unemployed	24	2.0%

Scale properties

Descriptive statistics

Table 11.2 below shows the mean and standard deviation for each of the six scales.

Table 11.2: Scale means and standard deviations

Scale	Mean	Std Dev
Expressed Inclusion (eI)	5.28	1.37
Wanted Inclusion (wI)	4.32	1.75
Expressed Control (eC)	6.59	1.50
Wanted Control (wC)	5.58	1.54
Expressed Affection (eA)	5.58	2.46
Wanted Affection (wA)	5.85	2.06

The frequency distributions of the scales are shown in Figures 11.1 to 11.6:

Figure 11.1: Expressed Inclusion (eI) score frequency distribution (n=1558)

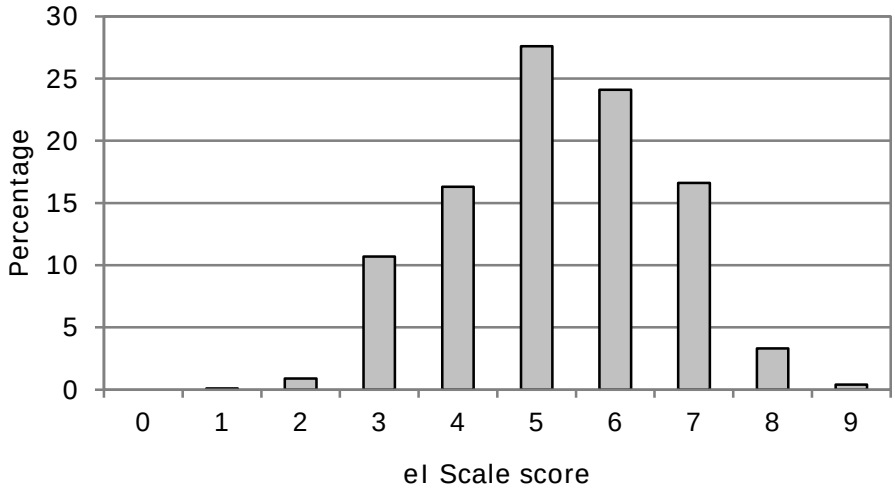


Figure 11.2: Wanted Inclusion (wI) score frequency distribution (n=1558)

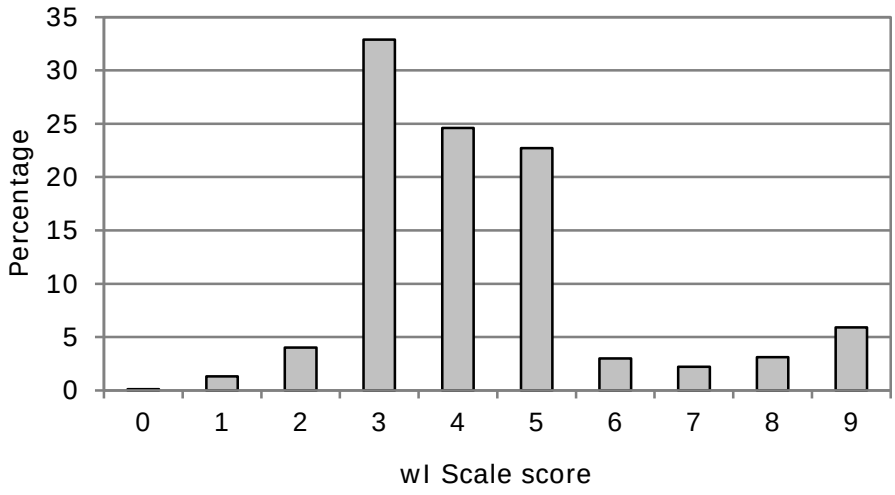


Figure 11.3: Expressed Control (eC) score frequency distribution (n=1558)

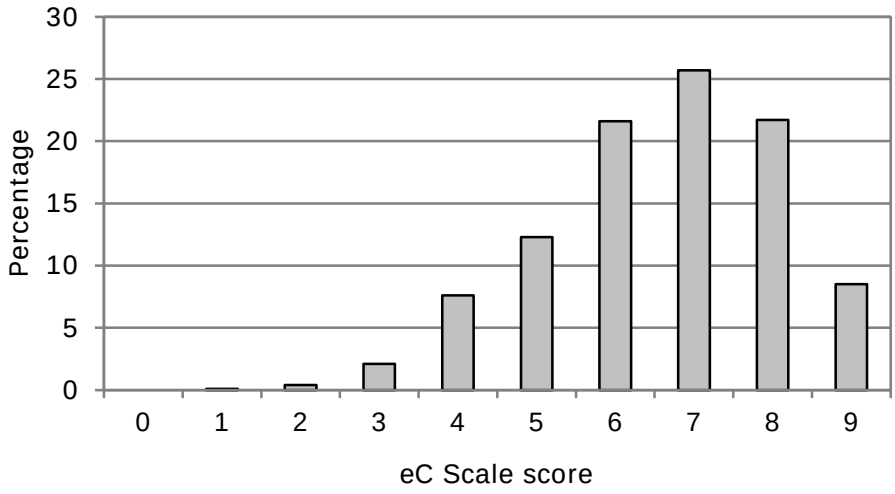


Figure 11.4: Wanted Control (wC) score frequency distribution (n=1558)

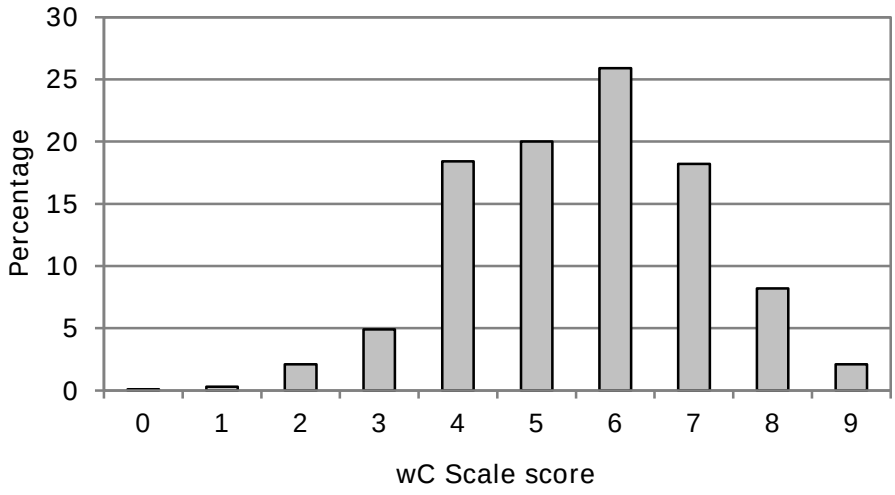


Figure 11.5: Expressed Affection (eA) score frequency distribution (n=1558)

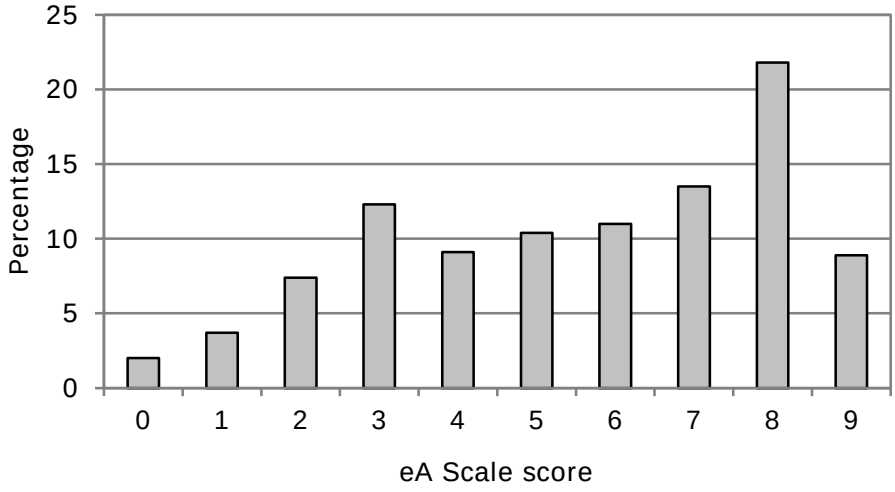
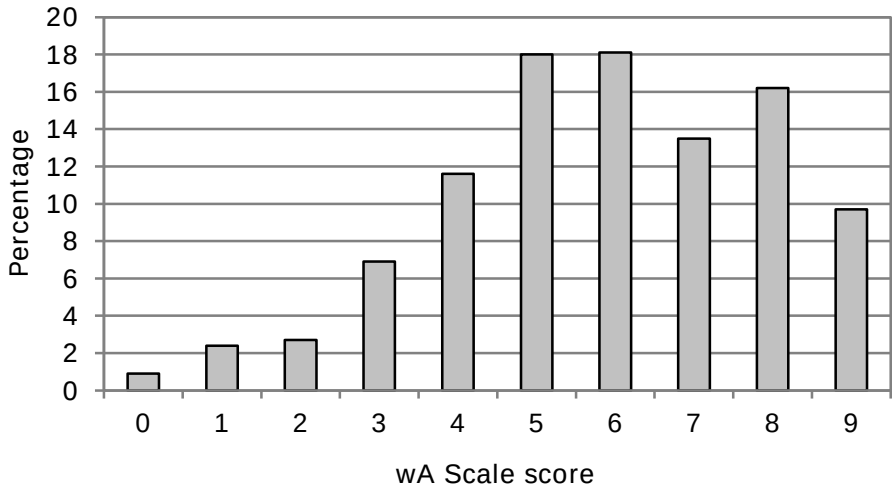


Figure 11.6: Wanted Affection (wA) score frequency distribution (n=1558)



Reliability – internal consistency

The reliability of a test or questionnaire relates to how consistent and precise it is. Internal consistency reliability addresses the question of whether all the questions in a scale measure the same construct. A common measure of internal consistency reliability is coefficient alpha (Cronbach, 1951). The alpha coefficients for the Spanish questionnaire are shown in Table 11.3.

Table 11.3: Internal consistency reliability – alpha coefficients

Scale	Coefficient alpha
Expressed Inclusion (eI)	0.84
Wanted Inclusion (wI)	0.94
Expressed Control (eC)	0.81
Wanted Control (wC)	0.83
Expressed Affection (eA)	0.87
Wanted Affection (wA)	0.87

It is generally agreed that internal consistency reliability should achieve a value of at least 0.7 for a test to be considered to be reliable.[36] On this basis, all the dimensions of the questionnaire show good internal consistency reliability.

Scale intercorrelations

The intercorrelations between the FIRO-B scales are shown in Table 11.4:

Table 11.4: Scale intercorrelations

Scale	eI	wI	eC	wC	eA	wA
Expressed Inclusion (eI)						
Wanted Inclusion (wI)	0.39**					
Expressed Control (eC)	0.11**	0.10**				
Wanted Control (wC)	0.09**	-0.03	0.06*			
Expressed Affection (eA)	0.40**	0.42**	0.05*	0.07**		
Wanted Affection (wA)	0.36**	0.57**	0.06*	0.04	0.65**	

**Significant at p<0.01, *Significant at p<0.05.

There is a significant correlation between Inclusion and Affection, and a significant correlation between the Expressed and Wanted scales of each dimension, with the exception of Expressed and Wanted Control where there is relatively little correlation.

Group differences

Group differences amongst individuals who completed the Spanish questionnaire were explored on the basis of gender, age and employment status.

[36] For example, see Nunnally (1978) or Kline (2000).

Gender

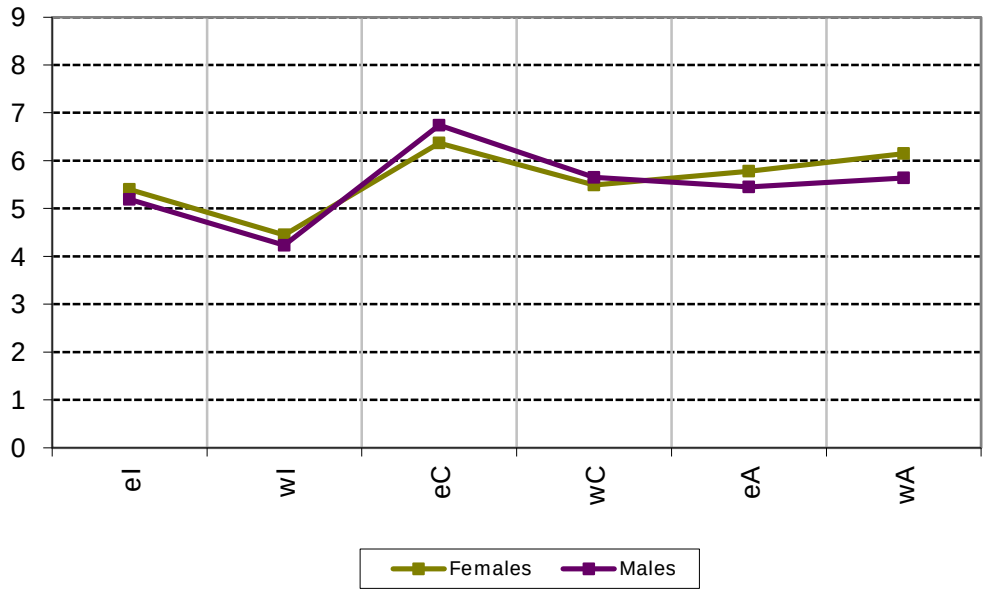
The means and standard deviations of the FIRO-B scales are shown separately for males and females in Table 11.5, along with the difference in mean scores. This is represented graphically in Figure 11.7.

Table 11.5: Gender differences in scale scores

	Females (n=400)		Males (n=172)		Difference (F–M)[37]
FIRO-B scale	Mean	SD	Mean	SD	
Expressed Inclusion (eI)	5.40	1.38	5.19	1.36	0.21**
Wanted Inclusion (wI)	4.45	1.87	4.23	1.66	0.22*
Expressed Control (eC)	6.37	1.56	6.74	1.44	-0.37**
Wanted Control (wC)	5.49	1.51	5.65	1.55	-0.16*
Expressed Affection (eA)	5.78	2.41	5.45	2.48	0.32**
Wanted Affection (wA)	6.15	2.07	5.64	2.03	0.51**

Difference significant at: *p<0.05, **p<0.01 (based on an independent samples t-test).

Figure 11.7: Gender differences in scale scores



Of the six scales, all showed significant differences in mean scores, with females scoring higher on Inclusion and Affection, and males scoring higher Expressed Control.

[37] A positive value indicates that female mean scores are higher, and a negative value indicates that male mean scores are higher.

Age

Correlations between scale scores and age are shown in Table 11.6:

Table 11.6: Age differences in scale scores

Scale	Correlation with age
Expressed Inclusion (eI)	-0.17**
Wanted Inclusion (wI)	-0.27**
Expressed Control (eC)	0.07*
Wanted Control (wC)	0.15**
Expressed Affection (eA)	-0.11**
Wanted Affection (wA)	-0.15**

Significant at: *p<0.05, **p<0.01

All six scales showed a significant correlation with age, though in real terms, the correlation with Expressed Control was small.

The negative correlations suggest that younger respondents were more likely to achieve higher Expressed Inclusion, Wanted Inclusion, Expressed Affection and Wanted Affection scores than older respondents. The positive correlations suggest that older people were likely to have a greater need both for control over others, and more especially for clear rules and directions, than were younger people.

Employment status

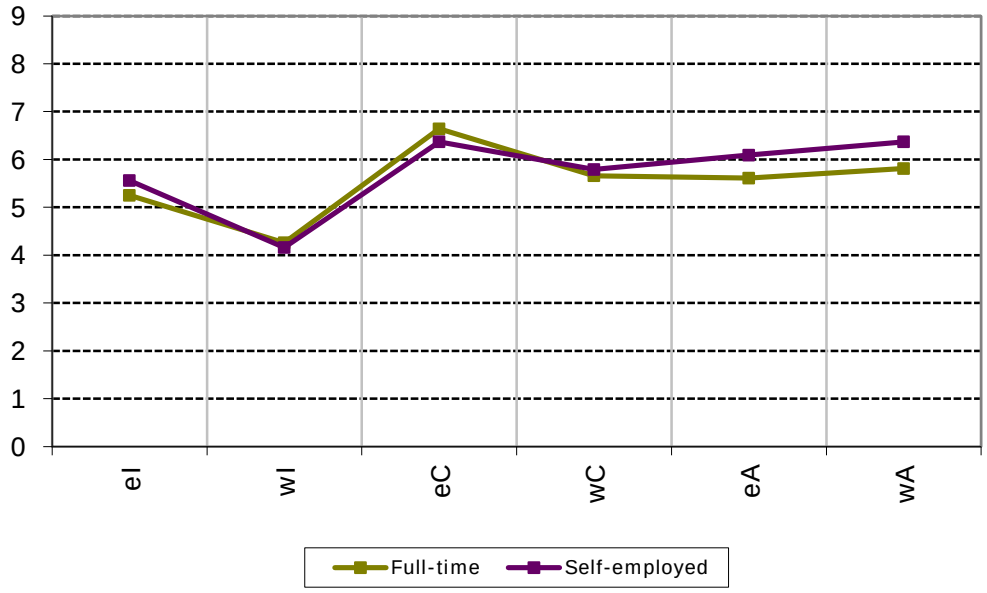
Table 11.7 shows the scale means and standard deviation for each employment status category where there are sufficient numbers of people for analysis (30 or more in this instance). This is represented graphically in Figure 11.8.

No statistically significant differences were found between groups on any of the scales.

Table 11.7: Scale scores by employment status

Scale	Working full-time (n=1096)		Self-employed (n=43)		Difference (FT-SE)[38]
	Mean	SD	Mean	SD	
Expressed Inclusion (eI)	5.25	1.33	5.56	1.35	-0.31
Wanted Inclusion (wI)	4.26	1.67	4.16	1.66	0.10
Expressed Control (eC)	6.64	1.47	6.37	1.54	0.27
Wanted Control (wC)	5.66	1.52	5.79	1.25	-0.13
Expressed Affection (eA)	5.61	2.43	6.09	2.16	-0.48
Wanted Affection (wA)	5.81	2.04	6.37	1.84	-0.56

Figure 11.8: Employment status differences in scale scores



[38] A positive value indicates that full-time employee mean scores are higher, and a negative value indicates that self-employed mean scores are higher.

Chapter 12: Data from the Swedish language questionnaire

This section contains two sets of psychometric data gathered for the Swedish language version of the questionnaire.

Demographic data

Group 1

The data in this group is based on responses from 487 respondents, who completed the Swedish version of the questionnaire in Sweden over a two-year period between August 2005 and December 2007.

Of these, 324 (67%) were female and 163 (33%) were male. Ages ranged from 18 to 65, with a mean age of 35 years. All the individuals stated that their country of residence was Sweden.

The employment status of the group is summarised in Table 12.1

Table 12.1: Employment status

Employment status	Number	Percentage
Working full-time	255	52.4%
Working part-time	64	13.1%
Not working for income	21	4.3%
Retired	6	1.2%
Full-time student	50	10.3%
Other	91	18.7%

Group 2

The data in this group is based on responses from 430 respondents who completed the Swedish version of the questionnaire via OPP's online assessment platform over a five-year period between February 2011 and January 2016.

Of these, 164 (38%) were female and 266 (62%) were male. Ages ranged from 18 to 66, with a mean age of 44 years. 94 (22%) of respondents provided their nationality, of which, 88 (94%) gave their nationality as Swedish.

Employment status data was only provided by 77 respondents. The present employment status of this group is summarised in Table 12.2.

Table 12.2: Employment status

Employment status	Number	Percentage
Working full-time	72	93.5%
Working part-time	2	2.6%
Self-employed	2	2.6%
Unemployed	1	1.3%

Scale properties

Descriptive statistics

Table 12.3 below shows the mean and standard deviation for each of the six scales.

Table 12.3: Scale means and standard deviations

Scale	Mean		Std Dev	
	Group 1	Group 2	Group 1	Group 2
Expressed Inclusion (eI)	4.73	5.32	1.56	1.45
Wanted Inclusion (wI)	3.97	4.16	2.07	1.91
Expressed Control (eC)	4.99	5.59	1.76	1.59
Wanted Control (wC)	4.97	5.68	1.90	1.60
Expressed Affection (eA)	4.95	5.34	2.29	2.21
Wanted Affection (wA)	6.01	6.01	1.86	1.71

The frequency distributions of the scales are shown in Figures 12.1 to 12.6:

Figure 12.1: Expressed Inclusion (eI) score frequency distribution

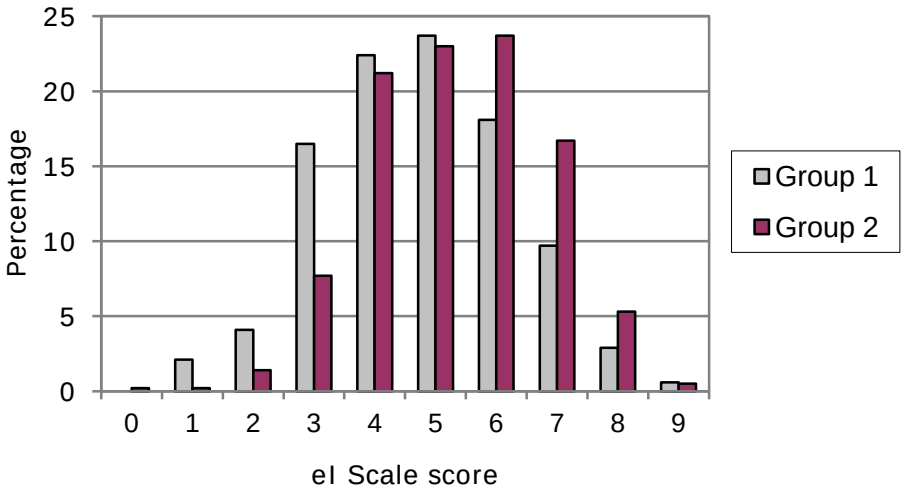


Figure 12.2: Wanted Inclusion (wI) score frequency distribution

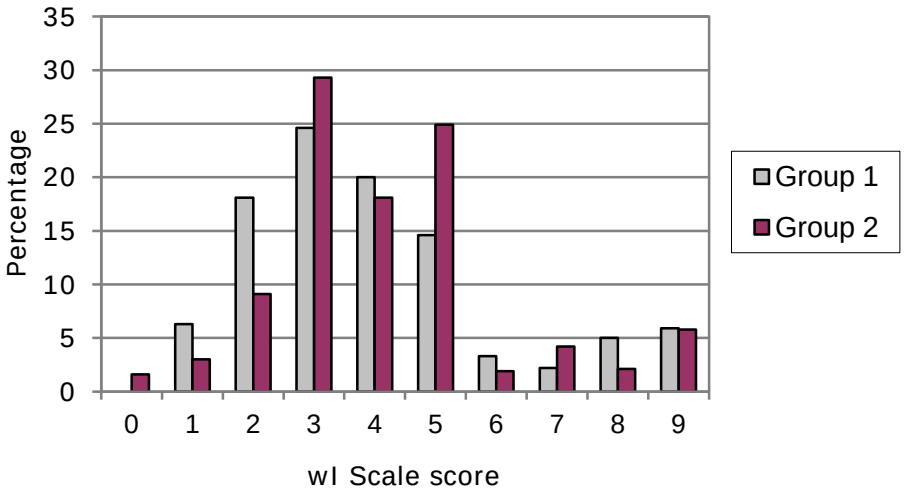


Figure 12.3: Expressed Control (eC) score frequency distribution

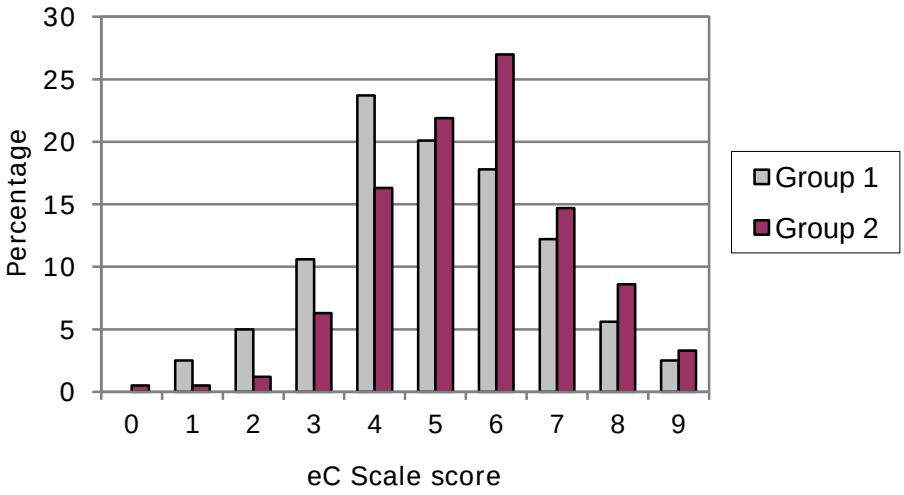


Figure 12.4: Wanted Control (wC) score frequency distribution

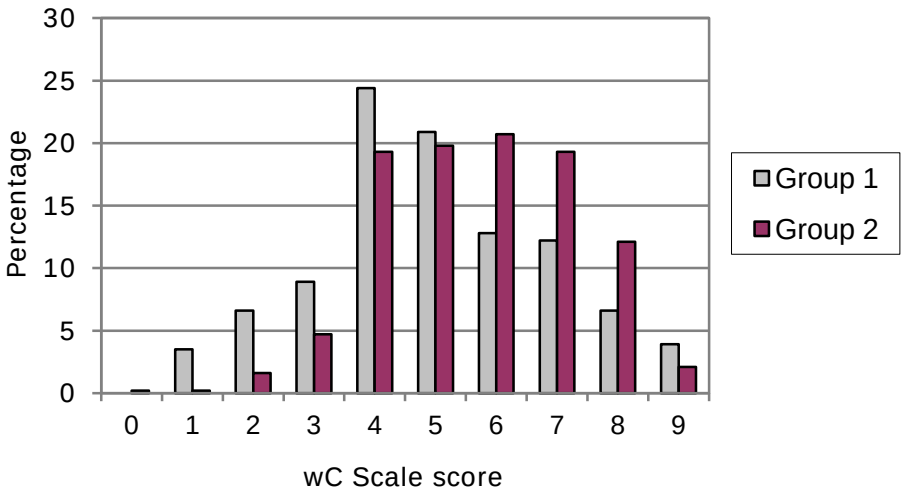


Figure 12.5: Expressed Affection (eA) score frequency distribution

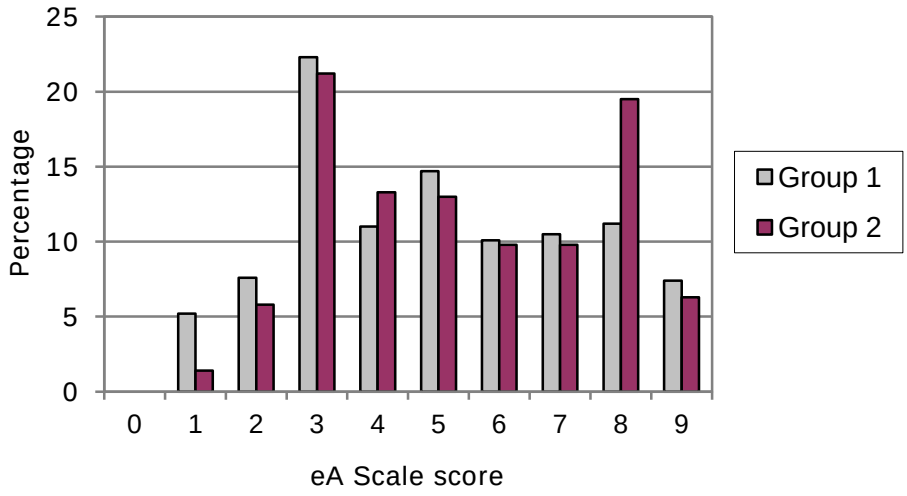
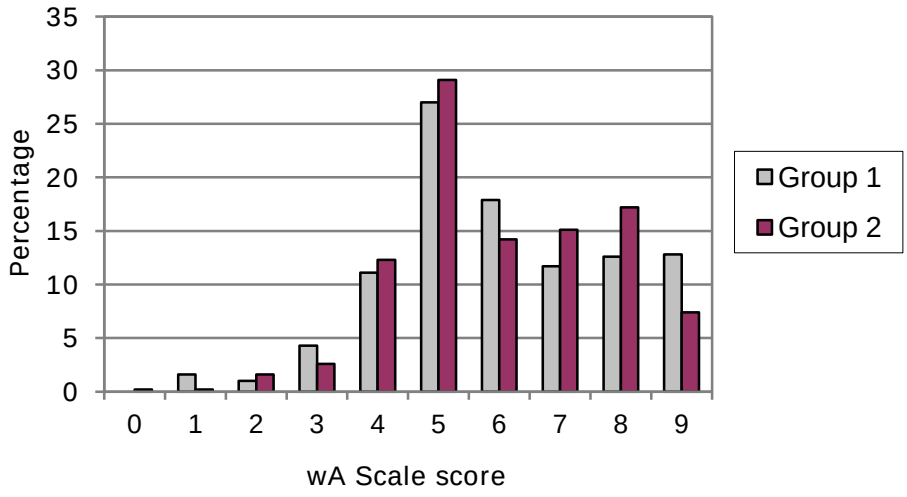


Figure 12.6: Wanted Affection (wA) score frequency distribution



Reliability – internal consistency

The reliability of a test or questionnaire relates to how consistent and precise it is. Internal consistency reliability addresses the question of whether all the questions in a scale measure the same construct. A common measure of internal consistency reliability is coefficient alpha (Cronbach, 1951). The alpha coefficients for the Swedish questionnaire are shown in Table 12.4.

Table 12.4: Internal consistency reliability – alpha coefficients

Scale	Coefficient alpha	
	Group 1	Group 2
Expressed Inclusion (eI)	0.83	0.83
Wanted Inclusion (wI)	0.95	0.95
Expressed Control (eC)	0.92	0.90
Wanted Control (wC)	0.92	0.88
Expressed Affection (eA)	0.86	0.83
Wanted Affection (wA)	0.83	0.81

It is generally agreed that internal consistency reliability should achieve a value of at least 0.7 for a test to be considered to be reliable.[39] On this basis, all the dimensions of the questionnaire show good internal consistency reliability.

Scale intercorrelations

The intercorrelations between the FIRO-B scales are shown in Table 12.5:

Table 12.5: Scale intercorrelations

Group 1

Scale	eI	wI	eC	wC	eA	wA
Expressed Inclusion (eI)						
Wanted Inclusion (wI)	0.31**					
Expressed Control (eC)	0.11*	0.07				
Wanted Control (wC)	0.12**	0.16**	-0.06			
Expressed Affection (eA)	0.39**	0.31**	0.01	0.00		
Wanted Affection (wA)	0.24**	0.56**	-0.05	0.09	0.50**	

**Significant at p<0.01, *Significant at p<0.05.

Group 2

Scale	eI	wI	eC	wC	eA	wA
Expressed Inclusion (eI)						
Wanted Inclusion (wI)	0.48**					
Expressed Control (eC)	0.14**	0.21**				
Wanted Control (wC)	0.08	0.20**	0.04			
Expressed Affection (eA)	0.40**	0.41**	0.06	0.11*		
Wanted Affection (wA)	0.32**	0.54**	-0.02	0.10*	0.59**	

**Significant at p<0.01, *Significant at p<0.05.

There is a significant correlation between Inclusion and Affection, and a significant correlation between the Expressed and Wanted scales of each

[39] For example, see Nunnally (1978) or Kline (2000).

dimension, with the exception of Expressed and Wanted Control where there is very little correlation.

Group differences

Group differences amongst individuals who completed the Swedish questionnaire were explored on the basis of gender, age and employment status.

Gender

The means and standard deviations of the FIRO-B scales are shown separately for males and females in Table 12.6, along with the difference in mean scores. This is represented graphically in Figure 12.7.

Table 12.6: Gender differences in scale scores

Group 1

	Females (n=324)		Males (n=163)		Difference (F–M)[40]
FIRO-B scale	Mean	SD	Mean	SD	
Expressed Inclusion (eI)	4.84	1.49	4.49	1.68	0.35*
Wanted Inclusion (wI)	4.07	2.09	3.76	2.03	0.31
Expressed Control (eC)	4.78	1.70	5.42	1.79	-0.64**
Wanted Control (wC)	4.95	1.93	5.00	1.85	-0.05
Expressed Affection (eA)	5.14	2.20	4.59	2.42	0.55*
Wanted Affection (wA)	6.21	1.81	5.60	1.89	0.61**

Difference significant at: *p<0.05, **p<0.01 (based on an independent samples t-test).

Group 2

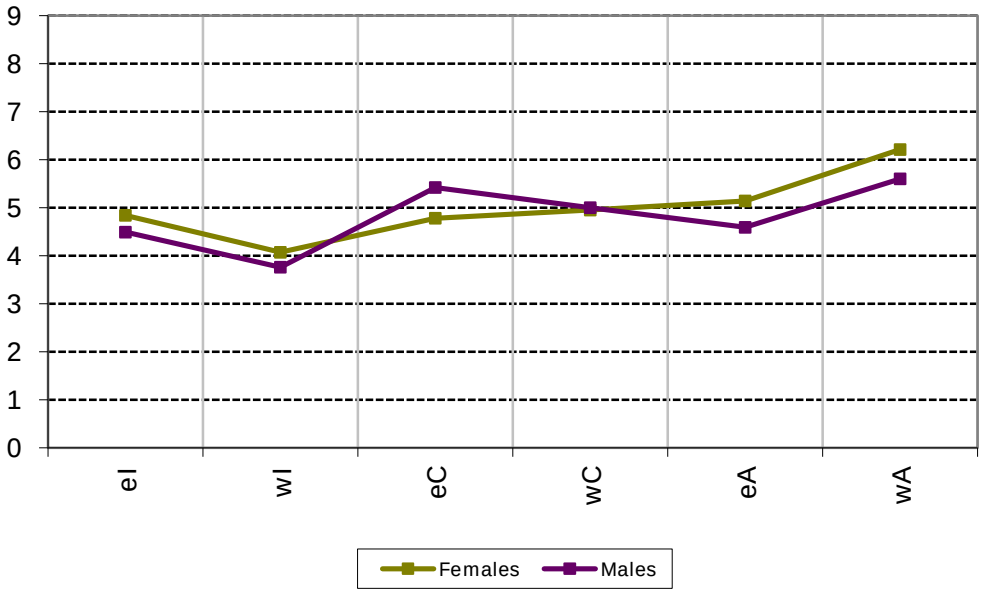
	Females (n=164)		Males (n=266)		Difference (F–M)[41]
FIRO-B scale	Mean	SD	Mean	SD	
Expressed Inclusion (eI)	5.38	1.39	5.29	1.49	0.10
Wanted Inclusion (wI)	4.27	1.97	4.09	1.88	0.18
Expressed Control (eC)	5.24	1.62	5.80	1.53	-0.55**
Wanted Control (wC)	5.62	1.49	5.72	1.67	-0.10
Expressed Affection (eA)	5.63	2.15	5.17	2.23	0.46*
Wanted Affection (wA)	6.19	1.56	5.91	1.80	0.28

Difference significant at: *p<0.05, **p<0.01 (based on an independent samples t-test).

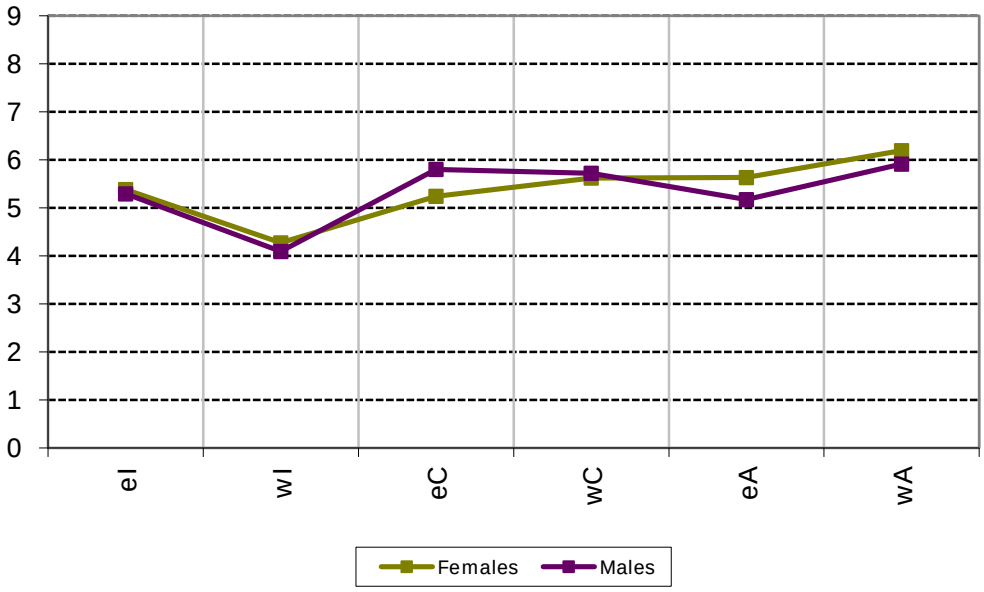
[40] A positive value indicates that female mean scores are higher, and a negative value indicates that male mean scores are higher.
[41] A positive value indicates that female mean scores are higher, and a negative value indicates that male mean scores are higher.

Figure 12.7: Gender differences in scale scores

Group 1



Group 2



Of the six scales, two showed consistent significant differences in mean scores across both groups with females scoring higher on Expressed Affection and males scoring higher on Expressed Control.

Age

Correlations between scale scores and age are shown in Table 12.7:

Table 12.7: Age differences in scale scores

Scale	Correlation with age	
	Group 1	Group 2
Expressed Inclusion (eI)	-0.11*	-0.31**
Wanted Inclusion (wI)	-0.30**	-0.33**
Expressed Control (eC)	0.02	-0.05
Wanted Control (wC)	-0.06	-0.19
Expressed Affection (eA)	-0.19**	-0.18
Wanted Affection (wA)	-0.28**	-0.23*

Significant at: *p<0.05, **p<0.01

Of the six scales, three showed a significant correlation with age in both groups and for Group 1, there was also a significant correlation between age and Expressed Affection. The correlations suggest that younger respondents were more likely to want to include, and be included by, others, and to want affection, than older respondents.

Employment status

Table 12.8 shows the scale means and standard deviation for each employment status category where there are sufficient numbers of people for analysis (50 or more, in this instance, not including the 'Other' category). This is represented graphically in Figure 12.8.

Whilst there are some observable differences across groups on several of the scales, the only statistically significant differences were found between individuals working full-time and those working part-time, and between individuals working full-time and full-time students on the Expressed Control scale. The mean score amongst the working full-time group was significantly higher than amongst the other two groups.[42] However, these results should be treated with caution due to the relatively small sample sizes for the working part-time and full-time student groups.

[42] Significant at p<0.05 (based on a one-way analysis of variance).

Table 12.8: Scale scores by employment status

Group 1

Scale	Working full-time (n=255)		Working part-time (n=64)		Full-time student (n=50)	
	Mean	SD	Mean	SD	Mean	SD
Expressed Inclusion (eI)	4.73	1.48	4.77	1.50	4.54	1.73
Wanted Inclusion (wI)	4.00	2.10	3.80	1.99	3.94	1.99
Expressed Control (eC)	5.35	1.66	4.64	1.95	4.26	1.80
Wanted Control (wC)	4.99	1.83	5.28	2.00	4.92	1.87
Expressed Affection (eA)	4.95	2.24	4.89	2.16	5.33	2.28
Wanted Affection (wA)	5.93	1.92	6.27	1.63	6.04	2.00

Group 2

Scale	Working full-time (n=72)	
	Mean	SD
Expressed Inclusion (eI)	5.63	1.33
Wanted Inclusion (wI)	3.94	1.74
Expressed Control (eC)	5.81	1.54
Wanted Control (wC)	5.28	1.59
Expressed Affection (eA)	5.57	2.19
Wanted Affection (wA)	5.82	1.54

Figure 12.8: Employment status differences in scale scores for Group 1

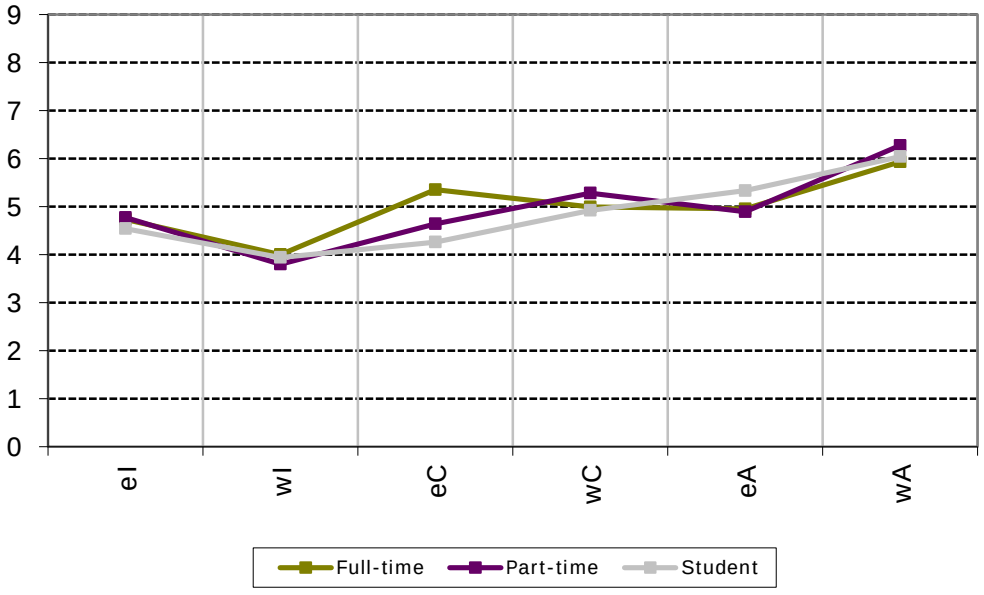
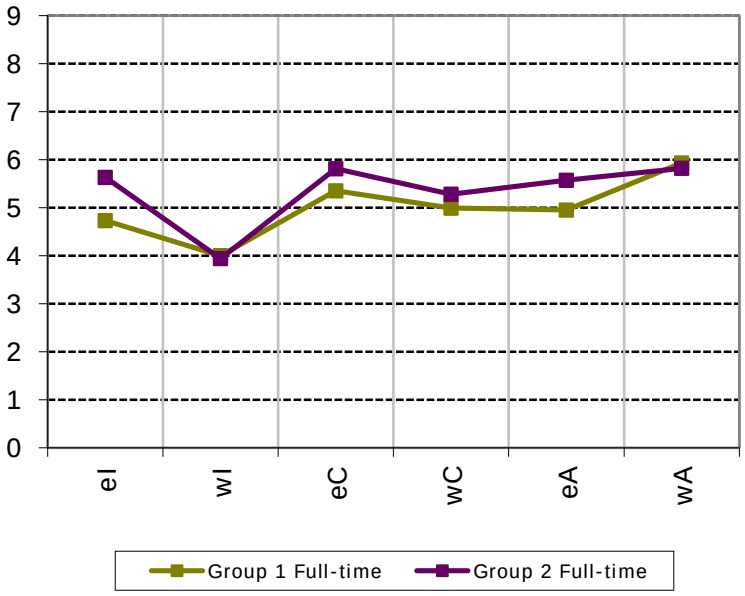


Figure 12.9: Full-time employment status difference in scale scores between Group 1 and Group 2



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