SPI-Q Technical Manual
2010

Contents

Purpose

This Technical Manual sets out the approach taken in constructing the SPI-Q and reports the main psychometric properties of the instrument.

Alpha Stage Item Trial

A pool of more than 600 items was written to fit the proposed 26-scale conceptual model. Two thirds of the items were phrased in the positive, and a third in the negative. Examples of negatively phrased items were: 'Feels uncomfortable asking friends or family for sales leads' and 'Dislikes the conflict often inherent within intense negotiations'. A total of 395 items were selected from the item pool, of which 138 (35%) were negatively keyed, and were administered online to a sample of 147 people. Participants were required to respond to each item using a 5-point Likert scale from 'Strongly Disagree' to 'Strongly Agree'.

The data was subjected to iterative item analysis in order to progressively eliminate the weakest items from the questionnaire. In addition, several items were transferred from their original scales to another scale if they showed a strong association with that scale, and the item content clearly conformed to the definition of the construct. Good scale reliabilities were obtained, ranging from 0.90 to 0.63, with the vast majority higher than 0.70. An exploratory factor analysis of the 26 scales suggested a five-factor structure. The relationship with biographical variables was explored, in which it was found that several scales correlated with sales experience to varying degrees.

Some of the items were reworded, where possible, in an attempt to reduce their dependence on Sales Experience. Several items that had been transferred to other scales were reworded slightly to anchor them more securely to the other items. Many new items were written as replacements for those scales that had lost items. The new items were patterned very closely on those items that had shown the strongest association with their scale.

The Collaboration scale was dropped from the questionnaire. It was the weakest of the 26 scales (modest reliability, and a tendency to correlate negatively or not at all with the others scales). It was also considered to be the least potentially useful scale conceptually.

A fuller account of the Alpha Stage trial is given in Appendix A.

Building the Ipsative Questionnaire

In building the final form of the SPI-Q, the ipsative format was favoured over a Likert-scale response format. The Likert-scale approach gives respondents the potential to rate all items equally strongly. Since there is good reason to expect that people with potentially good selling skills are generally skilled at 'selling themselves', whether consciously or unconsciously, the Likert-scale format would be likely to yield too many 'larger than life' profiles, particularly in high-stakes occupational selection contexts.

An alternative approach is to utilise the ipsative response format, which forces respondents to reflect on the relative strengths of different attributes, and which yields balanced profiles for everyone. The method of grouping the items into quads—and asking respondents to pick a 'Most Like Me' and a 'Least Like Me' response from among the four options provided—was adopted.

In an attempt to control social desirability, items were grouped as far as possible in terms of their statistical properties as established during Alpha Phase trailing. This included taking note of an item's relationship with sales experience. A total of 312 items were selected and were grouped into 78 quads.

All scales meet one another at least once in the questionnaire. Since some scales contain more items than others, some of the scales unavoidably meet one another more than once. Positively and negatively phrased items were placed in separate quads. Seventeen of the 78 quads contained negatively phrased items. Some items appear twice in the questionnaire, and form the basis for a Response Consistency check.

Beta (Ipsative) Stage Item Trial

A total of 686 individuals completed the Beta Stage questionnaire online. These trial participants were drawn from a diverse range of organisations and industries, including

- Pharmaceuticals 6%
- Insurance 7%
- Banking and Financial Services 21%
- Telecommunications 3%
- Recruitment and Human Resources Consulting 8%
- Marketing Communications 7%
- Agricultural Products 1%
- Legal 2%
- Print and Communications 8%
- Other/Industry not specified 25%

Description of Sample

The sample of 686 individuals was fairly well balanced in terms of gender (59% male, 41% female). Just over 40% of the sample was in the age range 36–46 years, 25% in the age range 47–60 years and 24% in the age range 29–35 years. The sample was well educated, with 62% of people holding a Graduate Diploma or higher (35% with a Bachelors Degree, 18% with a Masters Degree). Just over half the sample (51%) reported having 16 years or more general professional experience, while 50% of the sample had been in sales or business development roles for 10 years or more, and 65% for seven years or more. Only 5% of the sample reported having no sales or business development experience.

The sample appears to be quite similar in many respects to the sample that was secured for the Alpha Trial.

The relationships among the various biographical variables are shown in Table 1.

Table 1: Table of Correlations Among Biographical Variables (N=686)

	GENDER	AGE	PROF. EXPERIENCE	PROF.EXP IN SALES	EDUCATION
GENDER	-				
AGE	-0.14	-			
PROF. EXPERIENCE	-0.18	0.79	-		
PROF. EXP IN SALES	-0.16	0.58	0.65	-	
EDUCATION	0.04	-0.11	-0.10	-0.16	-

All correlations, except that between Gender and Education, are significant at $p<0.05$ (two-tailed)

As expected, general professional experience, professional experience in sales and business development, and age, are all strongly inter-connected. There is also a small, but statistically significant, tendency for these three variables to be negatively associated with education. That is to say, the better-educated individuals in the sample tend to be younger and to have less work experience.

The females in the sample tend, on average, to be a little younger, and to have slightly less work experience, than the males (positive correlations involving Gender favour females; negative correlations favour males).

Beta Stage Item Analysis

The items in the questionnaire were subjected to iterative item analysis. This involved correlating each item with every other item, and each item with every scale. When correlating an item with its own scale, the item was removed from that scale, to avoid part-whole correlations.

The weakest items (those with the lowest correlation with the other items in the scale) were progressively removed from each scale until optimum reliability was achieved. To further improve the scale reliabilities, a limited number of weak items were transferred to the scale with which they were most strongly correlated, provided the item content justified such transfer.

The scale reliabilities based on the best performing items are reported in Table 2 below.

Table 2: Beta Stage Scale Reliability Coefficients (Cronbach's Alpha)

Scale	Number of Items	Reliability
Compelling Relationships		
Impact	10	0.59
Credibility	14	0.56
Insight	10	0.64
Attentiveness	11	0.78
Initiation	11	0.74
Influence	10	0.59
Social Leverage	12	0.61
Client Engagement	10	0.54
Negotiation	13	0.62
Perceptive Reasoning		
Research	12	0.64
Exploration	14	0.53
Agility	10	0.63
Pursues Learning	9	0.54
Creativity	10	0.76
Structure	13	0.69
Quality Orientation	10	0.72
Rational	13	0.74
Specialist	12	0.70
Judgement	10	0.50
Channelled Energy		
Accountability	12	0.38
Authenticity	14	0.70
Resilience (composite)*	18	0.69
Recovery	12	0.60
Self Belief	13	0.50
Motivation	11	0.69
Sales Drive	8	0.64

* a composite of items drawn from the Recovery and Self Belief scales

Reliability coefficients range from 0.78 (Attentiveness) to 0.38 (Accountability); the median reliability being 0.63. Scales with relatively good reliability coefficients (Attentiveness, Creativity, Rational and Initiation, in particular) contain items that have fairly homogeneous content. Scales with more heterogeneous item content (especially Accountability, Self Belief and Judgement) tend to have lower reliabilities, mainly because the correlations among the items tend to be lower.

In order to improve the reliabilities of the weaker scales, new items have subsequently been written that are patterned very closely on the content of the best-performing items. The reliabilities of these scales should therefore be higher than reported here. The opportunity has also been taken to revise the weakest items in certain scales by rewording them to bring them into closer alignment with the best-performing items.

The Accountability scale has been completely revised. All original items in this scale have been discarded, and 12 replacements have been prepared for experimental use. The Accountability attribute will be re-incorporated into the questionnaire following further research and trialling.

Descriptive Statistics

The means, standard deviations and observed ranges for each of the scales (including the composite scale of Resilience) and the Consistency Scale are given in Table 3.

In scoring the SPI-Q, items endorsed as 'Most Like Me' are given a score of 2, 'Least Like Me' a score of 0, and if the item was left in the middle, it is given a score of 1. The raw scores therefore range from a minimum of zero to a maximum which is equal to the total number of items in the scale multiplied by two.

Table 3: Scale Means, Standard Deviations and Observed Ranges

Scale	Number of Items	Observed Range	Mean	Standard Deviation
Compelling Relationships				
Impact	10	2-18	10.39	3.00
Credibility	14	6-25	15.07	3.58
Insight	10	1-19	10.10	3.29
Attentiveness	11	0-22	12.62	3.85
Initiation	11	0-20	10.00	3.96
Influence	10	2-18	9.60	2.91
Social Leverage	12	1-20	8.57	3.38
Client Engagement	12	6-23	15.58	2.99
Negotiation	13	3-24	12.54	3.66
Perceptive Reasoning				
Research	12	0-22	9.28	3.67
Exploration	14	5-26	16.53	3.44
Agility	10	1-19	11.11	3.29
Pursues Learning	9	2-17	9.14	2.76
Creativity	10	1-20	11.17	3.72
Structure	13	1-23	10.63	4.31
Quality Orientation	10	1-20	9.91	3.74
Rational	13	1-24	11.35	4.11
Specialist	12	1-23	11.12	4.02
Judgement	10	2-19	11.00	2.68
Channelled Energy				
Accountability	12	6-21	13.60	2.75
Authenticity	14	1-24	12.64	4.35
Resilience (composite)*	18	5-32	20.48	4.83
Recovery	12	4-22	14.34	3.34
Self Belief	13	1-22	10.94	3.37
Motivation	12	2-23	11.37	4.05
Sales Drive	8	0-15	7.10	2.95
Consistency	5	1-5	4.21	0.82

* a composite of items drawn from the Recovery and Self Belief scales

The statistics in Table 3 suggest that the mean raw scores are very close to their natural mid-point (the number of items in the scale) on all except eight of the scales.

Means are substantially *lower* than their mid-point for three scales: Research, Structure and Social Leverage. This suggests that the endorsement rate of these attributes is relatively low, with a majority of respondents reporting that they engage less frequently in these behaviours.

Conversely, means are noticeably *higher* than their mid-point for four scales (Accountability, Exploration, Recovery and Resilience) and substantially higher for a fifth, Client Engagement. This suggests that the endorsement rate of these attributes is relatively high, with a majority reporting that they display these attributes quite frequently.

It is important to bear these trends in mind when providing feedback to individuals. The norms adjust for these trends, but there will be occasions when an individual may dispute a 'below average' grading on Client Engagement when they believe that this is an activity that they, in reality, do not avoid. Similarly, individuals could be surprised to see an 'above average' grading on Social Leverage, when in their mind they consider themselves to be 'average'. In both instances, the individual needs to be reminded that they are being compared with other sales and business development professionals.

The mean for Consistency is high, which suggests that when people have nothing to 'gain' or 'lose' by taking the SPI-Q, the majority are motivated to answer openly, honestly and consistently.

The percentage of people who scored at each of the six levels of the Consistency Scale is shown in Table 4.

Table 4: Frequency Distribution of Consistency Scores

Level of Consistency	Frequency	Percentage Frequency
5 – Very Consistent	292	42.6%
4 - Consistent	268	39.1%
3 – Reasonably Consistent	108	15.7%
2 – Fairly Inconsistent	14	2.0%
1 - Inconsistent	4	0.6%
0 – Very Inconsistent	0	-

Scale Inter-correlations

The correlations among the various scales, including Consistency and the composite Resilience scale, are shown in Table 5. Statistically significant correlations ($p<0.05$; two-tailed) have been bolded.

Table 5: Correlations Among Scales (N = 686)

	Impact	Credibility	Insight	Attentiveness	Initiation	Influence	Social Leverage	Client Engagement	Negotiation	Research	Exploration	Agility	Pursues Learning	Creativity	Structure	Quality Orientation	Rational	Specialist	Judgement	Accountability	Authenticity	Resilience	Recovery	Self Belief	Motivation	Sales Drive	Consistency
Impact	-																										
Credibility	0.20	-																									
Insight	0.08	0.06	-																								
Attentiveness	-0.36	-0.18	0.14	-																							
Initiation	0.33	-0.08	-0.15	-0.23	-																						
Influence	0.34	0.15	0.15	-0.34	0.03	-																					
Social Leverage	0.14	-0.05	-0.12	-0.11	0.45	-0.08	-																				
Client Engagement	0.17	0.09	0.06	0.09	0.26	-0.06	0.21	-																			
Negotiation	0.18	-0.08	-0.16	-0.26	0.22	0.19	0.02	-0.10	-																		
Research	-0.26	-0.21	-0.10	0.04	-0.11	-0.15	-0.01	-0.24	-0.08	-																	
Exploration	0.01	-0.02	0.14	-0.07	-0.15	0.20	-0.10	-0.05	0.09	-0.01	-																
Agility	0.30	0.02	0.10	-0.25	0.28	0.13	0.12	0.19	0.14	-0.26	0.02	-															
Pursues Learning	-0.16	-0.18	0.05	0.12	-0.08	-0.17	-0.03	-0.02	-0.24	0.15	0.01	-0.08	-														
Creativity	0.12	-0.13	-0.17	-0.19	-0.03	0.11	-0.06	-0.05	0.14	0.00	0.03	0.09	-0.12	-													
Structure	-0.39	-0.19	-0.03	0.23	-0.27	-0.34	-0.15	-0.21	-0.44	0.19	-0.15	-0.33	0.31	-0.22	-												
Quality Orientation	-0.43	-0.06	-0.03	0.26	-0.32	-0.35	-0.23	-0.09	-0.40	0.15	-0.12	-0.32	0.18	-0.26	0.54	-											
Rational	-0.38	0.02	-0.06	0.05	-0.49	-0.09	-0.34	-0.32	-0.17	0.08	-0.02	-0.36	-0.03	-0.16	0.25	0.28	-										
Specialist	-0.35	0.06	-0.11	0.11	-0.37	-0.27	-0.17	-0.17	-0.31	0.06	-0.22	-0.21	-0.07	-0.10	0.22	0.34	0.46	-									
Judgement	0.02	0.13	-0.05	-0.23	-0.17	0.32	-0.25	-0.12	0.17	-0.01	0.27	-0.10	-0.23	0.26	-0.20	-0.15	0.13	-0.09	-								
Accountability	-0.22	-0.18	-0.15	0.16	-0.07	-0.21	-0.05	0.05	-0.03	-0.05	-0.04	-0.22	0.01	-0.13	0.12	0.16	0.06	0.07	-0.11	-							
Authenticity	-0.14	0.08	0.17	0.11	-0.34	-0.06	-0.23	0.04	-0.34	-0.05	0.01	-0.18	0.08	-0.22	0.15	0.22	0.25	0.22	-0.11	0.02	-						
Resilience	0.11	-0.14	-0.19	-0.08	0.23	0.07	0.03	-0.08	0.30	-0.03	-0.09	0.21	-0.17	0.25	-0.27	-0.31	-0.25	-0.33	0.11	-0.05	-0.38	-					
Recovery	0.12	-0.12	-0.13	0.01	0.19	0.01	0.00	-0.04	0.16	0.00	-0.04	0.17	-0.09	0.21	-0.16	-0.27	-0.25	-0.30	0.05	-0.05	-0.35	0.84	-				
Self Belief	0.23	-0.03	-0.17	-0.27	0.20	0.27	0.03	-0.09	0.36	-0.12	-0.03	0.23	-0.24	0.21	-0.35	-0.36	-0.22	-0.32	0.20	-0.08	-0.28	0.67	0.34	-			
Motivation	-0.06	0.00	-0.15	-0.01	-0.06	-0.13	-0.01	-0.19	-0.02	-0.06	-0.25	-0.17	-0.02	-0.10	-0.01	0.00	0.04	0.11	-0.21	-0.06	-0.04	-0.17	-0.14	-0.15	-		
Sales Drive	0.06	-0.20	-0.27	-0.17	0.26	-0.12	0.15	-0.19	0.24	-0.05	-0.14	0.07	-0.14	-0.02	-0.14	-0.22	-0.15	-0.06	-0.15	0.04	-0.30	0.19	0.13	0.13	0.32	-	
Consistency	0.03	0.03	0.06	-0.02	-0.08	0.01	-0.06	0.02	-0.06	-0.07	0.02	-0.06	0.03	-0.06	0.09	0.13	0.00	0.04	0.02	0.08	0.03	-0.06	-0.07	-0.01	0.01	-0.10	-

A factor analysis of the scales has not been attempted because of the ipsative (forced choice) structure of the questionnaire. It is nevertheless apparent, from the pattern of correlations among the scales, that many of the scales continue to cluster in a manner similar to the clusters identified for the Alpha Stage trial version of the SPI-Q (see Appendix A). The ipsative nature of the Beta Stage form of the questionnaire results, however, in lowered correlations among scales that had hitherto been strongly correlated with one another—while at the same time introducing negative correlations with many of the scales with which they had previously been uncorrelated.

Several scales in Compelling Relationships are interrelated to varying degrees, but do not constitute a single factor. Impact and Influence are moderately correlated with one another (0.34) and form a couplet, but each has a different relationship to other scales. Impact, for instance, is also positively related to Initiation (0.33) and Agility (0.30), while Influence is also positively related to Judgement (0.32), and to a lesser extent to Self Belief (0.27) and Exploration (0.20). Both Impact and Influence are negatively related to several of the Perceptive Reasoning scales as well as Attentiveness, but the pattern of negative correlations with these scales is also slightly different. Initiation and Social Leverage form another couplet and are fairly strongly correlated (0.45), as might be expected. Of the Compelling Relationships scales, Insight, Credibility and Attentiveness appear to be relatively independent constructs, though Attentiveness tends to be correlated negatively with most of the other Compelling Relationships scales.

Negotiation, whilst related to several Compelling Relationships scales, shows a tendency to be associated even more strongly with Self Belief (0.36) from the Channelled Energy domain. Self Belief and Recovery also form a couplet.

Among the Perceptive Reasoning scales, the strongest couplets appear to be Structure and Quality Orientation (0.54), Specialist and Rational (0.46) and Specialist and Quality Orientation (0.34)

Motivation and Sales Drive, from the Channelled Energy domain, are also moderately correlated with one another (0.32). Authenticity tends to be positively correlated with several Perceptive Reasoning scales, and moderately correlated in a negative direction with some of the Compelling Relationships scales and Resilience.

An obvious trend in the data is the tendency for most of the Compelling Relationships scales and some of the Channelled Energy scales to be negatively correlated with several of the Perceptive Reasoning scales (Quality Orientation, Specialist, Rational and Structure in particular). This suggests a broad 'people' versus 'task' orientation.

Consistency Scale

The consistency scale shows low correlations with all scales. The only statistically significant correlations are with Quality Orientation, Structure and Accountability (positively related) and Sales Drive, Initiation, Research and Recovery (negatively related). The low correlations are partly a function of limited variance in the consistency scale (most respondents having answered consistently or very consistently). Given the three scales with which Consistency is positively (albeit weakly) correlated, it is possible that high consistency is a comment on the respondent adopting a conscientious approach to the questionnaire.

Relationship with Biographical Variables

The relationship between the various scales and five biographical variables is shown in Table 6. Positive correlations involving Gender favour females; negative correlations favour males. Correlations that are significant at the p<0.05 level are bolded.

Table 6: Relationships between Scales and Biographical Variables (N=686)

	Gender	Age	Professional Experience	Prof. Exp in Sales	Education
Impact	0.05	0.06	**0.09**	**0.17**	**0.16**
Credibility	-0.01	**0.14**	**0.17**	**0.12**	**0.18**
Insight	**0.18**	-0.01	-0.03	**-0.09**	**0.24**
Attentiveness	-0.05	-0.01	-0.02	-0.04	-0.06
Initiation	-0.02	0.05	0.03	**0.18**	**-0.13**
Influence	**-0.09**	**0.10**	**0.15**	0.06	**0.22**
Social Leverage	0.04	-0.01	-0.02	0.05	-0.06
Client Engagement	**0.12**	**0.11**	**0.11**	**0.13**	-0.06
Negotiation	**-0.21**	**0.15**	**0.23**	**0.25**	**-0.11**
Research	-0.08	**-0.09**	**-0.09**	**-0.14**	**0.10**
Exploration	0.06	**0.09**	**0.14**	0.01	**0.21**
Agility	0.06	-0.02	-0.05	**0.14**	-0.08
Pursues Learning	**0.20**	**-0.31**	**-0.33**	**-0.33**	0.01
Creativity	-0.08	0.06	0.07	**0.09**	**-0.09**
Structure	**0.22**	**-0.21**	**-0.23**	**-0.30**	-0.07
Quality Orientation	**0.18**	**-0.13**	**-0.17**	**-0.17**	-0.07
Rational	-0.07	0.01	0.00	**-0.15**	0.03
Specialist	-0.05	-0.06	**-0.11**	**-0.13**	**-0.12**
Judgement	**-0.13**	**0.15**	**0.19**	0.08	**0.18**
Accountability	0.05	0.06	0.03	0.04	**-0.19**
Authenticity	**0.10**	0.06	0.01	**-0.14**	**0.10**
Resilience	**-0.17**	0.07	0.07	**0.17**	-0.09
Recovery	**-0.09**	-0.01	0.02	**0.14**	-0.05
Self Belief	**-0.23**	**0.18**	**0.15**	**0.17**	-0.03
Motivation	**-0.07**	**-0.18**	**-0.18**	**-0.11**	0.00
Sales Drive	-0.07	**-0.10**	-0.07	**0.10**	**-0.15**
Consistency	**0.13**	-0.04	-0.05	-0.05	0.03

Criterion-Related Validity

The outcome of criterion-related validity studies typically varies from one study to the next. Many factors determine each set of findings, the most common being:

- The sample size, and its representativeness.
- The reliability of the criterion measures themselves, which are often of a subjective nature.
- Restriction of range, both in the criterion measures (e.g. the leniency rating effect) and in the psychological variables (e.g. natural selection effects).
- Organisational culture, which often accounts for particular personality traits being valued more highly than others, and which can therefore influence an observer's judgment of people's job performance.

Validation Study 1: Pharmaceutical Industry

It should be noted that the data in this study was collected form a high-performance group, and as a result the performance data showed a severely restricted range, limiting the effectiveness of the study.

Sample

It is important to note that the sample was composed mainly of top-performing sales professionals, resulting in considerable restriction of range on the various criterion measures used.

The sample comprised 51 high-performing incumbent sales professionals (43% male, 57% female), ranging in age from the early 20s to early 60s, with a median age of around 40 years. More than 60% of the sample held a university degree, mainly at Bachelors level. The average person reported between 10 to 12 years of experience in a sales and/or business development role.

Compared to the general norm group, the sample was higher on Specialist (Sten 7) and lower on Judgement (Sten 4).

Criterion Measures

The criterion measures were manager ratings on the following areas of performance:

- Sales Target: sales target achievement
- Customer Calls: average calls to customers per day
- Target Customer Calls: of average calls to customers per day, % of calls to targeted customers
- Target Customer Meetings: number of target customers attending meetings per quarter
- Field Coach: Average overall performance on field coaching days

The various criterion measures were largely uncorrelated with one another, which suggests that the halo rating effect had been kept to a minimum.

Results

Statistically significant relationships are summarised in Table 7 below.

Table 7: Statistically significant correlations between Criteria and SPI-Q scales: Pharmaceutical Industry Study

Criterion	SPI-Q relationships
Sales Target	0.39 Structure, -0.29 Negotiation
Customer Calls	0.42 Resilience (0.31 Recovery; 0.29 Self Belief), -0.30 Motivation
Target Customer Calls	-0.34 Insight
Target Customer Meetings	-
Field Coach	-

Relatively few significant relationships have emerged between SPI-Q scales and criterion measures. The most likely reason for this was restriction of range, given that the sample contained very few people with low performance ratings on the various job performance criteria. The strong relationship between resilience and customer calls is nevertheless noteworthy, and is likely to be even stronger in a more fully representative sample of the sales force. The negative correlation with Motivation is difficult to explain, since it suggests that people who make a large number of customer calls are typically not motivated by earning high salaries/commissions, or public recognition. The finding could be explained, in part, by the small but negative correlation, for this sample, between SPI-Q Motivation and SPI-Q Resilience. Alternatively, it may be that those more focused on financial reward are focusing on more rewarding activities.

Validation Studies 2, 3 and 4

Three separate validation studies were conducted on small samples of sales and business development people in the insurance, print & communication, and consulting industries. In all three studies, the same job performance criteria were used as set out in Table 8 below.

Table 8: Description of Criterion measures used in Validation Studies 2, 3 and 4

Criterion Measure	Question asked	Rating Scale**
Overall Rating (5-point scale)	Overall, how would you rate this individual's performance in the role?	Poor Marginal Satisfactory/sound Strong Excellent
Sales Target (5-point scale)	What percentage of their sales target has this individual achieved in the last 12 months (or other most relevant time period)?	<80% 80-94% 95-104% 105-120% >120%
Conversion Rate (5-point scale)	What is this individual's conversion rate of either leads or proposals (whichever is more relevant to your business)?	<50% 50-60% 61-70% 71-80% 81-100%
Daily Phone Calls (3-point scale)	How would you rate their number of telephone calls to customers per day?	<targeted daily call rate achieves target daily call rate >targeted daily call rate
Weekly Client Meetings (3-point scale)	How would you rate their number of face-to-face client meetings per week?	As above
Business Development Time Utilisation Targets (5-point scale)	How is this individual performing in relation to their time (utilisation) targets for business development activities?	Well below average Below average Average Above average Well above average
Cross-Selling (5-point scale)	Please rate the effectiveness of the individual on the following activities: cross-selling products or services.	Very ineffective Somewhat ineffective Somewhat effective Quite effective Very effective
New Business (5-point scale)	Please rate the effectiveness of the individual on the following activities: bringing in completely new business.	As above
Managing and Growing Existing Clients (5-point scale)	Please rate the effectiveness of the individual on the following activities: managing and growing existing clients.	As above

** in each case, provision was made for the option of 'not applicable'; an option which was rarely used in practice.

Validation Study 2: Insurance Industry

Sample

The sample comprised 43 incumbent sales professionals (60% male, 40% female), ranging in age from the early 20s to early 60s, with a median age of around 40 years. More than 90% of the sample held a tertiary certificate or diploma, the remainder (10%) holding university qualifications. A bimodal distribution characterises the sample's number of years experience in a sales and/or business development role (58% with less than 10 years experience, and 42% with 10 or more years experience, with nearly 30% of the sample reporting 19 or more years).

Compared to the general norm group, the sample was lower on Credibility (Sten 4), Influence (Sten 4), Exploration (Sten 4), Agility (Sten 4) and Judgement (Sten 4).

All except two of the criterion measures (Conversion Rate and Weekly Client Meetings) were positively and significantly correlated with one another and with Manager's Overall Rating. Sales Target, whilst correlated with Manager's Overall Rating, tended to correlate less strongly with the other scales.

Results

Statistically significant relationships are summarised in Table 9 below.

Table 9: Statistically significant correlations between Criteria and SPI-Q scales: Insurance Industry Study

Criterion	SPI-Q relationships
Overall Rating	0.40 Resilience (0.31 Self-Belief, 0.30 Recovery), 0.37 Negotiation
Sales Target	0.42 Specialist, -0.37 Structure, 0.35 Client Engagement
Conversion Rate	-0.36 Authenticity, 0.34 Influence, 0.32 Self Belief
Daily Phone Calls	0.34 Negotiation, 0.30 Self Belief
Weekly Client Meetings	-0.49 Initiation, 0.43 Authenticity, 0.36 Rational, -0.31 Impact, -0.30 Creativity,
Business Development Time Use	0.30 Negotiation
Cross-Selling	-0.58 Structure, 0.41 Negotiation, 0.41 Self Belief, -0.41 Quality Orientation, 0.40 Impact, 0.36 Initiation, -0.36 Creativity, 0.34 Sales Drive, 0.32 Client Engagement
New Business	0.42 Sales Drive, -0.41 Structure, -0.38 Creativity
Managing & Growing Existing Clients	0.44 Self Belief, -0.41 Structure, 0.37 Agility, 0.35 Resilience, 0.32 Impact, -0.31 Quality Orientation

Self Belief and Negotiation appear to be important predictors of sales success across a range of criteria, including those criteria that are not significantly correlated with one another. Self Belief and Negotiation, in turn, are moderately correlated with one another for this sample, as they are in the general normative sample. Sales Drive appears to be an effective predictor of the ability to cross-sell products and services, and to bring in new business; but is not related, for this sample, to Sales Target.

Several scales show negative relationships with some of the criteria. Most of these scales are in the Perceptive Reasoning domain (Creativity, Structure and Quality Orientation), suggesting that—in this particular sample—the better organised, quality-minded and innovative sales professionals perform less effectively on most criteria (there was a small, but non-significant tendency for Structure and Quality Orientation to be related to Number of Weekly Client Meetings). Impact and Client Engagement have also emerged as potentially useful predictors.

Validation Study 3: Print & Communication Industry

Sample

The sample comprised 33 incumbent sales professionals (72% male, 28% female), ranging in age from the early 20s to early 60s, with a median age of around 40 years. The vast majority of the sample (over 90%) held high school leaving qualifications, certificates, diplomas or advanced diplomas; the remainder (10%) holding university qualifications. A bimodal distribution characterises the sample's number of years experience in a sales and/or business development roles (52% with less than 13 years experience, and 48% with 13 or more years experience, with 40% of the sample reporting 19 or more years).

Compared to the general norm group, the sample was lower on Influence (Sten 4), Exploration (Sten 4), Pursues Learning (Sten 4) and Authenticity (Sten 4).

All except one of the criterion measures (Daily Phone Calls) were positively and significantly correlated with one another, and with Manager's Overall Rating. Sales Target, whilst strongly correlated with Manager's Overall Rating, tended to correlate less strongly with most of the other scales.

Results

Statistically significant relationships are summarised in Table 10 below.

Table 10: Statistically significant correlations between Criteria and SPI-Q scales: Print & Communication Industry Study

Criterion	SPI-Q relationships
Overall Rating	-0.51 Authenticity, 0.48 Recovery, 0.41 Judgement
Sales Target	0.43 Credibility, 0.39 Judgement, 0.35 Agility
Conversion Rate	0.40 Client Engagement, -0.40 Research
Daily Phone Calls	-0.44 Influence, -0.36 Motivation, 0.35 Structure
Weekly Client Meetings	0.39 Structure, -0.36 Motivation
Business Development Time Use	0.48 Research, -0.44 Authenticity, 0.39 Resilience (0.47 Recovery, 0.22 Self Belief), -0.36 Insight, -0.35 Rational
Cross-Selling	-0.53 Motivation, 0.46 Judgement, 0.39 Creativity, 0.36 Resilience (0.46 Recovery, 0.25 Self Belief)
New Business	0.49 Negotiation, 0.43 Initiation, 0.37 Impact, 0.36 Resilience (0.46 Recovery, 0.25 Self Belief)
Managing & Growing Existing Clients	0.38 Judgement, -0.37 Client Engagement, 0.34 Sales Drive

Resilience and Judgement appear to be important predictors of sales success across a range of criteria, including those criteria that are not significantly correlated with one another. Resilience and Judgement, in turn, are essentially unrelated to one another for this sample, resulting in considerable incremental validity when used in conjunction. Structure appears to be an effective predictor of Daily Phone Calls and Weekly Client Meetings, but these two criteria are fairly strongly

correlated with one another. Authenticity showed a negative relationship with two of the criteria (Overall Rating and Business Development Time Use) but this relationship is partly accounted for by a moderately strong tendency for Authenticity to be related to age and professional experience (variables which also tended to be negatively correlated with the same two performance criteria). Motivation, with its emphasis on striving to earn well and public recognition, was also largely counter-indicative of sales success for this sample.

Validation Study 4: Recruitment Industry

Sample

The sample comprised 13 incumbent sales professionals (92% female), ranging in age from the early 20s to 50s, with a median age of around 35 years. Around 85% of the sample held a school leaving certificate, tertiary certificate or diploma; the remainder (15%) holding university qualifications. The average person reported between seven and nine years of experience in a sales and/or business development role, the range extending from one to 18 years.

Compared to the general norm group, the sample was higher on Sales Drive (Sten 7) and lower on Negotiation (Sten 4), Rational (Sten 4) and Judgement (Sten 4).

All criteria measures were significantly correlated with Overall Rating, and most were significantly correlated with one another, suggesting a moderate 'halo' effect in the ratings.

Results

Statistically significant relationships are summarised in Table 11 below.

Table 11: Statistically significant correlations between Criteria and SPI-Q scales: Consulting Industry Study

Criterion	SPI-Q relationships
Overall Rating	0.59 Impact, 0.56 Insight
Sales Target	-0.75 Client Engagement, 0.55 Sales Drive, -0.55 Attentiveness
Conversion Rate	-0.65 Client Engagement, -0.50 Attentiveness
Daily Phone Calls	-0.64 Negotiation, 0.55 Authenticity, 0.54 Rational
Weekly Client Meetings	-0.62 Attentiveness
Business Development Time Use	-
Cross-Selling	0.84 Insight
New Business	0.64 Influence, -0.61 Structure
Managing & Growing Existing Clients	0.60 Insight

Fewer significant findings emerged in this study, compared with studies 2 and 3. The sample size was very small, however. It is nevertheless interesting to note that Insight was among the scales showing a positive relationship with sales performance. This could suggest the importance of having an interest in analysing human behaviour in the recruitment industry.

Relationship between SPI-Q scales and Manager Ratings of SPI-Q attributes

In the four separate validation studies described above, managers were asked to rate their reports in terms of each of the SPI-Q attributes.

For validation studies 2, 3 and 4, managers were provided with a description of each SPI-Q that closely followed the actual content in the SPI-Q scales. The pharmaceutical industry study (Study 1) was an earlier investigation, and the definitions provided to the managers differed to some degree from the final definitions used in developing the questionnaire. For example, the provided definition for Motivation did not include reference to financial reward, which later became an important element of the attribute items. As such, the results from Study 1 are omitted here.

The results of the study are given in Table 12 on the next page. Results are reported separately for the three separate validation samples, together with an analysis of validation studies 2, 3 and 4 combined.

Table 12: Correlations between SPI-Q scales and Manager Ratings of SPI-Q Attributes

Attribute	Study 2 Insurance (N=43)	Study 3 Print & Comm. (N=33)	Study 4 Consulting (N=13)	Studies 2, 3 and 4 combined (N=89)
Impact	**0.35***	0.27	0.19	*0.37**
Credibility	0.21	**0.39***	0.26	*0.32**
Insight	0.04	- 0.16	**0.67***	*0.15*
Attentiveness	0.08	-0.04	-0.34	*-0.05*
Initiation	**0.59***	**0.63***	0.05	*0.53**
Influence	0.20	0.10	0.38	*0.22**
Social Leverage	**0.31***	0.03	0.39	*0.21**
Client Engagement	0.15	0.30	0.03	*0.25**
Negotiation	**0.46***	-0.18	0.14	*0.16*

Research	-0.01	**0.54***	-0.50	*0.07*
Exploration	-0.13	0.15	**0.62***	*0.10*
Agility	**0.31***	-0.11	0.19	*0.19*
Pursues Learning	0.29	0.09	0.23	*0.26**
Creativity	-0.10	**0.48***	0.02	*0.08*
Structure	**0.30***	0.25	0.19	*0.22**
Quality Orientation	0.24	0.30	0.41	*0.23**
Rational	0.27	-0.31	0.22	*0.10*
Specialist	**0.32***	0.15	0.23	*0.15*
Judgement	0.08	0.32	**0.57***	*0.20*

Authenticity	-0.04	**-0.36***	0.38	*-0.08*
Self Belief	**0.45***	0.32	0.26	*0.39**
Recovery	0.26	0.04	0.09	*0.20*
Motivation	0.03	0.04	0.48	*0.12*
Sales Drive	0.13	-0.11	**0.67***	*0.17*

Across the four validation studies, 20 of the 25 SPI-Q scales have demonstrated a significant, positive relationship with manager's ratings of the same attributes.

Authenticity, which has satisfactory reliability, showed an unexpected relationship in Study 2. Authenticity was significantly correlated with Quality Orientation in the print and communication study, and it is informative to note that Authenticity is positively (but weakly) correlated with all of the Perceptive Reasoning scales, and with Quality Orientation in particular (see Table 5). It is also worth noting that Authenticity may be difficult for managers to observe, and a reliance on inference may have affected the results.

It is informative to note that, in some instances where significant correlations between Manager Ratings of SPI-Q attributes and the actual SPI-Q scale were not found, the Manager Ratings showed—instead—a significant relationship with an SPI-Q scale closely connected with the attribute. Manager ratings of 'Recovery', for instance, were significantly correlated with the SPI-Q scales of Self Belief, Impact and Initiation, while Manager ratings of Motivation tended to be more strongly correlated with the SPI-Q scales of Impact, Initiation and Influence. This may suggest that the managers were not making finely differentiated behavioural observations when completing the performance surveys.

Overview of Main Validation Findings

The vast majority of SPI-Q scales show positive correlations with Manager Ratings of personal attributes.

Resilience and its Self Belief and Recovery sub-components show particular promise as important elements of effective performance in sales and business development. No negative relationships have been found between these attributes and job performance criteria, suggesting that emotional resilience and belief in one's abilities are attributes that are transportable across industries. Negotiation, an attribute that is closely associated with Resilience, has also yielded encouraging results.

Sales Drive, Initiation and Impact join Resilience, Recovery, Self Belief and Negotiation as potentially useful predictors of cross-selling and generating new business.

Several Perceptive Reasoning scales appear to have negative relationships with many of the job performance criteria; especially Structure, Quality Orientation and, somewhat surprisingly, Creativity. These may well be sample-dependent findings, but it should be remembered that Structure and Quality Orientation tend to be negatively correlated with scales such as Resilience, Negotiation and Initiation, which would account in part for the negative correlations with job performance criteria. Anecdotal evidence from feedback sessions conducted with trial participants also indicates that these characteristics are often associated with subject matter experts and process and analyst teams that are sales-related, but fulfil a less traditional sales role.

Appendix A: Alpha Stage Item Trial

The primary purpose of the Alpha Stage of developing the SPI-Q was threefold:

- To explore the conceptual integrity of the questionnaire
- To eliminate the weakest items from the questionnaire
- To determine the need for item rewording and the need to create new items to replace items that fail to perform effectively.

A pool of more than 600 items was written to fit the proposed 26-scale conceptual model. Two thirds of the items were phrased in the positive, and a third in the negative. Examples of negatively phrased items were: 'Feels uncomfortable asking friends or family for sales leads' and 'Dislikes the conflict often inherent within intense negotiations'. The design of negatively keyed items was considered important for a sales questionnaire, given the tendency for many sales professionals to answer questionnaires in a socially desirable manner.

A total of 395 items were selected from the item pool for the Alpha Stage trial. Of these items, 138 (35%) were negatively keyed.

Alpha Trial Sample

Invitations to participate in the Alpha Stage trial were sent to a broad sample of individuals. These were largely drawn from Performance Insights' contacts and clients, supplemented by clients of TestGrid, the host organisation for online assessment. The experimental nature of the questionnaire was explained to participants, who were also offered the incentive of entering a draw for a case of exclusive wines.

A total of 153 individuals completed the questionnaire online. To combat the possible effects of fatigue, participants were randomly assigned to one of two versions of the questionnaire: *Form A*, in which the items were ordered from 1 to 395, and *Version B*, which contained the identical items, but in reverse order. Participants were required to respond to each item using a five-point Likert scale: 'Strongly Disagree', 'Disagree', 'Unsure', 'Agree', and 'Strongly Agree'.

The questionnaire returns were examined to identify possible problem cases. Six 'problem cases' were identified. These were cases where there was a very clear indication that the questions had been answered inappropriately. In all instances, the individual had responded to every item (including the negatively keyed ones) by consistently stating 'Strongly Agree', or 'Unsure', or had started to answer correctly but had fallen into the consistent response mode within the first ten items.

The sample of 147 individuals was fairly well balanced in terms of gender (57% male, 43% female). The age range was between 19 and 64, with a mean of 39.5 years (Standard Deviation = 10.4 years). The home language of the majority of the sample was English (91%). The sample was predominantly a professional-level one, with 57% of people reporting 13 years or more professional experience. In terms of sales and business development experience, 60% of the sample had been in sales roles for seven years or more. Only 11% of the sample reported having no sales or business development experience.

Alpha Trial Item Analysis

For purposes of statistical analysis, all reverse-keyed items were transformed to positive values. That is to say, a 'strongly disagree' response to a reverse-keyed item was recoded to 'strongly agree' and vice versa; 'agree' was recoded to 'disagree' and vice-versa. 'Unsure' responses retained their original value.

The 395 items in the questionnaire were subjected to iterative item analysis. Items were discarded from their intended scale if:

- The correlation with the other items in the scale was not statistically significant and/or their removal from the scale raised the reliability of the scale
- The item had a stronger correlation with another scale

Items that correlated more strongly with another scale were transferred to that scale only if the content (wording) of the item clearly related to the core construct, and the inclusion of the item improved the reliability of the scale.

By way of an example, the original Listening scale—which had been designed to capture as many aspects of listening as possible—lost three of its items to the Insight scale, and two items to Client Engagement. In all instances the wording of the items clearly justified their transfer to these scales. For example, the item 'Listens to the way people say things' was more strongly correlated with the Insight scale than with Listening, and proved to be the fourth most effective Insight item after transfer to that scale. The four remaining Listening items correlated well with one another and were clearly focused solely on the core concept of attentive listening. (It is informative to note that all items that were transferred to other scales remained in their new scales after the second [ipsative] trial, which vindicates the decision to transfer them).

The casualty rate for negatively phrased items was higher than the casualty rate for positively phrased ones. However, several negatively phrased items worked exceptionally well; for example, 'Prefers not to engage in cold calling'. It was for this reason that the decision was taken to retain some of the negatively phrased items when constructing the Beta Stage (ipsative) questionnaire.

The Alpha Stage scale reliabilities ranged from 0.90 (Initiation, Insight and Research) to a low of 0.63 (Collaboration), with the vast majority being higher than 0.70. There is little doubt that the high reliabilities were attributable in part to a fairly strong 'halo effect' that seemed to be operating when participants answered the questions. There was also a noticeable tendency for people to use mainly two of the points (Strongly Agree and Agree; or Strongly Disagree and Disagree in the case of many of the reverse-keyed items). The discrimination among individuals was nevertheless sufficient to produce good scale reliabilities. The data was also sufficiently sensitive to enable pinpointing of items that needed to be transferred to other scales.

Alpha Stage Scale Inter-correlations and Factor Analysis

There was a fairly pronounced tendency for the interpersonal scales, in particular, to be strongly correlated with one another. The highest correlations were between Resilience (now called Recovery) and Self Belief (0.77); and between Initiation and Social Leverage (also 0.77). These pairs of scales have a fairly strong conceptual overlap (sensitivity to criticism and call reluctance respectively), though there are still important subtleties differentiating them.

Other strong correlations were: Initiation & Negotiation (0.75), Client Engagement & Credibility (0.74), Insight & Judgement (0.74), Judgement & Openness to Learning (now called Pursues Learning) (0.74), Impact & Influence (0.73), Credibility & Influence (0.72), Credibility & Judgement (0.72), Exploration & Judgement (0.72), Client Engagement & Impact (0.71), Credibility & Exploration (0.71), Credibility & Impact (0.71), Exploration & Insight (0.70) and Agility & Negotiation (0.70).

Low or zero correlations among scales were also found. Zero or near zero correlations were observed between Agility and Specialist, Authenticity and Impact, Client Engagement and Rational, Influence and Specialist, Initiation and Quality Orientation, Listening and Rational, Motivation and Specialist, Negotiation and Rational, Sales Drive and Specialist, Self Belief and Rational, and Structure and Authenticity—to mention the most salient. The Collaboration scale was largely correlated in a negative direction, or completely uncorrelated, with most of the other scales.

An exploratory factor analysis of the 26 scales was performed. Five components were extracted in accordance with Kaiser's criterion for factor significance, explaining 71% of the total variance in the data set. The factor rotation method followed was Varimax, with Kaiser Normalisation. The results bear out the moderate to strong correlations among many of the Alpha Stage scales, as described above.

The first factor accounted for about 44% of the total variance, on which 19 of the scales loaded significantly. The principal markers of this factor were Agility, Self Belief, Negotiation, Judgement, Creativity, Client Engagement, Influence, Insight and Impact (all with factor loadings above 0.70). The only scales not loading significantly on this factor were Authenticity, Collaboration, Motivation, Quality Orientation, Rational, Specialist and Structure, which suggest that general 'interpersonal and influencing effectiveness' could be the underlying source of the factor.

Motivation, Accountability and Sales Drive (all with factor loadings higher than 0.60) defined the second strongest factor. This could suggest a 'results focus' factor.

The third factor centred on Specialist, Rational, Quality Orientation and Structure (all with factor loadings higher than 0.60) and was supported by Openness to Learning (now called Pursues Learning), Research, Judgement and Listening (now called Attentiveness). This factor seems to describe a task and problem-solving focus.

The fourth factor comprised 10 scales, marked principally by *low* Authenticity, together with positive factor loadings for Initiation, Social Leverage, Sales Drive (all with loadings higher than 0.50), Resilience (now called Recovery), Structure, Negotiation, Self Belief, Research and Listening (all with loadings between 0.30 and 0.50). This factor appears to be related in the main to 'Call Reluctance' (or, more properly, 'call willingness' with a sales drive focus).

The final factor was referenced primarily by Collaboration, with support from Insight, Listening and Authenticity, all of which suggest interpersonal sensitivity.

Relationships between Alpha Stage Scales and Biographical Variables

Number of years experience in Sales and Business Development correlated significantly, but modestly, with the following scales (correlation coefficient given in parentheses): Initiation (0.39), Negotiation (0.39), Credibility (0.38), Exploration (0.37), Sales Drive (0.37), Impact (0.35), Influence (0.35), Client Engagement (0.30), Social Leverage (0.30), Resilience (now Recovery) (0.26), Accountability (0.23), Structure (0.23), Insight (0.22), Self Belief (0.21), Creativity (0.19), Judgement (0.19), Motivation (0.19) and Collaboration (-0.17).

Number of years experience in a Professional role, which is correlated to some extent with number of years experience in a Sales and Business Development role, was correlated with Exploration (0.25), Influence (0.22), Credibility (0.20), Client Engagement (0.19), Impact (0.19), Negotiation (0.17) and Accountability (0.16). These correlations are noticeably lower than those in respect of Sales and Business Development experience.

Both Sales & Business Development experience and Professional experience are correlated with Age to some extent, but Age on its own correlated significantly only with Specialist (0.20), Credibility (0.17) and Judgement (-0.18). Age per se therefore appeared to be playing a negligible role in explaining differences between people.

There was a slight tendency for people whose home language is English to obtain higher scores on Client Engagement, but the trend was negligible.

Gender differences favouring men were observed on Self Belief, Resilience (now Recovery), Creativity and Research. The relationship with Self Belief and Resilience tended to be moderately strong, whilst the relationship with Creativity and Research was quite small. The only scale showing a small difference in favour of women was Collaboration.

Item Revision and the Development of New Items

Some of the items were reworded, where possible, in an attempt to reduce their dependence on Sales Experience. Several items that had been transferred to other scales were reworded slightly to anchor them more securely to the other items.

Many new items were written as replacements for those scales that had lost items to other scales. The new items were patterned very closely on those items that showed the strongest association with their scale.

The Collaboration scale was dropped from the questionnaire. It was the weakest of the 26 scales (modest reliability, and a tendency to correlate negatively or not at all with most of the others scales). It was also considered to be the least potentially useful scale conceptually.