

Linking Emotional Intelligence to Successful Health Care Leadership: The *Big Five* Model of Personality

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Abstract

Research has identified emotional intelligence as the ability to understand and manage emotions. This is especially important for surgical leaders who must interact constructively with teams, administrators, patients, colleagues, and the community. Conventional intelligence emphasizes the rational and analytical brain. When one becomes aware of emotional intelligence, it adds to the repertoire of the surgical leader. It gives them insight into the dynamics of interpersonal relationships. This will allow the surgeon to control the emotional side of communication. Specifically, emotional intelligence focuses on self-awareness, self-management, social skills, and resiliency. With these skills, they are able to modulate their leadership style, allowing for increased conflict management and persuasiveness, more effective change management, and consensus-building. Emotional intelligence is not innate; these are learned skills. With practice and attention, it is possible to acquire the skills to enhance relationships.

Keywords

- ▶ emotional intelligence
- ▶ relationship enhancement
- ▶ conflict management

Leadership has become more challenging in the current health care environment due to globalization, rapid development, constant innovation, and evolving changes in expectations. Our health care system is frequently viewed as a machine with many moving parts and processes that can be improved with manufacturing-derived redesign approaches.¹ In reality, it is more like a complex adaptive system that relies heavily on interpersonal relationships for success. Research has confirmed that personality and emotional intelligence are vital to achieving organizational goals and succeeding in changing environments.² Health care providers are constantly under pressure to discover forward-looking, workable solutions to ensure outcomes-driven results in a changing environment. Through analysis and reorganization, they work to structure new approaches that will maximize patient care, minimize cost, and support growth, research, and innovation.

Emotions have consistently been ignored in the past study of organizational leadership in the health care environment. The workplace was viewed as a rational environment where emotions would impede the science of sound judgment. Thus, emotions were not even considered as explanations for workplace phenomenon.³ That idea has been rejected as research-

ers explore how emotions can impact and be managed to improve outcomes. David and Congleton⁴ suggest that it is impossible to ignore emotions. Further, research shows that attempting to minimize or ignore thoughts and emotions only results in amplification. Effective leaders do not attempt to suppress emotions; rather, they employ a technique called *emotional agility*, whereby emotions are approached in a mindful and productive way.

Pioneers in Emotional Quotient Research

Emotional intelligence, or emotional quotient (EQ), has been studied extensively for decades. Pioneers in EQ include E.L. Thorndike who is credited with the genesis of emotional intelligence. In 1920, he proposed the idea of a unique form of intelligence termed *social intelligence*. Seventy years later, Professors Peter Salovey and John Mayer furthered understanding of EQ by creating a 16-step developmental modal ranging from childhood to adulthood. Daniel Goleman expanded he work of Mayer and Salovey in 1995 when he coined the term *emotional intelligence* and generated awareness of EQ by focusing on specific components that are

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distinguishable from intelligence quotient (IQ). Goleman's theoretical constructs of emotional intelligence include the awareness of emotions in oneself and others, understanding the impact of emotions, and the ability to manage emotions both in one's own life, as well as in the lives of others. He promoted the idea that there is more at stake than mere IQ, which had previously been the gold standard of predicting success in life. Goleman⁵ established a framework by which EQ analysis and implementation supersedes IQ. His theory has been widely debated, and experts concur that both EQ and IQ are necessary elements in the realm of professional achievement.

Goleman⁶ researched nearly 200 large, global companies and found that qualities traditionally associated with leadership are insufficient. Intelligence, toughness, determination, and vision are required for success, but more is required (► **Appendix 1**).

Effective leaders also possess a high degree of emotional intelligence, including self-awareness, self-regulation, motivation, empathy, and social skill. Emotional intelligence is now becoming recognized as an integral part of leadership. Many companies currently enlist psychologists to create "competency models" used to identify, train, and promote employees. In medical education, Stratton et al⁷ proposed that EQ assessment could be integrated into the selection process for admission to medical school.

As part of the research, Goleman grouped capabilities into three categories: purely technical skills such as accounting and business planning; cognitive abilities like analytical reasoning; and competencies demonstrating emotional intelligence, including the ability to work with others and demonstrate effectiveness in leading change. As part of the research, senior managers were asked to assist with providing objective criteria, such as a division's profitability to differentiate star performers at senior levels from the average ones. Those individuals were then extensively interviewed and tested, and their capabilities were compared. The result was the creation of fundamentals for highly effective leaders that ranged in length from 7 to 15 items and included such principles as initiative and strategic vision. Goleman reported:

"When I analyzed all this data, I found dramatic results. To be sure intellect was a driver of outstanding performance. Cognitive skills such as big-picture thinking and long-term vision were particularly important. But when I calculated the ratio of technical skills, IQ, and emotional intelligence as ingredients of excellent performance, emotional intelligence proved to be twice as important as the others for jobs at all levels."⁶

Another conclusion drawn by Goleman⁶ was the presence of emotional intelligence skills found at the highest level of leadership in the company. Goleman asserts a comparison of star performers against average ones in senior leadership positions showed nearly 90% of the differences could be attributed to emotional intelligence rather than cognitive abilities. Goleman's assertions have been confirmed by other researchers who posit that not only does emotional intelligence distinguish strong leaders, but can also be linked to strong performance. Five components of emotional intelligence at work were identified by Goleman (► **Fig. 1**).

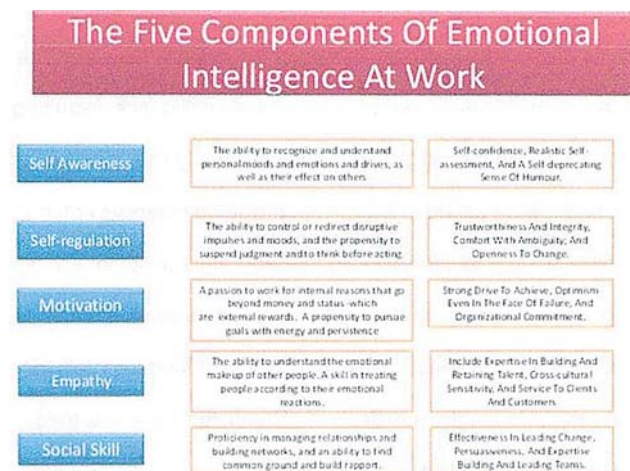


Fig. 1 Emotional intelligence defined. "IQ and technical skills are important, but emotional intelligence is the *sine qua non* of leadership."⁶

At its core, emotional intelligence is the ability to understand both ourselves and others on an intuitive level that supersedes cognitive ability. Ugwu⁸ posited that the link between IQ and EQ is based on the connection between the limbic system and cerebral hemisphere of the brain. As a result, EQ is dependent on the ability to comprehend and exercise emotional intelligence traits based on general intelligence.⁸ Without general intelligence, individuals would not possess the ability to exhibit EQ traits such as delayed gratification and impulse control. The background of emotional intelligence provides a theoretical foundation for further research pertaining to individuals with high emotional intelligence, as well as the underlying reasons attributed to their optimal success in relationships and higher scores on life satisfaction scales than their high-IQ counterparts.

Goleman⁵ defined emotional intelligence as being comprised of four components: self-awareness, self-management, social awareness, and relationship management. This definition is widely accepted and acknowledged as foundational. *Self-awareness* is the ability to understand one's emotions and their effects, while *self-management* allows individuals to experience emotions and contemplate before reacting.

Concomitant to a discussion of self-awareness and self-management is *emotional regulation* which illustrates how outcomes are affected by the ability of individuals to recognize and manage their emotions in various situations. According to emotional regulation theory, emotions can be regulated at two different points.³ At the initial intervening point, antecedent-focused emotion regulation can be employed, whereby the individual modifies the situation or the perception of the situation to adjust emotions. The second intervention point is where an individual could engage in response-focused emotion regulation, or response modulation. In this process, the person has a tendency toward an emotional response, but manipulates how that response is exhibited. Rather than adjusting the situation or the perception of the situation, the individual manipulates the emotional expression of his or her reaction to the situation. The concept of emotional regulation has implications for the workplace when health care workers

are required to adjust reaction and behavior to accommodate a variety of scenarios, that is, a provider must help meet the needs of a patient with a pleasant attitude. Situations where providers are required to adjust emotions to work settings are referred to as *emotional labor*. Peña-Sarrionandia et al⁹ state strategic flexibility appears essential for adaptation to a complex and changing environment in which a normally functional regulation style may become dysfunctional, such as in workplace settings.

Golis¹⁰ suggested that *social awareness* is the most important component of emotional intelligence due to one's ability to effect changes in emotional drives leading to improved performance. *Social awareness* facilitates deeper understanding of group dynamics.⁵ Dissecting groups and understanding how individual personalities work (or do not work) together can reveal important information such as the identity of the real leader, who is compliant, who will be resistant, and how this information impacts expected outcomes. Effective leadership can be compromised without this important EQ skill.

Social intelligence implies an awareness of the social environment and the needs of others. Building relationships across an organization is critical to success, job efficiency, and increased effectiveness. The number of conflicts in the workplace can be lowered dramatically and absenteeism decreased as the needs of people are met both at home and in the workplace.

Larson¹¹ described *relationship management* as the art of developing others by becoming a catalyst for change. Relationship management encompasses effective communication skills, conflict resolution, and successful collaboration. Trallia et al¹² discuss seven characteristics necessary for establishing successful work relationships: trust, the foundation for successful collaboration; diversity, which broadens the number of potential solutions and enables individuals to learn from one another; mindfulness, which allows for openness to new ideas and promotes equal participation; interrelatedness, to understand how each individual's work affects one another; respect, demonstrating value in other's opinions and the importance of problem-solving; varied interaction, involving both professional and personal task-related practices; and effective communication that enables collaboration and understanding.

Controversy surrounds the proposition that high emotional intelligence increases the efficacy of leaders, although the idea that self-awareness is a leadership imperative is widely concurred.¹³ Transformational leaders are often credited with high emotional intelligence, while those lacking interpersonal skills are labeled as being low on the emotional intelligence scale. The concept of understanding how EQ impacts personality traits is a widely accepted, critical link to improved leadership. One question that remains undetermined is whether emotional intelligence can be learned or is it a naturally occurring phenomenon. Goleman⁶ posits that it can be both. Scientific research supports a genetic component to emotional intelligence, while psychological and developmental research indicates that nurture also plays a role. It has been concluded that emotional intelligence can be learned, but also increases with age. Goleman emphasizes

that increasing emotional intelligence requires both desire and effort. EQ cannot be learned in a seminar or through a manual. It is experiential and necessitates time and practice. Modeling is helpful in demonstrating alternative behavior that includes EQ skills. "Emotional intelligence is born largely in the neurotransmitters of the brain's limbic system, which governs feelings, impulses, and drives. Research indicates that the limbic system learns best through motivation, extended practice, and feedback . . . To enhance emotional intelligence, organizations must refocus their training to include the limbic system. They must help people break old behavioral habits and establish new ones. That not only takes much more time than conventional training programs, it also requires an individualized approach."⁶ According to Goleman, many leadership training programs fail because they are focused on the wrong part of the brain.

Green,¹⁴ in her interview with Muriel Maignan Wilkins,¹⁵ coauthor of *Own the Room*, discusses the three biggest personality irritations in the workplace: micromanaging, passive-aggressive behavior, and working with individuals with low, or no, emotional intelligence. Wilkins suggests that an increased sense of self-awareness enables one to manage themselves, as well as others, more effectively, and is a success factor in being a great leader. Bringing awareness to one's behavior is the first step in recognizing, and changing, to incorporate emotional intelligence skills. For example, micromanaging behavior can be controlled by bringing awareness to the difference between what is micro and what is macro. Micromanagers often place equal weight on each element when 80% of time should be spent addressing the macro. Wilkins describes passive-aggressive behavior as disconnect between what is being said versus what is actually done. She also links passive-aggressive behavior to the fear of failure, conflict, or rejection. Individuals who exhibit this behavior may be playing both sides to avoid conflict or rejection. Awareness and learning to be direct can mitigate the behavior and instill confidence in dealing with fear. Wilkins cites feedback as the most important tool in working with low EQ individuals. Honest feedback can bring awareness to behaviors and attitudes that need to be addressed. Wilkins suggests that feedback should be part of the corporate culture and framed in the context of individual and corporate growth. One grows only when they can learn.¹⁴ As one progresses up the corporate ladder, these three behaviors need to be uncovered and replaced with emotional intelligence skills that promote success.

Big Five Beginnings

The *Big Five* model is a result of research started in 1936 by Gordon Allport and Harold Odbert, both of whom challenged the psychological research community to determine synonym clusters that distinguished the behavior of one human from another.¹⁶ After years of research, a solution was reached in the 1980s. The agreed upon acronym is currently used to identify the five dimensions of personality—*N, E, O, A, C*. Although different names may be utilized for descriptive purposes, the meaning remains constant.

As stated above, decades of research on personality yielded five broad dimensions¹⁷:

- **N** – Emotional stability (one's level of calmness and tranquility).
- **E** – Extroversion (one's level of sociability and enthusiasm).
- **O** – Intellect (one's level of creativity and curiosity).
- **A** – Agreeableness (one's level of friendliness and kindness).
- **C** – Conscientiousness (one's level of organization and work ethic).

These are not “types” of personalities, but rather dimensions that include regulatory behaviors. Each personality is a combination of the *Big Five* personality characteristics.

The *Abridged Big 5 Circumplex (AB5C)* is a circular model of personality whereby psychologists examine traits or “facets” that are essentially blends of any two of the *Big Five* dimensions. For example, individuals high in *Intellect* and high in *Extroversion* and high *Intellect* could also reveal the more subtle characteristics of being witty or humorous. In contrast, individuals high in *Intellect*, but low in *Extroversion* could indicate the quality of being reflective.

One can rank high or low on each of the *Big Five* dimensions. When the different possible combinations are tallied, there are 45 personality facets from which the *Big Five* personality scores can be computed (Appendices 2 and 3). Each of the *Big Five* traits is also comprised of six facets or subtraits (– Fig. 2).

- Reliability – extremely high level of reliability of approximately 0.90.
- Validity – extremely high ability to predict future performance (as opposed to the Myers–Briggs Type Indicator).
- Norms – commonly accepted standard measure of 500 men and 500 women randomly selected from three different, well-respected studies.
- Global applicability – proven across a variety of national, economic, cultural, religious, and linguistic settings.
- Descriptive power – facilitated new knowledge about personality and can accurately describe changes in behavior associated with certain age groups.
- The *Big Five* at Work

The *Big Five* model is widely accepted by the psychological community due to:

Dimension	High scorers are ...	Low scorers are ...
Extroversion	Outgoing, enthusiastic and active; you seek novelty and excitement.	Alloof, quiet and independent; you are cautious and enjoy time alone.
Neuroticism	Prone to stress, worry and negative emotions.	Emotionally stable but can take unnecessary risks.
Conscientiousness	Organised, self-directed and successful, but controlling.	Spontaneous, careless, can be prone to addiction.
Agreeableness	Trusting, empathetic and compliant, you are slow to anger.	Uncooperative and hostile, find it hard to empathise with others.
Openness	Creative, imaginative, eccentric and open to new experiences.	Practical, conventional, sceptical and rational.

Fig. 2 Six facets or subtraits of the *Big Five* traits.

In examining the importance of the *Big Five Model of Personality* at work, Bartone et al¹⁸ were skeptical of the aforementioned criteria as reliable predictors of job performance, leadership behavior, and outcomes. However, the ensuing consensus suggested that leadership was more strongly predicted by facets of *Extroversion* (sociability and dominance) and *Conscientiousness* (achievement and dependability) than by more general dimensions.

Beer and Nohria¹⁹ argue that 70% of change processes fail because of lack of strategy and vision, lack of communication and trust, lack of top management leadership, and resistance to change. These, among other factors, affect individual work performance. Thus, it may be concluded that the key determinant to competition and sustainability is found in emotional and personality factors. In searching for the most suitable employees, the *Big Five* model is widely used and accepted.

Human behavior is complex and often difficult to predict. Acquiring a common vocabulary, as provided in the *Big Five*, facilitates understanding and decision-making for leaders. As each dimension is examined for its impact in work settings, the importance of how it manifests becomes clear. For example, individuals who score high in emotional stability (low in neuroticism) react less emotionally and are less easily upset.¹⁶ They tend to be emotionally stable, calm, and are not disposed to protracted periods of negativity. However, the fact that these individuals are relatively free from experiencing negative feelings does not mean that they are inclined to possess a positive mindset. Conversely, individuals who score high in neuroticism can be very emotionally reactive. They may have an emotional response to events that would not elicit the same in others. A high score in neuroticism on a personality test can indicate the possibility of feeling threatened or engender a change in mood in a normal situation. As a result, clarity of thought and coping mechanisms may be nullified. A low score on emotional stability can manifest in the following manner(s): anxiety, anger, depression, self-consciousness, immoderation, and vulnerability. Access to this relevant information enhances leaders' understanding of individuals and offers the precepts to effectively manage team dynamics to achieve objectives.

Much emphasis is placed on *Extroversion* as a desirable trait in areas of both leadership and teamwork. Psychologist Carl Jung described the extroverted person as one who is most focused on the external world, hence the term *extroversion*. Extroversion has become one of the basic personality types on most major personality tests. According to the *Big Five* definition, an extrovert is high on sociability, talkativeness, energy, and assertiveness. While most people have some fluctuations in their personalities, depending on what they are doing and with whom they are doing the activity, extroverts are at their happiest and thrive in a group setting.¹⁶ Parties, concerts, and clubs are all venues in which extroverts would be energized.

By comparison, those who enjoy time spent alone with their thoughts, work, or a solitary hobby, are introverts. Introverts have more internal dialogue and may be more intelligent as well. Nonetheless, states of happiness and overall satisfaction are reported less often. It is important to not confuse introversion with shyness. Shyness includes the fear of social judgment and the assumption that people

tend to be negatively judging others. Introversion embodies one's response to stimulation, along with social stimulation.

Because introverts are often perceived as lacking the ability to interact and influence others, extroversion is more positively correlated with leadership. This is a common misperception; often the converse is true. Cain²⁰ posits that introverts comprise one-third to one-half of the population, yet a misperception exists that extroverts are in the majority. Further, introverts are often misunderstood and undervalued in the workplace.²⁰ According to Cain, introverts feel most alive and energized in quieter, low key environments, while extroverts crave, even require, greater amounts of stimulation to feel at their best. This has huge implications for socialization and interaction within the work environment, particularly in the area of problem-solving.

The importance of intellect in the workplace cannot be overemphasized. As previously stated, without IQ, higher emotional intelligence functions may not be possible. A high IQ, coupled with high EQ, is an optimum combination for individuals to excel in meeting organizational objectives. Intellect, referred to as *Openness* in the *Big Five* model incorporates: being informed, creativity, sociable, assertive, high energy, organized, dependable, decisive, accepting, trusting, and nurturing. All of these qualities are desirous in both leaders and followers.

According to Smith²¹:

"Knowledge plays a key role in the information revolution. Major challenges are to select the 'right' information from numerous sources and transform it into useful knowledge. Tacit knowledge based on common sense, and explicit knowledge based on academic accomplishments are underutilized."

Further... "valuable human and knowledge resources will be wasted unless management openly accepts and supports efforts to gather, sort, transform, record, and share knowledge. Priceless knowledge will continue to be lost unless organizations make better use of their prime resource – relatively unchallenged, creative people who are eager to apply their knowledge. Tacit knowledge, in particular, is lost through outsourcing, downsizing, mergers and terminations. Reportedly, 90 percent of the knowledge in any organization is embedded and synthesized in peoples' heads."²¹

Smith's assertions emphasize the need for intellect in the workplace.

Howard and Howard¹⁶ describe *Agreeableness* as the tendency to regard others as well-intentioned, to be straightforward, and, therefore, devoid of deception or manipulation. Other facets include altruism, generosity, consideration, willingness to help others, compliance, a desire to cooperate rather than compete, modestly, humility, tenderhearted, and empathetic. Depending on the situation, this dimension can be perceived as either positive or negative. *Agreeableness* is positive when: consensus is important; cohesive decentralized teams are part of the culture; shared decision-making is rewarded; or the right team is in place. However, when competition is a key to success, clients or competitors are aggressive, there is a difficult or unpopular decision that must be made, or workers need corrective feedback, *Agreeableness*

can be a negative. Agreeable leaders tend to avoid the disagreeable, such as corrective feedback. Agreeable leaders also tend to tolerate bad behavior longer than advisable, resulting in loss of respect from those negatively impacted. Teamwork erodes and morale decreases if employees see the agreeable leader as a "doormat." Agreeable leaders often avoid competition. Those who thrive on achievement and competition may feel held back in a culture of consensus.²²

Conscientiousness is characterized in the *Big Five* model as being competent, well-organized, methodical, reliable, propensity toward high achievement, self-motivation, and reflective before responding. According to Baer,²³ a staggering amount of research exists linking conscientiousness to success. *Conscientiousness* is also cited as the only consistent personality trait leading to success.

Conscientious individuals excel at setting and achieving goals through persistency. However, work that requires innovation, creativity, and spontaneity may not be well suited for a highly conscientious personality. The conscientious personality is better suited to roles where detailed work is required.

Conclusion

Understanding the importance of EQ and its connection to dimensions of personality provides an additional tool for leaders to become more effective and successful. Personality traits alone are just that—traits. As research has demonstrated, personality and cognition are not sufficient to lead to greatness. A deeper understanding of behavior and how it can be manipulated to achieve desired outcomes is essential to optimum performance.

Each of the *Big Five* models of personality can be enhanced by EQ. For example, *Extroversion*, *Agreeableness*, and *Conscientiousness* can each be viewed as positive or negative according to situational factors. Emotional intelligence offers awareness as to when these traits are appropriate, or inappropriate, thereby enabling effective interaction and instilling confidence in others as they observe and learn from leaders who are seen as role models.

It is worthwhile for anyone desiring to lead others, or simply become an effective team member, to study emotional intelligence and acquire higher EQ skills. The reward will be yielded in professional success and personal satisfaction.

Conflict of Interest

None declared.

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Appendix 1: Five Main Components of Emotional Intelligence

The following includes a brief overview of the five main components (as stated by Daniel Goleman) of Emotional Intelligence. The main identifying characteristics of Emotional Maturity are made possible by the Emotional Intelligence component.

1. **Self-awareness:** Recognize and understand your own moods and motivations and their effect on others. To achieve this state, you must be able to monitor your own emotional state and identify your own emotions. *Emotional Maturity in this trait shows:*
 - Confidence.
 - Sense of humor (can laugh at self).
 - Aware of your impression on others (can read the reactions of others to know how you are perceived).
2. **Self-regulation:** Controlling your impulses—instead of being quick to react rashly, you can reign in your emotions and think before responding. You express yourself **appropriately**. *Emotional Maturity in this trait shows:*
 - Conscientious and take personal responsibility for your own work/deeds.
 - Adaptable (and favorable) to change.
 - When someone is complaining or is rude to you, you do not respond in kind. You respond in a manner which would not escalate the situation. (At this point, you will also realize that when someone expresses anger at you, they're not always angry at you; they're often just angry and want to take it out on someone.)
3. **Internal motivation:** Internal motivation is marked by an interest in learning. It is also self-improvement vs. pursuit of wealth and status (as a pursuit of wealth and status in an external motivator). *Emotional Maturity in this trait shows:*
 - Initiative and the commitment to complete a task.
 - Perseverance in the face of adversity.
4. **Empathy:** The ability to understand another person's emotional reaction. This is only possible when one has achieved self-awareness—as one cannot understand others until they understand themselves. *Emotional Maturity in this trait shows:*
 - **Perceptive** of other's emotions and taking an active interest in their concerns.
 - Proactive—able to anticipate someone's needs and the appropriate reaction.
 - Social situations such as office politics do not phase one who has a firm grasp of empathy.
5. **Social skills:** Identifying social cues to establish common ground, manage relationships, and build networks. *Emotional Maturity in this trait shows:*
 - Communication: Listening and responding appropriately.
 - Influence and leadership: The ability to guide and inspire others.
 - Conflict management: The ability to diffuse difficult situations using persuasion and negotiation.

Appendix 2: Sample Big Five Factor Questionnaire

How Accurately Can You Describe Yourself?

Describe yourself as you generally are now, not as you wish to be in the future. Describe yourself as you honestly see yourself, in relation to other people you know of the same sex as you are, and roughly your same age. So that you can describe yourself in an honest manner, your responses will be kept in absolute confidence. Indicate for each statement whether it is: 1. Very Inaccurate, 2. Moderately Inaccurate, 3. Neither Accurate Nor Inaccurate, 4. Moderately Accurate, or 5. Very Accurate as a description of you.

	Very Inaccurate	Moderately Inaccurate	Neither Accurate Nor Inaccurate	Moderately Accurate	Very Accurate	
1. Am the life of the party	O	O	O	O	O	(1 +)
2. Feel little concern for others	O	O	O	O	O	(2 -)
3. Am always prepared	O	O	O	O	O	(3 +)
4. Get stressed out easily	O	O	O	O	O	(4 -)
5. Have a rich vocabulary	O	O	O	O	O	(5 +)
6. Don't talk a lot	O	O	O	O	O	(1 -)
7. Am interested in people	O	O	O	O	O	(2 +)

(Continued)

(Continued)

	Very Inaccurate	Moderately Inaccurate	Neither Accurate Nor Inaccurate	Moderately Accurate	Very Accurate	
8. Leave my belongings around	0	0	0	0	0	(3-)
9. Am relaxed most of the time	0	0	0	0	0	(4+)
10. Have difficulty understanding abstract ideas	0	0	0	0	0	(5-)
11. Feel comfortable around people	0	0	0	0	0	(1+)
12. Insult people	0	0	0	0	0	(2-)
13. Pay attention to details	0	0	0	0	0	(3+)
14. Worry about things	0	0	0	0	0	(4-)
15. Have a vivid imagination	0	0	0	0	0	(5+)
16. Keep in the background	0	0	0	0	0	(1-)
17. Sympathize with others' feelings	0	0	0	0	0	(2+)
18. Make a mess of things	0	0	0	0	0	(3-)
19. Seldom feel blue	0	0	0	0	0	(4+)
20. Am not interested in abstract ideas	0	0	0	0	0	(5-)
21. Start conversations	0	0	0	0	0	(1+)
22. Am not interested in other people's problems	0	0	0	0	0	(2-)
23. Get chores done right away	0	0	0	0	0	(3+)
24. Am easily disturbed	0	0	0	0	0	(4-)
25. Have excellent ideas	0	0	0	0	0	(5+)
26. Have little to say	0	0	0	0	0	(1-)
27. Have a soft heart	0	0	0	0	0	(2+)
28. Often forget to put things back in their proper place	0	0	0	0	0	(3-)
29. Get upset easily	0	0	0	0	0	(4-)
30. Do not have a good imagination	0	0	0	0	0	(5-)
31. Talk to a lot of different people at parties	0	0	0	0	0	(1+)
32. Am not really interested in others	0	0	0	0	0	(2-)
33. Like order	0	0	0	0	0	(3+)
34. Change my mood a lot	0	0	0	0	0	(4-)
35. Am quick to understand things	0	0	0	0	0	(5+)
36. Don't like to draw attention to myself	0	0	0	0	0	(1-)
37. Take time out for others	0	0	0	0	0	(2+)
38. Shirk my duties	0	0	0	0	0	(3-)
39. Have frequent mood swings	0	0	0	0	0	(4-)
40. Use difficult words	0	0	0	0	0	(5+)
41. Don't mind being the center of attention	0	0	0	0	0	(1+)
42. Feel others' emotions	0	0	0	0	0	(2+)
43. Follow a schedule	0	0	0	0	0	(3+)
44. Get irritated easily	0	0	0	0	0	(4-)
45. Spend time reflecting on things	0	0	0	0	0	(5+)

(Continued)

	Very Inaccurate	Moderately Inaccurate	Neither Accurate Nor Inaccurate	Moderately Accurate	Very Accurate	
46. Am quiet around strangers	O	O	O	O	O	(1-)
47. Make people feel at ease	O	O	O	O	O	(2+)
48. Am exacting in my work	O	O	O	O	O	(3+)
49. Often feel blue	O	O	O	O	O	(4-)
50. Am full of ideas	O	O	O	O	O	(5+)
Note: These five scales were developed to measure the <i>Big-Five</i> factor markers reported in the following article: Goldberg LR (1992). The development of markers for the <i>Big-Five</i> factor structure. <i>Psychological Assessment</i> , 4, 26-42.						

The numbers in parentheses after each item indicate the scale on which that item is scored (i.e., of the five factors: (1) Extroversion, (2) Agreeableness, (3) Conscientiousness, (4) Emotional Stability, or (5) Intellect/Imagination) and its direction of scoring (+ or -). These numbers should not be included in the actual survey questionnaire.

Appendix 3: Converting IPIP Item Responses to Scale Scores

Here is how to score IPIP scales:

For + keyed items, the response "Very Inaccurate" is assigned a value of 1, "Moderately Inaccurate" a value of 2, "Neither Inaccurate nor Accurate" a 3, "Moderately Accurate" a 4, and "Very Accurate" a value of 5.

For - keyed items, the response "Very Inaccurate" is assigned a value of 5, "Moderately Inaccurate" a value of 4, "Neither Inaccurate nor Accurate" a 3, "Moderately Accurate" a 2, and "Very Accurate" a value of 1.

Once numbers are assigned for all of the items in the scale, just sum all the values to obtain a total scale score.