ASCEND

MATCH V

technical manual
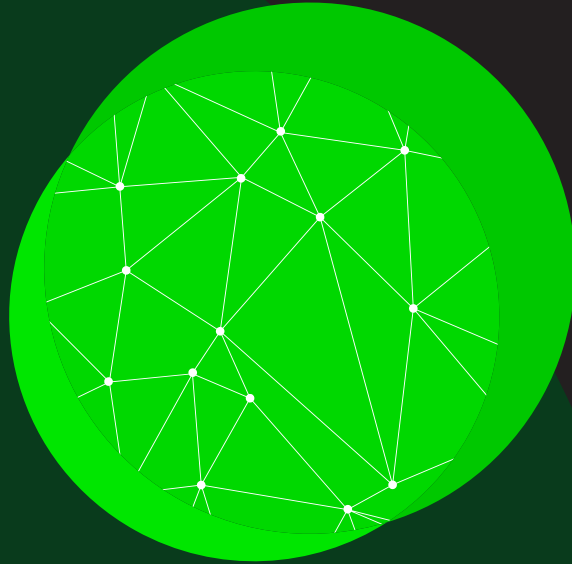
ASSESSIO

MATCH-V TECHNICAL MANUAL

TABLE OF CONTENTS

LIST OF TABLES

LIST OF FIGURES

1. EXECUTIVE SUMMARY

Human history is replete with examples of highly motivated individuals who felt deeply compelled to do something that ultimately changed the world. Equally, leaders in all organizations ponder how to engage people who seem to lack motivation. It is therefore no surprise that understanding what drives human motivation has attracted much attention from philosophers, psychologists, and business leaders. The argument goes: if we can understand what motivates someone, their talents, skills, and expertise can be more readily developed and applied. The MATCH-V was designed to achieve this goal.

The MATCH-V is a short and engaging psychometric assessment to measure an individual's core motivations and psychological needs. The MATCH-V takes only 10 minutes to complete and provides rich insight into the types of tasks, activities, and organizational cultures that are attractive to respondents and that they are motivated by. Built upon the *Self-Determination Theory* (Gagné & Deci, 2005), the assessment measures seven *needs*:

1. Need for Change
2. Need for Status
3. Need for Pleasure
4. Need for Achievement
5. Need for Curiosity
6. Need for Connection
7. Need for Integrity

The MATCH-V was carefully developed by Deeper Signals' team of I/O psychologists and data scientists. Collecting data on over 12,000 U.S. and Swedish working adults, the MATCH-V has excellent psychometric properties and has been empirically demonstrated to be a valid measure of values and human motivation. The seven MATCH-V scales display strong relationships with other measures of values and human motivation, alongside measures of personality, and work outcomes, thus demonstrating construct and concurrent validity. The MATCH-V is free of adverse impact and shows few group differences across demographic factors.

The MATCH-V is designed to help provide insights for a population of working adults in individual contributor, management, and leadership roles. The tool can be used to inform talent management decisions, coaching, team development, training, and to support organizational change. If the diagnostic is to be used for selection purposes, a local validation study must be conducted first and should not be the sole data point used in a decision-making process.

The following document outlines the MATCH-V's theoretical and scientific framework and describes the empirical methodology and analyses that went into developing the psychometric tool.

2. THEORETICAL FRAMEWORK

Mahatma Ghandhi is today revered for his compassion and humanity. His unwavering commitment to alleviating poverty and righting injustice inspired tens of millions in his native India to resist British occupation non-violently. Hundreds of millions more adopt his views of living simply, peacefully, in being fiercely committed to being truthful, and treating all beings with love and respect. "Happiness", said Ghandi, "is when what you think, what you say, and what you do are in harmony".

Ghandhi is a prime example of what we might term a 'values-led' person. Human history is replete with examples of individuals who felt deeply compelled to do what they held to be true and right, and who ultimately changed the world. In this way, values are a deep wellspring of energy that can motivate action and sustain commitment in the face of tremendous obstacles.

On the other hand, organizational history is replete with examples of managers puzzling about how to energize demotivated staff. Very often companies publish statements on their websites or walls as a means of virtue-signaling, trying to show employees that they, or customers or the environment, are valued. Just as often companies stray from their stated values and prefer the expediency of committing crimes to make money (think, for example, of VW faking emissions tests), but are castigated for it. Humans take values seriously.

It is therefore no surprise that understanding what drives human motivation has attracted much attention from philosophers, psychologists, and organizational leaders. The argument is in line with Ghandi's recipe for happiness: if we can understand what motivates someone, their talents, skills, and expertise can be harmoniously matched to work, resulting in a win-win for the company and the individual.

Understanding the motivations, goals, and values of employees has become of much importance to organizational leaders given that it is estimated that 66% of the workforce are disengaged at work, 51% are dissatisfied with their job, and 90% would gladly take a pay cut to work in a meaningful role (Achor, Reece, Kellerman, & Robichaux, 2018; Gallup, 2019; Pew Research Center, 2016). Sadly, the evidence indicates most organizations are failing to inspire and engage their employees, and their organization's productivity and growth is sluggish because of it.

If organizations are to successfully attract, attain, and retain a talented workforce, they need to better understand what motivates their people, assign them to tasks and projects that appeal to these psychological needs, and build a culture that reflects and enables the expression of such values.

It is for this reason the MATCH-V was developed.

The MATCH-V is a modern and scientific psychometric assessment that measures seven psychological *needs*. These *needs* reflect deep psychological motivations, goals and preferences that if pursued can enable the individual to experience feelings of intrinsic motivation, purpose and meaning. The MATCH-V can be used to measure an individual's core motivations, alongside measuring an organization's culture if deployed to an entire workforce. The MATCH-V can be used by I/O psychologists, practitioners, and leaders to inform talent management strategies, improve coaching and development, and support organizational change and strategic initiatives. The MATCH-V offers scientific and data-driven insights about an organization's talent to help people live more meaningful lives, make the workplace a more satisfying environment, and make organizations more productive.

The remaining sections of this chapter further describe the psychological literature of human values and motivation, organizational culture and the importance of value congruence between the firm and its

employees, and the MATCH-V theoretical model. Later chapters provide information to aid the interpretation of scores, alongside detailing empirical evidence of the tool's psychometric rigor.

2.1. HUMAN MOTIVATION & SELF-DETERMINATION THEORY

The study of human motivation has long been a focus of the psychological community. While researchers have explored the topic from a variety of perspectives and approaches the question remains the same: how are individuals both similar and different in what motivates, inspires, or drives action, or what their needs are?

At the highest level, we understand that human motivation derives either from *intrinsic* or *extrinsic* factors. Intrinsic motivation refers to doing something because it is inherently interesting or enjoyable (e.g. meeting friends, eating a memorable meal), whereas extrinsic motivation refers to doing something because it leads to a separable outcome such as a monetary reward (Ryan & Deci, 2000). People are reliably different when it comes to the degree they respond to extrinsic factors or not; some don't care much for money, while others react strongly to its supply and withdrawal. However, it is the mystery of intrinsic motivation that is often of greatest interest, given its association with many life and work outcomes, and ability to persist despite contextual and environmental changes and challenges (Deci & Ryan, 2010; Gagné & Deci, 2005).

Given this, the question that researchers and practitioners are most interested in answering is how can intrinsic motivation be fostered? This interest has generated to a bewildering variety of models, theories and taxonomies. Of the many theories and frameworks proposed in the scientific community, *Self-Determination Theory* (SDT) has received significant support due to its explanatory power and empirical support (Gagné & Deci, 2005). SDT also has the advantage of parsimony; it posits that there are three base needs that when satisfied foster intrinsic motivation and initiate meaningful, self-determined behavior. These are *Autonomy, Competence* and *Relatedness.* These needs operate at a macro level of human psychology and can be broadly described as "innate psychological nutriments that are essential for on-going psychological growth, integrity, and well-being" (Ryan & Deci, 2000, p.229). The three needs can therefore be understood as essential for optimal psychological functioning and wellbeing.

The *Need for Autonomy* can be described as "the need to self-organize experience and behavior to have activity be concordant with one's integrated sense of self" (Deci & Ryan, 2000, p.231). Alternatively, it describes the extent to which individuals have the ability to have agency, the ability to make one's own decisions, and have ownership over one's life. It shares a conceptual overlap with internal locus of control, whereby individuals have volition and agency; they are able to influence the direction of their lives, rather than be subject to external factors that are out of one's control.

The *Need for Competence* can be described as "the need to feel a sense of mastery over the environment and to develop new skills" (Van den Broeck, Ferris, Chang, & Rosen, 2016; pp. 1198). The need for competence arises from the satisfaction and well-being derived from being able to exercise, as well as improve one's capabilities, skill sets, and knowledge (Ryan & Deci, 2000). This need is most readily met when the presented challenge is not significantly above or below one's current level of ability, similar to development concepts such as Vygotsky's "zone of proximal development" (Vygotsky, 1978).

The *Need for Relatedness* can be described as "the need to feel belongingness and connectedness with others" (Ryan & Deci, 2000). This need explains an individual's desire to build and maintain relationships with others, feel a sense of belonging, and the exchange of positive emotions and reciprocal behaviors (Van den Broeck et al., 2016). While it is hypothesized that such desires are a product of humans' evolutionary history, it is undisputed that social relationships and dynamics are an integral part of human motivation given the plethora of theories that seek to explain the positive and negative impact of such factors on human, group, and society behavior (Haslam, Eggins, & Reynolds, 2003).

SDT is a macro-theory of human motivation whose key proposition is that: to the extent the three basic needs are enabled, the more likely the individual will experience intrinsic motivation. When it comes to understanding SDT's practical utility, a recent meta-analysis of 119 independent samples found that the three needs are empirically linked a multitude of critical work outcomes — job performance, job satisfaction, organizational citizenship behavior, counterproductive work behavior, burnout, engagement, and so on (Van den Broeck et al., 2016). Furthermore, others have demonstrated its incremental validity in the prediction of work outcomes compared to other models of human motivation (Gagné & Deci, 2005). For these reasons we adopted SDT as the framework of choice when attempting to conceptualize, describe, and predict motivation at work.

2.2. INDIVIDUAL DIFFERENCES & BASIC HUMAN VALUES

While the factors that can influence and shape the satisfaction of SDT's three broad needs are varied, operationalizing them through a more focused lens of attitudes and values overcomes the "bandwidth-fidelity" problem between broad and narrow conceptualizations of human motivation. In turn, this helps create specific actions, decisions, and interventions to target and satisfy these needs. Thus we turn to personal values as a more proximal set of concepts that can be more readily measured and engaged (Diefendorff & Chandler, 2010).

Where personality theory describes behavioral dispositions and tendencies, personal values describe individual differences in goals, ambitions, and motivations that transcend specific situations (Parks-Leduc, Feldman, & Bardi, 2014). Values represent underlying goals and ambitions, and they act as guideposts or decision-weights, shifting the calculus of choosing more or less favorable behaviors. Thus people who value status and recognition readily pay money for status-signaling objects (diamond watches or expensive cars) that others may view as frivolous or irrelevant.

The extent to which they influence behavior is dependent on how easily a value is activated (Verplanken & Holland, 2002). The more an individual places importance on a given value, the more readily activated it is, and likely to result in influencing behavior (Schwartz, 2006). Finally, the more an individual can live according to these values, and have them satisfied, the more likely they are to experience positive affect and engagement at work (George & Jones, 1996; Rich, Lepine, & Crawford, 2010). Altruists who value social justice are more likely to find that value activated in organizations dedicated to social justice than investment banking.

Of the attempts to develop a theoretical model of values akin to the Five Factor Model of personality, two models have been proposed. First, Schwartz's (1994) Basic Human Values framework has been one of the most influential and widely studied. The model contains ten narrow values that are organized into four higher-order values (see *Figure 1* for a comprehensive review; Schwartz, 2012). Second, Holland's model of Vocational Interests posits six behavioral preferences that are aligned with different career and job types (Holland, 1959). These are *Realistic, Investigative, Artistic, Social, Enterprising* and *Conventional*, and have been widely adopted by the U.S. government to categorize jobs and the labor market (i.e. O*NET). Empirical research has demonstrated that when these vocational values have been met, the individual is likely to display high levels of performance, satisfaction, and engagement (Kieffer, Schinka, & Curtiss, 2004; Schnell, Höge, & Pollet, 2013).

Given mechanisms by which values influence and sustain behavior and the empirical research that demonstrates their ability to predict critical work outcomes, the use of values as a means to engage SDT's three macro psychological needs is justified. We outline our integration of these two models in our approach to creating a measure of values, below.
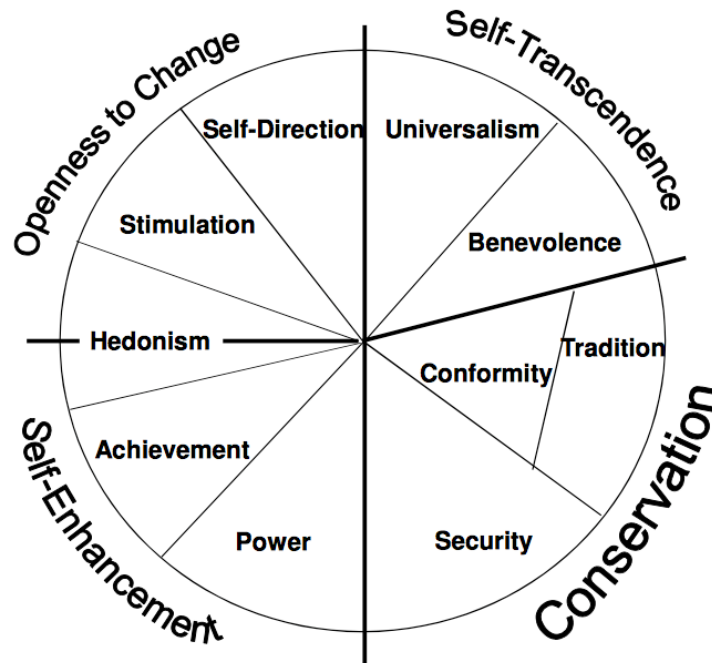
Figure 1: Schwartz' Model of Basic Human Values. Reproduced from (Schwartz, 2012).

2.3. ORGANIZATIONAL CULTURE & PERSON-ENVIRONMENT FIT

Organizational culture may be defined as the shared basic assumptions, values, and beliefs that characterize a setting and are taught to new incumbents as the proper way to think and feel, communicated by the myths and stories people tell about how the organization came to be the way it is as it solved problems associated with external adaptation and internal integration
(Schneider, Ehrhart, & Macey, 2013). In other words, organizational culture describes "how things get done around here". Organizational cultures differ between organizations and industries, and ideally, culture reflects and supports the organization's strategy. Accordingly, culture is often found to explain why some organizations are more productive and effective than others (S. J. Hogan & Coote, 2014; Ogbonna & Harris, 2000). Continuing this, 94% of executives believe that distinct workplace culture is important to business success, only 19% of executives believe their company has the 'right culture' (Bersin, Geller, Wakefield, & Walsh, 2016). It is therefore no surprise that organizations invest heavily on building, improving and maintaining cultures.

Organizational culture is not just important for incumbents. In fact, culture is a powerful mechanism that externally communicates the organization's values, thereby shaping its reputation — thereby influencing perceptions of stockholders, potential clients, and job applicants. From such a perspective, organizational culture can be understood as communicating the firm's brand (Hatch & Schultz, 1997). A strong and desirable culture that is communicated externally increases stock prices (Chamberlain, 2015), decreases cost per hire (Guletkin, 2011), improves the number of qualified individuals applying for jobs, attracts diverse candidates, and drives employee referrals (Kennedy & Hill, 2016).

2.4. VALUE CONGRUENCE

Given that organizational culture describes a group's shared goals, assumptions, and beliefs, culture can be understood through the lens of values theory. Specifically, a culture reflects the aggregated values of a group. At this level, shared values create established social norms around appropriate and inappropriate behaviors,

prototypical groups roles, and a clear in-/out-group identity that enforces a sense of social connection while also continuing to orientate, influence and motivate individual behavior towards similar goals (Ashforth & Mael, 1989; Cornelissen, Haslam, & Balmer, 2007; Haslam, Postmes, & Ellemers, 2003). From this perspective, if an individual is to "fit" within a group and its culture there must be *value congruence* (Kristof, 1996).

Value congruence can be described as the compatibility of values between an individual and other organizational entities such as supervisors, interviewers, coworkers, work group, and the entire organization (Chatman, 1989; Kristof, 1996). Value congruence is often examined alongside theories of person-organization fit (Westerman & Cyr, 2004), which postulates that where this is a congruence between an individual's values, personality, and expertise and the organization's culture and strategy, there will be increased levels of job performance, engagement, intrinsic motivation and citizenship behaviors, alongside reduce tenure and counterproductive work behaviors (Bao, Dolan, & Tzafrir, 2012; Chatman, 1989; De Cooman et al., 2009; Kristof, 1996; Westerman & Cyr, 2004). Influenced by this research, it is now best practice for hiring managers and leaders to maximize "fit" when selecting new employees, building teams and undergoing organizational transformation.

Despite organizational culture being valued by all stakeholders, only one in three executives report understanding their culture (Bersin et al., 2016). As such, frameworks and tools to help leaders map their culture is mission critical due to its impact on individual and group performance.

2.5. THE MATCH-V MODEL

Given the literature reviewed and the challenges facing organizations, the MATCH-V was developed to solve three important issues. The first is to help organizations understand what motivates their people. Through understanding an individual's values, goals, and beliefs, leaders can shape work design and the environment to better satisfy these needs and evoke intrinsic motivation and engagement to lead to increased job satisfaction and performance. The second issue the MATCH-V solves is to help leaders understand their organization's culture in a scientific and evidence-based way. If all leaders can agree that culture needs to be carefully managed due to its impact on performance, it is imperative that they have an accurate method to first measure and diagnose the shared values and beliefs held by their workforce. The final issue the MATCH-V solves is to improve cultural fit in new and current incumbents. Talent is simply a function of person and environment (Chamorro-Premuzic, Winsborough, Sherman, Hogan, 2013), therefore it does not matter how skilled or hard working an individual is if they are not in an environment that suitably engages or motivates them.

To build a tool that could address these three issues it was critical that the MATCH-V was built upon a solid scientific framework. As described in Chapter 2.1, SDT was adopted as the central theoretical framework. That is, three macro psychological needs must be met (*Autonomy, Competence,* & *Mastery*) in order to bring about intrinsic motivation. Appreciating that these macro needs are difficult to operationalize in a way that is practically relevant to organizational leaders and practitioners, seven "micro" needs were developed. These micro needs are based on Schwartz' and Holland's values and vocational interests models (Holland, 1959; Schwartz, 1994). These models were used as inspiration given their theoretical explanatory power, body of empirical research, and practical utility. The MATCH-V was not designed to measure the full possible spectrum of human values and needs, but rather those of greatest interest and utility to organizational leaders. The seven needs measured by the MATCH-V were selected due to their explanatory power and relevance to the modern organization. We selected these seven needs through an extensive review of the psychological literature, current industry reports, and focus groups with prominent HR practitioners. *Figure 2* displays the MATCH-V model. Specifically, the seven measure "micro" needs and their relation to SDT.
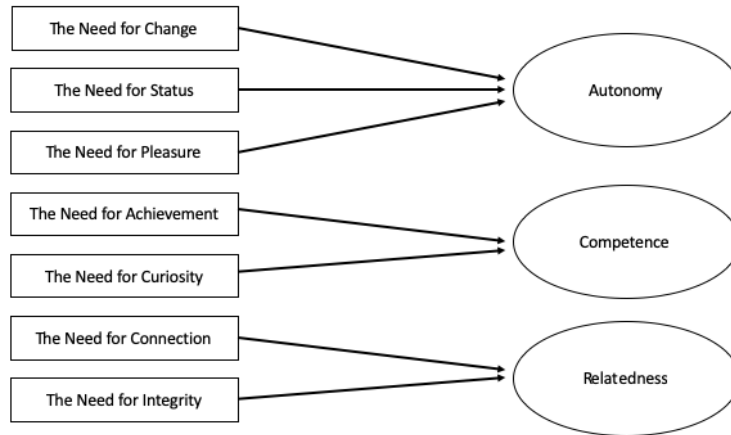
Figure 2: The MATCH-V Model.

We now briefly describe each of the seven needs, highlighting its relationship to existing values frameworks and organizational culture.

2.5.1. THE NEED FOR CHANGE

The *Need for Change* describes one's motivation to seek out novelty, variety, and change. Individuals who have a high need for change value flexibility, ambiguity, and enjoy being in a constant state of flux. They challenge conventions, social norms, and do things differently. At a cultural level, organizations with a high need for change could be described as innovative or agile. Organizations with a low need for change could be described as traditional or conventional. This need shares conceptual overlap with Schwartz' Stimulation, Conformity, Security, and Tradition values.

2.5.2. THE NEED FOR STATUS

The *Need for Status* describes one's motivation for power, influence, and prestige. Individuals who have a high need for status value being recognized and receiving praise, leading others, and being in control. At a cultural level, organizations with a high need for status could be described as hierarchical, top down, or prestige focused. Organizations with a low need for status could be described as egalitarian and humble. This need shares conceptual overlap with Schwartz' Power value.

2.5.3. THE NEED FOR PLEASURE

The *Need for Pleasure* describes one's motivation for hedonism, joy, and gratification. Individuals who have a high need for pleasure value having fun, enjoying the finer things in life, and not taking themselves seriously. At a cultural level, organizations with a high need for pleasure could be described as spontaneous, informal and playful. Organizations with a low need for pleasure could be described as being serious, formal, and professional. This need shares conceptual overlap with Schwartz' Hedonism value.

2.5.4. THE NEED FOR ACHIEVEMENT

The *Need for Achievement* describes one's motivation for gaining new skills, achieving ambitious goals, and pushing oneself to be successful. Individuals who have a high need for achievement value personal and professional growth, development opportunities, and gaining a strong sense of competence. At a cultural level, organizations with a high need for achievement can be described as driven, ambitious, and highly goal oriented. Organizations with a low need for achievement can be described as relaxed, calm, and content. This need shares conceptual overlap with Schwartz' Achievement value.

2.5.5. THE NEED FOR CURIOSITY

The *Need for Curiosity* describes one's motivation for learning and understanding the world. Individuals who have a high need for curiosity value the arts and science, experiencing new cultures, and diversity in thought, demographics, and experience. From a cultural perspective, organizations who have high levels of this need can be described as curious, open to change, and liberal. Organizations who have low levels of this need can be described as pragmatic, secure, and conservative. This need shares a conceptual overlap with Schwartz' Self-Direction and Universalism values.

2.5.6. THE NEED FOR CONNECTION

The *Need for Connection* describes one's motivation for affiliation, social relationships, and connection. Individuals who have a high need for connection value belonging to a group, networking with others, and having lots of social interaction. At a cultural level, organizations who have a high need for connection can be described as collaborative, team oriented, and relational. Organizations who have a low need for connection could be said to encourage independence, personal responsibility, and trust people to work alone. This need shares conceptual overlap with Schwartz' Benevolence value.

2.5.7. THE NEED FOR INTEGRITY

The *Need for Integrity* describes one's motivation to live according to moral principles, honesty, and to help others. Individuals who have a high need for integrity value living an ethical life, doing things to support and care for others, and hold themselves to a high standard. At a cultural level, organizations who have a high need for integrity can be described as being respectful, doing what is right and not what is expedient, and principled. Organizations that are low on this need can be described as flexible, adaptive, and willing to do what it takes to achieve its goals. This need shares a conceptual overlap with Schwartz' Universalism, Benevolence, and Tradition values.

2.6. USES & APPLICATIONS OF THE MATCH-V

Once completed, the MATCH-V reports are generated for individuals. These reports reflect their standing on each of the seven needs and indicate what activities and environments are most likely to motivate, engage, and promote intrinsic motivation. There is no "right profile". Instead, results should be interpreted based on the context for which the individual is assessed in. When interpreting results, practitioners are encouraged to look for general themes in what motivates the individual or describe the culture (i.e. autonomy, competence, or relatedness themes), alongside the interaction between needs (i.e. high need for achievement and high need for connection).

While there are numerous ways the MATCH-V can be used, there are six uses cases where the tool will be of significant value:

1. **Apply scientifically validated and unbiased insights.** Humans are biased decision makers. The MATCH-V provides scalable, bias free, and scientifically validated data to:
   - Improve employee selection and development decisions
   - Guide leadership development
   - Understand the values of an organization
   - Shape team composition
   - Help organizations harness the cognitive diversity of its people

2. **Empower change through self-awareness.** The MATCH-V enables the individual to gain insight into their interests and motivations, helping target effort in the most appropriate areas. Providing insight and understanding of internal states has been shown to have meaningful effects on change, in-group identification and inter-personal liking.

3. **Measure organization culture and culture fit**. The MATCH-V can be used to help organizations understand the values of the workforce, thereby gaining a deep understanding of their culture.

4. **Identify critical gaps for training and development.** Most organizations practice a "one size fits all" approach to development, although of course this actually fits no one. Not everyone is open to change, or approaches development in the same way nor even needs the same amount of training. The MATCH-V helps personalize development plans.

5. **Demonstrate the effectiveness of interventions.** As the old adage has it, you cannot manage what you don't measure. The MATCH-V helps individuals track progress towards their behavioral goals, and organizations understand how their culture is changing (or not).

6. **Leverage data to help organizations understand their workforce.** All organizations have problems. Most of those problems are to do with people. And most people problems are due to a lack of understanding. The MATCH-V can help organizations better understand their people and its cognitive diversity.

3. INTERPRETING THE SCALES

In this chapter we outline and describe the low and high ends of each scale to help users and practices in interpreting MATCH-V scores.

3.1. THE NEED FOR CHANGE

The *Need for Change* scale describes the extent to which individuals are motivated to seek out change, novelty, and variety, as opposed to tradition, structure, and familiarity.

Individuals who score high on this scale can be described as someone who:
- Enjoys change and unpredictable environments
- Is comfortable without clear direction or instructions
- Is willing to take risks and try new things
- Supports and practices creativity and innovation at work

Individuals who score low on this scale can be described as someone who:
- Practices and upholds traditions
- Prefers predictability and familiarity
- Observes social norms and conventions
- Seeks out and establishes stability

3.2. THE NEED FOR STATUS

The *Need for Status* scale describes the extent to which individuals are motivated by gaining social prestige, recognition, and power, as opposed to being cooperative, valuing consensus, and building equitable relationships.

Individuals who score high on this scale can be described as someone who:
- Is drawn to positions of power and being in charge
- Has a strong desire to be recognized for their achievements and talents
- Wants to get ahead rather than get along
- Supports and practices hierarchical relationships and structures at work

Individuals who score low on this scale can be described as someone who:
- Wants to fit in and get along with others
- Preserves relationships over self-interests
- Operates in a way that is humble and respectful to others
- Does things without seeking for recognition or praise

3.3. THE NEED FOR PLEASURE

The *Need for Pleasure* scale describes the extent to which individuals are motivated by instant gratification, enjoyment, and playfulness, as opposed to being restrained, frugal, and formal.

Individuals who score high on this scale can be described as someone who:
- Is fun and pursues joyful activities
- Informal and light-hearted
- Has a "work-hard play-hard" approach to life
- Enjoys luxuries and the finer things in life

Individuals who score low on this scale can be described as someone who:
- Displays constraint and delays gratifications

● Follows social conventions and behaves appropriately at all times
● Has a frugal approach to life, uninterested in luxuries
● Focused on the task at hand and not easily distracted by other more exciting opportunities

3.4. THE NEED FOR ACHIEVEMENT

The *Need for Achievement* describes the extent to which individuals are motivated by achieving ambitious goals, gaining mastery, and becoming an expert, as opposed to being satisfied, laid-back, and more interested in other pursuits.

Individuals who score high on this scale can be described as someone who:
● Is goal-driven and ambitious
● Is intentional about how they invest their time and energy
● Enjoys challenges and pushing themselves
● Invests heavily into their expertise, skillsets, and education

Individuals who score low on this scale can be described as someone who:
● Is driven to lead a relaxed and satisfied life
● Is unlikely to challenge themselves unless motivated by reasons other than intrinsic need to improve
● Is happy to follow the direction and opinion of others
● Has strong interests beyond their career and professional development

3.5. THE NEED FOR CURIOSITY

The *Need for Curiosity* scale describes the extent to which individuals are motivated by a need for understanding the world, other people, and knowledge, as opposed to being practical, pragmatic, and holding more conservative ideals.

Individuals who score high on this scale can be described as someone who:
● Is highly curious and inquisitive about the world
● Values differences and is interested in understanding people who are different to themselves
● Enjoys the arts and sciences
● Is creative and likes to learn new things

Individuals who score low on this scale can be described as someone who:
● Prefers what is already known and understood
● Adopts a practical and pragmatic mindset
● Requires evidence and data to convince and change their mindset
● Is likely to hold conservative ideals

3.6. THE NEED FOR CONNECTION

The *Need for Connection* scale describes the extent to which individuals are motivated by social relationships, affiliation, and working closely with people, as opposed to being independent, self-reliant, and uninterested in building a large social network.

Individuals who score high on this scale can be described as someone who:
● Enjoys working cooperatively and being part of a close-knit team
● Enjoys being surrounded by people for large amounts of time
● Is frequently interacting and sharing with others
● Builds new relationships to broaden their network

Individuals who score low on this scale can be described as someone who:

- Works best independently and left to their own resources
- Prefers having their own time and space
- Is candid and transparent with others
- Does things their own way, rather than following the group

3.7. THE NEED FOR INTEGRITY

The *Need for Integrity* scale describes the extent to which individuals are motivated by living closely to their own moral principles, displaying altruism, and holding themselves and others to high standards. This is opposed to being flexible with one's sense of morals and ethics, likely to look after one's own, and doing what is expedient.

Individuals who score high on this scale can be described as someone who:
- Has a strong moral code
- Is altruistic, caring, and helpful towards others
- Holds themselves and others to high standards
- Has a clear sense of the right and wrong way of doing things

Individuals who score low on this scale can be described as someone who:
- Has a flexible and relative approach to what is right and wrong
- Chooses to do what is expedient and efficient, over what is the "right" way to do things
- Is willing to challenge existing norms and structures
- Is likely to put their own wellbeing before others'

4. SCALE CONSTRUCTION

The following chapter describes the process and methodology used to develop the MATCH-V assessment. We first outline our process for identifying and developing items. We then present information related to the assessment's psychometric properties.

4.1. ITEM DEVELOPMENT

A scientific and robust development process was used to create the MATCH-V assessment. First, Subject Matter Experts (SMEs) with advanced degrees in I/O psychology and psychometric assessments reviewed the scientific literature on popular values and motivation frameworks, such as SDT (Gagné & Deci, 2005), Schwartz' Basic Human Values (Schwartz, 2012), and Holland's Vocational Interests (Holland, 1959). Balancing the need for a theoretical model that was built upon credible science, while ensuring it had practical utility and can be used for individual and organizational values, seven *needs* were identified: *Change, Status, Pleasure, Achievement, Curiosity, Connection,* and *Integrity.* Theoretically, these seven needs can be organized under SDT's three dimensions of Autonomy (i.e. *Need for Change, Status* & *Pleasure*), Mastery (*i.e. Need for Achievement* & *Curiosity*), and Relatedness (i.e. *Need for Connection* & *Integrity*).

Second, utilizing this behavioral taxonomy, the SMEs generated a pool of items hypothesized to measure the most characteristic motivations, goals, beliefs, and attitudes associated with the seven needs. The initial item pool contained 160 items that were a mix of item statements (i.e. "I prefer consistency over change", "I am drawn to positions of power") and value adjectives (i.e. "Altruism", "Charity", "Security"). Participants responded to the item statements using a 4-point Likert scale to indicate whether they agree or disagree with the statement. Participants used a 4-point Likert scale to indicate whether the value adjectives were or were not personally important. A blended approach to using items and adjectives was used to ensure that the items contained face and content validity, while reducing the participants' ability to "fake good" (Meade, Pappalardo, Braddy, & Fleenor, 2018). After generating the item pool, our team of SMEs assessed each one to ensure it had face and content validity.

Third, a sample of 778 working US adults responded to each of the 160 items. Our team of psychometricians then performed statistical analyses to reduce the number of items and test for the psychometric properties for each scale (i.e. descriptive statistics, item correlations, measures of internal consistency, exploratory & confirmatory factor analysis). As a result of this process, the number of items was reduced from 160 to 70 (ten per scale). As described in the next chapter, each of seven scales has desirable psychometric properties.

Fourth, we tested the diagnostics' construct and criterion validity. To achieve this, we collected data from three samples of working adults (Sample 1 N = 411, Sample 2 N = 226, Sample 3 N = 173). All samples completed the MATCH-V assessment, alongside a battery of psychometric inventories. Specifically, measures of the Big Five, dark personality dimensions, basic human values, vocational interests, work engagement, and self-reported job performance. Collecting data from multiple samples allowed us to test the stability and generalizability of the assessment's psychometric properties and validity.

The final step involved building a normative database so that an individual's scores can be compared, benchmarked against a representative population, and tested for adverse impact. To achieve this, we collected data from a total of 10,588 working adults from the United States, the United Kingdom and Sweden. In sum, data was collected from nearly 12,000 working adults to develop and validate the MATCH-V diagnostic. The following chapters describe the results of these analyses and the psychometric properties of each scale.

4.2. DESCRIPTIVE STATISTICS, RELIABILITIES & FACTOR ANALYSIS

The descriptive statistics for the seven MATCH-V scales are presented in *Table 1*. For each scale, the mean score and its standard deviation are presented alongside the minimum and maximum scores, and an estimate of the scale's reliability.

Each item was designed to measure the characteristic motivations, goals, beliefs and attitudes associated with the seven needs. Individuals respond to items using a four-point Likert scale (for statements: Strong Disagree/Disagree/Agree/Strongly Agree; for value adjectives: Not at all important/Not important/Somewhat important/Very important). As there are 10 items per scale, the minimum score is 10 and the maximum score is 40.

The means for each scale is mostly similar, ranging between 24.23 (Need for Status) and 31.31 (Need for Integrity), and the standard deviations indicate a similar spread of scores around the mean. Using the minimum and maximum score as a reference, the means reveal that there is a slight left skew in the distribution of scores. This is not a concern, however. When inspecting histograms of each scale, it is revealed that scores are normally distributed however this occurs towards the upper end of the range of possible scores. Further, Skewness statistics for each scale do not exceed ± 1 and Kurtosis statistics are mostly close to zero.

The internal consistency of each scale, as measured by Cronbach's Alpha, is greater than .60 (ranging between .69 to .84). The internal consistency of scale ranges between "satisfactory" to "good". Although it would have been possible to achieve a higher level of internal consistency for each scale by including more items, this would have introduced redundancy and needlessly increased the length of each scale. We wanted to keep the number of items low, while ensuring as much of the behavioral domain was sampled and maintaining good convergent validity. To ensure that this assumption was empirically met, two additional analyses were conducted.

First, we studied the reliability results for each scale to identify whether removing any items would improve the scale's overall level of internal consistency. This was not possible indicating that the scales already have the optimal level of internal consistency. Second, exploratory factor analyses revealed each scale to load onto a single factor explaining between 21% (Change & Connection) to 35% (Achievement) of the variance in scores. Together, these analyses demonstrate the scales to have good levels of internal consistency.

Table 1: Descriptive Statistics & Reliabilities

Scale	N	M	SD	Med	Min	Max	Skew	Kurt	α
Need for Change	4,506	27.45	4.01	28	10	40	-.25	1.98	.69
Need for Status	2,250	24.23	4.49	24	10	40	.15	.81	.82
Need for Pleasure	2,243	26.99	3.85	27	10	40	.03	1.52	.72
Need for Achievement	4,519	27.97	5.03	28	10	40	-.15	.69	.84
Need for Curiosity	3,831	29.30	4.12	29	10	40	-.05	.69	.81
Need for Connection	3,832	29.41	3.71	29	10	40	-.16	.53	.72
Need for Integrity	2,252	31.31	3.71	31	10	40	-.48	2.58	.79

Note: M = Mean; SD = Standard Deviation; Med = Median; Min = Minimum; Max = Maximum; Skew = Skewness; Kurt = Kurtosis; α = Cronbach's Alpha.

4.3. SCALE CORRELATIONS

The correlations between MATCH-V scales are presented in *Table 2*. Overall, the scales hold moderate correlations with each other. The size of these correlations does vary across scales, however. For instance,

Change, Status, and Pleasure are most correlated with each other, suggesting a general tendency to value autonomy and independence. Similarly, a Need for Achievement is associated with a tendency to be high in Curiosity and Integrity, indicating a general disposition to value Mastery, as described by SDT. Last, Connection and Integrity are positively correlated, indicating a tendency to value affiliation, connection, and altruism.

Table 2: The Correlation between MATCH-V Scales.

	1.	2.	3.	4.	5.	6.
1. Need for Change	—					
2. Need for Status	.62	—				
3. Need for Pleasure	.61	.65	—			
4. Need for Achievement	.60	.63	.61	—		
5. Need for Curiosity	.38	.16	.41	.51	—	
6. Need for Connection	.53	.53	.52	.56	.37	—
7. Need for Integrity	.41	.31	.41	.62	.61	.61

Note: *N* = 778; all correlations are statistically significant ($p < .05$).

4.4. PRINCIPAL COMPONENTS ANALYSIS & MULTIDIMENSIONAL SCALING

To further test the factor structure of the seven scales, a Principal Components Analysis (PCA) was completed. This PCA used the composite scores listed in *Table 1* and varimax rotation to aid interpretation of results. The results from the PCA are presented in *Table 3*. Studying the displayed pattern matrix, it can be seen that three factors can be extracted from the data that represent SDT's three motivations: Component 1 and Autonomy, Component 2 and Relatedness, and Component 3 and Mastery. Each component explains an adequate amount of variance, ranging between 22% and 38%.

While some scales cross load onto Component 3 (i.e. Achievement and Integrity), this is still in line with the SDT's definition of a Mastery need (i.e. learning new things, doing them with a high standard, and doing them the right way). Further, the MATCH-V was not designed to be pure operationalization of the SDT model, rather it uses it for a theoretical framework to be a valuable tool in applied contexts.

Table 3: Principal Components Analysis of MATCH-V Scales

	Component 1	Component 2	Component 3
Need for Change	.78		
Need for Status	.86		
Need for Pleasure	.81		
Need for Achievement	.63		.42
Need for Curiosity			.93
Need for Connection		.84	
Need for Integrity		.71	.58
Sums of Squared Loadings	2.63	1.56	1.54
Variance Explained	38%	22%	22%

Note: N = 778. Factor loadings less than .40 are not shown.

To build upon, and further investigate the relationships between the seven scales, Multidimensional Scaling (MDS) was used to visualize the similarity and differences between the scales. The results in *Figure 3* further replicate the three-factor structure that is presented above. For instance, Change, Status, Pleasure, and

Achievement are clustered together, as is Connection and Integrity, and finally Curiosity does not cluster with the other scales.

Figure 3: Multidimensional Scaling of MATCH-V Scales
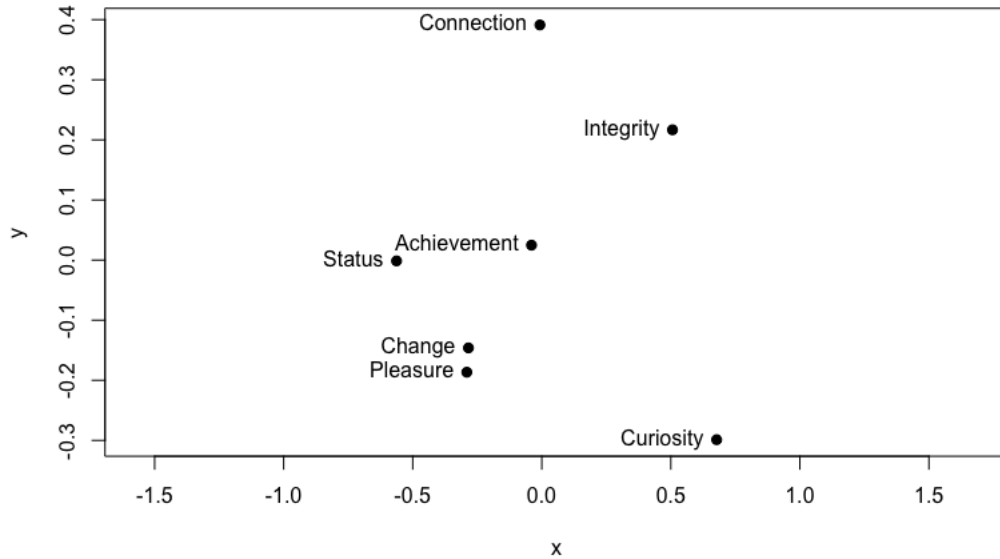
The analyses presented in this chapter demonstrate the MATCH-V scales to have stellar psychometric properties. They are normally distributed and reliable measures that have a clear and interpretable factor structure, which reflects general motivations to pursue autonomy, mastery, and connection with others.

5. VALIDITY

Chapter 4 demonstrated that the scales exhibit good internal reliability and factor structure. In this chapter, we explore the scales' construct validity.

First, we answer the question: "to what extent do scores on the dimensions correlate with well- established psychological constructs?" Where convergent validity tests the extent to which a scale correlates with other variables that are hypothesized to measure a similar behavioral domain, discriminant validity tests the extent to which a scale does not correlate with variables that measure different behavioral domains. Establishing convergent and discriminant validity is important in psychometric construction as it places the scales within a nomological network of psychological constructs. This serves as additional evidence that the scales are measuring the intended behaviors and increases the interpretability of scores. Second, we provide evidence that demonstrates the scales' concurrent validity, thereby answering the question: "to what extent do scores on the dimensions correlate with relevant work behaviors and outcomes?"

Although the below analyses demonstrate multiple forms of construct validity for the scales, further evidence is needed to confirm the scales' predictive validity. That is, their ability to predict future work outcomes. As stated by the American Psychological Association's guidelines and regulations, it is critical to demonstrate predictive validity if these scales are to be used in applied settings and inform selection or hiring decisions.

5.1. CONVERGENT & DISCRIMINANT VALIDITY

The below section describes the measures used to test the convergent and discriminant validity of the scales, alongside the presentation and interpretation of these analyses. To test the scales' convergent and discriminant validity, we chose inventories that were related to the assessment's theoretical model, and widely validated within research and applied contexts.

5.1.1. MEASURES

Assessio "Measuring and Assessing individual Potential - Extremes" Inventory (MAP – X; Akhtar, Ort, Winsborough, & Chamorro-Premuzic, 2019)
Assessio's MAP-X assessment is a personality inventory based on the DSM-5's model of personality disorders. Using the Five-Factor Framework of personality, the MAP-X measures the "dark side" of personality. The MAP-X inventory can be used for screening and selection to predict workplace behavior, at the individual contributor, manager, and leader level. The technical manual reports the assessment to have optimal levels of internal reliability, robust factor structure, and hold good concurrent validity with other psychological constructs and work outcomes.

The Dark Triad Dirty Dozen (Jonason & Webster, 2010)
The Dirty Dozen is a 12-item inventory for The Dark Triad of personality. The Dark Triad represents three broad malevolent and agentic dimensions of personality: Psychopathy, Narcissism, and Machiavellianism. Individuals who score highly on these three dimensions of personality are likely to be callous, uncaring, and selfish (Psychopathy), egotistical and over-confident (Narcissism), and manipulative and exploitative (Machiavellianism). These dimensions have been found to predict job performance, engagement, and work-related behaviors (Furnham, Richards, & Paulhus, 2013). Participants responded to each item using a five-point Likert scale (Strongly Disagree / Disagree / Neutral / Agree / Strongly Agree). Each scale was found to have acceptable levels of internal consistency ($\alpha > .70$).

The Deeper Signals Core Drivers Diagnostic (Akhtar, Ort, Winsborough & Premuzic, 2019)
The Deeper Signals Core Drivers (CD) diagnostic consists of 60 forced-choice adjective pairs. The assessment requires individuals to choose adjectives that best describe them. It consists of six dimensions that are based on the Five Factor Model of personality (Donnellan, Oswald, Baird, & Lucas, 2006). These are: Outgoing

(Extraversion-Sociability), Drive (Extraversion-Proactivity), Considerate (Agreeableness), Disciplined (Conscientiousness), Stable (Emotional Stability) & Curious (Openness). The scales display good levels of internal consistency (α >.70), and a high level of convergent validity with other measures of the Five Factor Model (r > .50), and other psychometric inventories. Adjective-based assessments such as the CD offer improvements to traditional statement-based assessments as they sample different aspects of personality dimensions (i.e. reputation), are easier to complete, and harder to fake (Meade et al., 2018).

The Hogan Personality Inventory: International Personality Item Pool Form (HPI; (Goldberg et al., 2006; Hogan & Hogan, 2007)
This inventory is a non-commercial version of the HPI — a popular personality assessment used in selection and development contexts. The HPI has been found to predict a range of relevant work outcomes, such as job performance, leadership effectiveness, and innovation (for a review, see Akhtar, Humphreys, & Furnham, 2015). The HPI measures seven behavioral dimensions: Adjustment, Ambition, Sociability, Interpersonal Sensitivity, Prudence, Inquisitiveness, and Learning Approach. The inventory consists of 70 items, with participants responding to each item using a five-point Likert scale (Strongly Disagree / Disagree / Neutral / Agree / Strongly Agree). The average correlation between the HPI and HPI scales is .70, suggesting a high level of convergent validity between the commercial and non-commercial version of the assessment.

The O*NET Vocational Interests Profiler – Short Form (Rounds, Su, Lewis, & Rivkin, 2010)
This inventory contains 50 items that measures an individual preference across the six vocational interests outlined by Holland (1959): *Realistic, Investigative, Artistic, Social, Enterprising* and *Conventional*. Items ask individuals to indicate how much they would enjoy performing certain tasks (i.e. "Build kitchen cabinets") using a 4-point Likert scale. The inventory has satisfactory psychometric qualities and is used widely in career guidance, job selection and career development contexts.

The Schwartz Basic Values Inventory (Schwartz, 1992)
The Schwartz Basic Values inventory contains 45 value adjectives that measure 10 basic values: *Power, Achievement, Hedonism, Stimulation, Self-Direction, Universalism, Benevolence, Tradition, Conformity* and *Security.* Participants rate each value indicating on an 8-point Likert scale how much of a life-guiding principle the value is. The ten values have been found to be replicated in a variety of different cultures (Schwartz, 2012), and the inventory has been found to have good psychometric properties (Lindeman & Verkasalo, 2005).

5.1.2. CONVERGENT & DISCRIMINANT VALIDITY RESULTS
The following sections describe the convergent and discriminant validity of the MATCH-V assessment. Attention is paid to highlighting and interpreting the largest correlations. We first discuss how the MAP-X correlates to assessments based on the Five-Factor Model (e.g. the Core Drivers & HPI), before discussing relationships held with measures of dark dispositions (e.g. the MAP-X & Dark Triad), and other value frameworks (e.g. Schwartz Basic Values & Vocational Interests).

Table 4 displays the correlations between the MATCH-V and measures of the Five Factor Model of personality, specifically the Hogan Personality Inventory and the Core Drivers. Studying the correlations, it can be seen that the MATCH-V holds many statistically significant correlations with the personality measures. For example, a *Need for Change* is associated with the tendency to be outgoing, driven, flexible and impulsive and curious. *Need for Status* is associated with a strong disposition to be driven and self-assured. *Need for Pleasure* is associated with impulsivity, a disregard for rules and systems, and sociable disposition. *Need for Achievement* is associated with a tendency to be ambitious, conscientious and task focused. *Need for Curiosity* is associated with a tendency to be inquisitive, intellectual and open to new experiences. *Need for Connection* is associated with being interpersonally sensitive, friendly, and emotional stable. Finally, a *Need for Integrity* is associated with the tendency to be empathetic, altruistic and well adjusted. These results

place the MATCH-V within a taxonomy of personality dimensions, alongside build a behavioral profile of individuals based on the MATCH-V scores.

Table 4: The Correlation between the MATCH-V, Core Drivers & HPI

Scale	Change	Status	Pleasure	Achievement	Curiosity	Connection	Integrity
Adjustment	.06	-.15	-.17	.03	.13	.30*	.47*
Ambition	.03	.09	.04	.31*	.37*	.26*	.21*
Sociability	.69*	.61*	.64*	.35*	.20*	.52*	.47*
Interpersonal Sensitivity	-.07	-.14	-.10	.16	.37*	.40*	.29*
Prudence	-.42*	-.40*	-.39*	-.08	.11	.06	.07
Inquisitive	-.03	-.17	-.19	.11	.43*	.01	-.04
Learning Approach	-.21*	-.20	-.10	.17	.59*	-.04	-.04
Agreeableness	-.30*	-.32*	-.33*	-.16*	.16*	.05	.12*
Conscientiousness	-.36*	-.20*	-.26*	.11*	.07	.03	.09
Drive	.37*	.48*	.36*	.42*	.20*	.30*	.27*
Extraversion	.30*	.36*	.29*	.28*	.25*	.47*	.30*
Openness	.19*	.04	.10*	.09	.37*	.09	.17*
Emotional Stability	.06	.12*	-.07	.27*	.22*	.25*	.24*

Note: HPI *N* = 104, Core Drivers *N* = 411; * *p* < .05.

Table 5 contains the correlations between the MATCH-V and two measures of dark side personality dimensions, The Dark Triad and the MAP-X. It can be seen that the three Dark Triad scales are positively correlated with the *Need for Change, Status, & Pleasure*. This is in line with the scales sampling attitudes and values associated to autonomy, independence, and advancing one's own goals and interests. Continuing this, these three *Needs* are negatively correlated with extreme Agreeableness, Conscientiousness, and Emotional Stability and positively correlated with extreme Extraversion and Openness. These findings indicate that individuals who value Change, Status and Pleasure have a tendency to behave in agentic and self-serving ways when under stress.

The *Need for Achievement* was associated with Narcissism, and extreme Conscientiousness and Extraversion, suggesting that under stress such individuals are likely to be overconfident and perfectionistic. The *Need for Curiosity* was negatively correlated with Psychopathy, while positively correlated with extreme Agreeableness, Conscientiousness, Emotional Stability, and Extraversion. These findings indicate that under stress, individuals who have a strong need for curiosity may be oversensitive, diligent, and over rely on relationships. The *Need for Connection* was correlated with measures of Narcissism and extreme Extraversion, suggesting that such individuals are confident, grandiose, and likely seek out the attention of others.

Finally, the *Need for Integrity* was correlated with Narcissism, Extreme Agreeableness, Extreme Conscientiousness, and Extreme Extraversion. In sum, the reported correlations demonstrate that the MATCH-V holds many relationships with dark or maladaptive behavioral dispositions. Such relationships further advance the interpretation of MATCH-V scores and profiles as they suggest how an individual may behave under stress or when they are not sufficiently managing their reputation.

Table 5: The Correlation between the MATCH-V, the Dark Triad, and the MAP-X

Scale	Change	Status	Pleasure	Achievement	Curiosity	Connection	Integrity

Machiavellian	.57*	.57*	.55*	.16	-.13	.17	.13
Psychopathy	.59*	.51*	.50*	.05	-.22*	.12	.10
Narcissism	.62*	.63*	.62*	.23*	-.07	.41*	.33*
Agreeableness	-.34*	-.40*	-.34*	-.04	.38*	.08	.16*
Conscientiousness	-.31*	-.23*	-.37*	.12*	.15*	.07	.22*
Emotional Stability	-.35*	-.38*	-.50*	-.10	.22*	-.04	.05
Extraversion	.49*	.40*	.51*	.50*	.42*	.79*	.72*
Openness	.37*	.22*	.30*	-.18	-.19	.17	.10

Note: Dark Triad *N* = 106, MAP-X *N* = 305; * *p* < .05.

Table 6 displays the correlation between the MATCH-V and two values inventories: Schwartz' Basic Values and Rounds' Vocational Interests Profiler, which measures Holland's model of vocational interests (i.e. RIASEC; Holland, 1959; Rounds et al., 2010; Schwartz, 1992). The MATCH-V was found to hold statistically significant and positive correlations with virtually all of the Schwartz and Rounds scales. This demonstrates the MATCH-V to have good convergent validity with the two popular frameworks for conceptualizing individual values and motivations. Further the magnitude of these correlations varies and are stronger for constructs that share theoretical overlap and weaker for those constructs that do not. Thus, providing evidence of discriminant validity. Given this, there are a number of notable correlations that are worth highlighting:

- The *Need for Change* is correlated to Stimulation and Enterprising values.
- The *Need for Status* is correlated with Power and Achievement values.
- The *Need for Pleasure* is correlated with Hedonism and Stimulation values.
- The *Need for Achievement* is correlated with Achievement and Enterprising values.
- The *Need for Curiosity* is correlated with Self-Direction and Universalism values.
- The *Need for Connection* is correlated with Benevolence, Tradition, and Social values.
- The *Need for Integrity* is correlated with Universalism, Benevolence, and Tradition values.

Table 6: The Correlation between MATCH-V, Basic Values, and Vocational Interests

	Change	Status	Pleasure	Achievement	Curiosity	Connection	Integrity
Power	.64	.80	.67	.66	.35	.58	.49
Achievement	.54	.62	.63	.64	.46	.62	.58
Hedonism	.45	.38	.50	.42	.44	.43	.48
Stimulation	.67	.60	.71	.55	.55	.55	.52
Self-Direction	.26	.04	.27	.23	.57	.24	.45
Universalism	.34	.14	.33	.31	.62	.41	.64
Benevolence	.28	.19	.37	.37	.50	.51	.69
Tradition	.39	.40	.41	.54	.37	.58	.68
Conformity	.35	.36	.43	.44	.37	.51	.60
Security	.39	.37	.48	.47	.39	.47	.55
Realistic	.35	.34	.39	.40	.23	.32	.33
Investigative	.28	.24	.41	.27	.36	.31	.34
Artistic	.37	.29	.42	.33	.37	.30	.34
Social	.52	.52	.52	.54	.36	.61	.55
Enterprising	.64	.68	.67	.65	.38	.56	.43
Conventional	.49	.58	.54	.55	.29	.46	.38

Note: Basic Values *N* = 217, Vocational Interests *N* = 209; all correlations are statistically significant (*p* < .05)

5.1.3. SUMMARY OF CONVERGENT & DISCRIMINANT VALIDITY EVIDENCE

The presented analyses effectively demonstrate that the MATCH-V scales have good convergent and discriminant validity. Not only do these analyses place the scales within a psychological taxonomy of normal and maladaptive personality dispositions, alongside two frameworks of personal values and career interests, the strong correlations provide evidence that the items are measuring the desired behavioral domains and overlap with adjacent psychological constructs.

5.2. CONCURRENT VALIDITY

The following section describes the concurrent validity of the diagnostic. We first describe the measures used to test for concurrent validity and then present correlations between the MATCH-V assessment and these measures. We then conclude with an interpretation and discussion of these results.

5.2.1. MEASURES

The Utrecht Work Engagement Survey-9 items (UWES-9; Schaufeli & Bakker, 2006)
The UWES-9 is a 9-item scale measuring work engagement. It is a shorter version of the original 17-item UWES that characterizes work engagement by three subscales: Vigor, Dedication, and Absorption, which can be totaled to produce a single work engagement score — representing the extent to which an individual is cognitively, emotionally, and physically engaged with, and motivated by, their work. Participants respond to each item using a frequency 7-point Likert-scale (1 = Never to 7 = Always). Work engagement has been found to hold a positive relationship with a variety of organizational measures of performance (Saks, 2006).

Counter Productive Work Behaviors (Bennett & Robinson, 2000)
Counterproductive behaviors (CWBs) describe employee behavior that goes against the interests of an organization and its incumbents. This can include behaviors such as absenteeism, abuse towards others, bullying, loafing, incivility, fraud, sexual harassment, and sabotage (Spector et al., 2006). To measure CWBs we used the 18-item CWB checklist that was developed by Bennet and Robinson (2000). The checklist contains 18 specific CWBs and participants rated the frequency of which they have displayed a given behavior (0 = Never, 7 = Daily). The scale was found to have acceptable levels of internal consistency and has been used extensively in research contexts.

Self-Reported Job Performance
A 5-item job performance scale was created by the Deeper Signals team. Participants indicated the number of promotions they had received in the last two years, alongside the frequency to which they:
- Planned their work so that it was done on time.
- Performed their work well with minimal time and effort.
- Collaborated well with others.
- Met or exceeded what their job demands from them.

Participants rated themselves on how frequently they display the above behaviors using a 1 to 5 Likert scale, ranging between Never to Daily. A single job performance score was created from the sum of the five items. While subjective ratings of job performance can be prone to bias and are typically less accurate than supervisor or peer ratings, this data was collected to indicate the extent to which an individual believes they perform well within their role.

5.2.2. CONCURRENT VALIDITY RESULTS
Table 7 contains the correlation between the diagnostic and three measures of relevant work behaviors: CWB, work engagement, and self-reported job performance.

First, CWB was moderately correlated with *Need for Change, Status, and Pleasure*. Individuals high on these are likely to bend and break rules and engage in behaviors that are disruptive. Given that these scales were associated with low Agreeableness and Conscientiousness, such a finding is in line with existing literature (Mount, Ilies, & Johnson, 2006).

Second, Work Engagement was correlated with *Need for Change, Achievement,* and *Integrity*. These relationships can be interpreted as showing that individuals who are not satisfied with the status quo, hungry to learn and master things, while going about them in an intentional and thoughtful way are most likely to be engaged with their work.

Finally, self-appraisals of job performance were significantly correlated with *Need for Achievement, Curiosity,* and *Integrity*. This indicates that individuals who are driven by a need to grow and develop as a professional, alongside displaying curiosity and integrity are more likely to complete their work on time, exceed others' expectations, and produce high quality work. While these correlations indicate a relationship between MATCH-V scores and job performance, we acknowledge that the performance is self-reported and that further analyses should be conducted to test for criterion validity against measures of supervisor ratings and objective work outcomes.

Table 7: Concurrent Validity Results

	Change	Status	Pleasure	Achievement	Curiosity	Connection	Integrity
CWB	.32*	.52*	.41*	.20	-.29*	.07	-.17
Engagement	.55*	.35	.08	.44*	.55	.32	.53*
Job Performance	.34	.42	.33	.60*	.62*	.18	.49*

Note: N = 55; *$p < .05$.

6. GROUP DIFFERENCES & SCORE NORMALIZATION

This chapter reports on the extent to which different genders, ages, and ethnic groups have statistically significant different scores on the MATCH-V diagnostic. Understanding such differences may aid in the interpretation of feedback reports and scores. We then present the result for adverse impact simulations to demonstrate that the scales do not discriminate on the bases of age and gender. Finally, we report data on the distribution and normalization of scores.

6.1. GROUP DIFFERENCES

Independent samples *t*-tests were conducted to investigate whether males and females, under/over 45-years old, and White and Non-White individuals scored significantly different across the seven MATCH-V scales. Cohen's *d* was also computed to understand to what extent are such differences practically meaningful.

Table 8 demonstrates that there are statistically significant differences between females and males. On average, males score higher on the *Need for Change, Status, Pleasure,* and *Achievement,* while females tend to score higher on the *Need for Connection, Curiosity,* and *Integrity* scales. Although gender groups significantly differ on these scales, Cohen's *d* demonstrates that such differences are not practically meaningful. Further statistically significant differences are likely the product of the large sample used in the analyses, thereby increasing the chances of Type 1 errors.

Table 9 indicates there are statistically significant differences in average scores between individuals who are under and over 45 years old. The results demonstrate that individuals who are under 45 typically score higher on each of the seven scales. Nonetheless, these differences are not practically meaningful as evidenced by the small Cohen's *d* estimates.

Finally, *Table 10* demonstrates that there are statistically significant differences between non-white and white individuals. On average non-white individuals score higher on the *Need for Change, Achievement, Curiosity, Status,* and *Pleasure,* while white individuals score high on *Connection*. While statistically significant, Cohen's *d* estimates indicate that these differences are not practically meaningful.

To summarize, although there are statistically significant differences in MATCH-V scores between different demographic groups, such differences are small and unlikely to be practically meaningful.

Table 8: Gender Differences

	Female		Male				
Scale	N	Mean	N	Mean	*t*	*df*	*d*
Change	1,489	26.92	2,693	27.73	-6.817	3692.10***	-.20
Status	1,972	24.02	263	25.78	-5.338	314.52***	-.40
Pleasure	1,972	26.98	263	27.29	-1.147	319.66	-.08
Achievement	1,489	26.93	2,693	28.53	-10.468	3453.70***	-.32
Curiosity	3366	29.35	215	28.54	2.653	259.65**	.20
Connection	3366	29.47	215	28.60	2.952	256.13***	.23
Integrity	1,972	31.44	263	30.44	3.533	308.47***	.27

Note: *t* = *t* value, *df* = degrees of freedom, * *p* < .05, *d* = Cohen's d effect size (.00 - .19 = negligible; .20 - .49 = small; .50 - .79 = moderate; .80 <= large).

Table 9: Age Differences

	Under 45		Over 45				
Scale	N	Mean	N	Mean	*t*	*df*	*d*
Change	3,615	27.53	362	26.65	-3.551	434.30***	-.22
Status	1,635	24.42	550	23.57	-3.992	994.39***	-.19
Pleasure	1,635	27.35	550	25.96	-7.800	1012***	-.37
Achievement	3,615	27.98	362	27.30	-2.153	450.79*	-.14
Curiosity	2,380	29.50	1,111	28.84	-4.559	2186.10***	-.16
Connection	2,380	29.51	1,111	29.22	-2.129	2091.40*	-.08
Integrity	1,635	31.37	550	31.23	-.786	997.29	-.03

Note: *t* = *t* value, *df* = degrees of freedom, * *p* < .05, *d* = Cohen's d effect size (.00 - .19 = negligible; .20 - .49 = small; .50 - .79 = moderate; .80 <= large).

Table 10: Ethnic Differences

	Non-White		White				
Scale	N	Mean	N	Mean	*t*	*df*	*d*
Change	988	28.41	3,230	27.16	8.630	1665.10***	.32
Status	339	25.01	1,917	24.09	3.083	425.25***	.20
Pleasure	339	27.68	1,917	26.88	3.075	421.91***	.21
Achievement	988	29.00	3,230	27.66	7.581	1735***	.27
Curiosity	473	30.45	3,120	29.12	6.660	675.83***	.32
Connection	473	28.95	3,120	29.48	-2.870	664.76***	-.14
Integrity	339	31.65	1,917	31.25	1.578	419.9	.11

Note: *t* = *t* value, *df* = degrees of freedom, * *p* < .05, *d* = Cohen's d effect size (.00 - .19 = negligible; .20 - .49 = small; .50 - .79 = moderate; .80 <= large).

6.2. ADVERSE IMPACT SIMULATIONS

Adverse Impact (AI) can be defined as "a substantially different rate of selection in hiring, promotion, or other employment decisions which works to the disadvantage of members of a race, sex or ethnic group" (see section 1607.16 of the *Uniform Guidelines on Employee Selection Procedures,* Equal Employment Opportunity Commission, 1978). The "Four-Fifths rule" can be used to determine whether an assessment has AI. Specifically, when the "selection rate for any race, sex or ethnic group which is less than four-fifths (4/5) (or eighty percent) of the rate for the group with the highest rate will generally be regarded by the Federal enforcement agencies as evidence of adverse impact." (see section 1607.4 D; Equal Employment Opportunity Commission, 1978). Furthermore, given the Age Discrimination in Employment Act (ADEA, 1967) states that individuals over 45 years old need protection, assessments should not adversely impact younger or older individuals.

While the previous analyses demonstrated statistically significant, although not practically meaningful, group differences, AI simulations of the 4/5ths rule were conducted to further demonstrate that the five scales do not adversely impact protected groups. To test for AI, we compared the selection rate of protected groups (females & over 40-year olds) against the selection rate of non-protected groups (males & under 40-year olds). Ratios greater than or equal to .80 indicate that the assessment has no AI. AI simulations were not computed for ethnicity because of insufficient data. Ongoing research and development efforts are being made to address this.

Although organizations do not need to conduct validity studies for selection tools that do not adversely impact protected groups, it is best practice that organizations do continually test for AI and continue to build evidence of criterion validity. As such, Deeper Signals recommends that organizations who use the MATCH-V assessment pilot the tool and collect such evidence before using the diagnostic to inform their employee selection practices.

Individual differences such as personality, attitudes, and values lie on a continuum whereby relative strengths and challenges can be found at either end (Widiger & Mullins-Sweatt, 2008). As such, the MATCH-V was designed to reflect this bipolarity for each of the seven needs. Accordingly, we provide two sets of cutoff scores that can be used when the MATCH-V is informing selection, promotion, and hiring decisions. *Table 11* contains the cutoff scores when the goal is to select out the "low" end of a scale, and *Table 12* contains the cutoff scores when the goal is to select out the "high" end of each scale.

Although we supply these scores, we stress that low scores do not imply negative, unproductive, or harmful behaviors, nor do high scores imply positive, productive, or desirable behaviors. Accordingly, we recommend organizations conduct a job analysis to identify the most suitable values profile before using the tool to make personnel decisions. Adding to this, if organizations use different cutoff scores to those listed below, it is their responsibility to evaluate the potential for AI.

Table 11: Recommended Decision Rules – Selecting Out Low Scores

Scale	Does Not Meet Cutoff		Meets Cutoff	
	Raw Score	Percentile Score	Raw Score	Percentile Score
Need for Change	< 26	< 36%	> 26	> 36%
Need for Status	< 22	< 31%	> 22	> 31%
Need for Pleasure	< 24	< 22%	> 24	> 22%
Need for Achievement	< 25	< 28%	> 25	> 28%
Need for Curiosity	< 27	< 29%	> 27	> 29%
Need for Connection	< 28	< 35%	> 28	> 35%
Need for Integrity	< 29	< 27%	> 29	> 27%

Table 12: Recommended Decision Rules – Selecting Out High Scores

Scale	Does Not Meet Cutoff		Meets Cutoff	
	Raw Score	Percentile Score	Raw Score	Percentile Score
Need for Change	> 30	> 74%	< 30	< 74%
Need for Status	> 27	> 73%	< 27	< 73%
Need for Pleasure	> 30	> 78%	< 30	< 78%
Need for Achievement	> 31	> 73%	< 31	< 73%
Need for Curiosity	> 32	> 74%	< 32	< 74%
Need for Connection	> 32	> 76%	< 32	< 76%
Need for Integrity	> 34	> 77%	< 34	< 77%

Using the listed cutoff scores, we conducted AI simulations for three demographic dimensions: gender, age, and ethnicity. *Table 13* contains the results of age, gender and ethnicity when selecting out low scores. *Table 14* contains the results of age, gender and ethnicity when selecting out high scores. Given that the AI ratio was greater than .80 across each scale and demographic group, we conclude that when using the recommended cutoff scores organizations should not expect to see adverse impact or bias.

Table 13: Selection & Adverse Impact Ratios When Selecting Out Low Scores

Scale	Gender			Age			Ethnicity		
	SR	SR	AI Ratio	SR	SR	AI Ratio	SR	SR	AI Ratio
Need for Change	.64	.54	1.19	.61	.50	.81	.57	.70	1.21
Need for Status	.64	.76	.84	.67	.59	.88	.64	.70	1.09
Need for Pleasure	.76	.78	.97	.79	.66	.83	.75	.81	1.08
Need for Achievement	.61	.74	.82	.70	.62	.89	.67	.77	1.14
Need for Curiosity	.68	.62	1.09	.69	.64	.93	.66	.78	1.17
Need for Connection	.60	.52	1.15	.60	.57	.95	.60	.54	.91
Need for Integrity	.71	.59	1.19	.70	.68	.98	.69	.71	1.03

Note: SR = Selection Ratio; AI = Adverse Impact Ratio.

Table 14: Selection & Adverse Impact Ratios When Selecting Out High Scores

Scale	Gender			Age			Ethnicity		
	SR	SR	AI Ratio	SR	SR	AI Ratio	SR	SR	AI Ratio
Need for Change	.79	.68	1.16	.71	.78	1.10	.75	.61	.81
Need for Status	.72	.58	1.24	.69	.78	1.13	.72	.65	.90
Need for Pleasure	.94	.94	1.01	.93	.97	1.04	.95	.91	.97
Need for Achievement	.79	.67	1.18	.71	.76	1.07	.74	.63	.85
Need for Curiosity	.72	.78	.92	.70	.77	1.10	.74	.60	.80
Need for Connection	.71	.73	.98	.71	.72	1.02	.71	.75	1.06
Need for Integrity	.72	.77	.94	.72	.75	1.04	.74	.66	.90

Note: SR = Selection Ratio; AI = Adverse Impact Ratio.

6.3. NORMATIVE SCORING

When reporting scores on the assessment, users may find it easier to interpret such results if they are standardized and converted into percentiles, thereby helping individuals and groups understand how they compare to the rest of the test-taker population. *Table 15* contains the distribution of raw scores across three interpretative groups: Low, Moderately Low, Moderately High, and High.

Table 15: Distribution of Raw Scores & Interpretative Groups

	Low	Moderately Low	Moderately High	High
	0 - 16%	17 - 50%	51 - 84%	85 - 100%
Need for Change	10 - 23	24 - 27	28 - 31	32 - 40
Need for Status	10 - 19	20 - 24	25 - 30	31 - 40
Need for Pleasure	10 - 23	24 - 27	28 - 31	32 - 40
Need for Achievement	10 - 23	24 - 28	29 - 33	34 - 40
Need for Curiosity	10 - 25	26 - 30	31 - 35	36 - 40
Need for Connection	10 - 25	26 - 29	30 - 34	35 - 40
Need for Integrity	10 - 27	28 - 32	33 - 36	37 - 40

7. REFERENCES

Achor, S., Reece, A., Kellerman, G., & Robichaux, A. (2018). 9 Out of 10 People Are Willing to Earn Less Money to Do More-Meaningful Work. Retrieved October 5, 2019, from Harvard Business Review website: https://hbr.org/2018/11/9-out-of-10-people-are-willing-to-earn-less-money-to-do-more-meaningful-work?utm_source=facebook&utm_medium=social&utm_campaign=hbr

Age Discrimination in Employment Act of 1967. , Pub. L. No. Pub. L. No. 90-202, et seq (1967).

Akhtar, R., Humphreys, C., & Furnham, A. (2015). Exploring the relationships among personality, values, and business intelligence. *Consulting Psychology Journal*, *67*(3), 258–276.

Akhtar, R., Ort, U., Winsborough, D., & Premuzic, T. C. (2019). *The Deeper Signals Core Drivers Diagnostic Technical Manual*. New York, NY: Deeper Signals.

Ashforth, B. E., & Mael, F. (1989). Social Identity Theory and the Organization. *Academy of Management Review*, *14*(1), 20–39.

Bao, Y., Dolan, S. L., & Tzafrir, S. S. (2012). Value Congruence in Organizations: Literature Review, Theoretical Perspectives, and Future Directions. *SSRN Electronic Journal*, *September*(239).

Bennett, R. J., & Robinson, S. L. (2000). Development of a measure of workplace deviance. *Journal of Applied Psychology*, *85*(3), 349–360.

Bersin, J., Geller, J., Wakefield, N., & Walsh, B. (2016). *Human Capital Trends 2016*. Retrieved from https://www2.deloitte.com/us/en/insights/focus/human-capital-trends/2016/human-capital-trends-introduction.html

Chamberlain, A. (2015). *Does Company Culture Pay Off? Analyzing Stock Performance of "Best Places to Work" Companies - Glassdoor Economic Research*. Retrieved from https://www.glassdoor.com/research/studies/does-company-culture-pay-off-analyzing-stock-performance-of-best-places-to-work-companies/

Chamorro-Premuzic, T., Winsborough, D., Sherman, R. A., Hogan, R. (2013). New Talent Signals: Shiny New Objects or a Brave New World. *Industrial and Organizational Psychology: Perspectives on Science and Practice*, *53*(9), 1689–1699.

Chatman, J. A. (1989). Improving Interactional Organizational Research: A Model of Person-Organization Fit. *Academy of Management Review*, *14*(3), 333–349.

Cornelissen, J. P., Haslam, S. A., & Balmer, J. M. T. (2007). Social Identity, Organizational Identity and Corporate Identity: Towards an Integrated Understanding of Processes, Patternings and Products. *British Journal of Management*, *18*(s1), S1–S16.

De Cooman, R., Gieter, S. De, Pepermans, R., Hermans, S., Bois, C. Du, Caers, R., & Jegers, M. (2009). Person–organization fit: Testing socialization and attraction–selection–attrition hypotheses. *Journal of Vocational Behavior*, *74*(1), 102–107.

Deci, E. L., & Ryan, R. M. (2010). Intrinsic Motivation. In *The Corsini Encyclopedia of Psychology* (pp. 1–2).

Deci, E. L., & Ryan, R. M. (2012). Self-Determination Theory. In P. A. M. Van Lange, A. W. Kruglanski, & E. T. Higgins (Eds.), *Handbook of Theories of Social Psychology: Volume 1* (pp. 416–437).

Diefendorff, J. M., & Chandler, M. M. (2010). Motivating employees. In S. Zedeck (Ed.), *APA handbook of industrial and organizational psychology, Vol 3: Maintaining, expanding, and contracting the organization.* (pp. 65–135).

Donnellan, M. B., Oswald, F. L., Baird, B. M., & Lucas, R. E. (2006). The Mini-IPIP scales: Tiny-yet-effective measures of the Big Five factors of personality. *Psychological Assessment*, *18*(2), 192–203.

Equal Employment Opportunity Commission, Civil Service Commission, U.S. Department of Labor, & U. S. D. of J. (1978). Uniform guidelines on employee selection procedures. *Federal Register*, *43*, 38290–38309.

Furnham, A., Richards, S. C., & Paulhus, D. L. (2013). The Dark Triad of Personality: A 10 Year Review. *Social and Personality Psychology Compass*, *3*(7), 199–216.

Gagné, M., & Deci, E. L. (2005). Self-determination theory and work motivation. *Journal of Organizational Behavior*, *26*, 331-362.

Gallup. (2019). Employee Engagement on the Rise in the U.S. Retrieved October 5, 2019, from Gallup

website: https://news.gallup.com/poll/241649/employee-engagement-rise.aspx?utm_source=link_wwwv9&utm_campaign=item_245786&utm_medium=copy

George, J. M., & Jones, G. R. (1996). The experience of work and turnover intentions: Interactive effects of value attainment, job satisfaction, and positive mood. *Journal of Applied Psychology*, *81*(3), 318–325.

Goldberg, L. R., Johnson, J. A., Eber, H. W., Hogan, R., Ashton, M. C., Cloninger, C. R., & Gough, H. G. (2006). The international personality item pool and the future of public-domain personality measures. *Journal of Research in Personality*, *40*(1), 84-96.

Guletkin, E. (2011). What's the Value of Your Employment Brand? Retrieved October 6, 2019, from LinkedIn Talent Blog website: https://business.linkedin.com/talent-solutions/blog/2011/12/whats-the-value-of-your-employment-brand

Haslam, S. A., Eggins, R. a, & Reynolds, K. J. (2003). The ASPIRe model: Actualizing Social and Personal Identity Resources to enhance organizational outcomes. *Journal of Occupational and Organizational Psychology*, *76*(1), 83–113.

Haslam, S. A., Postmes, T., & Ellemers, N. (2003). More than a Metaphor: Organizational Identity Makes Organizational Life Possible. *British Journal of Management*, *14*(4), 357–369.

Hogan, R., & Hogan, J. (2007). *Hogan Personality Inventory Manual* (3rd ed.). Hogan Assessment Systems.

Hogan, S. J., & Coote, L. V. (2014). Organizational culture, innovation, and performance: A test of Schein's model. *Journal of Business Research*, *67*(8), 1609–1621.

Holland, J. L. (1959). A theory of vocational choice. *Journal of Counseling Psychology*, *6*(1), 35-45.

Hatch, J. M., & Schultz, M. (1997). Relations between organizational culture, identity and image. *European Journal of Marketing*, *31*(6), 356–365.

Jonason, P. K., & Webster, G. D. (2010). The dirty dozen: a concise measure of the dark triad. *Psychological Assessment*, *22*(2), 420–432.

Kennedy, K., & Hill, V. (2016). *The New Talent Landscape: Recruiting Difficulty and Skills Shortages Media Contact China Gateway Plaza Chaoyang District United Arab Emirates*. Retrieved from https://www.shrm.org/hr-today/trends-and-forecasting/research-and-surveys/Documents/SHRM New Talent Landscape Recruiting Difficulty Skills.pdf

Kieffer, K. M., Schinka, J. A., & Curtiss, G. (2004). Person-Environment Congruence and Personality Domains in the Prediction of Job Performance and Work Quality. *Journal of Counseling Psychology*, *51*(2), 168–177.

Kristof, A. (1996). Person-organization fit: An integrative review of its conceptualizations, measurement, and implications. *Personnel Psychology*, *49*(1), 1–49.

Lindeman, M., & Verkasalo, M. (2005). Measuring Values With the Short Schwartz's Value Survey. *Journal of Personality Assessment*, *85*(2), 170–178.

Meade, A. W., Pappalardo, G., Braddy, P. W., & Fleenor, J. W. (2018). Rapid Response Measurement: Development of a Faking-Resistant Assessment Method for Personality. *Organizational Research Methods*, *August*.

Mount, M., Ilies, R., & Johnson, E. (2006). Relationship of personality traits and counterproductive work behaviors: The mediating effects of job satisfaction. *Personnel Psychology*, *59*(3), 591–622.

Ogbonna, E., & Harris, L. C. (2000). Leadership style, organizational culture and performance: empirical evidence from UK companies. *The International Journal of Human Resource Management*, *11*(4), 766–788.

Parks-Leduc, L., Feldman, G., & Bardi, A. (2014). Personality traits and personal values: A meta-analysis. *Personality and Social Psychology Review*, *19*(1), 1–27.

Pew Research Center. (2016). The State of American Jobs | Pew Research Center. Retrieved October 5, 2019, from Pew Research Center website: https://www.pewsocialtrends.org/2016/10/06/the-state-of-american-jobs/

Rich, B. L., Lepine, J. A., & Crawford, E. R. (2010). Job Engagement: Antecedents and Effects on Job Performance. *Academy of Management Journal*, *53*(3), 617–635.

Rounds, J., Su, R., Lewis, P., & Rivkin, D. (2010). *O*NET Interest Profiler Short Form Psychometric Characteristics: Summary*. Retrieved from

https://www.researchgate.net/publication/268327520_ONETR_Interest_Profiler_Short_Form_Psycho metric_Characteristics_Summary

Ryan, R., & Deci, E. (2000). Intrinsic and Extrinsic Motivations: Classic Definitions and New Directions. *Contemporary Educational Psychology*, *25*(1), 54–67.

Saks, A. M. (2006). Antecedents and consequences of employee engagement. *Journal of Managerial Psychology*, *21*(7), 600–619.

Schaufeli, W. B., & Bakker, A. B. (2006). The Measurement of Work Engagement With a Short Questionnaire: A Cross-National Study. *Educational and Psychological Measurement*, *66*(4), 701–716.

Schneider, B., Ehrhart, M. G., & Macey, W. H. (2013). Organizational climate and culture. *Annual Review of Psychology*, *64*, 361–388.

Schnell, T., Höge, T., & Pollet, E. (2013). Predicting meaning in work: Theory, data, implications. *The Journal of Positive Psychology*, *8*(6), 543–554.

Schwartz, S. H. (1994). Are There Universal Aspects in the Structure and Contents of Human Values? *Journal of Social Issues*, *50*(4), 19–45.

Schwartz, S. H. (2006). Basic Human Values: An Overview. *Jerusalem Hebrew University*, 49–71.

Schwartz, S. H. (1992). Universals in the content and structure of values: Theoretical advances and empirical tests in 20 countries. *Advances in Experimental Social Psychology*, *25*, 1-65.

Schwartz, S. H. (2012). An Overview of the Schwartz Theory of Basic Values. *Online Readings in Psychology and Culture*, *2*(1).

Spector, P. E., Fox, S., Penney, L. M., Bruursema, K., Goh, A., & Kessler, S. (2006). The dimensionality of counterproductivity: Are all counterproductive behaviors created equal? *Journal of Vocational Behavior*, *68*(3), 446–460.

Van den Broeck, A., Ferris, D. L., Chang, C.-H., & Rosen, C. C. (2016). A Review of Self-Determination Theory's Basic Psychological Needs at Work. *Journal of Management*, *42*(5), 1195–1229.

Verplanken, B., & Holland, R. W. (2002). Motivated decision making: effects of activation and self-centrality of values on choices and behavior. *Journal of Personality and Social Psychology*, *82*(3), 434–447.

Vygotsky, L. S. (1978). *Mind in society: The development of higher psychological processes*. Cambridge, MA: Harvard University Press.

Westerman, J. W., & Cyr, L. A. (2004). An Integrative Analysis of Person-Organization Fit Theories. *International Journal of Selection and Assessment*, *12*(3), 252–261.

Widiger, T., & Mullins-Sweatt, S. (2008). Five-Factor Model of Personality Disorder: A Proposal for DSM-V. *Annual Review of Clinical Psychology*, *5*(1), 197–220.