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# **Exploring the Concept of Learning Agility**

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## **Abstract**

Continuous learning and employee adaptation have become increasingly important within modern organisational environments categorised by volatility, uncertainty, complexity, and ambiguity. In turn, this has resulted in a growing body of literature supporting a construct known as learning agility.

This study sought to determine the underlying psychological variables that support individual learning agility. In doing so, cognitive ability, personality, and emotional intelligence assessments distributed by OPRA Psychology Group were administered to a random sample of Scenic Hotel Group employees to obtain quantifiable data. Alongside this, a validated learning agility questionnaire was administered to participants and their managers to obtain a measure of each employee's learning agility. Participants' learning agility scores were then correlated with their personality, cognitive ability, and emotional intelligence assessment results.

Results of this study indicate that learning agility is significantly positively correlated with overall cognitive ability. Furthermore, learning agility shows a significantly positive relationship with personality factors associated with openness to experience, extraversion, and the neuroticism sub-trait, tense-driven. As an outcome, this has provided for a tentative model of learning agility comprising of:

1. Cognitive ability
2. Learning mindset and behaviour
3. Contribution to the social learning environment

This research adds to the current body of literature available into a construct known as a key determinant of employee performance and potential (Eichinger & Lombardo, 2000; McCauley, 2001). Furthermore, it provides the foundations for the development of a derived measure of learning agility that can be determined using existing psychometric assessments.

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## Table of Contents

Abstract .....	2
Acknowledgments .....	3
Introduction.....	6
Literature Review .....	11
Research Method .....	30
Results .....	42
Discussion .....	49
Conclusion .....	57
References.....	61
Appendices .....	67

## List of Tables

Table 1 - Choices Architect Instrument Factors .....	19
Table 2 - Burke Learning Agility Inventory Dimensions .....	21
Table 3 - Bedford Learning Agility Question Items.....	22
Table 4 - viaEdge, Burke LAI, and Bedford Questionnaire Factor Comparisons .....	23
Table 5 - 15FQ+ Openness to Experience Scales .....	24
Table 6 - 15FQ+ Conscientiousness Scales .....	25
Table 7 - 15FQ+ Extraversion Scales.....	25
Table 8 - 15FQ+ Agreeableness Scales .....	26
Table 9 - 15FQ+ Neuroticism Scales .....	26
Table 10 - Internal Consistency Coefficients (15FQ+, <i>Adapt-g</i> , <i>Genos Emotional Intelligence Select</i> ) .....	33
Table 11 - 15FQ+ Impression Management Scales .....	35
Table 12 - Genos Emotional Intelligence Assessment Validity Scales .....	38
Table 13 - Participant Tenure Demographic Information .....	39
Table 14 - Participant Position Demographic Information.....	40
Table 15 - Bedford Learning Agility Questionnaire ( <i>BLAQ</i> ) Range and Means .....	43
Table 16 - Learning Agility and Cognitive Ability Results.....	44
Table 17 - Learning Agility and The Big Five Results.....	45
Table 18 - Learning Agility and Emotional Intelligence Results.....	45
Table 19 - Learning Agility and Openness Sub-Traits .....	46
Table 20 - Learning Agility and Conscientiousness Sub-Traits .....	47
Table 21 - Learning Agility and Extraversion Sub-Traits.....	47
Table 22 – Learning Agility and Agreeableness Sub-Traits.....	48
Table 23 - Learning Agility and Neuroticism Sub-Traits .....	48
Table 24 - Organisational Learning Principles and Learning Agility .....	54

## Introduction

Cognitive ability, personality, and emotional intelligence are well supported assessment constructs for predicting employee performance and leadership potential (Schmidt & Hunter, 1998; Palmer, Walls, Burgess, & Stough, 2001). Indeed, the validity of these constructs has been found to have a higher correlation as a predictor of overall performance than other forms of personnel measures such as structured employment interviews. More recently, researchers and practitioners have increasingly been focusing their attention on a concept referred to as learning agility, discussing this as a key determinant of performance and potential (Eichinger & Lombardo, 2000; McCauley, 2001). Learning agility can be understood as the willingness and ability to learn from experience and apply that learning to new and novel situations, often in creative or unique ways (Lombardo & Eichinger, 2000).

So what factors support or inhibit learning agility? Whilst there is some disagreement amongst the existing literature, De Meuse (2017) suggests that learning agility focuses on high level cognitive processing and human behaviours such as experimentation, self-awareness, continuous improvement, and self-reflection. At a conceptual level, these appear to be psychological variables that can be measured using existing cognitive ability, personality, and emotional intelligence assessments. However, in his research assessing the construct validity of a measure of learning agility, Connelly (2001) suggested that additional research is required to better understand the psychological variables that underpin learning agility. Furthermore, the increased focus on learning agility as an indicator of performance and potential has resulted in many practitioners using some kind of learning agility measure to identify high potential talent (De Meuse, Dai, & Hallenbeck, 2010). However, whilst the concept of learning agility has attracted considerable attention from practitioners and academics alike, it still remains ill-defined and poorly measured (DeRue, Ashford, & Myers, 2012). The few studies that do exist are not entirely consistent, define learning agility in broad terms, and draw different conclusions on the role cognitive ability and personality play in determining an individual's ability to learn from experience and apply that learning in new novel situations.

Modern organisational environments are described as volatile, uncertain, complex, and ambiguous (VUCA). This increasing organisational disruption is forcing organisations to reconsider their selection and development practices; ensuring that these are tailored towards identifying and nurturing a set of individual attributes that enable employees to navigate the unknown, cope with complexity, and maintain performance under first time conditions. Indeed, the *Future of Jobs Report*, produced by The World Economic Forum (2016), outlines how changing socio-economic influences are impacting the labour market and the type of skills and behaviours required for success. In essence, the report suggests that new categories of jobs are emerging, partly or wholly displacing others. Thus, the skill-sets required in both old and new occupations are changing. Among others, the report outlines cognitive flexibility, emotional intelligence, and creativity as being key skills required now and in the future of work. Also supporting this transition is Morgan (2014), who

suggests that there is an evolutionary shift in thinking with respect to the skills and attributes valued in modern organisations. Indeed, as organisational environments become more complex and uncertain, an employee's ability to learn and adapt has become increasingly important (De Meuse et al. 2010). Furthermore, research conducted by De Meuse et al. (2010) identified learning agility as one of the most critical success factors for effective performance within modern workplace environments. Thus, it appears that learning agility will be pivotal in work in the future; with people high in learning agility better able to demonstrate a set of attributes and behaviours that allow them to address the unexpected, embrace new challenges, and get results under tough first-time conditions (Swisher, 2013). However, what is less clear is a consensus on the psychological variables that underpin learning agility. For example, is learning agility a standalone construct or is it a facet of personality, cognitive ability, and emotional intelligence?

Whilst learning agility is a relatively new concept, the ability to learn from experience was recognised by ancient scholars. This included Aristotle, who noted that certain behaviours and values are learned through habit and practice (Ostwald, 1962). In addition, Kolb (1976) established that the propensity to learn from experience reflected an individual's ability to master changing job requirements. More recently, Sternberg, Wagner, Williams, and Horvath (1995) identified practical intelligence and learning from experience as stronger predictors of job performance than traditional measures of cognitive ability. However, despite many researchers contributing to the evolution of learning agility, gaps still remain in the literature as to why some people are better able to move through the experiential learning process more effectively than others (DeRue et al., 2012).

As a concept, learning agility was conceptualised by McCall, Lombardo, and Morrison (1988). Drawing on their research, Lombardo and Eichinger (2000) constructed a multi-rater assessment based on four dimensions of learning agility. These dimensions were shown to strongly correlate with perceptions of high potential and included: people agility, results agility, mental agility, and change agility. Lombardo and Eichinger subsequently used the instrument with a sample of over 200 managers and concluded that learning agility predicted an individual's future potential. Dries, Vantilborgh, and Pepermans (2012) also used the same instrument in seven best practice organisations as a means for assessing employee potential. They found that the multi-rater instrument indicated that employees high in learning agility were 18 times more likely to be promoted. Others to create measures of learning agility included Bedford (2011). *Bedford's Learning Agility Questionnaire (BLAQ)* consisted of nine items and found that learning agility scores were significantly correlated with both ratings of current performance ( $r = .78$ ) and predictions of future potential ( $r = .77$ ). In his study, Connolly (2001) also found that learning agility predicted job performance ( $r = .37$ ). Beyond this, the United States military has also shown an interest in researching and assessing employee learning agility. In this study, Wong (2004) focused on organisational settings that promoted the development of adaptable behaviours. He identified employees better able to cope in theatres categorised

by complexity, unpredictability, and ambiguity as demonstrating higher levels of initiative, innovation, and confidence.

These independent streams of research support the view that there is a need for employees to continually learn, grow, and adapt across time. As well as this, the evidence is compelling for using measures of learning agility as a basis for identifying high potential talent (DeRue et al., 2012). However, whilst a variety of learning agility tools are currently available, they all include different facets and dimensions. Furthermore, many of the items included in these assessments are unrelated to learning agility (DeRue et al., 2012). This indicates that there is some disagreement as to the constructs that underpin learning agility. Alongside this, many of the instruments in current use have limitations in that they are multi-rater assessments requiring input from raters who are already familiar with a person's behaviour (De Meuse et al., 2010). As an alternative, it has been suggested that a self-assessment battery capable of tapping the psychological constructs underpinning learning agility needs to be developed (DeRue et al., 2012).

This research, therefore, responds to calls in the literature for efforts to develop a well-defined and validated derived measure of learning agility. To support this, the key purpose of this research is to identify what scales on the personality, cognitive ability, and emotional intelligence assessments distributed by OPRA Psychology Group (OPRA) correlate with employee learning agility. In doing so, this research aims to determine if it is possible to develop a derived scale of learning agility using existing psychometric assessments. More specifically, this research will answer the following question:

- What are the underlying psychological variables that support employee learning agility?

The author of this report works for OPRA Psychology Group (OPRA), a New Zealand based company that provides psychometric assessments for client organisations using a range of instruments. Based on previous studies and relevant literature (Lombardo & Eichinger, 2000; Bedford, 2011; Connolly, 2001), specific factors were identified and selected across OPRA's personality, cognitive ability, and emotional intelligence assessments that were thought to be associated with learning agility. Based on this review, the following hypotheses were identified for testing:

1. Learning agility positively correlates with abstract reasoning
2. Learning agility positively correlates with openness
3. Learning agility positively correlates with extraversion
4. Learning agility positively correlates with emotional self-awareness
5. Learning agility positively correlates with emotional reasoning
6. Learning agility positively correlates with emotional self-management

If a valid and reliable derived measure of learning agility can be established, it could provide for an objective measure in the identification and selection of high potential employees. For example, organisations could use a learning agility questionnaire to nominate employees for challenging assignments and on-going career advancement (Lombardo & Eichinger, 2000; Spreitzer, McCall, & Mahoney, 1997). Furthermore, a valid measure may also aid in wider talent management programmes to identify employee development needs, support succession planning, and build leadership bench strength.

This study is based on a quantitative research strategy and aims to determine if there are certain personality traits, cognitive abilities, and skills associated with emotional intelligence that can be used to predict learning agility. To achieve this, a cross-sectional survey design was used to collect quantifiable data via psychometric assessments and a self-completion questionnaire. More specifically a battery of psychometric assessments including a personality, cognitive ability, and emotional intelligence assessment, was administered to a random sample of 96 Scenic Hotel Group employees. Alongside this, a validated measure of learning agility was administered to participants and their managers to provide for a measure of employee learning agility. Subsequently, this allowed learning agility scores to be calculated and correlated with participant personality, cognitive ability, and emotional intelligence assessment results.

The main purpose for collecting the data was for research completed as part of this Massey University thesis study. However, to provide for an applied use of the data beyond university research, participant consent was obtained to allow Scenic Hotel Group to use the results to design targeted employee development initiatives.

The structure and layout of this report can be seen on the following page in Figure 1.

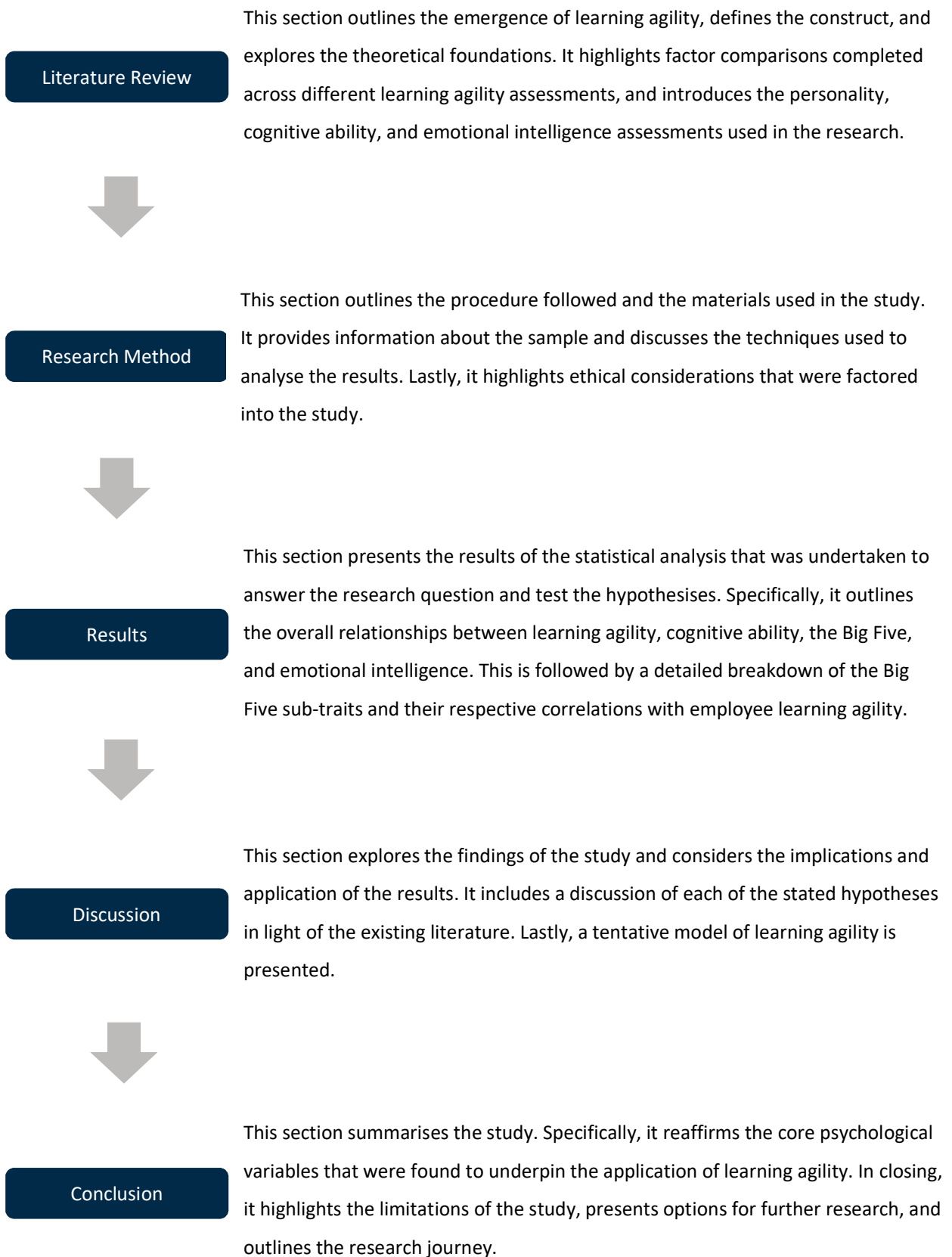


Figure 1

## Literature Review

There is a lot being said about the future of work and the type of skills and behaviours required to succeed. Bestselling author, Jacob Morgan (2014), describes specific trends shaping the future of work. These include: technology, millennials, employee mobility, and globalisation. These trends are bringing a dramatic shift in attitudes and ways of working. They require new behaviours, approaches, and workplace expectations. Morgan suggests that if employees are going to thrive and prosper within modern workplace environments, they will need to be willing to adopt pro-learning mind-sets, step outside their comfort zones, and engage in reflective practices to make meaning of their experiences.

Supporting this new landscape is Dai, De Meuse, and Tang (2013), who suggest that traditional leadership competencies are fast becoming less relevant for leadership success within modern organisational environments. Indeed, employee selection research conducted by Van Iddekinge and Ployhart (2008) identified that measures of adaptive performance are now commonly used to help identify leadership potential. It is evident that the inclusion of this additional domain in leadership selection is in direct response to changing organisational environments categorised by increasing volatility, uncertainty, and complexity. Therefore, identifying and developing talent that can thrive and adapt within these types of environments has become a business imperative. In turn, this has challenged organisations to focus their human resource management systems and practices on the selection, development, and deployment of employees who demonstrate individual attributes supportive of adaptation, learning, and growth. Indeed, as Silzer and Church (2009) point out, continuous learning is an essential component in enabling employees to flex and adapt their behaviour as situations change. This requires that employees are open to new experiences, have the willingness and ability to learn from those experiences, and are able to make sense of complexity to apply their learning to new challenges. This is the essence of learning agility.

This literature review begins with a discussion on the evolution and emergence of learning agility. It explores the theoretical foundations of the concept and identifies common characteristics of the learning agile. In doing so, it examines the literature to identify the underlying psychological constructs that are known to either support or inhibit learning agility. In turn, this information is used to perform a factor comparison between various measures of learning agility and the *15FQ+* personality assessment, *Adapt-g* cognitive ability assessment, and *Genos Emotional Intelligence Select* assessment. Lastly, the review draws on existing research to highlight what is currently known about the correlations between learning agility, personality, cognitive ability, and emotional intelligence.

## **The Emergence of Learning Agility**

There are a variety of researchers that have contributed to the evolution of learning agility. However, the origins of the term can be traced back to two streams of research conducted at the Center for Creative Leadership. In one series of studies, McCall, Lombardo, & Morrison (1988) investigated how executives learn from their work experiences. In their study, the researchers interviewed approximately 200 corporate executives and asked them to identify key learning events that had the biggest impact on their careers. As a result, the researchers concluded that people differed in their ability to learn from experience. Some learned more quickly and demonstrated certain behavioural characteristics that supported growth. For example, the executives who were willing to step away from their comfort zone, break with habitual patterns of behaviour, and who remained open to new ways of working outperformed those that were more risk averse, defensive, and who demonstrated a low desire for growth. Those leaders who relied on the technical skills and abilities that got them promoted in the first place tended to be less successful. Whereas, the successful leaders were willing to learn and develop from new, challenging situations. As De Meuse et al (2017) suggest, meaningful development experiences involve stretch and discomfort and require individuals to have a strong motivational drive for growth. In summary, this research established that the willingness and ability to learn from experience separated high potential leaders from those who experienced less success in their careers (De Meuse et al., 2010).

In the second stream of studies, the researchers (Lombardo, Ruderman, & McCauley, 1988; McCall & Lombardo, 1983) supported the development of learning agility by comparing successful versus derailed executives. In this study, the researchers identified derailed executives as those leaders who had been promoted but ultimately failed to achieve results at a higher hierarchical level within the organisation. Their results indicated that those executives unable or unwilling to change or adapt were more likely to derail; suggesting these leaders tended to be defensive and less open to experimentation. On the contrary, leaders who remained open to learning, took calculated risks, and remained resilient in the face of adversity were less likely to derail. These leaders also tended to be non-defensive and demonstrated greater levels of self-awareness. One of the important findings was that those leaders who willingly embraced a variety of challenges throughout their career, such as starting initiatives from scratch and handling business mistakes, were more likely to be successful overall. This was despite both the successful and derailed participant groups being very bright, ambitious, and possessing excellent performance records (De Meuse et al., 2010). What appeared to differentiate these groups were factors associated with learning agility. However, as De Meuse et al. suggest, simply having an experience does not guarantee that learning will occur. Rather, and in addition, it is important the leaders are able to extract something worthwhile from their experiences and see opportunities for applying their learning to help solve novel and unique problems (McCall et al., 1988).

The importance of learning from experience has also been examined by other researchers. For example, Spreitzer, McCall, and Mahone (1997) observed that dimensions related to learning from experience were significantly related to managers' perceptions of executive potential. Furthermore, Dragoni, Tesluk, Russell, and Oh (2009) conducted a study that correlated self-reported learning experiences with performance-based competency ratings provided by the participants' manager. The results showed that participants with stronger learning orientations were more likely to receive higher competency ratings as a result of going through developmental experiences than those with weaker learning orientations.

### **Defining Learning Agility and its Components**

As an outcome of the research discussed above, the Center for Creative Leadership conceptualised and defined learning agility as "the willingness and ability to learn from experience, and subsequently apply that learning to perform successfully under new or first-time conditions" (Lombardo & Eichinger, 2000, p. 321). It is evident that the definition is framed so that learning agility can be viewed as a broad, multi-faceted, construct comprising of both motivational and ability-based elements. Indeed, this approach to the construct of learning agility led DeRue et al. (2012) to raise the broadness and lack of specificity as a major issue pertaining to Lombardo and Eichinger's definition. They suggested that the concept lacked definitional clarity and had become a catch-all phrase for all things related to learning from experience. Instead, DeRue et al. choose to define the construct more narrowly, emphasising the speed with which people learn, as well as cognitive flexibility as key enablers of individual learning agility. Regardless of whether one takes a broad or narrow view of learning agility, there is general agreement that the construct comprises of both cognitive and behavioural elements. For example, an individual must possess the cognitive ability to make sense of complexity and, at the same time, must demonstrate feedback seeking behaviours to gauge the application of their new-found knowledge.

It has been implied that cognitive ability plays a significant role in supporting an individual's ability to be learning agile. Indeed, Schmidt and Hunter (1996) have pointed out that the ability to learn is largely underpinned by an individual's intelligence. In their work, Schmidt and Hunter define cognitive ability as an individual's ability to process information and learn. They conclude that individuals possessing higher levels of cognitive ability are shown to achieve greater success across a broad range of complex tasks and work contexts. This is because they are able to learn more quickly from their experiences, retain their knowledge, and subsequently access this more readily to apply it in new situations.

Another cognitive function that appears to support learning agility is Cattell's (1943) fluid intelligence. The concept of fluid intelligence stems from Cattell's work on intelligence testing. As part of this, Cattell identified that intelligence tests available at the time focused too heavily on assessing acquired skills and abilities. He was concerned that the differences in scores seen on earlier tests were largely due to differences

in social status and abilities distinct from intelligence. As a result, he determined that adult mental capacity consists of both crystallised and fluid intelligence. Cattell defines fluid intelligence as a component of cognitive ability that allows individuals to analyse novel problems, identify patterns, and extract meaning from these using logic. It can be described as reasoning ability in its most abstract and purest form (Psytech International, 2017). Thus, fluid intelligence is recognised as a form of intelligence relatively independent of a person's educational experience. It is traditionally measured using abstract reasoning tests. Cattell suggests that crystallised intelligence, on the other hand, consists of abilities established within a specific domain. It is described as the product of an individual's cultural and educational experiences interacting with their fluid intelligence. Observed through an individual's ability to reason using words and numbers, it is often assessed using traditional measures of verbal and numerical reasoning ability. Unlike crystallised intelligence, the application of fluid intelligence allows individuals to combine old and new information, challenge their ingrained assumptions, and look for opportunities to transfer their learning to help solve on-the-job problems and challenges (Brown, 2016). Therefore, it follows that fluid intelligence, abstract reasoning, and more broadly, cognitive ability are key components of individual learning agility.

However, in contrast, researchers such as De Meuse et al (2010) and Hezlett and Kuncel (2012) support Lombardo and Eichinger's broader conceptualisation of learning agility. These researchers conclude that the concept is best viewed as a meta-competency; or a multidimensional construct made up of a number of specific behavioural elements drawn from across a variety of competencies. This multifaceted view of learning agility is also supported in earlier learning research conducted by Kolb (1976) who found that the ability to learn from experience involved a broad array of individual characteristics and attributes. More specifically, this includes personality and behavioural attributes such as openness to experience, experimentation, dealing with ambiguity, self-awareness, and emotional resilience (DeRue et al., 2012). Furthermore, McCauley (2001) also supports behavioural elements associated with learning agility and suggests that people high in learning agility have the tendency to seek out new challenges, actively seek feedback from others to support their growth and development, engage in self-reflective activities, and demonstrate the propensity to evaluate their experiences from multiple angles.

In summary, this early learning agility research suggests that the learning agile are more able to capitalise on opportunities than their low learning agile counterparts. Subsequently, they are more likely to be considered for challenging assignments and promotion (Dragoni et al, 2009). Thus, it follows that the learning agile are more likely to climb the organisational ladder and achieve higher levels of overall career success. To achieve this, learning agile individuals must possess a broad array of skills, attributes, and behaviours that enable them to embrace new challenges, learn from experience, and apply their learning across different contexts. As Vandewalle (2012) suggests, "learning agility is about how one learns from experience within the conceptual parameters of speed and flexibility" (p. 301). Therefore, it can be argued that individual learning agility requires both cognitive and behavioural processes.

However, alongside a lack of definitional clarity, there also remains debate as to the specific psychological variables that underpin an individual's ability to learn from experience. This is despite learning agility being identified as a prime predictor of performance and potential (Eichinger & Lombardo, 2000; De Meuse, 2016), and is concerning considering the popularity of the concept throughout the business world. For example, in a survey conducted by the New Talent Management Network, 62% of respondents claimed to use a measure of learning agility to predict leadership potential and help guide promotion decisions (De Meuse, 2017). Furthermore, there are a wide variety of assessment measures available on the market claiming to measure learning agility. However, all use different factors to assess the construct. It is this variation that prompted De Meuse to challenge researchers and practitioners to clarify the concept and standardise the measures used in the assessment of individual learning agility.

For the purposes of this study, it is reasonable to define learning agility in broad behavioral terms at this stage, and then work towards finding the link with the underlying psychological variables that support its application. Indeed, the work of Spencer and Spencer (1993) on job competencies provides a way to conceptualise complex work-based constructs. They suggest that underlying characteristics or 'competencies' (such as values and motives) give rise to skilled behaviour, which in turn give rise to outcomes or results. In early stages of research, it is difficult to establish a link between competencies, which are relatively hard to identify and observe, and results. Instead, links can first be made between skilled behaviour and results, and then between competencies and skilled behaviour.

### **Theoretical Foundations of Learning Agility**

As a broader concept, learning agility has its foundations rooted in experiential learning theory. Supporting this is a book review conducted by Laser (1990) that made connections between the themes and messages within McCall, Lombardo, and Morrison's (1998) book *The Lessons of Experience* and the experiential learning theory developed by Kolb and his associates. At its core, Kolb (1984) explains that experiential learning theory is a process of constructing knowledge through the transformation of experience. He suggests that, in order to achieve this, a learner must be able to grasp and conceptualise knowledge, as well as transform that knowledge through active experimentation. This process is depicted as a learning cycle whereby a learner must move through all phases – experiencing, reflecting, thinking, and acting – in order to increase their learning power. In addition, Kolb and Kolb (2009) suggest that a strong learning self-identity is a key enabler of learning ability. Learning self-identity concerns an individual's views about his or her ability to learn. Without confidence in one's ability to learn, the learning process becomes stifled; and thus, the ability to apply learning to new novel situations limited. In contrast, Kolb and Kolb suggest that individuals who view themselves as learners, and who trust their ability to learn from experience, are better able to conceptualise and draw knowledge from their experiences.

The concept of learning identity is closely related to Carol Dweck's (2012) work on fixed versus growth mindsets. Dweck argues that a person's mindset profoundly affects the way they live their life and contributes to how successful they will be. She suggests that people with a fixed mindset believe their qualities and capacities are carved in stone. As a consequence, they have an urgency to prove themselves to others, a tendency to avoid risk, and are threatened by the successes of other people. Indeed, individuals with a fixed mindset may lack confidence in their own intellectual abilities, may prefer to work on uncomplicated tasks, and believe they lack general knowledge (Psytech International, 2017). In contrast, individuals with a growth orientated mindset take the approach that there is always more to learn, believing that their capabilities can be cultivated through effort and practice. In doing so, they embrace risk, seek out challenging assignments, and remain open to feedback. Furthermore, Dweck points out that these people have sound self-insight. They are aware of their strengths and limitations. For example, in her studies Dweck found that those with a growth mindset were more likely to have a grounded and accurate view of their abilities, whereas, those with a fixed mindset greatly misestimated their performance and abilities.

In another study, Wood and Bandura (1989) found that participants demonstrating characteristics associated with a fixed orientated mindset failed to profit from their mistakes and fell short of expectations. However, those demonstrating characteristics associated with a growth mindset faced up to their mistakes, accepted feedback, and engaged in continuous learning. Psytech International (2017) also outline that individuals who possess attributes associated with a growth mindset tend to be confident in their own intellectual abilities, are keen to learn new information, and have a preference for working through complex tasks and ideas. In summary, and as various scholars suggest, the characteristics found in individuals with a growth mindset are also considered hallmarks of the agile learner (Lombardo & Eichinger, 2000; De Meuse, 2017).

Another psychological construct closely related to learning agility is learning goal orientation (De Meuse, Dai, & Hallenbeck, 2010). Initially developed by Dweck (1986), learning goal orientation distinguishes between people who focus on developing their competence by gaining new knowledge and skills; as opposed to performance orientated individuals who focus their attention on performance standards and rewards. In a study involving 167 sales employees, VandeWalle, Brown, Cron, and Slocum (1999) found that learning goal orientated individuals were more likely to utilise an adaptive coping style when faced with difficult challenges. In contrast, performance goal orientated individuals used a maladaptive style that inhibited their performance. In another study conducted by Colquitt and Simmering (1998), it was found that learning goal orientation was positively correlated ( $r = .43$ ) with motivation to learn. In addition, MaCauley (2001) describes learning goal orientated individuals as self-directed learners who take responsibility for their own learning for the purposes of experiencing growth sensation and accomplishment. Other researchers who have emphasised the link between learning agility and motivation to learn include Arun, Coyle, and Hauenstein (2012) and Carette and Anseel (2012). These independent streams of research help establish a link between learning goal orientation and the motivational aspect inherent in McCall, Lombardo, and

Morrison's (1988) definition of learning agility. However, despite this alignment, a study conducted by Connolly (2001) found learning goal orientation to have no significant correlation with the learning agility facets (people agility, mental agility, change agility, results agility) used within Lombardo and Eichinger's (2000) conceptual framework of learning agility.

Practical intelligence is another construct that has been found to have close links with learning agility. As Sternberg, Wagner, Williams, and Horvath (1995) suggest, practical intelligence, or "street smarts", involves learning by doing. It is related to everyday experience and seems more effective when dealing with complex tasks that have multiple solution options available. These researchers suggest that practical intelligence has direct relevance to everyday work problems that are often poorly defined and lack information. In contrast, academic intelligence, or "book smarts", are largely characterised by readily available information, well defined problems, and tasks that are not always related to the individual's immediate context. Interestingly, Sternberg et al. outline a variety of studies, including Cornelius and Caspi (1987) and Denney and Palmer (1981), showing traditional cognitive task performance tends to peak earlier in life than practical task performance. Thus, it is possible to conclude that the ability to solve strictly academic problems declines earlier in adulthood than does the ability to learn from experience and solve problems of a practical nature. Underpinning the practically intelligent individual is what Sternberg et al. (1995) suggest is their ability to acquire and apply tacit knowledge. According to Sternberg et al., there are three main features of tacit knowledge. That is, it is procedural in nature, relevant to individual goals, and acquired with little help from others. Tacit knowledge is also related to action, experimentation, and is practically useful. Thus, considering the hallmarks of the agile learner, it is possible to see the similarities and connections between practical intelligence and the more modern construct known as learning agility. Indeed, Sternberg and his colleagues emphasised interpersonal savviness and the ability to synthesise information as being key enablers of practical intelligence. Interestingly, these authors also found that practical intelligence was more predictive of organisational success than basic IQ.

Alongside the individual attributes that support learning agility, it is also important to consider the environmental aspects that either inhibit or support an individual's ability to learn from experience. Supporting this is Kolb and Kolb (2009), who highlight the importance of creating effective learning spaces that empower and support self-regulated learning. Schraw, Crippen, and Hartley (2006) define self-regulated learning as an individual's ability to influence their own learning environment. Therefore, to support learning agility, it is important that individuals perceive that they have a sense of control over their learning. This includes influencing and shaping the environments in which they learn. Closely aligned with this is Senge's (2006), organisational learning principles. In his book, *The Fifth Discipline: The Art of the Learning Organisation*, Senge suggests that in order for an organisation to remain competitive within complex and volatile organisational environments, they must build their capacity for continual learning and transformation. This involves developing cultures that encourage and support employees in their pursuit of

personal mastery, described by Senge as a commitment to the process of learning and continuous self-improvement. Furthermore, effective organisational learning requires open organisational cultures; ones that encourage employees to challenge ingrained assumptions and mental models. In turn, Senge suggests that this promotes positive inquiry and trust.

Related to this work on learning cultures is Edmondson's (1999) research on psychological safety. Here, Edmondson points out that an effective and safe learning environment allows people to take risks, question norms, explore alternatives, and receive feedback on performance. Thus, organisational cultures that tolerate mistakes, and allow employees to learn through a practice of trial and error, are more likely to be supportive of individual learning agility. In contrast, organisations that punish mistakes and construct individual reward systems around 'being right', are more likely to drive defensive behaviours and detract from an individual's ability to remain open and learn from experience (DeRue, et al., 2012). Indeed, defensive behaviours are seen as a significant inhibitor of learning agility. This is supported by Brockett and Hiemstra (1991, cited in DeRue et al., 2012) who suggest that defensiveness reduces an individual's cognitive flexibility and reduces the speed at which they acquire and apply new knowledge. Therefore, alongside individual attributes, cognitive abilities, and behavioural processes, the organisational learning environment can play an important role in enabling or inhibiting the demonstration of individual learning agility.<sup>1</sup>

### **Learning Agility Assessment Constructs – Factor Comparisons**

The independent streams of research reviewed above demonstrate that there is a need for employees to continually learn, grow, and adapt across time. As well as this, the literature is compelling for using measures of learning agility as a basis for identifying talented employees (DeRue et al., 2012). However, whilst a variety of learning agility tools are currently available, they all include different facets and dimensions. Furthermore, many assessment tools have been criticised for including items that are unrelated to learning agility (DeRue et al., 2012), suggesting that there is some disagreement as to the exact psychological variables that underpin learning agility. Alongside this, many of the instruments in current use have limitations in that they are multi-rater assessments requiring input from raters who are already familiar with a person's behaviour (De Meuse et al., 2010). In turn, this limits the utility of these instruments for recruitment and selection. As an alternative, it has been suggested that a self-assessment battery capable of tapping the psychological variables underpinning learning agility be developed (DeRue et al., 2012).

Lombardo and Eichinger (2000) constructed a multi-rater assessment, *Choices Architect*, based on four dimensions of learning agility. These dimensions were shown to strongly correlate with perceptions of performance and potential. As pointed out by De Meuse, Dai, Hallenbeck, and Tang (2008), the assessment

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<sup>1</sup> Note: the assessment and evaluation of organisational learning environments is beyond the scope of this research.

consists of 81 question items measuring learning agility across four dimensions: people agility, results agility, mental agility, and change agility. These dimensions are summarised in table 1 (Lombardo & Eichinger, 2000).

Factor	Individual Characteristics
People Agility	<ul style="list-style-type: none"> <li>- Demonstrates self-awareness</li> <li>- Remains open minded and appreciates individual differences</li> <li>- Maintains composure in challenging situations</li> </ul>
Results Agility	<ul style="list-style-type: none"> <li>- Delivers results in tough situations</li> <li>- Inspires the performance of others</li> <li>- Demonstrates personal drive and a commitment to excellence</li> </ul>
Mental Agility	<ul style="list-style-type: none"> <li>- Comfortable with complexity</li> <li>- Considers issues from a variety of perspectives</li> <li>- Makes connections between abstract concepts</li> </ul>
Change Agility	<ul style="list-style-type: none"> <li>- Demonstrates curiosity and experimentation</li> <li>- Embraces challenge and self-improvement</li> <li>- Accepts responsibility and accountability</li> </ul>

Table 1

Lombardo and Eichinger subsequently used the *Choices Architect* instrument with a sample of over 200 employees and concluded that learning agility predicted an individual’s future potential. More specifically, they found the correlations between managerial ratings of employee potential and each of the four learning agility factors to be: people agility,  $r = .47$ ; results agility,  $r = .50$ ; mental agility,  $r = .47$ ; change agility,  $r = .53$ . Furthermore, the researchers found these correlational patterns to be consistent across age, gender, and managerial levels. Dries, Vantilborgh, and Pepermans (2012) used the same instrument in seven best practice organisations as a means for assessing employee potential. Consistent with Lombardo’s and Eichinger’s findings, Dries et al. found that the multi-rater instrument indicated employees high in learning agility were 18 times more likely to be promoted. Others to use the *Choices Architect* multi-rater assessment include Connolly (2001). In his doctoral dissertation, Connolly assessed the learning agility of 107 law-enforcement officers. Alongside this, he collected supervisory ratings of performance and promotability. The results showed strong correlations between learning agility scores and ratings of performance ( $r = .40$ ) and promotability ( $r = .37$ ). In addition, Dai, De Meuse, Clark, and Cross (2011) used the *Choices Architect* to correlate learning agility scores with current performance appraisal ratings. Again, the results showed a

strong correlation between these variables at  $r = .37$ . Thus, it is evident that the factor items included in the *Choices Architect* learning agility assessment return statistically significant correlations with ratings of performance and potential.

However, despite its performance and potential predictive validity, an obvious limitation of the *Choices Architect* learning agility assessment is that it is a multi-rater assessment requiring input from people who know the subject well. As De Meuse et al. (2010) suggest, this restricts its practical application. For example, in a recruitment situation it is not feasible to obtain rating evaluations from the candidates' current manager, colleagues, and/or direct reports. Furthermore, DeRue et al. criticise the *Choices Architect* by suggesting that it contains a number of psychometric issues; including double barrelled questions and weak content validity.

To overcome these limitations, De Meuse, Dai, Eichinger, Page, Clark, and Zewdie (2011) developed a self-reported measure of learning agility known as *viaEDGE*. The assessment includes 116 question items drawn from the *Choices Architect* multi-rater assessment, the *Workplace Behavior Inventory* developed by Assessment Associates International, and a comprehensive review of the learning agility literature. Whilst the assessment retains the original four factors assessed in the *Choices Architect* multi-rater, the *viaEDGE* assessment includes self-awareness as a fifth factor. As De Meuse et al. point out, self-awareness is embedded within the People Agility factor found in the *Choices Architect*. However, following an extensive review of the literature, self-awareness was identified as a significant component of learning agility and thus warranted its inclusion as a standalone factor. The importance of making it a standalone factor is evident when considering the reflective components inherent in learning agility. For example, various studies reinforce the notion that reflection and self-awareness are essential elements of experience-based learning (DeRue, Nahrgang, Hollenbeck, & Workman, 2012; Ellis & Davidi, 2005). In the context of learning agility, self-awareness is about how aware an individual is of their environment and their skill-sets, strengths, and limitations (De Meuse et al, 2011).<sup>2</sup>

Whatever instrument is used to assess learning agility, it is important that the reliability and validity of the measure is acceptable. In this regard, the *viaEDGE* assessment has been validated by a professional team of psychometricians trained in psychometrics and statistics (De Meuse, 2017). However, despite this, De Meuse, Dai, Hellenbeck, and Tang (2008) found that a measure of learning agility utilising self-assessment may be difficult to meaningfully interpret due to individuals largely being unaware of their personal learning agility. This is evident in the results of their study where they found that high potential employees tended to under-rate themselves whereas low potential employees tended to over-rate themselves. Furthermore, in selection situations, candidates often feel a desire to put their best foot forward and present themselves in an overly positive light. Therefore, to support the meaningful interpretation of results, the *viaEDGE* assessment

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<sup>2</sup> These are also emotional self-awareness factor items assessed in the Emotional Intelligence self-assessment used in this research.

includes six verification scales that provide an indication of a candidate’s response style. For example, the self-presentation scale provides insight into the extent to which an individual has attempted to present himself or herself in an overly positive manner.

Another self-assessment of learning agility is the *Burke Learning Agility Inventory (Burke LAI)* developed and validated Dr. Warner Burke at Columbia University. Similar to Lombardo and Eichinger’s original definition of learning agility, Burke and his team defined that learning agility was an integration of both the skill to learn from experience and the motivation to do so (De Meuse, 2017). Based on an extensive review of the literature, Burke (2017) included 38-items in the *Burke LAI* across 9 independent factor dimensions. These are summarised in table 2. It is noted that, although they contain different factor labels, the underlying facets of learning agility are similar to those found in the *Choices Architect* and *viaEDGE* assessments. For example, the individual characteristics inherent in the experimentation dimension are also consistent with facets of change agility.

Dimensions:	Individual Characteristics
Flexibility	- Being open to new ideas and solutions
Speed	- Acting on ideas quickly
Experimentation	- Trying out new behaviors, approaches, and ideas
Performance Risk Taking	- Seeking out new opportunities, challenges, and activities
Interpersonal Risk Taking	- Confronting individual differences to support learning and growth
Collaborating	- Finding ways to work with others and engage in shared learning
Information Gathering	- Keeps up to date in area of expertise
Feedback Seeking	- Asks others for feedback on performance
Reflecting	- Pauses to evaluate his or her own performance

Table 2

To support validation and the establishment of a normative sample, the *Burke LAI* was administered to three different groups (Burke 2017). This included 393 mid-level managers drawn from across a variety of organisations, a voluntary sample of 193 United States adults over the age of 18, and a random sample of 471 employees at a healthcare organisation. The results across all three samples demonstrated excellent test reliability with Cronbach’s Alpha scoring higher than .7 for all subscales in all three samples. Thus, it was established that the *Burke LAI* is a reliable measure of the nine independent dimensions included in the assessment. In addition, the construct validity of the *Burke LAI* was tested to ensure the assessment measures what it is intended to measure. This included testing cognitive ability and personality measures for convergent validity. As Burke (2017) points out, these measures were selected based on their suggested

overlap with learning agility. Indeed, the results showed that the *Burke LAI* dimensions correlated with the expected cognitive and personality measures; therefore, supporting the construct validity of the *Burke LAI*. For example, openness to experience and extraversion had a mid to strong correlation with seven of the *Burke LAI* dimensions. Thus, this research suggests that personality and cognitive ability factors are supportive of learning agility. Other measures to show a strong correlation with overall learning agility scores included learning goal orientation, tolerance for ambiguity, and generalised self-efficacy. This is consistent with the theoretical foundations of learning agility.

Alongside the commercial learning agility assessments available on the market, others have developed their own instruments to assess learning agility. This includes Bedford (2011) who designed a nine-item learning agility questionnaire to support his doctoral research. Like the earlier assessments discussed, these items were initially conceptualised by completing a review of the literature. Subsequently, the items were sorted into categories by registered psychologists, and reviewed for content and face validity. A description of the final items is included in table 3.

Bedford Learning Agility Question Items
1. Accepts and acts on feedback from others.
2. Is flexible; adjusts his/her approach when something doesn't work.
3. Is curious and inquisitive.
4. Is self-aware; knows own strengths and limitations.
5. Displays a desire to gain new knowledge and skills.
6. Actively pursues personal growth and improvement.
7. Seeks out challenges and new experiences.
8. Is open-minded and receptive to change and new ideas.
9. Reflects on and learns from mistakes.

Table 3

In his research, Bedford analysed 294 responses to the nine items and found strong inter-item correlation at a mean of  $r = .60$ . In addition, Bedford used Cronbach's alpha to measure the internal consistency and reliability of the scale. He found that only one of the nine items could be removed to improve the internal consistency. However, the improvements observed when item two, is flexible; adjusts his/her approach when something doesn't work, was removed were marginal. In considering the extent to which flexibility is referenced in the learning agility literature, Bedford decided to leave the item in the questionnaire.

In his results, Bedford found that participants average learning agility score across the nine-items correlated strongly with manager ratings of current performance ( $r = .78$ ) and predictions of future potential ( $r = .77$ ). Again, this is consistent with previous studies that suggest learning agility is predictive of performance and

potential (Lombardo & Eichinger, 2000; Dries, Vantilborgh, and Pepermans, 2012). Bedford also completed a multiple regression analysis to determine which cognitive ability and personality traits best predicted learning agility. However, unlike Burke (2017), he found no significant correlations between cognitive abilities, personality traits, and overall learning agility scores. Bedford concluded that further research was required to support or eliminate the linkages between cognitive ability, personality, and learning agility.

Others to research cognitive ability and personality as a predictor of learning agility include Connolly (2001). In his doctoral dissertation, Connolly assessed the construct validity of the *Choices Architect* assessment. As part of this, he examined the convergent and discriminate validity of the instrument against cognitive ability and personality measures. In doing so, Connolly administered the *Choices Architect* assessment, along with personality and cognitive ability measures, to 510 law enforcement officers. In his findings, Connolly concluded that the *Choices Architect* assessment measures a construct unique to cognitive ability and personality. Furthermore, he found a weak average correlation of  $r = .16$  between the Big 5 personality factors and overall learning agility scores. He also found a non-significant correlation between mental agility and cognitive ability. Whilst these results are consistent with Bedford's (2011) findings, they are somewhat surprising given the similarities between the factor descriptions across the *viaEdge*, *Burke LAI*, and *BLAQ*.

When comparing the factors and dimensions across the *viaEDGE*, *Burke LAI*, and the *BLAQ*, it is evident that the underlying psychological variables that these assessments are measuring are similar. For example, as seen in table 4, mental agility is related to the speed and flexibility with which people learn. In addition, it is also possible to draw comparisons between: people agility, interpersonal risk taking, collaborating, and being open minded and receptive to new ideas.

viaEDGE	Burke LAI	BLAQ
Mental Agility	Flexibility Speed	- Is flexible; adjusts his/her approach when something doesn't work
Change Agility	Experimentation	- Seeks out challenges and new experiences - Displays a desire to gain new knowledge and skills
People Agility	Interpersonal Risk Taking Collaborating	- Is open-minded and receptive to change and new ideas
Results Agility	Information Gathering Performance Risk Taking	- Is curious and inquisitive - Actively seeks personal growth and improvement
Self-Awareness	Reflecting Feedback Seeking	- Is self-aware; knows own strengths and limitations - Reflects on and learns from mistakes - Accepts and acts on feedback from others

Table 4

Despite the descriptive similarities across the factor labels found on these assessments, it has been shown that the results of previous studies (Connolly, 2001; Bedford, 2011) are inconclusive with respect to the role cognitive ability, personality, and emotional intelligence play in supporting individual learning agility. Adding to this confusion is De Meuse (2017) who suggests that learning agility is likely underpinned by various personality factors. In the sections that follow, literature related to the assessments of personality, cognitive ability, and emotional intelligence used in this research is reviewed.

### Personality Assessment

The *15FQ+* personality assessment designed by Psytech International (2017) will be used to identify which personality traits may be related to individual learning agility. The *15FQ+* is a self-assessed measure of personality based on the dominant model in personality research, the Big 5 theory of personality. These factors are outlined in more detail below.

**Openness to Experience** describes a dimension of cognitive style that distinguishes imaginative, creative people from down-to-earth, conventional people. Those high on the openness to experience scale are intellectually curious. They tend to think and act in individualistic and nonconforming ways. In contrast, people with low scores on openness to experience tend to have narrow, common interests. They prefer the straightforward and obvious over the complex and ambiguous. They are more conservative and resistant to change. Therefore, it is hypothesised that openness to experience will show a strong positive correlation with learning agility. For example, the learning agile are more likely to be open to new ideas and receptive to change. The specific scales on the *15FQ+* as they relate to openness to experience are outlined in table 5.

Openness to Experience	Pragmatism
Tender-minded	Hard-headed
Abstract	Concrete
Radical	Conventional

Table 5

**Conscientiousness** concerns the way in which people control, regulate, and direct their impulses. Those high in conscientiousness have an ability to think about future consequences before acting on an impulse. They avoid risk and achieve high levels of success through purposeful planning and persistence. In contrast, individuals low in conscientiousness may act spontaneously and can be impulsive. They may be criticised for their unreliability and can be perceived to have a lack of ambition. Therefore, it is expected that conscientiousness will show an inverse relationship with learning agility. For example, those high in conscientiousness are unlikely to embrace complexity and take on risky assignments with unknown outcomes. In contrast, the learning agile are more likely to be curious and embrace new experiences. The

specific scales on the *15FQ+* as they relate to conscientiousness are related to demonstrating high self-control are outlined in table 6.

High Self-Control	Low Self-Control
Conscientious	Expedient
Restrained	Direct
Self-disciplined	Informal

Table 6

**Extraversion** is marked by pronounced engagement with the external world. Extraverts enjoy interacting with people and are often perceived as being full of energy. They tend to be enthusiastic, action-oriented, and prepared to participate in a wide variety of activities. In contrast, introverts tend to be quiet, low-key, and deliberate. Their preference is for time to think through ideas and solutions before reporting back. Therefore, it is hypothesised that extraversion will show a weak positive correlation with learning agility. For example, those high in extraversion are more likely to demonstrate interpersonal risk taking. The specific scales on the *15FQ+* as they relate to extraversion are outlined in table 7.

Extraversion	Introversion
Empathic	Distant aloof
Enthusiastic	Sober serious
Socially-bold	Retiring
Group-orientated	Self-sufficient

Table 7

**Agreeableness** reflects individual differences in concern with cooperation and social harmony. Agreeable individuals value getting along with others and are generally considerate, friendly, helpful, and willing to compromise their interests with others'. In contrast, individuals who are low on agreeableness place self-interest above getting along with others. Sometimes their scepticism about others' motives causes them to be suspicious, unfriendly, and uncooperative. Therefore, it is expected that agreeableness will show a positively weak relationship with learning agility. For example, whilst the agreeableness trait is closely related to the people agility aspects of learning agility, it is also recognised that less agreeable and independent individuals are likely to be somewhat questioning and suspicious, demonstrate a tendency to challenge the status quo, and have confidence in their intellectual abilities. The specific scales on the *15FQ+* as they relate to agreeableness are outlined in table 8.

Agreeableness	Independence
Low Intellectance*	High Intellectance*
Accommodating	Dominant
Trusting	Suspicious

Table 8 \*Intellectance is defined as a metacognitive personality variable as opposed to an ability factor

**Neuroticism** is a trait characterised by anxiousness, moodiness, and emotional instability. People high in neuroticism are more likely to respond emotionally and intensely to events that would not affect most people. They are more likely to interpret ordinary situations as threatening, and minor frustrations as hopelessly difficult. These problems in emotional regulation can diminish a neurotic's ability to think clearly, make decisions, and cope effectively with stress. In contrast, individuals who score low in neuroticism tend to be calm, emotionally stable, and free from persistent negative feelings. Therefore, it is expected that neuroticism will be negatively related to learning agility. For example, being learning agile requires making sense of complexity whilst remaining calm under pressure. The specific scales on the *15FQ+* as they relate to neuroticism are outlined in table 9.

Low Anxiety	High Anxiety
Emotionally stable	Affected by feelings
Self-assured	Apprehensive
Composed	Tense-driven

Table 9

### Cognitive Ability Assessment

Alongside the personality factors outlined above, it is also hypothesised that general mental ability, or cognitive ability as it is sometimes called, will show positive relationships with individual learning agility. General mental ability is defined as a person's capacity to: understand logic; comprehend and learn complex new material; think abstractly; solve problems; and respond to the environment in an adaptive, flexible manner (Psytech International, 2017). It can be summarised as the speed and accuracy with which an individual performs mental tasks. Thus, it appears to have a relationship with the mental agility factor included in the *viaEdge* learning agility assessment, as well as the flexibility and speed components included in the *Burke LAI*. Furthermore, and as Psytech International suggest, a good measure of cognitive ability should tap components of both crystallised and fluid intelligence. The *Adapt-g* cognitive ability assessment used in this research was designed with this in mind. For example, the numerical and abstract components of this assessment provide a good measure of fluid intelligence by tapping an individual's ability to make sense of complex numerical and abstract patterns. In turn, this provides insight into their ability to apply logic and reasoning ability when faced with new, complex workplace problems.

In contrast, verbal reasoning is the most influenced by higher levels of education and provides a good measure of crystallised intelligence. Taken together, these three test components (verbal, numerical, and abstract reasoning) provide a sound overall measure of cognitive ability. Of the three components, it is expected that abstract reasoning will correlate most strongly with learning agility. This is because abstract reasoning directly assesses an individual's ability to understand complex concepts, assimilate new information, and recognise patterns. These are all key components inherent within the concept of learning agility. In addition, it has been established that learning agile individuals need to demonstrate an awareness of their strengths and limitations, as well as maintain composure when faced with new, challenging situations. Therefore, alongside the factors associated with personality and cognitive ability already discussed, it is also hypothesised that skills associated with emotional intelligence will show a positive correlation with individual learning agility. This includes emotional self-awareness, emotional reasoning, and emotional self-management.

### **Emotional Intelligence Assessment**

Emotional self-awareness is described by Genos International (2010) as the skill of perceiving and understanding one's own emotions. It includes being aware of the behaviour you demonstrate, your strengths and limitations, and the impact you have on others. Workplace behaviours associated with emotional self-awareness include:

1. Demonstrating awareness of the way you feel
2. Demonstrating awareness of the impact your emotions can have on your thinking
3. Demonstrating an awareness of the impact your feelings can have on the way you interact with others
4. Asking others for feedback on your workplace behaviour
5. Responding effectively to feedback from others
6. Demonstrating awareness of your mood
7. Behaving in a way that is consistent with how you describe yourself to be

It is possible to make connections between the behaviours associated with emotional self-awareness and the people agility and self-awareness factor items found on the *viaEdge* assessment and across the related constructs on the *Burke LAI* and *BLAQ*.

Emotional reasoning measures how often an individual incorporates emotional information in the process of decision-making and problem-solving at work. It also emphasises the use of emotions for successfully engaging with others to complete challenging tasks and assignments. This makes it possible to see parallels between emotional reasoning and the learning agility factors associated with results and people agility. This includes collaborating, information gathering, being curious and inquisitive.

The Genos (2010) workplace behaviours associated with emotional reasoning include:

1. Reflects on feelings when decision-making
2. Asks others how they feel about potential solutions to a problem
3. Considers issues from multiple perspectives
4. Involves others in decisions that affect their work
5. Demonstrates awareness of bias in decision-making
6. Communicates decisions in a way that is sensitive to others feelings
7. Uses organisational values effectively when making important decisions

Again, it is possible to draw comparisons between many of these question items and the factor items found across the *viaEdge*, *Burke LAI*, and *BLAQ*. For example, in the context of problem-solving, the learning agile are more likely to consider issues from multiple perspectives by being aware of their own biases and remaining open to other's ideas.

Another dimension of emotional intelligence hypothesised to show correlations with individual learning agility is emotional self-management. An outcome of effective emotional self-management is the ability to remain resilient in the face of adversity. Considering aspects of learning agility involves taking on new challenges, stepping outside your comfort zone, and maintaining composure under pressure, it is hypothesised that emotional self-management will show a strong positive relationship with learning agility. Genos International (2010) describe emotional self-management as the ability to manage one's own mood and emotions. It includes the following behaviours:

1. Responds effectively in stressful situations
2. Demonstrates a positive, energising demeanor
3. Adapts effectively to different/changing circumstances
4. Responds effectively to criticism from others
5. Manages their time effectively
6. Controls their anger at work
7. Seeks to improve themselves

Again, it is possible to draw comparisons between the behaviours associated with emotional self-management and the learning agility factor items found on the *viaEdge*, *Burke LAI*, and *BLAQ*. For example, change agility and the desire to gain new knowledge and skills, is directly related to emotional self-management question item seven, 'seeks to improve themselves'. In addition, question item three, 'adapts effectively to different/changing circumstances', relates directly to Bedford's question item 'is flexible; adjusts his/her approach when something doesn't work'.

In summary, it has been established that there is some overlap and commonality between the learning agility factor items found across the *viaEdge* learning agility self-assessment, *Burke LAI*, and *BLAQ*. In addition, it has been shown that many of these factors also overlap with personality traits, cognitive abilities, and emotional intelligence skills which can be assessed using well validated and reliable psychometric assessments.

## Research Method

This section outlines the procedure and materials used to help answer the question: what are the underlying psychological variables that support employee learning agility? In addition, information about the participants included in the sample, the results analysis techniques, and the ethical considerations considered in the study is provided. It begins with a discussion of the research philosophy of the researcher.

The choice of research method is influenced by a researcher's epistemological position. As Bryman and Bell (2015) suggest, researchers grounded in the natural sciences are more drawn towards a philosophical position known as positivism. Indeed, this is the position that was adopted for this research. In this study, existing theory related to learning agility has been considered and a series of hypotheses established. In turn, these hypotheses have been used to guide the process of collecting data in order to confirm or reject the stated hypotheses that:

1. Learning agility positively correlates with abstract reasoning
2. Learning agility positively correlates with openness
3. Learning agility positively correlates with extroversion
4. Learning agility positively correlates with emotional self-awareness
5. Learning agility positively correlates with emotional reasoning
6. Learning agility positively correlates with emotional self-management

In doing so, this study followed the principles of deductive reasoning and was based on a quantitative research strategy. It used a cross-sectional survey design to collect quantifiable data via psychometric assessments and a self-completion questionnaire to determine if there are certain personality traits, cognitive abilities, and skills associated with emotional intelligence that can be used to predict learning agility. To achieve this, participant's personality, cognitive ability, and emotional intelligence assessment results were correlated with manager ratings of learning agility. More information about the instruments used in this study is provided in the following sections.

A key consideration in this research design is the use of self-assessments. As De Meuse et al. (2010) suggest, self-serving bias can be problematic with these types of instruments. To help overcome this, psychometric assessments with response style indicators were used. For example, the emotional intelligence self-assessment used in this study has sub-scales associated with self-deceptive enhancement and over-claiming. Finally, the use of a cross-sectional design methodology is consistent with other research in the domain of learning agility (Lombardo & Eichinger, 2000; Connolly, 2001; Dries et al., 2012; Bedford, 2011). However, it is recognised that opportunities exist to employ longitudinal research design methods to assess learning agility across time and within different organisational settings. Future research using this approach would help address any management favourability bias and subjective evaluations that may have occurred.

## Procedure

The Group Human Resources Manager at Scenic Hotel Group was contacted to see if the organisation was interested in taking part in this research. To support this invitation, a research proposal was written and provided. This outlined the objectives of the study and included ethical considerations. A meeting was also held with the Group Human Resource Manager to discuss how best to introduce the study to participants and how to maximise the value of the study for the organisation and individual employees who participate. Options discussed included obtaining the permission of participants to use the data to support existing talent management and development strategies. Once selected, each participant received a covering email with information about the study. Specifically, this outlined the reasons for the research, what would be involved, and how the results would be used. It also mentioned that participation was optional and provided guarantees of confidentiality. A copy of this email is included as Appendix One. Alongside this, the managers of the selected participants were also sent an email outlining the purpose of the study, the benefits, and what is involved. A copy of this email is included as Appendix Two. Both the participant and manager email were sent internally by the Group Human Resource Manager a week prior to the launch of the study to support increased readership.

On launching the study, participants received an email informing them that they would shortly be receiving three separate computer-generated emails from the systems used to administer the psychometric assessments and self-completion learning agility questionnaire. The systems used were GeneSys Online, Genos Surveys, and Qualtrics. Before beginning the assessments, participants were provided with recommendations for completing the assessments. This included being in a quiet environment free from interruption, completing each assessment in one sitting, and to keep the following things in mind when completing the personality and emotional intelligence assessments:

- It's very important to answer honestly and truthfully. Answer how you are, not how you might like to be
- Try to avoid the middle or uncertain answer as often as you can
- Go with your first response rather than thinking the questions through too deeply.

They were also asked to indicate their understanding and informed consent. Alongside this, they completed demographic questions associated with gender, age, position, and educational level.<sup>3</sup>

The total time taken for participants to complete the assessments was estimated as follows:

1. *15FQ+* personality assessment – 15mins
2. *Adapt-g* cognitive ability assessment – 22 mins

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<sup>3</sup> This information was collected for the purposes of maintaining normative sample groups and does not have any bearing on this research.

3. *Emotional Intelligence Select* assessment – 10 mins

4. *Bedford Learning Agility Questionnaire* – 5 mins

As Bryman and Bell (2015) suggest, it is recognised that shorter assessments tend to achieve better response rates than longer assessments. However, they also suggest that respondents can be more accepting of longer assessments if the topic is of interest to them. The response rate achieved in this study indicates that the total time to complete the assessments may have been perceived as being too long.

Upon completion of the assessments and questionnaire, participants and their managers submitted their responses directly into the online systems. For employee and manager non-completion, automated email reminders were sent to help drive response rates.

## **Materials**

It was important that quality criteria were considered and factored into this research. This includes reliability; which refers to the consistency of a measure. For example, a reliable psychometric test is one that produces consistent results when the same person is tested on different occasions (Schmidt & Hunter, 1998). In the sections that follow, there is discussion of the *BLAQ*, which acts to provide a benchmark for the learning agility of participants, and then consideration of the reliability and validity of the psychometric assessments used in the research.

### **Bedford Learning Agility Questionnaire**

The *BLAQ* was administered to participants and their managers to obtain a rating of learning agility. Bedford's questionnaire includes nine items that were developed from a review of the learning agility literature available at the time. In developing his questionnaire, Bedford identified traits and behaviours that he considered to be related to learning agility. From these, he identified 15 item categories which he trialled and tested for their relevance. Following this, some items were combined, and some items eliminated. This resulted in the final nine items which were reviewed by subject matter experts for content and face validity and measured for reliability using Cronbach's Alpha.

Bedford found that the nine items considered together returned a score of Alpha = .929. Furthermore, in analysing his results, he was able to show that all nine items included in the scale correlated at a mean inter-item correlation of  $r = .60$ . This provides assurances that the items on the Bedford scale are related to each other and are suitable for measuring a single construct (Cohen & Swerdlik, 2005). The nine items included in the *BLAQ* can be seen in Appendix Six.

The rationale for using the *BLAQ* in this research was that it provided for a well validated measure of learning agility that was readily available in the public domain at no cost to the researcher. Furthermore, the nine items

on Bedford’s short and concise questionnaire were shown to have commonality with factor items found across longer measures of learning agility available; including the *viaEdge* self-assessment and *Burke LAI*. In addition, the logical coherence of the nine items on the questionnaire appears to relate to the theoretical foundations of learning agility that have been outlined in the literature review of this study. For example, Kolb’s (1984) experiential learning theory is well established. It is represented in the form of a four-stage learning cycle and the items on the Bedford questionnaire appear closely related to these stages. If Kolb is right that people must move through each stage of the cycle to effectively learn and construct knowledge, then a high score on the *BLAQ* indicates a more complete approach to learning whereby a learner is willing and able to:

1. Actively pursue and participate in new experiences
2. Reflect and make sense of their experiences
3. Conceptualise new ideas
4. Actively experiment with ideas whilst remaining open to feedback

This complete approach to learning, at least on the surface, sounds synonymous with learning agility, and in contrast with an approach to learning based on a limited set of preferences. In addition, Bedford also provides an approach to learning agility that is based on skilled behaviours associated with important outcomes, which is appropriate for research at this early stage.

The psychometric measures used in this study had all demonstrated good test-retest stability in earlier research, and as a minimum, demonstrated an internal consistency coefficient of at least 0.7. As Kline (2015) suggests, this supports their practical and reliable use for selection and development purposes. Table 10 outlines the ranges of internal consistency coefficients (Cronbach’s  $\alpha$ ) for the psychometric assessments used in this study.

<b>15FQ+ Personality</b>	<b>Adapt-g Cognitive Ability</b>	<b>Genos Emotional Intelligence</b>
Professional Group Sample across 16 Factors = <b>0.72 – 0.82</b>	Abstract = <b>0.76</b> Numerical = <b>0.85</b> Verbal = <b>0.84</b>	Australia and New Zealand Sample across 7 Factors = <b>0.74 – 0.87</b>

Table 10

In summary, test-retest reliability and internal consistency were considered fair to very good across all psychometric assessments included in this study. However, the fact that a test is reliable only means that the test is consistently measuring a construct. It does not indicate what construct the test is consistently measuring. The concept of validity addresses this and is outlined in more detail below for the respective assessments used in this study.

## **15FQ+ Personality Assessment**

The *15FQ+* is a trait-based assessment of personality based on the original 16 personality factors identified by Cattell (1946). The main features of the *15FQ+* include:

- Items that have been written to avoid culture, gender, and age bias. They are written using clear and concise business English.
- Items that are presented in multiple choice format and include three response options: true, neutral, and false.
- An assessment that consists of 200 questions. This includes 12 items per 16 scales and 8 items from the social desirability scale.
- An assessment that can be administered and completed online.
- An assessment that is designed to be used for selection, development, coaching, and career guidance.
- A normative assessment that compares respondent results against a specific comparison group. The comparison group used in this study consists of 19,633 New Zealand respondents.

In addition to providing a measure across 16 personality scales, the *15FQ+* also includes impression management scores using the scales outlined in table 11.

Impression Management Scale	Explanation	Interpretation
Social Desirability	The desire to present an unrealistically positive image of oneself.	A score of 8 – 10 may indicate a deliberate attempt to distort results, or that the respondent has an unrealistic self-image.
Faking Good	The tendency to present oneself in an overly favourable light by denying development areas and weaknesses.	Faking good results generally follow the same pattern as social desirability. It is advisable to interpret results with caution when faking good is extremely high but social desirability is not high.
Faking Bad	The tendency to present oneself in an unfavourable light by admitting to weaknesses or problem areas that do not apply to the individual.	A high score indicates that the respondent may be self-critical. High levels of anxiety or emotional stress can also inflate the scores on faking bad.

Table 11

The interpretation of these scales helps provide insight into how a participant in the study responded to the *15FQ+*. In turn, this provides a gauge into the meaningfulness and validity of their respective results. In this study, results were excluded for participants who scored in the 8-10 range in social desirability and faking good. They were also excluded for participants who scored in the 8-10 range for only faking good. Detailed information about these exclusions is provided in the results section of this report.

Finally, there is considerable evidence demonstrating the construct and criterion validity of the *15FQ+* (Psytech International, 2017). Construct validity assesses whether the characteristic which an assessment is measuring is consistent with how that construct is defined. A common way of determining an assessment's construct validity is by demonstrating that the test correlates with other assessments which claim to measure related constructs (convergent validity), whilst at the same time, does not correlate with assessments that measure different constructs (divergent validity). It has been shown that the *15FQ+* demonstrates both convergent and divergent validity when compared against other personality measures such as the NEO PI-R, OPQ32i, and MBTI®. A table highlighting the correlations observed across the corresponding scales on the *15FQ+* and OPQ32i is included as Appendix Five.

Alongside construct validity, the publishers claim that the *15FQ+* also demonstrates excellent criterion validity. This involves demonstrating that the assessment meaningfully predicts some real-world criteria. For example, in a study of 42 telesales staff, multiple regression analysis indicated that four of the *15FQ+* factors predicted sales performance. In summary, those sales staff who were rated as being more effective by their line manager were more socially-bold, less self-doubting, and more emotionally stable than those who were rated as being less effective. In this respect, it is noted that the *15FQ+* factor social-boldness assesses social confidence, and self-doubting assesses a tendency to mull over failures and setbacks. This suggests that these two factors are assessing the ability to cope with the interpersonal rejection that is often a feature of high-pressured telesales environments. In addition, conscientiousness was also found to be significantly correlated with participants rated sales performance. In turn, this reflects the importance of diligently completing sales documentation and reliably following up on sales leads. Lastly, it is noted that these four personality factors accounted for just under 20% of the variance in rated sales performance. This clearly demonstrates the criterion validity of the *15FQ+*.

### ***Adapt-g* Cognitive Ability Assessment**

The *Adapt-g* is a measure of cognitive ability that incorporates assessment of both fluid intelligence and crystallised intelligence. In doing so, it includes numerical reasoning and abstract reasoning components that tap fluid intelligence and a verbal reasoning component that is a good measure of crystallised intelligence. The overall score provides a robust measure of general cognitive ability. It is represented as 'g' and is a composite of numeric reasoning, abstract reasoning, and verbal reasoning (Psytech International, 2017). The main features of the *Adapt-g* include:

- An adaptive test structure that tailors itself to the ability level of each respondent by selecting questions based on their response to the previous question. For example, if the participant scores an incorrect answer, then the *Adapt-g* responds with an easier next question that has a lower scoring weighting. In doing so, the assessment yields insight into a participant's ability in a shorter amount of time than traditional reasoning tests. In turn, this reduces participant's anxiety and enhances their assessment experience.
- A verbal reasoning component that measures vocabulary, verbal fluency, and the ability to reason using words. Participant questions for this section of the assessment are drawn from a total pool of 199 items. 7 minutes is allocated to this component of the assessment.
- A numerical reasoning component that measures the ability to understand numerical concepts, to reason using numbers, and perceive logical relationships between numerical information. Participant questions for this section of the assessment are drawn from a total pool of 143 items. 7 minutes is allocated to this component of the assessment.

- An abstract reasoning component that measures the ability to understand abstract logical problems and use new information outside the range of previous experience. This component of the assessment is the purest form of mental ability, is least affected by previous education, and is hypothesised to most strongly correlate with learning agility of the three components included in this assessment. Participant questions for this section of the assessment are drawn from a total pool of 110 items. 8 minutes is allocated to this component of the assessment. An example of test items is included in Appendix Six.

The item data-sets used in the *Adapt-g* have gone through multiple validations (Psytech International, 2017). This included recalibrating item sets to broaden the item pool to include more difficult items in order to assess those at the higher end of the continuum. It also included altering the time limits for each component of the test so that more participants were able to complete the questions in the allocated time. All question items within the *Adapt-g* assessment were designed, reviewed, and tested by registered psychometricians.

### **Genos Emotional Intelligence Select Assessment**

The third and final psychometric assessment used in this study is the *Genos Emotional Intelligence Select* assessment. The assessment measures the frequency with which an individual may exhibit behaviours associated with emotional intelligence (Genos International, 2010). In doing so, the assessment includes items across seven dimensions:

1. Emotional self-awareness
2. Emotional expression
3. Emotional awareness of others
4. Emotional reasoning
5. Emotional self-management
6. Emotional management of others
7. Emotional self-control

The Genos emotional intelligence inventory was specifically designed for workplace settings. It only includes dimensions and items obviously associated with emotional intelligence. Furthermore, all items within the assessment have workplace relevance. In turn, this enhances the face validity of the assessment and promotes its workplace application. The main features of the assessment include:

- Raw scores derived from the seven dimensions are transformed into percentile scores to support interpretation. These scores represent the percentage of individuals within the normative data base that scored lower than the participant's raw score. For example, if a participant scores 50 in emotional self-awareness, then it is said that the participant achieved a raw score higher than 50% of the normative sample.

- The assessment includes a total emotional intelligence score. This is based on an equally weighted composite of the seven dimensions and represents the frequency with which a participant engages in a range of emotionally intelligent behaviours aligned to the seven dimensions.
- The assessment was designed to be administered to a general workplace population. Therefore, the normative sample is very large ( $n = 4775$ ) and is representative of a wide spectrum of the working population including:
  - Adults ranging in age from 18 – 76
  - A gender breakdown of close to 50/50 with slightly more females (52.9%) than males (47.1%)
  - A spread of educational levels ranging from school leaver through to doctoral degree
  - A range of nationalities, occupational groups, role levels, and industries
- The assessment includes three validity indices to help evaluate the quality of a participant’s responses. These are outlined in table 12 on the following page.

Genos Emotional Intelligence Select Assessment – Validity Scales	
Inconsistency Index	Consists of seven item pairs selected on the basis that they are very similar to each other. Thus, the scale provides insight into whether a participant responded to the questions in a consistent fashion. It is suggested that high inconsistency scores should be cause for concern with respect to the valid interpretation of the participant’s results.
Inflation Index	The inflation index provides insight into whether a participant may have unconsciously responded in an overall positive manner to achieve more desirable scores. The assessment automatically adjusts scores for participants who score in the high to very high range. Thus, it allows for all results sets to be interpreted as valid.
Manipulation Index	The manipulation index provides insight into whether a participant is consciously attempting to manipulate their responses to achieve more desirable scores. The assessment automatically adjusts scores for participants who score in the high to very high range. Thus, it allows for all results sets to be interpreted as valid.

Table 12

Along with the *15FQ+* and *Adapt-g* assessments, the *Genos Emotional Intelligence Select* assessment has been through a rigorous validation process (Genos International, 2010). Indeed, the Genos emotional intelligence inventory was formed as a result of a comprehensive factor analytic study involving predominant

models and measures of emotional intelligence including the Mayer-Salovey-Caruso emotional intelligence test (*MSCEIT*) and *BarOn EQ-i*. Furthermore, the assessment was purposefully and theoretically designed to specifically measure behaviours associated with emotional intelligence rather than obvious personality dimensions.

### Participants

The primary unit of measurement and analysis in this study was individuals drawn from a single organisation. The rationale for this was to provide for a more reliable measure of individual learning agility. For example, drawing participants from a single organisation reduces the role the organisational environment plays in supporting or inhibiting learning agility. Furthermore, because the level of analysis was at the individual level, care has been taken not to use the data derived from this level to represent something at a different level (Bryman & Bell, 2015). For example, learning agility is an individual construct and, therefore, making inferences about organisational learning can lead to misattribution.

In selecting participants, a random list generator was used to select 100 Scenic Hotel Group employees from a total pool of 165 employees who had been with the company for a minimum of six months. In effect, this meant that each employee within the participating organisation that met the tenure criteria had an equal probability of being included in the sample. The rationale for imposing the six-month tenure criteria was to enhance the validity of the managers' rating of their employee/s learning agility. Indeed, as Posthuma and Campion (2008) suggest, evaluators require an opportunity to frequently observe employees' job performance across time and within a variety of situations. The reason for limiting the sample size to 100 was due to considerations associated with assessment costs, and concerns from Scenic Hotel Group that they would have too many employees' off-the-job completing assessments. Therefore, it was agreed in consultation with Scenic Hotel Group that using a sample of 100 represented an appropriate balance between time, cost, and obtaining a representative sample. Four of the randomly selected participants subsequently left the company before the research went live; leaving a final random sample of 96. Of the 96 participants selected, 58 were full-time employees and 38 were part-time employees. In addition, the tenure demographic information outlined in table 13 was obtained.

Tenure	# of Participants
6-12-month	18
1-2 years	27
3-5 years	33
5+ years	18

Table 13

Furthermore, a variety of positions were included in the sample. These are outlined in table 14.

Position	# of Participants
Chef	12
Food and Beverage	9
Hotel Support	48
Manager	17
Corporate Support Office	10

Table 14

As Bryman and Bell (2015) suggest, the benefits of using a simple random sampling technique are that it limits human bias and provides opportunities for generalising the findings beyond the sample population.

Following the completion of the data gathering, all participants who took part in this study received a personalised feedback report and were sent a webinar presentation providing them with tools and techniques for enhancing their learning agility.

### Results Analysis

In this study, bivariate analysis techniques were used to examine the relationship between variables. As Bryman and Bell (2015) suggest, bivariate analysis is about relationships and not causation. Therefore, care was taken not to infer that one variable (e.g. extraversion) caused another (e.g. learning agility). Both the psychometric assessment and learning agility questionnaire results were represented on a scale. For example, the *Adapt-g* cognitive ability results were presented on a 10-point scale, with a score of 1 indicating low performance and a score of 10 indicating high performance. Likewise, the *15FQ+* personality results were also presented on a 10-point scale, with a score of 1 indicating low likelihood and a score of 10 indicating high likelihood. Both the participants' and managers' *BLAQ* results were presented on a 7-point scale, with a score of 1 indicating low performance and a score of 7 indicating high performance. In turn, the results were able to be rank-ordered and entered into SPSS Statistics software as interval/ratio variables. Pearson's *r* was then used to examine the relationship between the variables. Pearson's *r* uses coefficients between zero (no relationship) and one (perfect relationship) to demonstrate the strength of the relationship between the variables under analysis. For example, the relationship between employee learning agility and general cognitive ability (*g*) was found to be .395 indicating a positive relationship between these variables. More detailed results are included in the results section of this report. Additionally, statistical significance was used to provide a level of confidence that the results could be generalised to the population from which they were drawn. Considering the results of this study are predominantly being used for research purposes, a statistical significance at the  $p < 0.05$  was accepted. This indicates that the researcher is prepared to accept that 5% of the results could have arisen due to chance.

## **Missing Data Adjustments**

In some instances, participants did not complete all assessments, resulting in incomplete data set-sets. For example, there were twelve participants who only completed one or two of the three psychometric assessments and/or received no manager learning agility rating. Alongside this, there were four *15FQ+* personality assessment results that indicated some socially desirable responding. Initially the incomplete data-sets and socially desirable responses were excluded from the study; which resulted in 21 complete data sets. However, when the socially desirable response data was entered into SPSS, it had little effect on the correlations between learning agility and the personality variables under analysis. Therefore, the decision was made to include these participant data sets in the study. In addition, after contacting managers and participants who had outstanding assessments, a further nine complete data sets were obtained. This resulted in a final total of 34 complete data-sets.

## **Ethics**

It was important that ethical considerations were addressed in this study. This involved ensuring that the purpose was communicated, participant informed consent was obtained, and all participants received a detailed feedback report on their assessment results. As well as this, disclaimers were included on all instruments indicating that the information provided was strictly confidential. Furthermore, this research met the standards set out in the Massey Code of Ethical Conduct for Research, Teaching and Evaluations Involving Human Participants. More detailed information about this can be seen in Appendix Seven. In summary, this provides actions taken in response to eight ethical principles including:

1. Respect for persons
2. Minimisation of harm to participants, researchers, institutions and groups
3. Informed and voluntary consent
4. Respect for privacy and confidentiality
5. The avoidance of unnecessary deception
6. Avoidance of conflict of interest
7. Social and cultural sensitivity to the age, gender, culture, religion, social class of the participants
8. Justice

## Results

This study examined the relationship between employee learning agility and the personality, cognitive ability, and emotional intelligence factors that support this construct. In doing so, it sought to answer the following question:

- What are the underlying psychological variables that support employee learning agility?

This section presents the results of the statistical analysis that was undertaken to answer this question and test the following hypotheses.

1. Learning agility positively correlates with abstract reasoning
2. Learning agility positively correlates with openness
3. Learning agility positively correlates with extraversion
4. Learning agility positively correlates with emotional self-awareness
5. Learning agility positively correlates with emotional reasoning
6. Learning agility positively correlates with emotional self-management

Firstly, the overall relationships between learning agility, cognitive ability, the Big Five, and emotional intelligence will be presented. This will be followed by a detailed breakdown of the Big Five sub-traits and their respective correlations with employee learning agility. All results were generated using bivariate analysis, and more specifically, Pearson correlations.

They were entered into SPSS software on a scale following data cleansing which involved:

- Averaging verbal, numerical, and abstract reasoning and using this as a score for overall 'g' on the *Adapt-g* cognitive ability assessment.
- Averaging the personality sub-traits and using this as a score for the corresponding Big Five personality dimension.
- Averaging the emotional intelligence dimensions and using this as a score for total emotional intelligence.

Alongside the above data cleansing, it was determined that the manager ratings of learning agility would provide for the most objective measure of participants learning agility. For example, not factoring participants self-assessed learning agility score helps limit the effects of self-serving bias and impression management that can surface in the completion of self-assessments. Therefore, to obtain an overall learning agility score for each participant, the manager's ratings across the nine items on the *BLAQ* were averaged. The range and means obtained across the nine items can be seen in table 15.

Question Item:	Range:	Mean:
1. Accepts and acts on feedback from others.	Min = 1 Max = 7	5.67
2. Is flexible; adjusts his/her approach when something doesn't work.	Min = 2 Max = 7	5.69
3. Is curious and inquisitive.	Min = 1 Max = 7	5.60
4. Is self-aware; knows own strengths and limitations.	Min = 2 Max = 7	5.60
5. Displays a desire to gain new knowledge and skills.	Min = 2 Max = 7	5.74
6. Actively pursues personal growth and improvement.	Min = 1 Max = 7	5.43
7. Seeks out challenges and new experiences.	Min = 1 Max = 7	5.32
8. Is open-minded and receptive to change and new ideas.	Min = 2 Max = 7	5.66
9. Reflects on and learns from mistakes.	Min = 1 Max = 7	5.64

Table 15

The consistency of the range and means across the nine items suggests that each item contributes meaningfully to the overall learning agility score used in this study. Indeed, Bedford was able to show that all nine items included in the scale correlated at a mean inter-item correlation of  $r = .60$  and are therefore suitable for measuring a single construct.

Each hypothesis was tested using a one-tailed test of significance. In effect, this meant that the possibility of the relationship was tested in one direction only. Whilst using a one-tailed test disregards the possibility of an effect in the opposite direction, it is deemed appropriate for this research because the researcher is only interested in understanding if learning agility has a significantly positive relationship with the independent variables under analysis. In summary, in the case of the hypotheses being tested in this research, the relationship is one directional and hence the use of a one-tailed test is appropriate.

In addition, it is noted that these results were drawn from a small sample size ( $n = 34$ ) and therefore may be unreliable. Indeed, the low response rate obtained in this study was disappointing and may have been influenced by participants receiving three separate system generated emails containing assessment links. In hindsight, using a single landing page containing all assessments requiring completion may have improved

the response rate. In turn, this would help reduce confusion and limits the chances of assessment links ending up in participants' junk mail.

Finally, the correlational effect sizes outlined in this study are deemed relatively small at .10, typical at .20, and relatively large at .30. This is supported by Gignac and Szodorai (2016) who suggested that researchers in the behavioural and cognitive sciences are recommended to apply these normative correlational guidelines.

### Learning Agility and Cognitive Ability

Learning Agility	Cognitive Ability	
1	Verbal Reasoning	.333*
	Numerical Reasoning	.250
	Abstract Reasoning	.413**
	Overall General Cognitive Ability (g)	.395*

Table 16

\*\* Correlation is significant at the 0.01 level (1-tailed)

\* Correlation is significant at the 0.05 level (1-tailed)

Learning agility is showing a significantly positive relationship with overall general cognitive ability ( $r = .395$ ). This is evident at the  $p < 0.05$  level. Furthermore, learning agility is showing an even stronger ( $r = .413$ ) significantly positive relationship with abstract reasoning. This is evident at the  $p < 0.01$  level. Therefore, this provides the researcher with a strong level of confidence that these results can be generalised to the sample population from which they were drawn. It also means that the null hypothesis can be rejected and the stated hypothesis that learning agility positively correlates with abstract reasoning can be accepted. In addition, learning agility is also showing a significantly positive relationship with verbal reasoning ( $r = .333$ ) at the  $p < 0.05$  level. However, whilst learning agility is showing a positive relationship with numerical reasoning ( $r = .250$ ), it is non-significant.

## Learning Agility and The Big Five

The following table outlines the relationship between learning agility and the Big Five personality dimensions. Descriptions of the Big Five, and their opposite dimension, can be seen in Appendix Nine.

Learning Agility	The Big Five	
1	Openness	.376*
	Conscientiousness	.186
	Extraversion	.331*
	Agreeableness	-.070
	Neuroticism	.278

Table 17

\*\* Correlation is significant at the 0.01 level (1-tailed)

\* Correlation is significant at the 0.05 level (1-tailed)

Learning agility is showing a significantly positive relationship with openness ( $r = .376$ ) and extraversion ( $r = .331$ ) at the  $p < 0.05$  level. Again, this provides the researcher with a level of confidence that these results can be generalised to the population from which they were drawn. With conscientiousness ( $r = .186$ ) and neuroticism ( $r = .278$ ), learning agility is showing a positive but non-significant relationship. Furthermore, learning agility shows a non-significant but very weak inverse relationship with agreeableness ( $r = -.070$ ). Based on these results, the stated hypotheses that learning agility positively correlates with openness and extraversion can be accepted.

## Learning Agility and Emotional Intelligence

Learning Agility	Emotional Intelligence	
1	Total Emotional Intelligence	.130
	Emotional Self-Awareness	.164
	Emotional Awareness of Others	.050
	Emotional Expression	.162
	Emotional Reasoning	-.023
	Emotional Self-Management	.168
	Emotional Management Others	.086
	Emotional Self-Control	.159

Table 18

There were no significant correlations between learning agility and the skills associated with emotional intelligence with results ranging from  $r = -.023$  through to  $r = .168$  and with a mean correlation of  $r = .112$ . Therefore, based on these results, the stated hypotheses that learning agility positively correlates with emotional self-awareness, emotional reasoning, and emotional self-management are rejected. The lack of statistical significance and correlational strength across these results will be discussed in more detail in the next section.

### Learning Agility and Openness Sub-Traits

This section outlines the relationship between learning agility and sub-traits of the Big Five personality dimensions. Descriptions of the sub-trait labels (and their opposite dimension) can be viewed in Appendix Ten. In addition, a more detailed analysis and discussion of these findings is included in the discussion section of this report.

Learning Agility	Openness Sub-Traits	
1	Tender-Minded	.042
	Abstract	.432**
	Radical	.346*

Table 19

\*\* Correlation is significant at the 0.01 level (1-tailed)

\* Correlation is significant at the 0.05 level (1-tailed)

There is a significantly positive relationship between learning agility and the abstract trait ( $r = .432$ ). A person high in the abstract trait is likely to be imaginative, innovative, and naturally inclined to look beyond the obvious facts. The opposite of abstract is concrete. This is indicative of someone who is pragmatic and concerned with realism. There is also a significantly positive relationship between learning agility and the radical trait ( $r = .346$ ). Someone high in the radical trait is more likely than most to reject tried and tested methods, question the status quo, and be comfortable with change. The opposite of radical is conventional. Someone scoring high in the conventional trait is more likely to value tried-and-tested methods and be accepting of the status quo. Furthermore, they may feel uncomfortable in rapidly changing environments and dislike ambiguity.

### Learning Agility and Conscientiousness Sub-Traits

Learning Agility	Conscientiousness Sub-Traits	
1	Conscientious	.261
	Restrained	-.009
	Self-Disciplined	.178

Table 20

As seen in table 20, the findings in this study demonstrated no correlations of significance between learning agility and the conscientiousness sub-traits.

### Learning Agility and Extraversion Sub-Traits

Learning Agility	Extraversion Sub-Traits	
1	Empathic	.196
	Enthusiastic	.010
	Socially-Bold	.385*
	Group Oriented	.323*

Table 21

\*\* Correlation is significant at the 0.01 level (1-tailed)

\* Correlation is significant at the 0.05 level (1-tailed)

Learning agility is showing a significantly positive relationship with socially-bold ( $r = .385$ ) and group orientated ( $r = .323$ ). Both sets of results are observed at the  $p < 0.05$  level and provide the researcher with a good level of confidence that the findings can be generalised to the population from which they were drawn. A person high in the socially-bold trait is likely to be confident interacting and communicating with new people. The opposite of socially-bold is retiring. This reflects individuals who are more likely to take some time to build rapport and potentially have an aversion to being the focus of attention. Highly group-orientated individuals are likely to demonstrate a preference for team activities and collective decision-making processes. The opposite of group-orientated is self-sufficient. This is more reflective of self-reliant individuals who are happy working autonomously, may see group decision making as inefficient, and tend to be selective about consulting others. Although not significant, learning agility shows a positive relationship with empathic ( $r = .196$ ). Empathic people are likely to demonstrate an interest in other people and be perceived as friendly, warm, and supportive. There is no relationship of any significance between learning agility and enthusiastic ( $r = .010$ ).

### Learning Agility and Agreeableness Sub-Traits

Learning Agility	Agreeableness	
1	Low Intellectance	-.214
	Accommodating	-.080
	Trusting	.175

Table 22

As seen in table 22, there were no significant correlations found between learning agility and the agreeableness sub-traits. However, learning agility did show an inverse correlation with low intellectence ( $r = -.214$ ). The opposite of low intellectence is high intellectence. People scoring high in this dimension are likely to demonstrate confidence in their intellectual abilities, are keen to learn new information, and prefer complex arguments and ideas. While it is possible to theorise a connection between these attributes and the concept of learning agility, the result was not significant.

### Learning Agility and Neuroticism Sub-Traits

Learning Agility	Neuroticism	
1	Affected by Feelings	.230
	Self-Doubting	-.166
	Tense Driven	.469**

Table 23

\*\* Correlation is significant at the 0.01 level (1-tailed)

\* Correlation is significant at the 0.05 level (1-tailed)

For the neuroticism sub-traits, learning agility demonstrated a significantly positive correlation with tense driven ( $r = .469$ ) at the  $p < 0.01$  level. Individuals scoring high in the tense driven trait are likely to be ambitious, hard-driving, and may work long hours. The opposite to tense driven is composed which is reflective of people who are likely to deal with inconveniences in a calm and steady manner and not be easily frustrated by setbacks or failures. Although not significant, learning agility also shows a positive relationship with affected by feelings ( $r = .230$ ). Somebody scoring high in this trait is likely to be emotionally sensitive and may have difficulty summoning sufficient energy to embrace challenging situations. Learning agility also shows a weak inverse relationship with self-doubting ( $r = -.166$ ); however, this is non-significant.

The research sought to find psychological variables that were related to the *BLAQ*. In summary, the analysis identified that learning agility is significantly positively correlated with overall cognitive ability, openness to experience, extraversion, and the neuroticism sub-trait, tense driven.

## Discussion

Increasingly, the construct of learning agility is being used as a measure to predict employee performance and leadership potential (De Meuse et al., 2010). However, there is much debate amongst researchers and practitioners as to the role cognitive ability and personality play in determining an individual's ability to learn from experience and apply that learning in new novel situations. Therefore, to make progress and move beyond the debate, it would be beneficial to test and identify the underpinning psychological variables that support the application of learning agility. In this study, the *Bedford Learning Agility Questionnaire* was used as a measure of employee learning agility and this has enabled the researcher to identify some significant findings as to the underpinning psychological variables that support its application. As discussed earlier, there is a conceptual basis for accepting Bedford's items as a complete approach to learning which allows one to be learning agile rather than demonstrate a dependence on a limited range of learning preferences.

This section explores the findings of this study and considers the implications and application of the results. In doing so, it includes a review and discussion of each of the stated hypotheses in light of the existing literature available.

### **Hypothesis 1: Learning agility positively correlates with abstract reasoning**

There was a significant ( $p = 0.01$ ) positive relationship between managers' ratings of employee learning agility and abstract reasoning ( $r = .413$ ). As Psytech International (2017) suggest, abstract reasoning is the purest form of mental ability. It measures the ability to understand complex problems and use new information outside the range of previous experience. In addition, abstract reasoning is closely related to Cattell's (1943) fluid intelligence. This is described as an individual's ability to identify patterns, analyse novel problems, and extract meaning using logic.

In applying their fluid intelligence, individuals are thinking beyond the obvious and working in a space not immediately connected to their existing knowledge. In other words, they are conceptualising possibilities within the realms of their cognitive abilities. Therefore, it follows that fluid intelligence, abstract reasoning, and more broadly cognitive ability, are key components of individual learning agility. Indeed, overall cognitive ability was also found to have a significant ( $p < 0.05$ ) positive relationship with leaning agility ( $r = .395$ ). Furthermore, these findings are consistent with DeRue et al's. (2012) narrow definition of learning agility whereby they emphasised the speed with which people learn, as well as the cognitive flexibility in which they apply their learning, as being hallmarks of the agile learner. They are also supportive of Schmidt and Hunter's (1996) view that the ability to learn is largely underpinned by an individual's intelligence and reinforce the notion that those who possess higher levels of cognitive ability achieve greater success across a broad range of work contexts.

In summary, individuals with higher levels of cognitive abilities are better able to process information and learn. However, it is noted that these results differ and contrast with Connolly's (2001) and Bedford's (2011) research that found no significant correlations between cognitive abilities and learning agility.

### **Hypothesis 2: Learning agility positively correlates with openness to experience**

Alongside possessing the cognitive ability to synthesise information and make sense of complexity, learning agility also involves growing and adapting across time. To achieve this, one must be open to experience. Individuals who score high on the openness to experience scale are intellectually curious and tend to think in nonconforming ways. They appear comfortable challenging the status quo and remain open to new ideas. In contrast, those low on openness to experience tend to prefer the straightforward and obvious over the complex and ambiguous. Therefore, considering this, it is not surprising to see a significant ( $p < 0.05$ ) positive correlation ( $r = .376$ ) between managers ratings of employee learning agility and the openness dimension on the *15FQ+* personality assessment. These results are also consistent with the early studies conducted by McCall, Lombardo, & Morrison (1988); Lombardo, Ruderman, & McCauley (1988); McCall & Lombardo (1983) that established the original construct of learning agility. In these studies, it was determined that successful leaders were more open to experimentation, tended to challenge the status quo, and continually strived to improve themselves. In doing so, these leaders were less likely to derail as they progressed through their leadership career. It is possible to see connections between these key leadership attributes and the openness sub-traits, radical ( $r = .346$ ) and abstract ( $r = .432$ ) which demonstrated significantly positive correlations with learning agility. This further emphasises that those who have the propensity to challenge mental models, demonstrate curiosity, and who look beyond the obvious, are more likely to be perceived as learning agile.

However, as De Meuse et al. (2010) suggested, remaining open to experience is only one part of the equation. Alongside this, it is important that leaders are able to conceptualise and extract something worthwhile from their experiences. This highlights the intersection and mutually inclusive relationship between openness to experience and cognitive ability. As Psytech International (2017) suggest, it is possible to view openness to experience as a sub-trait of cognitive ability. For example, openness to experience can be viewed as a cognitive style that distinguishes imaginative, creative people from down-to-earth, conventional people. Therefore, it is possible that learning agility is about the ability to be open within the parameters of one's cognitive abilities. In this study, the relationship between overall cognitive ability ( $g$ ) and openness to experience was  $r = .310$  and significant at the  $p < 0.05$  level.

### **Hypothesis 3: Learning agility positively correlates with extraversion**

Extraverted people tend to demonstrate a strong people orientation. They appear uninhibited and actively seek out situations to engage with others in conversation. In contrast, introverted personality types are more

oriented towards their own inner world of thoughts, perceptions and experiences. They can appear more self-contained and less socially active. The results of this study suggest that those who possess extraverted qualities are more likely to be learning agile ( $r = .331$ ). More specifically, those who are quick to initiate social contact, feel confident communicating with new people, and who prefer to engage in collective activities, are more likely to be perceived as learning agile by their manager. This is evidenced in the strong positive correlations with the extraverted sub-traits socially-bold ( $r = .385$ ) and group-orientated ( $r = .323$ ). Furthermore, these findings are supportive of the people agility, interpersonal risk-taking, and collaborative factors used across the *viaEDGE*, *Burke LAI*, and *BLAQ*. They are also consistent with Burke's (2017) findings that extraversion has a mid to strong correlation with the relevant dimensions on his learning agility inventory. However, whilst demonstrating qualities associated with these factors may be more pronounced in extraverted types, it is worth considering the management biases that may be evident in these results. For example, it is possible to conclude that a manager perceives that those who demonstrate outward thinking preferences and who make their logic obvious to others are more learning agile than their quieter introverted counterparts. Furthermore, Schmeck and Lockhart (1983) suggest that introverts are more influenced by punishment than extraverts; and therefore, they may be inclined to avoid challenging assignments through fear of failure and retribution. Taking these factors into consideration, the ability of leaders to facilitate learning environments in which all employees along the introversion-extraversion continuum can succeed is more likely to be supportive of individual learning agility.

#### **Hypothesis 4,5,6: Learning agility positively correlates with emotional intelligence skills**

Among the research hypotheses were that learning agility would positively correlate with emotional self-awareness, emotional reasoning, and emotional self-management. However, no correlations of significance were found. This is somewhat surprising given the neuroscience of emotions has shown that positive emotions tend to enhance the functioning of the prefrontal cortex. They have what psychologist Barbara Fredrickson (2004) termed, a 'broadening and build' effect; that is, positive emotions enhance people's capacity to think laterally, remain open to possibilities, and demonstrate creativity. These outcomes are consistent with the characteristics of the agile learner outlined in this paper. They are also common factors included as measurement constructs across the *viaEDGE*, *Burke LAI*, and *BLAQ*. Furthermore, positive emotions increase dopamine levels that are important for interest and learning; whereas negative emotions limit the functioning of the prefrontal cortex, narrowing thinking, and limiting interpretation of events. They tend to diminish cognitive resources through increased levels of cortisol. Thus, people can become biased in their views and lose their capacity to objectively evaluate situations (Genos International, 2010). Furthermore, the effects of negative emotions can mean that one can lose rationality and may find it harder than normal to deal with detailed facts and information. Therefore, the researcher expected to find that the ability to recognise, reason with, and manage emotions would be supportive factors underpinning the construct of learning agility.

It was for these reasons that self-awareness was identified as a significant component of learning agility by De Meuse, Dai, Eichinger, Page, Clark, and Zewdie (2011). In addition, various studies have also reinforced the role of self-awareness in achieving effective experience-based learning outcomes (DeRue, Nahrgang, Hollenbeck, & Workman, 2012; Ellis & Davidi, 2005). Alongside emotional self-awareness, learning agility involves seeking out new challenges, confronting individual differences, and being receptive to change. This can involve discomfort and requires the skills to manage one's own emotions. In doing so, the functioning of the pre-frontal cortex is enhanced and the capacity for demonstrating learning agility improved.

However, just because one is emotionally self-aware, values the perspectives of others, and can manage emotions in challenging situations, does not mean that they are able to learn at speed and make sense of complexity. These are also recognised as the hallmarks of the agile learner; and the findings of this study suggest that these attributes are more aligned to cognitive abilities and openness to experience than skills associated with emotional intelligence.

#### **Other Significant Findings: Verbal Reasoning and Tense-Driven**

Other factors found to correlate positively and significantly with learning agility include verbal reasoning ( $r = .333$ ) and the neuroticism sub-trait, tense-driven ( $r = .469$ ). Verbal reasoning measures verbal fluency and the ability to reason using words. It can be observed in an individual's capacity to formulate and express complex arguments. Considering the measure of learning agility used in this study was obtained via managers' observations and ratings, it follows that participants who are able to express and articulate their knowledge results in them being perceived as more learning agile. Furthermore, these results are consistent with the findings of Burke (2017) whereby he found that the dimensions used on his learning agility assessment most closely related to cognitive abilities, such as verbal reasoning, demonstrated a positive correlation with the expected cognitive measures he used to test the construct validity of his assessment. However, in contrast, Bedford (2011) and Connolly (2001) found no significant correlations between learning agility and factors associated with cognitive ability. Therefore, this supports the notion that further research is required to establish a clearer link between verbal reasoning and learning agility.

Alongside verbal reasoning, the results of this study also found a significant relationship between learning agility and the neuroticism sub-trait, tense-driven. The tense-driven trait categorises individuals who tend to be ambitious and hard-driving. These individuals are therefore likely to demonstrate commitment and dedication in learning the necessary knowledge, skills, and behaviours required to meet new challenges. Therefore, it is possible to make inferences between the tense-driven trait and the concept of learning goal orientation developed by Dweck (1986); and which has been found to show strong correlations with learning agility (Burke, 2017). In addition, it can be argued that these findings also support the linkages that have been established between learning agility and motivation to learn (Arun, Coyle, & Hauenstein, 2012; Carrette & Anseel, 2012). For

example, when combined with openness to experience, tense-driven individuals are more likely to demonstrate an ambition and drive for self-directed learning practices. Indeed, the results of this study show a significantly ( $p = < 0.01$ ) strong positive correlation between openness to experience and tense-driven ( $r = .557$ ). These findings also reinforce the personal motivational aspects of learning agility inherent in McCall, Lombardo, and Morrison's (1988) original definition. However, it is also recognised that tense-driven individuals are more likely to become frustrated by set-backs and failures. In doing so, they may be more inclined to dwell on mistakes and thus inhibit their capacity to be learning agile.

The significant positive relationship between the neuroticism sub-trait, tense-driven, and learning agility seen in this study is also in direct contrast to findings in other studies. This includes Bedford (2011) and Connolly (2001) who found an inverse relationship between learning agility and neuroticism. Therefore, one could speculate that in some organisations people who are tense driven may be given more challenging assignments and thus have more opportunities to demonstrate learning agility than their composed counterparts. In conclusion, more work is required to further test the relationship between the personality sub-traits associated with neuroticism and learning agility.

Despite one possessing all the attributes of an agile learner, it can be argued that the organisational learning environment and leadership practices play a significant role in supporting or inhibiting the application of individual learning agility. Senge (2006) suggests that organisational learning is best facilitated within environments that support:

1. The pursuit of personal mastery. This is described as a discipline underpinned by the motivation to continually learn and deepen one's awareness. It can be supported by providing on-going access to staff learning and development opportunities. In addition, and as Senge suggests, the pursuit of personal mastery is facilitated within organisational environments that encourage employees to adopt pro-learning mindsets, demonstrate learning drive and ambition, and practice continuous self-improvement.
2. The challenging of mental models and deeply ingrained assumptions, generalisations, and world views. Indeed, Senge suggests that individuals tend to adopt theories and practices that become entrenched within their norms, values, and behaviours. As a consequence, this can result in confrontational attitudes and defense mechanisms. Thus, it is important that organisations are able to promote cultures of openness.
3. The building of shared visions that foster genuine commitment and engagement. Establishing shared vision provides employees at all levels of the organisation with a sense of common identity, and in doing so, provides focus and encourages enrollment in the on-going learning process.
4. The establishment of team learning structures whereby team members develop the capacity for suspending assumptions and entering genuine dialogue without fear of repercussion. Team learning is facilitated through open communication, shared meaning, and by developing an appreciation of individual

strengths and differences within and across teams. In turn, this provides the conditions for knowledge to flow more freely across boundaries.

Facilitating these types of organisational learning environments requires certain leadership attributes and behaviours. Indeed, Senge (2006) suggests that to foster organisational learning, leaders need to depart from the more traditional type of leadership that is largely governed by rules and regulations. Instead, he proposes that leaders adopt transformational and empowering leadership styles that encourage employees to challenge the status quo, engage in collaborative activity to identify better ways of working across the organisational system, and that are more developmental in focus. These outcomes are also aligned with emotionally intelligent leadership and the capacity to facilitate positive emotions in others. Indeed, in a study conducted by Fredrickson, Cohn, Coffey, Pek and Finkel (2008), it was shown that by facilitating positive emotions in others, it was possible to broaden a learner’s sense of possibility, open their minds to more options, and boost their overall brain performance.

It is possible to see the relationships between organisational learning principles and individual learning agility in table 24.





<b>Organisational Learning</b>  	<b>Hi</b> <ul style="list-style-type: none"> <li>• Empowering leadership styles</li> <li>• Organisational learning structures in place</li> <li>• Low employee learning drive and ambition</li> <li>• Some employee resistance/defensiveness and limited organisational innovation</li> </ul>	<ul style="list-style-type: none"> <li>• Empowering leadership styles</li> <li>• Supportive learning environment and structures</li> <li>• Applied learning, collaboration, and engagement</li> <li>• Creative problem solving and high organisational innovation</li> </ul>
	<ul style="list-style-type: none"> <li>• Command and control leadership</li> <li>• Fixed mindsets and acceptance of status-quo</li> <li>• Employee resistance and defensiveness</li> <li>• No supporting organisational learning structures and no organisational innovation</li> </ul>	<ul style="list-style-type: none"> <li>• Command and control leadership</li> <li>• High employee learning drive and ambition</li> <li>• Self-directed learning and development</li> <li>• No supporting organisational learning structures and stifled organisational innovation</li> </ul>
<b>Lo</b>	<b>Individual Learning Agility</b>  	<b>Hi</b>

Table 24

In summary, the organisational culture provides the context in which people are able to express their learning agility. As can be seen in Table 24, there is a mutually beneficial relationship between organisational learning principles and individual learning agility.

What has become apparent in this research is that the construct of learning agility is largely underpinned by cognitive abilities and openness to experience. Combine these factors with drive and ambition, and the result appears to be someone who is more inclined to:

1. Accept and act on feedback from others
2. Be flexible in their approach and adjust this when something doesn't work
3. Demonstrate curiosity and an inquisitive nature
4. Understand their strengths and limitations
5. Display a desire to gain new skills and knowledge
6. Actively pursue personal growth and improvement
7. Seek out challenges and new experiences
8. Remain open-minded and receptive to change
9. Reflect and learn from mistakes

These findings appear to reinforce well founded and robust organisational psychology research that indicates cognitive ability and openness to experience as key determinants that benefit learning on the job and overall job performance. The major reason for this is that those with more intelligence acquire knowledge more rapidly and can subsequently apply that knowledge across a range of job experiences (Schmidt & Hunter, 1998). In other supporting research into the predictive validity for knowledge attainment, Stumm (2018) found openness to experience and cognitive ability to be the key determinants of knowledge attainment and application. However, at the same time, she also found that openness to experience was more positively associated with knowledge attainment and application than intellectual curiosity, or cognitive ability. Again, this reinforces the findings of this study that suggests both cognitive abilities and openness to experience are required to drive learning behaviour, achievement, and agility.

Considering the studies discussed in this paper (Bedford, 2011; Conolly, 2001; McCall, Lombardo, & Morrison, 1988; Lombardo, Ruderman, & McCauley, 1988; McCall & Lombardo, 1983) show some inconsistencies between each other, as well as with the results found in this study, it could be argued that the construct of learning agility still lacks definitional clarity and would benefit from further research to determine the precise underlying psychological variables that support its application. However, the findings of this research and literature review suggest that learning agility is a function of the following variables:

1. Cognitive ability
2. Learning mindset and behaviour
3. Contribution to the social learning environment

Cognitive ability is all about how smart the individual is. They need to have a requisite level of cognitive "horsepower" to make sense of complexity and work out what needs to be done in a new situation.

Learning mindset and behaviour involves having a learning goal orientation, remaining open to new experiences, and demonstrating a readiness to accept feedback from others. So, alongside being smart (cognitive ability), a learning agile individual is prepared to accept and embrace change. This is further reinforced when considering the close relationship between the hallmarks of the agile learner (Lombardo & Eichinger, 2000; De Meuse, 2017) and Carol Dweck's (1986) work on fixed versus growth mindsets. Individuals with a growth orientated mindset demonstrate a pro-learning attitude and therefore tend to embrace risk, seek out challenging assignments, and remain open to feedback. They are aware of their strengths and limitations and likely to have a grounded view of their skills and abilities.

The contribution to the social learning environment means that individuals are willing and able to contribute in the social context of the organisation. The other two variables are concerned with what is happening within the individual. For that to make a valuable difference, the individual has to make an active contribution to an organisation or group. In some organisations that may mean being high in neuroticism, and needing to stand out in an extraverted way, so that others pay attention. However, other organisations may seek to create learning cultures in which the insights of introverted, non-neurotic people are able to be heard just as readily as others.

In summary, whilst the three variables discussed above are independent of each other, they are mutually inclusive in supporting an individual to be learning agile.

## Conclusion

As bestselling author Jacob Morgan (2014) describes in his latest book there are a number of trends shaping the future of work. These trends include: technology, generational differences, and increased employee mobility. Alongside this, global markets are becoming more volatile, workplace problems increasingly complex, and organisational futures more uncertain. As a result, this is having an impact on the knowledge, skills, and behaviours required to be successful, and is forcing organisations to reconsider their selection and development practices. Subsequently, these trends have given rise to a construct known as learning agility as a measure of employee performance and potential. More specifically, measures of learning agility are being used to assess one's ability to navigate the unknown, cope with complexity, and maintain performance under first time conditions. However, whilst practitioners have been using learning agility to select and develop talent for many years, many questions and much debate remains as to the specific psychological variables that underpin the construct. Some researchers suggest that learning agility is a standalone construct (Connolly, 2001; Bedford, 2011) whilst others (Vandewalle, 2012; Burke, 2017) suggest that it is largely underpinned by cognitive abilities and personality traits. It is this lack of consistency and agreement that led to DeRue, et al. (2012) to suggest that the construct required better measurement.

In response, this study sought to determine the underpinning psychological variables that support the application of learning agility. To achieve this, a review of the literature was conducted to identify the common factors seen to support the construct. In addition, a factor analytic study of four learning agility assessments was conducted. This included the *Choices Architect* instrument (Lombardo & Eichinger, 2000), *viaEDGE* assessment (De Meuse et al., 2011), *Burke Learning Agility Inventory* (Burke, 2017), and the *Bedford Learning Agility Questionnaire* (2011). As an outcome, *Bedford's Learning Agility Questionnaire* was selected for use in this study based on its availability, conciseness, relevance to the existing literature, and appropriateness for this stage of research. Subsequently, the questionnaire was administered to the managers of participants to obtain an overall learning agility score for each participant. Alongside this, the *15FQ+* personality assessment, *Adapt-g* cognitive ability assessment, and *Genos Emotional Intelligence Select* assessment were administered to participants, and the results used to test the relationship between learning agility and cognitive ability, personality, and emotional intelligence.

As a result, this study was able to identify core psychological variables that underpin the application of a construct that has been identified as a key enabler of future leadership success (De Meuse, 2017). In addition, it has provided for a tentative model of learning agility comprising of:

1. Cognitive ability
2. Learning mindset and behaviour
3. Contribution to the social learning environment

It is possible that this model could be adopted as the foundation for further research, and the development of a derived scale of learning agility. If such a scale was to be developed, this study has shown that it would need to measure and weight the following in support of learning agility:

1. Verbal and abstract reasoning. These factors help predict employees who are able to make sense of complexity, formulate and express complex arguments, and use new information outside the range of previous experience. These outputs are all considered to be hallmarks of the agile learner.
2. Personality factors associated with extraversion, openness to experience, and the neuroticism sub-trait, tense-driven. When combined, these factors provide insight into individuals who are more likely to initiate social contact, challenge the status quo, demonstrate intellectual curiosity, and who possess learning drive and ambition. Again, these are all considered attributes of the agile learner.

The findings of this study also reinforce and support many of the theoretical foundations of learning agility. This includes Kolb's (1984) experiential learning theory, Dweck's (2012) work on fixed versus growth mindsets, and studies associated with learning goal orientation (VandeWalle et al., 1999; Dweck, 1986). Additionally, the organisational learning environment is suggested to play an important contextual role in supporting individual learning agility (Senge 2006). However, this was beyond the scope of this study and could be a key focus for future research.

In summary, the existing literature supports learning agility as a prime predictor of employee performance and potential. This study has shown that the willingness and ability to learn from experience and apply that learning to new and novel situations (Lombardo & Eichinger, 2000) is largely underpinned by ones' cognitive abilities, openness to experience, extraverted tendencies, and learning drive and ambition. These can all be measured using existing psychometric assessments.

### **Limitations**

There are a few factors that limit the generalisability of this study. The first of these is the relatively small sample size and the limited response rate. Indeed, Bryman and Bell (2015) suggest that a larger sample size means more precise results due to less sampling error. Furthermore, it is recognised that the time taken to complete the assessments may have had an impact on the response rate. Another consideration is that the assessments were all administered using separate systems. In effect, this may have resulted in assessments getting lost within participant's inboxes or even being accidentally deleted. To overcome this, it would be beneficial to administer all assessments from a single source platform and using a landing page containing links to the individual assessments.

Another consideration related to the sample is that all participants were drawn from one company. Using a sample drawn from across different organisations and industries might help explore the role of context and

therefore might produce more definitive results. In addition, this study used cross-sectional design and correlations to look at the relationship between learning agility, personality, cognitive ability, and emotional intelligence. As Bryman and Bell (2015) suggest, cross-sectional designs typically have weak internal validity and means that causal inferences cannot be extracted from the results.

Lastly, conclusions were drawn based on a single evaluation of learning agility i.e. ratings obtained from the participants' manager. Therefore, it is recognised that potential management bias may exist in some instances. For example, managers' perceptions of employee learning agility could be influenced based on an individual's achievement of key performance indicators, as opposed to their willingness and ability to learn. In addition, managers may become biased in their view that more socially-bold and extraverted types are more learning agile simply because they are more visible. However, whilst management bias can be seen as a potential limitation, there is also a need for individuals to make their learning agility visible in order to demonstrate their application of the construct and add value to their organisation.

### **Further Research**

There are a variety of approaches that future research could take to address the limitations of this study. Firstly, regression analysis could be performed to better understand the relationship between learning agility and the independent variables under analysis. In turn, this would allow for causal inferences to be made. It would also enable the researcher to determine the incremental contribution of the cognitive ability and personality factors that enhance learning agility. In effect, this would support the identification of core assessment items from across the *15FQ+* personality and *Adapt-g* cognitive ability assessments to include in a derived scale of learning agility.

Additionally, it would also be beneficial to collect learning agility ratings from multiple sources using a 360-degree survey approach that also asks peers and direct reports to provide ratings of participants learning agility alongside the manager. In turn, this would help address any management bias that may have existed.

Furthermore, if the results of this study could be replicated with a larger sample drawn from across a variety of industries and organisations, this might highlight some of the organisational cultural factors that might be evident in supporting learning agility, as well as support increased generalisability. In addition, it could be that future research looks at the linkages between scores on the Kolb learning style inventory and Bedford's instrument. As a result, this may provide evidence for accepting Bedford's items as a complete and holistic approach to learning.

Lastly, it would be beneficial to study the outcomes achieved through the application of learning agility. For example, assessing and identifying the underlying psychological variables in people who have achieved creatively. This could include completing a study using participants who have had to learn and adapt to the demands of establishing a small business.

## Review of the Research Journey

There is general agreement in the literature that people need to behave in ways that enable them to be learning agile, in order to produce results in a volatile and complex context. Despite this agreement, concern has been expressed that the concept of learning agility needs to be better defined, particularly in terms of the underlying psychological variables that act as the foundation for learning from experience and achieving results. As suggested by Figure 1, research is needed to establish what these psychological variables might be.



Figure 1

Spencer and Spencer suggest that research that attempts to connect psychological variables directly to results is too great a leap in the early stages of research in a field. An intermediary step of 'skilled behaviour' is needed. Psychological variables contribute to skilled behaviour, and it is this behaviour that produces desired results, as shown in Figure 2.

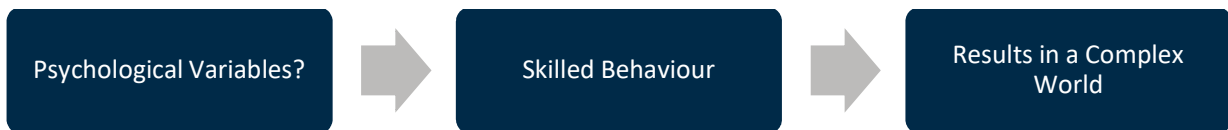


Figure 2

This research adopted the *BLAQ* as an established tool for assessing skilled behaviours associated with learning agility that contribute to results. Rather than attempting to establish a connection between psychological variables and results, the research examined whether there was a connection between psychological variables, as measured by assessments used by OPRA Psychology Group, and the *BLAQ*, as shown in Figure 3.

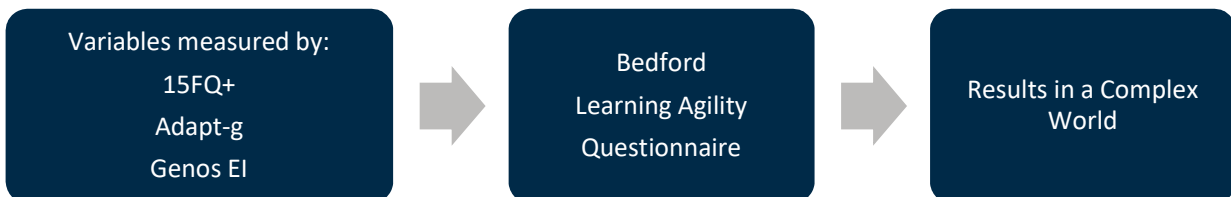


Figure 3

The results that emerged from the research provide the basis for a tentative model of learning agility. In addition, the researcher hopes that they can provide the foundations for the development of a derived measure of learning agility that can be determined using existing psychometric assessments.

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## Appendices

### Appendix One – Participants - Study Introduction Email

Dear Scenic Hotel Group team member,

I am writing you to let you know about a research study that you have been randomly selected to take part in. The study is being conducted by Simon Miller as part of a Master of Business Studies programme that he is completing through Massey University.

Research studies are conducted to answer a question. In this study, the question Simon is seeking to answer is:

- What are the underlying psychological variables that support individual learning agility?

To help answer this, you will receive an email from Simon outlining three assessments that you are requested to complete. Information about these assessments, and how to complete them, will be provided in the email. You and your manager will also receive a link to a learning agility questionnaire. In total, the three assessments and learning agility questionnaire will take you approx. 45mins to complete.

The benefits in taking part in this study include:

1. You will receive individualised reports outlining your potential areas of strength and potential areas for on-going development.
2. You will be invited to attend a 45min webinar presentation providing you with tools and techniques for enhancing your learning agility.

Participation is **optional**. All results will be treated in the **strictest of confidence** and are primarily for the purposes of this study. With the permission of participants, the results may also be used to identify future Scenic Hotel Group learning and development opportunities.

Simon will be sending you an email with information about the assessments from Monday 30th April. If you would like to take part in this research and receive feedback on your results, then please do complete the assessments and questionnaire as soon as possible.

Please send any questions directly to Simon at [simon.miller@opragroup.com](mailto:simon.miller@opragroup.com).

Thank you in advance. Should you choose to participate, I'm sure you will get some real value out of this study and get some insight to help develop your career with Scenic Hotel Group. Again, please note that your participation is entirely optional, and you may withdraw from this research at any time.

Best Regards  
Craig

**Craig Binney**  
Human Resources

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## Appendix Two – Participants Manager - Study Introduction Email

Hi team,

I am writing you to let you know about a research study that one or more of your direct reports has been randomly selected to take part in. The study is being conducted by Simon Miller as part of a Master of Business Studies programme that he is completing through Massey University.

Research studies are conducted to answer a question. In this study, the question Simon is seeking to answer is:

- What are the underlying psychological variables that support individual learning agility?

To help answer this question, Simon will be sending three assessments to your selected direct report/s to complete. He will also be sending you a short nine item Learning Agility questionnaire for each direct report you have taking part in the study. The questionnaire will take you approx. 5 mins to complete.

The benefits for your direct reports in taking part in this study include:

1. They will receive an individualised report outlining their potential areas of strength and potential areas for on-going development.
2. They will be invited to attend a 45min webinar presentation providing them with tools and techniques for enhancing their learning agility.

All results will be treated in the strictest of confidence and are primarily for the purposes of this study. With the permission of participants, the results may also be used to identify future Scenic Hotel Group learning and development opportunities.

Simon will be sending you an email with a link to complete the learning agility questionnaire for each of your direct reports taking part in the study from Monday 30th April.

Please send any questions directly to Simon at [simon.miller@opragroup.com](mailto:simon.miller@opragroup.com).

I appreciate your help with this, we are trying to build a better picture of learning and development within Scenic Hotel Group and this piece of research is a great way to develop this further. I will be emailing the randomly selected participants in a moment inviting them to participate in the study.

Best Regards  
Craig

**Craig Binney**  
Human Resources

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### Appendix Three – Participants Manager – Study Launch Email

Hi all,

I will soon be sending you a Learning Agility evaluation to complete as part of a research study that one or more of your direct reports has been randomly selected to take part in. Each invitation email will specify the direct report you are evaluating.

The survey is designed to measure their willingness and ability to learn from experience (untimed but takes around 5 minutes to complete). **This will be coming to you via email from Qualtrics, so please check your junk mail if you haven't received it.**

If you could please complete your evaluation/s as soon as possible that would be much appreciated. We receive your results automatically; if you have any questions regarding this research, please do not hesitate to contact me.

Warm regards, Simon

**Simon Miller**

South Island Manager



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## Appendix Four – Participants – Study Launch Email

Dear Scenic Hotel Group team member,

I will soon be emailing you a number of online assessments to complete as part of a research study that you have been randomly selected to take part in:

1. A personality assessment called the *15FQ+* - this assesses your natural preferences and tendencies (untimed, but as a guide should take you about 15 minutes to complete).
2. An ability assessment called the *Adapt-g* - this measures your Verbal Reasoning, Numerical Reasoning and Abstract Reasoning (timed for 22 minutes).
3. An emotional intelligence assessment called EI Selection – this assesses an individual’s emotional intelligence (untimed but takes around 10 minutes to complete).
4. A Learning Agility self-evaluation – this surveys your willingness and ability to learn from experience (untimed but takes around 5 minutes to complete).

**These assessments will be coming to you via email from three different platforms – Qualtrics, GeneSys Online and GENOS, so please check your junk mail if you haven’t received them. There will be three emails to access.**

**Please note these assessments cannot be completed on a Mac computer/laptop. Apple products are not compatible with flash player which is required to run this assessment, please complete this assessment on a PC.** To check whether your computer is currently running the latest version of Adobe Flash player, please visit: <http://www.adobe.com/software/flash/about/>.

I recommend that you complete these assessments in a quiet environment that is free from interruptions. When you complete the personality and emotional intelligence assessments, please keep the following things in mind:

- It’s very important that you answer **honestly and truthfully**. Answer how you are, not how you might like to be
- Try to **avoid the middle or uncertain answer** as often as you can
- Go with your **first response** rather than thinking the questions through too deeply

If you could please complete these assessments as soon as possible that would be much appreciated. We receive your results automatically; if you have any questions regarding this testing, please do not hesitate to contact me.

Warm regards, Simon

**Simon Miller**

South Island Manager



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**Appendix Five - Convergent and Divergent Validity - 15FQ+ and OPQ32i**

<b>15FQ+ Factor</b>	<b>OPQ Scale</b>
Empathetic	Behavioural (.33), Affiliative (.30)
Intellectance	Emotionally Controlled (-.43), Worrying (-.43), Modest (-.34)
Emotionally Stable	Worrying (-.43), Relaxed (.40), Optimistic (.30)
Dominant	Outspoken (.57), Controlling (.51), Modest (-.49)
Enthusiastic	Outgoing (.51) Affiliative (.50) Conventional (-.48)
Conscientious	Detail Conscious (.48), Variety Seeking (-.43) Conventional (.36), Innovative (-.35)
Socially Bold	Emotionally Controlled (-.57), Worrying (-.53), Modest (-.49), Conventional (-.49), Persuasive (.46)
Tender-minded	Worrying (.31)
Suspicious	Trusting (-.39)
Abstract	Detail Conscious (-.38), Conventional (-.36), Innovative (.35), Conceptual (.32)
Restrained	Rule Following (.35), Outspoken (-.30)
Self-doubting	Worrying (.59), Relaxed (-.45), Conventional (.44), Tough Minded (. -37)
Radical	Conventional (-.58), Emotionally Controlled (-.38), Innovative (.37), Rule Following (-.37)
Self-sufficient	Affiliative (-.54), Rule Following (.44), Democratic (-.41)
Self-disciplined	Rule Following (.36), Variety Seeking (-.35)
Tense-driven	Tough Minded (-.37), Relaxed (-.35), Worrying (.30)

## Appendix Six – Example Test Items

### 1. *Adapt-g* Assessment – Verbal, Numerical, Abstract Reasoning

Up	Down	Big	Little	Hot	?
Potato	Cake	Cold	Bun	Water	

---

2	1	4	2	6	?
6	0	6	9	3	

---


### 2. *15FQ+* Personality Assessment

		Strongly Disagree		Neutral		Strongly Agree
		1	2	3	4	5
1	I never let new ideas distract me from what I'm doing right now.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
2	I don't worry about things that have already happened.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
3	I seldom feel blue.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
4	I often set a goal but later choose to pursue a different one.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
5	I always tell the truth.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
6	I am the life of the party.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
7	I am diligent.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

### 3. Genos Emotional Intelligence Select Assessment

The Genos Emotional Intelligence assessment scale asked individuals to rate the frequency with which they demonstrate behaviours at work. Items were responded to using an anchored response scale from 1 to 5, where:

1 = almost never; 2 = seldom; 3 = sometimes; 4 = usually; and 5 = almost always.

- I am aware of the impact my behaviour has on others
- I make others feel appreciated
- I am open and honest about my mistakes
- I consider issues from multiply perspectives
- I learn from mistakes
- I maintain a positive energising, demeanour
- I manage my emotions effectively in difficult situations

### 4. Bedford Learning Agility Questionnaire Items

The *BLAQ* asked managers to consider the person that they were evaluating and rate their agreement to the below questions. Items were responded to using a 7-point Likert scale, where:

1 = strongly disagree; 2 = disagree; 3 = somewhat disagree; 4 = neither agree nor disagree; 5 = somewhat agree; 6 = agree; 7= strongly agree

1. Accepts and acts on feedback from others
2. Is flexible; adjusts his/her approach when something doesn't work
3. Is curious and inquisitive
4. Is self-aware; knows own strengths and limitations
5. Displays a desire to gain new knowledge and skills
6. Actively pursues personal growth and improvement
7. Seeks out challenges and new experiences
8. Is open-minded and receptive to change and new ideas
9. Seeks out challenges and new experiences

**Appendix Seven – Massey Code of Ethical Conduct for Research, Teaching and Evaluations Involving Human Participants – Actions Taken**

Ethical Principle	Action
Respect for persons	<ul style="list-style-type: none"> <li>- Participants were given the option to opt out or withdraw from the research at any time.</li> </ul>
Minimisation of harm to participants, researchers, institutions and groups	<ul style="list-style-type: none"> <li>- The purpose of the research was clearly communicated.</li> <li>- All participants received an individual report and were invited to attend a half-day learning agility workshop.</li> <li>- All results are stored on a secure assessment platform independently tested to meet New Zealand government cloud computing security standards.</li> </ul>
Informed and voluntary consent	<ul style="list-style-type: none"> <li>- All relevant information pertaining to the study was provided to selected participants in advance.</li> <li>- At no stage was pressure or coercion placed on participants to take part in the study.</li> <li>- It was made explicitly clear that taking part in this study was entirely voluntary and at the discretion of the participant.</li> <li>- In addition, the assessment introduction page was used to reiterate the purpose of the study and the intended use of results. It also provided a participant checklist covering ethical considerations pertaining to the completion of psychometric assessments.</li> </ul>
Respect for privacy and confidentiality	<ul style="list-style-type: none"> <li>- It was drawn to participants’ attention that the information that they provided was strictly confidential.</li> <li>- Participants were informed that, with their permission, the information that they provided could be used to support learning and development.</li> </ul>
The avoidance of unnecessary deception	<ul style="list-style-type: none"> <li>- The purpose of the research and intended use of the results was explicitly communicated.</li> </ul>
Avoidance of conflict of interest	<ul style="list-style-type: none"> <li>- Scenic Hotel Group acknowledged that the primary purpose for this study is to support the completion of a Master of Business degree through Massey University.</li> <li>- There is no dependant relationship with any of the participants and no foreseen conflict of interest exists.</li> </ul>
Social and cultural sensitivity to the age, gender, culture, religion, social class of the participants	<ul style="list-style-type: none"> <li>- The research will have mutual benefits for both the research participants, the participating organisation, and the wider academic community.</li> </ul>
Justice	<ul style="list-style-type: none"> <li>- Participants were randomly selected as not to discriminate in anyway.</li> <li>- Principles pertaining to the Treaty of Waitangi were respected throughout the research project.</li> <li>- The research was undertaken during Scenic Hotel Group’s quieter months to ensure that participants did not become overburdened.</li> </ul>

## Appendix Eight – Post Research Feedback Communications

Hi there,

Thanks for participating in my recent learning agility research. As promised, I have attached feedback report/s for the assessments that you completed. Please contact [simon.miller@oprargroup.com](mailto:simon.miller@oprargroup.com) if you have any questions about these.

Also, the following link provides a good overview of the concept of learning agility. It has been put together by the Society for Industrial and Organisational Psychology and includes references to further readings should this be a topic that you would like to explore further.

[SIOPI Mini Webinar Series - Learning Agility](#)

Thanks again, Simon

**Simon Miller**

South Island Manager



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## Appendix Nine – The Big Five Descriptions

### Openness

Pragmaticism	Openness
Realistic with a preference for concrete and tangible solutions; Factually-based actions and decisions; Conventional and unsentimental; Focused on the utility of ideas.	Intellectually orientated; Preference for creative and innovative approaches to problems; Open to possibilities; Enjoy broad concepts and theories; Appreciate artistic pursuits.

### Conscientiousness

Low Self-Control	High Self-Control
Free from the constraints of social rules; Prepared to express views that differ; Less interested in repetitive tasks; Have a tolerant, open attitude to life.	Conform to social norms and expectations; Dutiful and dependable; Highly conscientious.

### Extraversion

Introversion	Extraversion
Orientated towards their own inner world of thoughts, perceptions and experiences; Self-contained; Less socially active; Prefer solitary activities; Reserved and socially inhibited.	Strong people orientation; Seek out situations to be with or engage others; Socially confident and uninhibited; Good at initiating and maintaining personal relationships/networks.

### Agreeableness

Independence	Agreeableness
Actively self-determined in own thoughts and actions; Tend to have a strong need to get things done or make things happen; Willing to criticise others; Can be confrontational	Empathic and sensitive; Strong concern for others' needs; Averse to criticising or disciplining others; Happy to come to a compromise.

### Neuroticism

Low Anxiety	High Anxiety
Emotionally mature and resilient; Satisfied with life; Self-assured; Tend to cope well with pressure and emotionally demanding situations.	Anxious about the future; Distrusting of others; Dissatisfied with self and past achievements; Tend to have difficulty coping with demanding situations.

**Appendix Ten – 15FQ+ Personality Assessment – Big Five Sub-Traits**

<p style="text-align: center;"><b>Distant Aloof</b></p> <p>Low need for affiliation; Disinclined to talk about personal matters or express feelings; May feel uncomfortable with overly friendly people; Prefer relationships of longevity and depth.</p>		<p style="text-align: center;"><b>Empathic</b></p> <p>Friendly, warm, and supportive; Natural interest in other people; Personable and affable; Likely to be valued team members; May blur boundaries between work and socialising.</p>
<p style="text-align: center;"><b>Retiring</b></p> <p>May take some time to build rapport with people; Likely to slip into the background at social events; May feel uncomfortable around strangers; Have aversion to being the focus of attention.</p>		<p style="text-align: center;"><b>Socially-Bold</b></p> <p>Feel confident when meeting new people; May be quick to initiate social contact; Confident communicators who may appear 'over-the-top' to more retiring individuals.</p>
<p style="text-align: center;"><b>Group-Oriented</b></p> <p>Have a preference for team and group activities; Enjoy collective decision making; May find it difficult if they have to work independently and use initiative.</p>		<p style="text-align: center;"><b>Self-Sufficient</b></p> <p>Self-reliant individuals who are happy working autonomously; May see group decision making as inefficient; Tend to be selective about consulting others.</p>
<p style="text-align: center;"><b>Low Intellectance</b></p> <p>May lack confidence in own intellectual abilities; Prefer to work on uncomplicated tasks; May feel uncomfortable when explaining complex ideas; Believe they lack general knowledge.</p>		<p style="text-align: center;"><b>High Intellectance</b></p> <p>Confident of own intellectual ability; Enjoy working on tasks that are intellectually demanding; Keen to learn new information; Preference for complex arguments and ideas.</p>
<p style="text-align: center;"><b>Accommodating</b></p> <p>Co-operative and obliging; Will not force their opinions onto others; Try to avoid disagreeing with people; Content letting others take a more visible lead; May have difficulty asserting their own opinions and views.</p>		<p style="text-align: center;"><b>Dominant</b></p> <p>Assertive and forceful; Prefer to take charge of a situation; Effective in getting things done but may not always consider others' views; May push to get their own way.</p>
<p style="text-align: center;"><b>Direct</b></p> <p>Forthright and direct in their dealings with others; May be perceived as blunt or tactless on occasion; Has potential to get off-side with others.</p>		<p style="text-align: center;"><b>Restrained</b></p> <p>Tend to tailor their approach to the situation; Careful about the impression they create; Will tend to think before acting or speaking; Can be skilled at influencing other people.</p>
<p style="text-align: center;"><b>Trusting</b></p> <p>Quick to place their faith in others; Believe that most people are honest and reliable; Tolerant of others' shortcomings/mistakes; Likely to feel let down if others take advantage of their goodwill.</p>		<p style="text-align: center;"><b>Suspicious</b></p> <p>Doubtful and questioning of others' motives; Not inclined to take anything at face value; Guarded in their dealings with people; May take time to form close, personal friendships.</p>
<p style="text-align: center;"><b>Sober Serious</b></p> <p>Deliberate and cautious; Likely to consider all options before acting; May come across as being too serious and take some time to build rapport with strangers.</p>		<p style="text-align: center;"><b>Enthusiastic</b></p> <p>Energetic and carefree; Should be drawn to stimulating social situations; May act without fully considering the consequences.</p>

<p><b>Expedient</b></p> <p>Flexible and not always concerned about established rules; Inclined to view things from a broader perspective; Should enjoy working at the front end of projects; May be inattentive to detail.</p>	<p><b>Conscientious</b></p> <p>Systematic and orderly in their work; Tend to have a strong sense of duty; Have high personal standards and expectations of others; Generally a good finisher; May be a perfectionist.</p>
<p><b>Hard-Headed</b></p> <p>Decisions based on logic, facts and data; Won't allow sentiment to affect their decisions; Concerned with whether things work well rather than their aesthetic qualities; May discount the human implications of a decision.</p>	<p><b>Tender-Minded</b></p> <p>Have a subjective outlook; Will respond to situations at an intuitive level; May enjoy creative pursuits; May struggle to make difficult decisions that negatively impact on people.</p>
<p><b>Concrete</b></p> <p>Pragmatic and down to earth; Concerned with realism and the practical utility of ideas; Interested in how to get things done; Tend to have an operational focus.</p>	<p><b>Abstract</b></p> <p>Imaginative and innovative; Strong interest in theoretical ideas; Naturally inclined to look beyond the obvious facts; Ideas may not always have a practical application.</p>
<p><b>Conventional</b></p> <p>Value traditional, tried-and-tested methods; Accepting of the status quo; May feel uncomfortable in rapidly changing environments and may dislike ambiguity.</p>	<p><b>Radical</b></p> <p>Inclined to reject tried and tested methods in favour of new, radical approaches; Questions the status quo; Comfortable working with change; May be quick to reject acquired wisdom and knowledge.</p>
<p><b>Informal</b></p> <p>Believe that respect has to be earned rather than given on the basis of one's position; Free-thinking and open minded; Questions accepted moral values and social convention.</p>	<p><b>Self-Disciplined</b></p> <p>Respectful of authority, status and social position; Value is placed on self-control and self-discipline; May come across as excessively moralistic and rigid.</p>
<p><b>Affected by Feelings</b></p> <p>Emotionally sensitive; May have difficulty summoning sufficient energy to face demanding situations; Feelings easily hurt and may react strongly in some situations.</p>	<p><b>Emotionally Stable</b></p> <p>Emotionally mature and secure; Resilient under pressure and rarely flustered by pressure situations; Likely to have sufficient energy to meet life's challenges.</p>
<p><b>Confident</b></p> <p>Rarely troubled by feelings of self-doubt; Expect success more than failure; Rarely dwell on past mistakes/difficulties; Blame failure on the situation; May appear overly confident.</p>	<p><b>Self-Doubting</b></p> <p>Apprehensive about the future and before important events; Tend to be self-critical; Dwell on past mistakes; Sensitive to others' views and unfair criticism.</p>
<p><b>Composed</b></p> <p>Patient and composed; Can deal with inconveniences in a calm and steady manner; Not easily frustrated by setbacks or failures; Should find it easy to relax at the end of a demanding day.</p>	<p><b>Tense-Driven</b></p> <p>Ambitious and hard-driving; Easily frustrated by interruptions; May feel that the only way to ensure something is done properly is to do it themselves; May work long hours and struggle to switch off from work.</p>