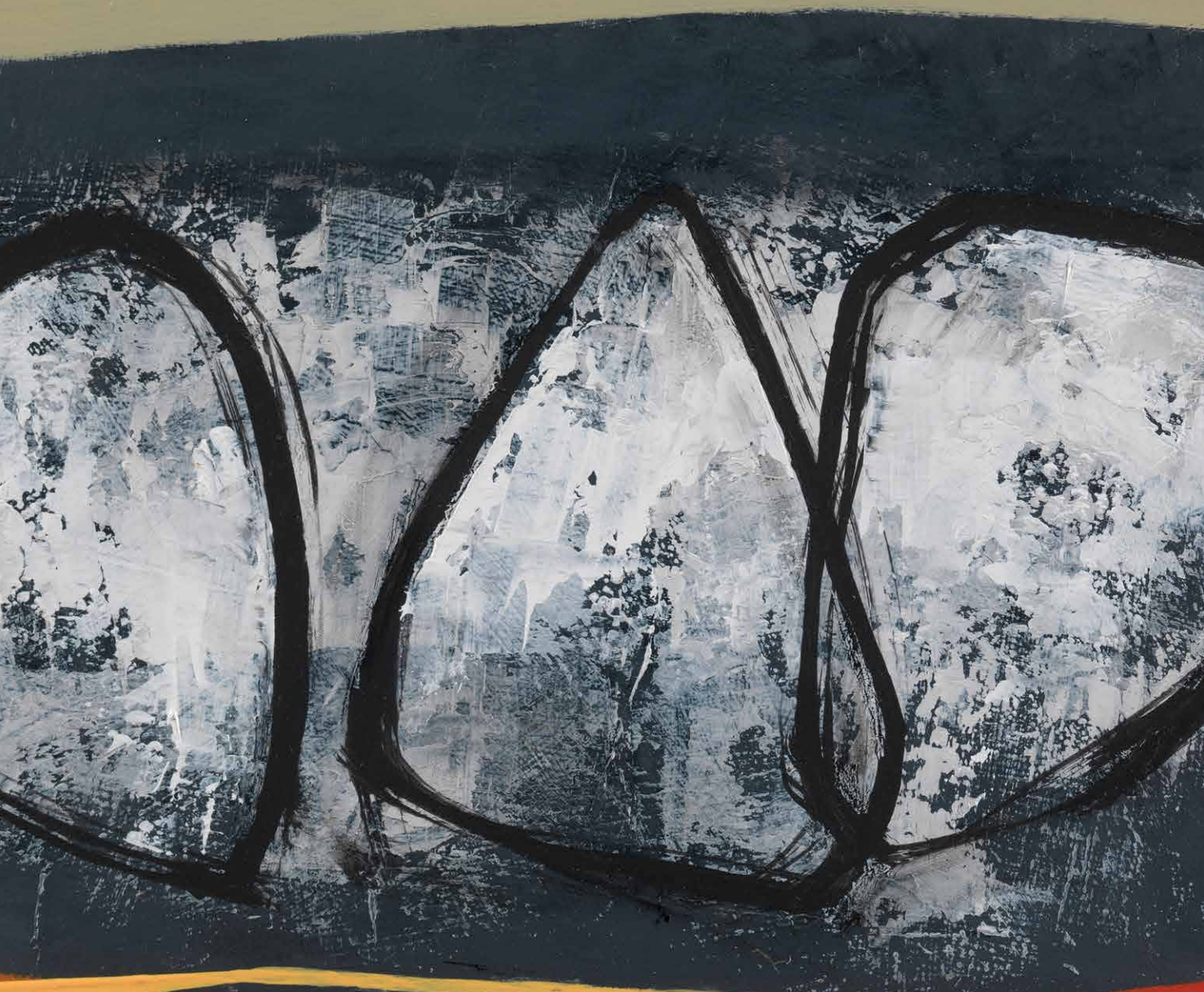
Certain Uncertainties

Measuring vertical development and its impact on leadership

A (K)nowWhat? piece from MDV Consulting

MDV Research and Innovation Alliance

September 2019



Leadership and talent consultants

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> *" In all affairs it's a healthy thing now and then to hang a question mark on the things you have long taken for granted."*
>
> Bertrand Russell (1940)

Introduction

This MDV piece of writing looks at the evidence base for vertical development: theoretical underpinnings, methodologies for measuring developmental stage, and its perceived utility and impact in organisations.

It is likely to interest anyone exploring and applying adult developmental theories. Some familiarity with key concepts is assumed, so if you are new to this field we first recommend the MDV April 2017 White Paper: *What in the world is going on? Mapping Vertical and VUCA beyond the bandwagon*.

MDV Research and Innovation Alliance

The MDV Research and Innovation Alliance (RIA) was created in 2016 as a creative collaboration between people working in the field of vertical development. It exists to research, build and accelerate the collective knowledge of vertical development practices and theory. Current members are; Karen Ellis, Julie Allan, Jo Hennessy, Carol Jefkins, Judith Ward and Mike Vessey.

Preface

"We realised that the environmental demands of our business were such that something beyond just best practice in assessment and development was needed. There was a new level of challenge for us in identifying and developing talent for our changing business context."

This newly typical client demand evolved as MDV was also evolving its approach for increasingly VUCA (volatile, uncertain, complex, ambiguous) organisational contexts. The White Paper *What in the world is going on? Mapping Vertical and VUCA beyond the bandwagon* summarised the adult developmental approaches, capacities and capabilities that organisational clients have found particularly important. This article shares MDV's enquiries and experience concerning relationships between: the impact of adult developmental trajectories, the nature of what is termed vertical development, the evidence for its relevance and impact, and approaches to appropriate measurement.

Successful outcomes seem to be resulting from vertical-inclusive approaches, and the MDV client-practitioner community welcomes the obligation to fully understand why and how this is so – to ensure substance beyond fashionable sizzle. One challenge is to host the conversation between inherited, tried-and-tested ways – for example in assessing and developing suitable leadership – and alternatives that current conditions and future directions require. Most organisations have active interest in evidence-based practice, in impact tracking and return on investment, so these continue to require attention while innovations are made and new knowledge evolves. An additional challenge is that sometimes the mindset(s) needed to take on this work in an organisation are wanted but not present – potentially opening a gap between will and means.

Key questions

Key questions in the vanguard of this endeavour and covered in the following pages are:

Q1 What evidence shows us there are developmental stages in adulthood?

Q2 What are the criticisms of staged theories?

Q3 Can we measure developmental stage?

Q4 How do notions of reliability and validity sit with vertical development?

Q5 Are the measures of developmental stage theoretically sound?

Q6 Do individuals and organisations find value in the idea of vertical development?

Q7 Do leaders at later development stages really perform better within VUCA environments?

Q8 What facilitates or inhibits vertical development?

Q9 Where are we now?

Some definitions that might be helpful

Vertical development

In his 2013 paper *Vertical Leadership Development: Developing Leaders for a Complex World – Part I*, CCL's Nick Petrie differentiates between 'horizontal' development (adding more knowledge, skills, and competencies) and 'vertical' development, which is about "the ability to think in more complex, systemic, strategic, and interdependent ways". In this article we take "the ability to think" in its broadest sense, encompassing more complex ways of relating to others and of understanding ourselves as well as the cognitive/conceptual domain.

Constructivist development

Constructivism as a paradigm or worldview posits that learning is an active process in which the learner is an information constructor, not simply a receiver. People actively construct or create their own subjective representations of their contexts, 'making sense' of their experiences and 'making meaning' from them. New information is linked to prior knowledge, and hence mental representations are subjective, made through the individual's particular existing lenses.

We behave in accordance with the world *as we have constructed/made sense of it*, and our behavior then indeed influences how the world is for ourselves and others.

Q1: What evidence shows us that there are developmental stages in adulthood?

Adult development occurs in a number of ways that we can recognize from personal experience. We may change biologically, psychologically, cognitively or socially, for example. So, development happens over time, and it may be thought to happen in particular, identifiable, stages.

The psychological study of life stages began with the pioneering work of Piaget in 1952: *The Origins of Intelligence in the Child* (see also 1954, 1969). The Swiss psychologist found specific developmental stages in children, which he said resulted from active engagement in the world, i.e. trying things out.[1] These were stages of largely cognitive development, a direction continued by Perry (1970)[2], extending into intellectual and ethical development in the college years. Erikson, whose published work began contemporaneous with Piaget's, took a psychosocial perspective. He continued his work into the 1980s, looking at lifespan stages beyond childhood, offering the view that what we might call 'wisdom' is the basic strength of an eighth stage of life.[3] Levinson et al's work (1978) continued the trajectory of research into lifespan stages.

Research in adult development has tended to focus in on parts of a picture – some have used chronological age as a differentiator, some have separated out cognitive performance, while others have interests in, for example, reflection and self-regulation. Lambert (1972) compared two strands – ego and moral development. Robinson (2013) helpfully summarises the interplay of biology, psychology and the environmental/social before exploring developmental strands including cognitive, emotional, motivational, personality and lifestage-related. To take an example from personality literature, longitudinal studies and meta analyses of trait-based theory show consistent types of change in the 'Big 5' personality traits despite some degree of variation between countries. Even where overall personality seemed to be staying consistent in adulthood, changes in specific traits were found for between 10% and 30% of adults.[4]

It is often possible to see some degree of fit or equivalence across different 'stage' theories even if the findings come through different enquiry routes. This does not seem surprising as human beings do not actually function in separated categories – our thinking and feeling mutually inform, for example. Different categories of development can seem to have corresponding developmental shifts, as well as there being some similarities in different sorts of measure of the same categories. Many of the staged theories in adult development are outlined on pages 6 and 7 and described in more detail in the Appendix. There are ongoing conversations concerning which are the equivalent stages across the theories.

Kallio (2011) reviewed the various strands of adult developmental theory and suggested that the various different expressions of it could be underpinned by the same process – integrative thinking. There is no one definition of integrative thinking, and much debate about the differences between 'integrative' and 'eclectic', among other arguments. However, much of the work that identifies distinct progressions or stages calls attention to increasing ability with complexity and uncertainty, and ability to navigate towards a judgment or action in the absence of a single correct solution.

In summary, adult developmental stages have been explored by a significant number of researchers over some decades. Approaches have encompassed those related to traits and the impact of lifespan and ageing; research has addressed different aspects, in particular cognitive and socio-emotional, with some attention on how these relate. Overall, a variety of lines of investigation have supported the presence of staged development that continues into adulthood, with some commonalities of trajectory across different aspects and theories.

Selected theorists and practitioners in adult development – an approximate timeline

1950s

Erik (and Joan) Erikson
Seminal work in psychosocial lifespan development from the 1950s onwards. Famously coined the phrase 'identity crisis'.

Elliott Jaques
Stratified Systems Theory; cognitive capacity develops in stages and impacts on the time horizon, and therefore the level of work complexity, an employee can address.

1960s

Jane Loevinger
Pioneering work in ego development and adult development from the late 1950s onwards. Developed the original Washington University Sentence Completion Test (WUSCT).

1970s

William G. Perry
Pioneering educational psychologist; proposed that students pass through a predictable sequence of positions of epistemological growth in their college years.

Clare Graves, Don Edward Beck and Christopher Cowan
Bio-psycho-social model of development, originated by Graves (once a student of Maslow) and later formulated into Spiral Dynamics by Cowan and Beck in the 1990s.

Bill Torbert
Development in work/organisational contexts, rooted in the work of Loevinger alongside the theory and practice of Collaborative Developmental Action Inquiry. Led development of the Leadership Development Framework (LDF) and Global Leadership Profile (GLP) in collaboration with Cook-Greuter and others.

Suzanne Cook-Greuter
Built on Loevinger's theories, initially alongside Torbert and others, particularly expanding evidence and work around later stages. Developed the Maturity Assessment Profile (MAP) in the 1990s.

Ken Wilbur
Integral theory: an integrative approach to experience, drawing on philosophical traditions regarding stages of consciousness including the work of Loevinger, Cook-Greuter, Kegan and Beck/Cowan.

See Appendix for further details on these theories

1990s

David Rooke and Bill Torbert

Developmental 'action logics' in work/organisational contexts, as measured by the Leadership Development Framework (LDF). Based on the work of Loevinger and developed in collaboration with Cook-Greuter.

Theo L. Dawson

Development of cognitive complexity, grounded in the work of Fischer and Commons. Developed the Lectical Assessment System (LAS).

Maretha Prinsloo

Modelling of cognitive processes relevant to handling increasing levels of complexity and ambiguity in the work environment, linked to Jaques' Stratified Systems Theory. Designed the Cognitive Process Profile (CPP).

Otto Laske

Constructive development in sense-making, based in the growth of dialectical thinking. Draws/builds on the work of Bhaskar and Basseches.

1980s

Kurt Fischer

Dynamic Skill Theory; offers a dynamic framework for describing, assessing, analysing, and explaining variation and systematic change in the organisation of action and thought from childhood into adult development.

Michael Commons

The Model of Hierarchical Complexity, based on mathematical descriptions of task and action complexity.

Robert Kegan

Theorised qualitatively different ways of meaning making through increasingly complex 'forms of mind', along with work on Immunity to Change (with Lahey). Developed the Subject-Object Interview methodology.

Karen Kitchener and Patricia King

Cognitive development research through the 1980s and onwards, focused on judgments reflecting the complexity of people's beliefs about knowledge and certainty.

2000s

Jennifer Garvey Berger

Adult development in leadership, drawing primarily on the work of Kegan. Developed the Growth Edge Interview methodology, primarily used in coaching.

Terri O'Fallon

Human meaning-making and perspective taking, initially drawing on Wilber and Cook-Greuter. Developed the StAGES methodology.

Q2: What are the criticisms of staged theories?

The stages are not inevitable and people may regress

Indeed, most people do not make their way through the full range of identifiable stages proposed in these theories. Older is not inevitably wiser: ten years of experience is not the same as one year of experience done ten times; active engagement and reflection is needed, at least. The research and critical review by Manners and Durkin (2001) supports the view that it is possible to progress, and that the stages conceptualised are identifiably different from each other and form a sequence. Regression is also possible and there is a lack of research specifically addressing the reasons or duration. We look later at potential inhibitors and facilitators of development.

The staged models are uncomfortably or wrongly hierarchical

Maturity is sometimes a term used in association with development, staged or otherwise, with immaturity being an often value-laden term for the opposite. In the seminal work of Loevinger (1966) and subsequent researchers including Torbert (1976, 1994) and Cook-Greuter (1990), there is some mixture of terminology, such as the use of 'later' rather than 'higher', and highlighting the value or merits of different stages, particularly in organisational settings (Torbert 1987; Rooke & Torbert, 2005).

As later stages of adult development are associated with increasing facility in situations of ambiguity and uncertainty, they tend to be considered as more helpful than are earlier stages under such conditions (Kegan 1994; Petrie, 2013). So, for VUCA (volatility, uncertainty, complexity, ambiguity) handling purposes, later may get judged 'better', but should always be contextualised. Jaques (1989) is explicit about the need to match the individual with the complexity of the work – both require assessment for fit. Herdman-Barker & Wallis (2016), in relation to leadership, invite ongoing enquiry into the apparent contradiction between hierarchical maps and the fluidity of development. With regard to cognitive developmental stages, Laske (2008) writes, "One can think of the transition from formal logical to dialectical thinking as an expansion of the conceptual field, thus of the mental space in which 'thinking' and 'work' occur."

Q3: Can we measure developmental stage?

One of the challenges of vertical development is that we are largely unaware of our own sense- or meaning-making frames until they are brought into focus for us. This makes it inappropriate to use such traditional psychological techniques as self-report questionnaires to assess or measure developmental stage. Instead, we turn to approaches that externalise someone's internal view on their world, so it can be observed in action.

Methodologies typically take one of three forms:

- Sentence completion forms
- Interviews
- Tasks and simulations

Before going on to the question of their reliability and validity, we give an overview of each:

Sentence completion forms

Participants are given a number of sentence stems to complete, covering different topics (e.g. "I just can't stand people who…"). There is no time limit. The principle here is that people finish the sentences in a way that reflects the meaning they make of their world. The structure and content of the completions indicates the person's developmental stage to trained raters. A number of different but related versions exist, originating from Jane Loevinger's Washington University Sentence Completion Test (WUSCT; Loevinger 1966, Loevinger & Wessler 1970).[5]

Interviews

Engaging in dialogue is another way to access someone's characteristic ways of understanding the world and organising his or her experience. Trained interviewers use focused questions to follow the train of a person's thinking in a dialogic way and draw out the limits of their current sense- or meaning-making. The differentiator from other forms of interviewing is a focus on the structure of the person's responses, rather than the content. Interviewers often analyse transcripts to form conclusions about the individual's stage of development.

Both Kegan's Subject-Object Interview (SOI) and Garvey Berger's Growth Edge Interview explore topics of significance to the participant, with an emphasis on socio-emotional meaning-making. Laske's Cognitive Interview explores cognitive sense-making (in distinction to meaning-making), for the sake of finding the range and complexity of 'forms of thought' that become available to an individual owing to cognitive growth. The MDV Leadership DNA semi-structured interview draws on a breadth of research to include structure- and process-related assessment of vertical: the content of a person's responses provides evidence for traditional leadership capabilities, while analysis of the structure helps identify conceptual, personal and interpersonal developmental capacities (Boston and Ellis, 2019). ▷

Q3: Can we measure developmental stage? continued

Tasks and simulations

These typically seek to measure conceptual or cognitive developmental stage by looking at the ways in which people approach and process complex tasks.

Cognadev's Cognitive Process Profile (CPP) is an automated computer simulation that involves deciphering 'hieroglyphic messages' (Prinsloo & Barrett 2013a). As someone completes the assessment, their actions are tracked and analysed to produce a detailed assessment of cognitive capacities and styles. The theoretical underpinning of the CPP aligns with Jaques' (1986) Stratified Systems Theory in which work environments range from purely operational to highly strategic. Because the CPP involves applying cognitive capability in unfamiliar, ambiguous contexts, it proposes to indicate the extent to which someone is comfortable making judgments in increasingly uncertain and complex emergent work environments.

The Model of Hierarchical Complexity, outlined by Commons (2008), is grounded in logical and mathematical tasks. His theory holds that as individuals develop, they are able to combine and co-ordinate lower-stage tasks in new and increasingly more complex ways (Commons & Richards, 2002). Developmental stage can be assessed by evaluating the maximum level of task complexity an individual can successfully accomplish.

Drawing on both Commons' work and that of Kurt Fischer (1980), the Lectical Assessment System (LAS) consists of a number of measures of the complexity level of people's thinking in particular knowledge areas (Dawson & Heikkinen, 2009). The Lectical Decision Making Assessment (LDMA) asks respondents to tackle realistic workplace dilemmas, responding to questions that focus on framing, developing solutions, and the decision-making process. Written answers are examined along six dimensions: cognitive complexity; perspective taking, seeking, and coordination; collaborative capacity; contextual thinking; decision making process, and coherence.

Q4: How do notions of reliability and validity sit with vertical development?

Reliability is about the accuracy of a measure, and is an essential prerequisite for that measure to be valid – if you can't be confident that the same person, assessed more than once in similar conditions, would produce similar results, then it would be unwise to place much faith in the technique used.

Validity is about whether a measure or approach is doing what it claims – that there is a relationship between the measure and one or more outcomes, and it isn't coincidental. The main commonly used types of validity in relation to psychological tests and measures are:

- Face (appears to test what it claims to test)
- Construct (relates to underlying theory)
- Concurrent (relates to other relevant measures) and
- Predictive (allows future outcomes to be predicted)

While the technical inheritance around tests and measures reflects useful and legitimate intent around accuracy and fairness, there are limitations to traditional notions of validity. This is because of assumed certainties that in fact seem rather uncertain (see next page). What remains clear is that a nuanced attention to the complexity of contexts in changing times is called for, rather than limiting notions of validity to definitions that are relevant in some circumstances and not in others.

As Kvale (1989) notes:

> *The complexities of validating qualitative research need not be due to a weakness of qualitative methods, but on the contrary, may rest upon their extraordinary power to reflect and conceptualize the nature of the phenomenon investigated, to capture the complexity of the social reality. The validation of qualitative research becomes intrinsically linked to the development of a theory of social reality.*

Bateson (2016) says:

> *Life is not divisible into the departments of a university, nor is our understanding of life greatly increased by standard research practices, which tend to pull their 'subject' matter out of the larger contexts they exist in, to facilitate focused study.*

While traditional approaches to validity risk over-simplification and can create an incorrect sense of certainty about cause-effect relationships, this is not to say that we should give up on robust enquiry and an interest in evidence. Researchers and practitioners have an ethical obligation to open up their theories and underlying assumptions to informed scrutiny. Decision-makers in organisations, seeking to make responsible choices for individual and organisational development, will ask questions of new approaches. A skilful process of inquiry and evaluation can itself lead to further development of theory and understanding of application, alongside learning about the nature of the process and evidence required. ▷

Constraints and limitations of conventional approaches to validity

Conventional approaches to validity depend on an empirical positivist approach with the assumption that there is an objective 'truth' to be discovered. The focus is verifiable evidence and certainty about rules, principles and causal relationships. Quantitative methodologies can be used to measure effects and associations, while qualitative approaches (Israel, 2015; Silverman, 2017) help to unravel the dynamic processes or contexts from which the measures are extracted.

However, many factors contribute to imprecision and inability to extrapolate or replicate when human activity is the object of study. It is not possible to keep perfect boundaries or identical conditions in place, and attempts to do so are at best approximations.
The challenges to creating controlled studies in real-life work environments include:

- Sample sizes are often small and limited in range
- Self-selection can't be ruled out
- Participants may drop out or leave mid-way through a study
- It is difficult to rule out the influences of factors other than those we are trying to measure.

In particular, the practical difficulties of organising longitudinal studies mean that in many cases researchers have to rely on cross-sectional 'snapshots' – a significant setback when looking at people's long-term development as a dynamic process.

Psychometric testing has met with greater success in creating best practice construction and application. This has produced accepted ways in which such a test can be judged reliable and valid. However, not all measurement approaches lend themselves to the full set of controls needed to meet those requirements in development. This may limit their suitability but doesn't remove it, depending on context and intention, and a test that has been constructed in a traditionally best practice way will still fail to be valid, or reliable, if inappropriately applied.

In addition to methodological problems, by its very nature the idea of 'constructivist' development challenges the proposal that there is 'objective truth'. A measure of something is not reality. Attempts to understand social processes need to take account of the researcher's own subjectivity, the multiple perspectives of the people who are the subjects of inquiry, the system or context in which their relationships exist, and the interactions between all of these. Collaborative Developmental Action Inquiry, for example Torbert (2013), highlights how interweaving first- and second-person perspectives with the conventional third-person approach can give us an alternative, richer way to consider validity. Self-assessments and peer assessments go part way to preventing unhelpful loss of inter-relating contexts.

Finally, when it comes to the choice of measures and our interpretations, these are both likely to be affected by our own developmental stage. Laske (2008) comments succinctly: ". . human behaviour appears as an epi-phenomenon of the presently held developmental level. Doing follows being." (p.125).

Q5: Are the measures of developmental stage theoretically sound?

All three methodologies described above – sentence completion forms, interviews, and tasks or simulations – are supported to a good extent by evidence of **reliability** (including internal consistency[6], inter-rater[7] and test-retest[8]).

It is also possible to find a fair amount of evidence of **construct** validity – that the various measures are actually picking up something associated with vertical development, as described by their underpinning theories. For example, Manners & Durkin (2001) cite studies of the WUSCT sentence completion form which have shown associations with factors including:

- Reasoning faced with complex social dilemmas
- Understanding of self and context
- Complexity of descriptions of one's own emotional states and ability to regulate them.

For the CPP simulation, Cognadev (2017) found individuals' Levels of Work to correlate significantly with their actual job classifications using Jaques SST levels. This supports the construct validity of the CPP's theoretical basis in Jaques Stratified Systems Theory. ▷

What is a correlation and when is it 'significant'?

Correlations measure the strength of relationships between variables, expressed as a number. If there is no relationship, it's 0; a perfect positive relationship is +1, and a perfectly negative (opposite/inverse) relationship is -1. In this article, a correlation of up to 0.30 in either direction is taken as a 'weak' correlation, 0.3-0.6 is 'moderate', and above 0.6 is 'strong'.

However, a strong correlation can occur simply by chance, and this is more likely when sample sizes are small. We therefore also need to look not only at the strength but also the **significance** of a correlation. If it is likely to occur by chance only five times in a hundred (i.e. it has a $p < .05$), we assume that it reflects a genuine pattern in the population from which the sample came.

Most importantly, even a strong and significant correlation does **not** imply causation – if two things are related, it does not mean that one necessarily causes the other.

Q5: Are the measures of developmental stage theoretically sound? continued

Evidence supporting the construct validity of the LDP sentence completion form was found in a cluster analysis of factors underlying peoples' responses (Torbert & Livne-Tarendach, 2009). It shows a striking difference between those profiling at Achiever or earlier ('Conventional') and those at Individualist or later ('Post-conventional'). The Conventional profiles show clearly defined groups, while the Post-conventional profiles produced a more complex structure of multiple interconnected factors (see Figures 1 and 2).

These differences align with the theoretical suggestion that Conventional profiles "represent a relatively simple mental map, with distinct, independent categories", while Post-conventional mental maps are "systems-orientated and inter-independent".

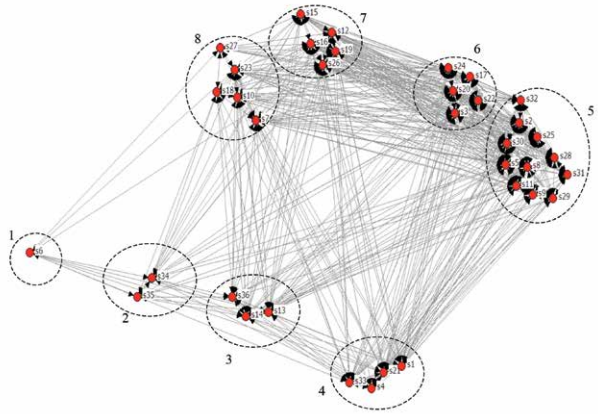

Figure 1: Cluster analysis of LDP scores on stems of Conventional profiles.

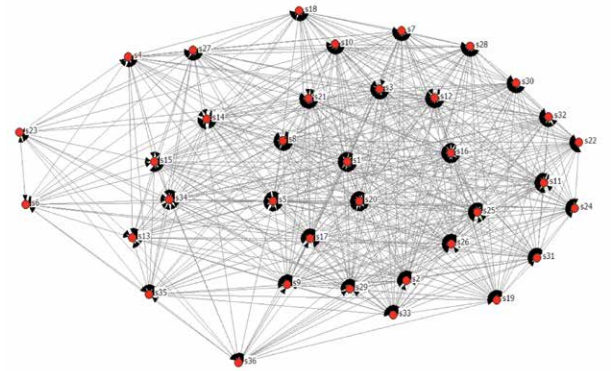

Figure 2: Cluster analysis of LDP scores on stems of Postconventional profiles.

One aspect of construct validity that seems largely lacking in the literature is cross-comparison of the different approaches used to tap into developmental stage; for example, studies in which the same individuals have been profiled using both a sentence completion form and an interview. This lack may reflect the divergence in theoretical stances and approaches followed by key players in the field, as well as the practical difficulties involved in multiple assessments.

MDV is collating a database of results where there has been the opportunity to use more than one technique – for example, a DNA interview or LDP profile along with CPP. Sample sizes are currently too small to draw any significant conclusions, but watch this space.

Q6: Do individuals and organisations find value in the idea of vertical development?

The significance of face validity may be downplayed since it simply looks at whether a measure appears to be useful and relevant. However, personal experience of vertical development can be a powerful thing. Learning about or participating in a developmental stage assessment or vertically orientated leadership programme can create rich discussions, open up new insight and catalyse people's willingness to practice, experiment and challenge themselves.

Berger and Atkins (2009) describe how Subject-Object Interview participants reported "significant or profound insights" and found that the process enabled them to identify developmental issues more quickly than other approaches. MDV's own experience with the Leadership DNA interview is similar; participants often say how much they learned about themselves through taking part, even before receiving feedback.

Case study 1: The Value of Vertical – Laura Heaton, VP Talent Development, Penske

In an environment of increasing complexity and disruptive competition, this US transportation services company transformed its approach to leadership development, bringing in a 'vertical' lens.

"We have a real blended approach. We do a lot of leadership and self-awareness and this vertical work, (and) we play with meaningful business stuff at the same time. One method we've adopted is 'one click bigger'; ....If (a leader is) talking about something that's very task, task, task, efficiency, efficiency, efficiency, then we'll just say, 'Okay, one click bigger' and we go to... what's the goal of that task? If they're talking about the goal... one click bigger, what outcome is that in service of?"

"The results are out there, the business is growing, they're doing things that they haven't been able to do before. ...It's really easy to be super excited about people that have phenomenal transformations and unlocked absolutely gorgeous post-conventional thinking. But what has really started to take my breath away has been people that come from pretty early stages that get close to Achiever. These people have gone through extraordinary transformations in a couple of years. That's a big deal. (A) participant has a huge job but (said), 'My job just seems so much slower now'. "

Read the full interview with Laura at: https://mdvconsulting.co/case_study/the-value-of-vertical-an-interview-with-laura-heaton-of-penske/

Q7: Do leaders at later development stages really perform better within VUCA environments?

Evidence of the real-world impact of vertical development in the form of concurrent or predictive validity is relatively thin on the ground, despite the importance of the questions involved – such as:

- How do people behave and act differently as they progress through developmental stages?
- Do organisational leaders who profile at later developmental stages really cope better with the demands of complex, volatile, uncertain and ambiguous environments?
- Is there a relationship between developmental stage and individual or organisational performance?

Sample sizes in these sorts of studies are often small, and finding appropriate and robust measures of behaviour or predicted outcomes can be problematic; often reliant on subjective ratings of performance and behaviour, as well as what constitutes organisational performance. Few studies have been able to take a longitudinal approach – following people as they develop over time – and instead use retrospective case studies or cross-sectional views across populations.

However, we do have some evidence of a relationship between vertical stage and leadership performance and potential[9]. For example, Helsing & Howell (2014) studied participants on a global leadership masters' program at the World Economic Forum using Subject-Object Interviews (SOIs). At the end of the program, participants who were rated through assessment by an external executive search firm as having high leadership potential had all been found 'fully self-authoring', while those rated as less than high potential were at earlier stages, according to the Subject-Object Interview.

Strang & Kuhnert (2009) found significant, albeit weak to moderate, correlations between vertical stage (measured by interview) and 360° ratings of leadership performance in a group of managers and executives. The stronger correlations were for superiors and peer rather than subordinate ratings.

Eigel & Kuhnert (2005) compared developmental stage (assessed by interview) and leadership effectiveness (rated by subject matter experts) in a group of CEOs and middle managers. A clear relationship was found; leaders at later developmental stages were evaluated as more effective when it came to inspiring a shared vision, solving problems, challenging processes, managing conflict, delegating, empowering and building relationships.

Joiner and Josephs (2007) mapped out differing typical leadership practices demonstrated by leaders at different developmental stages. This research was summarised in their work on Leadership Agility.

Despite a small sample size, Rooke and Torbert's 1998 CEO study (see Case study 2) gave intriguing support for the potential impact of later-stage leaders on a whole organisation.

Case study 2: The CEO study

In 1998 Rooke and Torbert looked at the outcomes of consulting and action research work with ten organisations attempting to transform their strategies, leadership cultures and ways of doing business.

Over time, seven of the ten organisations had successfully transformed and improved on a range of business and reputational measures. Two of the organisations had not changed, and one had regressed.

Profiling the CEOs of those organisations using the LDP, Rooke and Torbert found all five CEOs who profiled at Strategist level or later (postconventional) were leading organisations that successfully transformed; the organisation that regressed was led by a CEO who profiled at Diplomat (conventional).

A strong and statistically significant correlation of 0.65 was found between the CEO's LDP stage and the number of successful organisational transformations.

Q8: What facilitates or inhibits vertical development?

People appear to vary in the speed and extent to which they progress to later stages of development. What factors could be involved?

Age and experience

Since vertical development is theorised to unfold over time, one might expect a relationship between vertical stage and age. However, evidence is mixed. Strang & Kuhnert (2009) found a weak correlation in a small study of managers and executives, while Torbert (1994) found no association with age when looking at six separate studies of managers and professionals in the 1980s.

Age in itself may be less important to development than experience. Significant life events such as job changes, redundancy, becoming a parent, relationship changes or bereavement can alter our perceptions. Incidents that disrupt habitual ways of thinking, challenging our view of the world – what the Center for Creative Leadership calls "heat experiences" (Petrie, 2015, 2018) – can create favourable conditions for vertical development.

Intellect and education

Transitioning to a later stage of vertical development involves reframing one's ways of thinking and grasping increased levels of complexity. Perhaps unsurprisingly this has been found to be associated with higher levels of cognitive ability.[10] However, these correlations aren't particularly strong, suggesting there is more to vertical development than can be explained by intellectual capability alone.

Cohn & Westerberg (2004) found that the association between cognitive ability and developmental stage was stronger at the earlier stages. Perhaps a certain level of intellectual capability may be needed to facilitate development up to a point, beyond which other factors come more into play.[11]

Education level has been shown to have some association with developmental stage.[12] The experience of attending higher education has the potential to be transformative. For example, a study of US students by King et al. (2009) identified certain aspects of the college experience that influenced developmental shifts:

- Dissonance between how students saw the world before coming to college and what they encountered there
- An expectation for students to question and critique established sources, and to craft their own views
- Introductions to new cultures, perspectives and beliefs.

Personality

Psychologists broadly agree that five consistent underlying personality dimensions can be identified – known as the "Big Five".[13] A consistent finding is that a preference for one of these - Openness to Experience - is associated with both later stages of development and faster progression through stages.[14]

Why might Openness to Experience act as a facilitator for vertical development? People who are inclined to be curious and open to ideas and possibilities are more likely to seek out and value new experiences and different perspectives, and they may also perceive and respond to these in a more developmental way.

The facilitating or inhibiting effects of personality may be less important at the later, post-conventional stages of development, where increased self-awareness helps people recognise and engage with the costs and benefits of their own personality style.

Metacognition

The ability for people to 'think about their thinking' – and so take better charge of their learning processes and their behaviour – is an important underpinning for development (Flavell, 1979; Efklides, 2014). The study of what people are able to be metacognitive about, and how they apply it, can also reveal something of a person's current developmental stage.

There is an extensive body of relevant work looking at the links between reflection and adult development), some of which propose distinct stages (e.g. King & Kitchener, 1994, 2004). And research that started out in gerontology, understanding judgment processes in older adults, has become an extensive body of work on the psychology of wisdom (e.g. Baltes et al 2002 and researchers through the Berlin Institute and the University of Chicago). ▷

Q8: What facilitates or inhibits vertical development? continued

Deliberate developmental interventions

Can we deliberately create conditions to stimulate or accelerate vertical development? The research suggests we can.[15] Roberts et al (2006) emphasis the importance of external factors in providing the developmental opportunity. The Center for Creative Leadership (Petrie, 2015) recommends three key conditions that need to be present in any intervention:

1. Heat Experiences

A complex situation that disrupts and disorients habitual ways of thinking, so individuals discover that their current way of making sense of the world is inadequate. Their minds start to open and search for new and better ways to make sense of the challenge.

2. Colliding Perspectives

Exposure to people with different worldviews, opinions, backgrounds, and training. This both challenges people's existing mental models and increases the number of perspectives through which they can see the world.

3. Elevated Sensemaking

A process or coach to help integrate and make sense of these perspectives and experiences from later stages of development. A larger, more advanced worldview emerges and, with time, stabilises.

Center for Creative Leadership (2015)

Building new practices or orientations such as experimentation and action inquiry[16] in relation to everyday, real-world activity is a key part of that emergence and stabilisation. Garvey Berger and Johnston (2015) summarise "three simple habits of mind" that strengthen leaders' ability to respond to the challenges of a complex, unpredictable world:

- **Ask different questions;** slow down decision making and explore possibilities
- **Take multiple perspectives;** open up our field of vision and expand our set of solutions
- **See systems;** step back and look for the combinations of forces at play in a situation. This allows us to see how we might reshape those forces and get the system to move in a desired direction.

Garvey Berger (2019) suggests ways to unhook from five pervasive and unhelpful ways of thinking: the desire for simple stories, our sense that we are right, our desire to get along with others in our group, our fixation with control, and our constant quest to protect and defend our egos.

Laske (2008, 2015) separates socio-emotional 'meaning-making' from cognitive 'sense-making', seeing them as different and intrinsically linked. He hypothesizes that while the former emerges (i.e. cannot be developed deliberately), the latter can be taught by using questioning in dialogue to open peoples' minds to thinking that is structurally deepened through 'thought forms'.

Following the tradition of Basseches (1984), Laske distinguishes 28 forms of thought that can be used to help assess and develop cognitive capability, in four inter-relating dimensions of Context, Process, Relationship and Transformation. Perspectives taken on the world can through this approach be measured in terms of fluidity and complexity of thinking.

Another consideration in planning deliberate developmental interventions is the developmental stage of the practitioner (e.g. coach, action inquiry facilitator) in relation to the person or people being developed. Is it desirable or even possible for a coach operating at an earlier stage to assist the development of someone later-stage, such as when the coach is conventional and the client postconventional? Laske (2008) highlights the inadequacy of current research into this area. He notes the potential influence of a coach's own developmental stage on factors such as his or her conception of the client, qualities of empathy and detachment, and ability to challenge a client's thinking. He (2007) raises ethical considerations, drawing out distinctions between enabling behavioural change and enabling developmental or transformative change.

Case study 3: How leadership development can transform a global organisation – Danone

How does a global company, facing intense competition, transform itself through transforming its leaders' capacity to think and act more wisely? That is what Danone, one of the largest dairy food and water companies in the world, aimed to do when it engaged Harthill Consulting, providers of the Leadership Development Profile, to develop the transformational capabilities of its senior leaders.

Danone is experiencing tremendous turbulence across its worldwide environments. The organisation sought to support new ways for its leaders to lead, prompted by:

- Commitment to building a better world
- Rapid changes in mature and emerging markets, and
- Intense industry competition

The 'Transformational Leadership' programme was devised to develop the capabilities that underpin how a leader makes greater sense of the complexity around them and uses more sophisticated behaviours to address their challenges. Building on the theory that people move through sequential stages of ever more complex decision-making, the programme encourages action inquiry and experimentation to continually stretch leaders towards expanded ways of understanding and addressing their situations.

Post programme, participants report that this type of development (not simply learning more things) enables them to introduce new perspectives and different ways of delivering. Said the Vice President France, Africa, Central Europe & Near East:

'It has enriched my capabilities as a senior leader through developing my inquiry skills and ability to step back, gain a wider perspective and cast my area of influence much wider'.

Q9: Where are we now?

In evolving practices that fully serve leadership in our challenging times, there is increasing understanding of the place of adult development and its implications. Later stages of adult development across various dimensions are being recognized as important for increasing complexity and uncertainty (our VUCA world conditions). Practices in assessment and development, including coaching, are increasingly integrating adult developmental theories, particularly those involving stages. And we have some evidence that this approach is having a beneficial impact, with a continuing need to pay close attention to what can be learned from ongoing practice and appropriately designed research.

This is an eclectic and emergent field, with theory and research developing along a variety of avenues. The MDV view is that more applied research is needed bringing these avenues into relationship, to enhance our understanding of the interacting mechanisms of vertical development. In particular, we would like to see:

- More research that looks at the connections and separations between different 'strands' of vertical development (for example how cognitive and socio-emotional development inform one another).
- More research into the links between developmental stage and leader behaviour and/or performance in organisations, particularly with regard to the demands of complex, volatile, uncertain and ambiguous environments.
- More longitudinal work to identify patterns and underlying mechanisms of vertical development.

As with any evolving field, existing good practice needs to stay appropriate for the emerging future. So, traditional notions of validity may also need review in order to be appropriate to the different contexts and methods (while being retained for what they still suit). And the way in which leadership development is practiced needs to encompass the type of worldview and/or cognitive complexity that is being found helpful for organisational life. If it fails to do so then, paradoxically, such development initiatives can themselves become a limiting factor because they will be a mismatch for an individual's next developmental stage and/or miss accounting for the context. Assessment processes are needed that address these factors to inform practice.

Key requirements for this leading edge work are:

- An enquiring approach
- Constant iterative learning from the conversations between theory and practice
- Depth of understanding of the different types of development in adulthood, and their inter–relationship
- Practitioners who are practiced and skilled in the approaches that enable adult development, and who are themselves developing
- Practitioners who are reflexive and with relatively complex forms of metacognition

The MDV Leadership DNA assessment and related approaches draw on a number of routes in combination, including a secure base in occupational psychology, and with working methods that meet the above criteria. This includes a close attention to the balance of evidence, the available and needed research, conducting practitioner research wherever practicable and being in generative conversations with theorists and practitioners of like mind in order to keep developing the field through sharing knowledge and practice.

Over to you

As the title of this piece indicates, there will continue to be certain uncertainties. This makes it crucial that we pay close attention to understanding how we are creating our knowledge and practice base – it is the only way of working that enables a right relationship with validity.
As ever, we value your engagement so do contact us. The 'What do you think?' box contains a few pauses for thought.

What do you think?

- What are the implications of all this for our organisational lives?
  What are the biggest challenges and opportunities for leadership?
- What are the implications for development practitioners?
- Where does this take us next?
- What one helpful thing could you do, in light of this article?

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You may also like:

These MDV articles related to vertical development are available at www.mdvconsulting.co/experience/articles

The Value of Vertical Leadership Development in a Volatile World (April 2016)

Leadership in a VUCA World (December 2016)

Leadership Is About Changing Your Mind (March 2017)

Four Stages of Leadership Development (April 2017)

Vertical Leadership Assessment – A New Approach for a VUCA World (March 2017)

Development Coaching – Growing Leaders for a Complex World (October 2018)

Notes

1. Piaget's four stages are: Sensorimotor (0-2 years; learning through senses and motion, words as labels and demands, realising that objects still exist after they disappear), Preoperational (2-7 years; sentences to explain concepts, the idea of past and future can be used, things can symbolize other things – words and pictures, for example), Concrete operational (7-10 years; learn that other people may have different thoughts and feelings from theirs, still work things out based on concrete experience) and Formal operational (11+, use of logic/reasoning, planning into the future, hypotheticals, transferring concepts to different situations).

2. Perry was a seminal researcher in the area of post-formal (i.e. beyond Piaget's final stage) development. His four developmental levels of: dualistic, multiplistic, relativistic and committed thinking were divided into nine 'positions' and he thought that a student could get stuck in a position or regress or become detached from the sequence of positions. King and Kitchener (e.g. 1981) are among researchers who have also found stages present in the progression of young adults' thinking. A summary of Perry can be found online via Oxford University's Institute for the Advancement of University Learning (on 15th February 2019): https://www.learning.ox.ac.uk/media/global/wwwadminoxacuk/localsites/oxfordlearninginstitute/documents/supportresources/lecturersteachingstaff/resources/resources/Perry_Intellectual_etc.pdf

3. In *The Life Cycle Completed* (1997), Joan Erikson updates and extends the 1982 work of the same title by Erik Erikson, adding in a Ninth Stage. The previous eight were named as Infancy, Early Childhood, Play Age, School Age, Adolescence, Young Adulthood, Adulthood and Old Age. Each has its own particular crisis to address and a basic strength that comes from the resolution. The Ninth stage differs from the other eight in being a perspective on each of them. Erikson was pre-eminent in the psychoanalytic tradition. He and Joan selected their surname when they became naturalized US citizens in 1939 – it was not the birth surname for either. Erik died in 1994, having extensively annotated the 1982 publication, which was an extremely close collaboration with Joan. Joan died in 1997, having completed the extended version of the text. See also https://education.stateuniversity.com/pages/1960/Erikson-Erik-1902-1994.html

4. A variety of studies collated in Robertson (2013) support certain types of trait-related change being typical over a life span: Personality trait measures tend to change most – in the same way and at the same age – between 18 and 40, possibly connected with life experiences (Roberts and Mroczek 2008; Roberts, Walton and Viechtbauer 206). In these analyses, three of the Big Five increase throughout life (Agreeableness, Conscientiousness, Emotional Stability), while Openness to Change increases through adolescence and tends to reduce after the age of 60. The fifth trait, Extraversion was split into Social Vitality (decreasing slightly through adulthood) and Social Dominance (increasing throughout life). And even where overall personality seemed to be staying consistent in adulthood, changes in specific traits were found for between 10% and 30% of adults (Allemande, Gomez & Jackson 2010), leading to questions about the role of environmental factors, given these are believed to have more influence than genetic factors for adults. There may be variations by country – Donnellan and Lucas (2008) found Neuroticism decreased with age in a large UK sample, increased in a German one and (Lucas and Donnellan 2009) decreased in an Australian one.

5. They include Harthill Consulting's Leadership Development Profile (LDP), the Torbert/Herdman-Barker Global Leadership Profile (GLP), Cook-Greuter's Mature Assessment for Professionals Profile (MAP), and O'Fallon's StAGES. Although from an initial common root, each has distinctive aspects. See also Murray (2017).

6. Novy et al (1997) found strong split-half reliability for the WUSCT; internal consistency for the LDP has been measured at 0.937 (Cronbach's Alpha on 2014 data, personal communication; Cronbach's Alpha 0.906 in Torbert & Livne-Tarandach 2009).

7. Cook-Greuter and Herdman-Barker achieved WUSCT inter-rater reliabilities of 0.69 for perfect matches, and 0.90 for near-matches within one level; LDP (WUSCT as amended for business use) inter-rater reliabilities of 0.96 have been demonstrated with a more experienced rater reviewing the initial scores of another (Torbert & Livne-Tarandach 2009). Torbert (2019) has found 94% perfect agreement between GLP senior scorers. Inter-rater reliability of the Subject-Object Interview is reported between 0.75 and 0.90 (Lahey et al 1988).

Notes continued

8. Test-restest reliability of the Subject-Object Interview is reported at 0.83 (Lahey et al 1988). Cognadev found strong test-retest correlations (0.81-0.92) on participants' assessed Levels of Work in the CPP (Prinsloo & Prinsloo 2001).

9. In a focused review, McCauley et al (2006) summarise the position as follows: "*There is a growing body of research evidence that supports the view that leaders operating at the Independent order [Achiever or later] are more likely than those operating at the Dependent order [earlier stages] to enact leadership in ways deemed effective in most modern organizations. For example, they have been found to be more likely to delegate, hold people accountable, influence through rewards and expertise (rather than coercive power), look for underlying causes of problems, act as change agents, and be more comfortable with conflict. Although the arguments for the added effectiveness of leaders operating at the Inter-independent order [Strategist or later] are compelling, there is mixed support for this assertion.*"

10. In a meta-analysis across 42 studies Cohn and Westerberg (2004) found low to moderate correlations between the WUSCT and various intelligence and reasoning tests. On the CPP, correlations with cognitive ability/IQ tests are moderate, suggesting that while cognitive ability is related to performance, the CPP is not just another measure of intellect – it's picking up something else.

11. Manners & Durkin (2000) usefully differentiate between cognitive capability in the 'logico-mathematical' and 'socio-emotional' domains. While the former shows little relationship to developmental stage, the latter does.

12. Browning (1987) found that education level explained 8% of the variance in a study of young adults completing the WUSCT. In the technical data for the CPP graduates were found to generally achieve better scores than non-graduates (CPP Technical Manual).

13. The Big Five personality dimensions:

    - **Extraversion** (outgoing/energetic vs. solitary/reserved)
    - **Agreeableness** (friendly/compassionate vs. challenging/detached)
    - **Conscientiousness** (efficient/organised vs. easy-going/careless)
    - **Neuroticism** (sensitive/nervous vs. secure/confident)
    - **Openness to Experience** (inventive/curious vs. consistent/cautious)

14. Vincent et al (2013) found a preference for MBTI Intuition (N) was associated with later stages of development on entry to a leadership development programme, and greater vertical development during the programmes. On the CPP, those profiling at more strategic Levels of Work in CPP are also more likely to report Intuitive (N) MBTI preferences (correlation of 0.26). Other personality characteristics that have been shown to have associations with vertical stage include ego resiliency (adaptability to stressors and management of anxiety), interpersonal integrity (honesty, authenticity and closeness in relationships), and conformity (compliance with social conventions, strongest at Diplomat and Achiever). (Westenberg & Block 1993).

15. For example, Manners et al (2004) showed a significant and sustained increase in developmental stage in a group of adults attending a specially designed training programme focusing on self-awareness, communication, conflict resolution, stress management, and goal setting. A matched control group of participants on a waiting list for the course showed no progression.

16. Torbert (1994) describes Action Inquiry as follows: *"Action inquiry studies the interplay among one's own internal practice of attention, one's thinking/feeling, and one's action and outcomes in everyday life; at the organizational scale, action inquiry studies the interplay among mission, strategy, operations, and outcomes… The researchers are themselves also subjects and practitioners…, and the aim is to create communities of inquiry within communities of social practice"*. Also see movement through Developmental Action Inquiry to Collaborative Developmental Action Inquiry (Erfan & Torbert 2015).

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Appendix: Selected theorists and practitioners in adult development*

Names and what they are known for	Stage structures	Assessment methodologies
Jennifer Garvey Berger (2009, 2015) Adult development in leadership, drawing primarily on the work of Kegan and selected psychological research such as Baxter Magolda (e.g. 2012) and King. Developed the Growth Edge Interview methodology, primarily used in coaching.	Four different forms of mind: Self-sovereign mind, Socialized mind, Self-authored mind, Self-transforming mind. (Self-sovereign replaces Kegan's Imperial).	Growth Edge Interview.
Michael Commons (1984, 1995, 2000, 2007, 2014) Model of Hierarchical Complexity, based on mathematical descriptions of task and action complexity. Considered applicable in different domains (cognitive, social, etc).	Seventeen distinct orders: (*give Piaget correspondences*). Calculatory, Automatic, Sensory, Circular Sensory Motor (*Sensorimotor*); Sensory Motor; Nominal (*Pre-operational*); Sentential, Preoperational, Primary (*Concrete operational*); Concrete, Abstract, Formal (*Formal operational*); Systematic, Metasystematic, Paradigmatic, Cross-Paradigmatic, Metaparadigmatic (*Postformal*).	Analysis of observed actions in performing a task/situation, to determine the highest 'order' of actions performed, using axioms. There were five axioms by 2014: well ordered, transitive, chain rule, coordination rule and equal spacing.
Suzanne Cook-Greuter (1985, 1990, 1999, 2013) Built on Loevinger's theories, initially alongside Torbert and others, particularly expanding evidence and work around later stages. Developed the Maturity Assessment Profile (MAP) in the 1990s.	Up to 10 stages: (so far recognised). Preconventional: Impulsive (2), Self-defensive (2/3); Conventional: Conformist (3), Self-conscious (3/4), Conscientious (4); Post-conventional: Individualist (4/5), Autonomous (5), Construct-aware (5/6), Ego-aware; post-post-conventional/ego-transcendent: Unitive (6). Last named stage seen as catch-all for likely several others.	Maturity Assessment Profile (MAP).
Theo L. Dawson Dawson-Tunik, Commons, Wilson, & Fischer (2005), Dawson & Heikkinen (2009) Development of cognitive complexity through hierarchical integration; the formation of increasingly complex and abstract concepts. Grounded in Fischer's Dynamic Skill Theory (1980) and Commons' Model of Hierarchical Complexity (e.g. 2007).	Scores on the Lectical Scale represent increasing capacity to handle complexity. Levels 0 (at birth) to 14; levels 10-12 are the typical adult range. At level 10 people can understand and apply abstract concepts. At level 11 (40% of adults) they can identify systems of relations between multiple variables. Level 12 requires deep expertise in at least two areas, enabling connection and integration across multiple complex bodies of knowledge.	Lectical Assessment System (LAS). Includes measures for: leadership decision making (LDMA), self-understanding (LSUA), reflective judgment (LRJA) and ethical reasoning (LERA).
Erik (and Joan) Erikson (1950, 1982, 1997) Seminal work in psychosocial lifespan development from the 1950s onwards. Famously coined the phrase 'identity crisis'.	Eight life-stages: Infancy, Early Childhood, Play Age, School Age, Adolescence, Young Adulthood, Adulthood, Old Age. A ninth stage came later, taking a perspective on each of the other eight.	Erikson Psychosocial Stage Inventory (Rosenthal, Gurney & Moore, 1981) addresses the first six; The Modified Erikson Psychosocial Stage Inventory (Darling-Fisher & Leidy, 1988, 2015) addresses eight, as does the Inventory of Psychosocial Balance (Domino & Affonso, 1990).

* This does not attempt to be a fully comprehensive survey of all researchers and practitioners in the field of adult development, but to highlight some selected names, particularly including those we have made reference to in this article.

Appendix: Selected theorists and practitioners in adult development

continued

Names and what they are known for	Stage structures	Assessment methodologies
Clare Graves, Don Edward Beck and Christopher Cowan (1974, 2004 posthumous); Cowan and Beck (1996, 2005) Bio-psycho-social model of development, originated by Graves (once a student of Maslow) and later formulated into Spiral Dynamics by Cowan and Beck in the 1990s.	Currently nine (originally eight) Life Conditions, (A to I), paired with nine ways of addressing them, (N to V), denoting a sequence of worldviews. Each pair has an associated colour: beige, purple, red, blue, orange, green, turquoise, coral. Moves from self-directed survival to being in service to the larger picture.	Graves had assessment approaches while researching. Spiral Dynamics is a descriptive map of developmental stages based on Graves work, without an associated specific measure.
Kurt Fischer (1980); Fischer and Yan (2002) Dynamic Skill Theory; offers a dynamic framework for describing, assessing, analysing, and explaining variation and systematic change in the organisation of action and thought from childhood into adult development.	Cognitive development explained by a series of skill structures of gradually increasing complexity. In 1980, ten hierarchical levels divided into three tiers: sensory-motor actions (Tier 1) to representations (Tier 2) and then to abstractions (Tier 3) in adulthood. Becoming more nuanced through the 1990s to address multiple interacting factors including context and neuro-development. Each specific skill at one level is built directly from skills at the preceding level.	Primarily through constructed and observed research tasks for functional/optimal assessment; also dynamic modelling based on theory and observation.
Elliott Jaques (1986, 1989, 1994, 1998) Stratified Systems Theory; cognitive capacity develops in stages and impacts on the time horizon, and therefore the level of work complexity, an employee can address. Work role complexity can be assessed for fit with individual.	Work complexity has time horizons divided into numerical Strata from I (up to three months) to IX (beyond 100 years). Individual capability is divided into 16 positions. There are four types of mental processing (Declarative, Cumulative, Serial and Parallel), and four types of complexity of information used (Concrete verbal, Symbolic verbal, Abstract conceptual and Universals). So Concrete-Declarative would be a starting point (in childhood) and Parallel-Universal would be the ultimate under this system.	For role, Timespan of Discretion is assessed using an interview process, as is Level of Capability of an individual, also addressing the time horizon with which they can operate.
Robert Kegan (1980, 1982, 1994, 2000) Theorised qualitatively different ways of meaning making through increasingly complex 'Forms of Mind, along with work on Immunity to Change (with Lahey). Developed the Subject-Object Interview methodology.	Five Forms of Mind (four transition stages between): Impulsive, Imperial, Socialized, Self-authoring, Self-transforming. Plus an infancy-relevant stage: Incorporative. Later texts (In Over Our Heads 1994) used five Orders of Consciousness or Orders of Mind (first to fifth).	Subject-Object Interview.

Names and what they are known for	Stage structures	Assessment methodologies
Patricia King and Karen Kitchener (1989, 1994, 2002, 2004; King et al 2009) Cognitive development research through the 1980s and onwards, focused on judgments reflecting the complexity of people's beliefs about knowledge and certainty.	Prereflective Reasoning (Stages 1-3): Knowledge comes from an expert or direct experience; Quasi-Reflective Reasoning (Stages 4 and 5): Knowledge claims can be incomplete or inadequately researched – it's possible to follow processes to improve its quality; Reflective Reasoning (Stages 6 and 7): Knowledge claims need to be evaluated in context and knowledge is constructed and changeable, requiring constant review. Some people may never progress beyond Stage 3.	Reflective Judgment Model, measured using the Reflective Judgment Interview. The Reasoning about Current Issues test was also developed from the same theoretical framework.
Otto Laske (1999, 2004, 2007, 2011, 2015) Constructive development in sense-making, based in the growth of dialectical thinking. Draws/builds on the work of Bhaskar (e.g. 1993) and Basseches (e.g. 1980, 1983) and used in organisational settings (see De Visch and Laske 2018).	Draws out up to 28 Thought Forms arranged across four classes and three functions. The classes, known as Moments of Dialectic (after Bhaskar) are: Context, Process, Relationship, and Transformation (for which the other three need to be present). The function of any thought form can be to help the thinker Point to, Elaborate or Link concepts, with Point to being the most simple.	Dialectical Thought Form Framework, with an individual's thought form structures ascertained through semi-structured interview.
Jane Loevinger (1966, 1970, 1979, 1985, 1996, 1998) Pioneering work in ego development and adult development from the late 1950s onwards. Developed the original Washington University Sentence Completion Test (WUSCT).	Eight ego development stages (at least): Impulsive (E2/I-2), Self-protective (E3/Delta), Conformist (E4/I-3), Self-Aware (E5, I-3/4), Conscientious (E6, I-4), Individualistic (E7/I-4/5), Autonomous (E8/I-5), and Integrated (E9/I-6). Considered further stages possible.	Washington University Sentence Completion Test (WUSCT).
Terri O'Fallon (2013, 2017; see also Murray 2017) Human meaning-making and perspective taking, initially drawing on Wilber (e.g. 1996) and Cook-Greuter (e.g. 1999). Developed the StAGES/STAGES methodology, proposing an underlying structure that would be common to other models.	Twelve stages across three (or four) tiers, incorporating (at least) six Person-Perspectives and binary dimensions from Wilbur's AQAL (individual-collective, interior-exterior and inside/space-outside/time. Concrete tier: Impulsive, Egocentric, Rule-Oriented, Conformist; Subtle tier: Expert, Achiever, Pluralist, Strategist; Meta-awareness tier (MetAware): Construct Aware, Transpersonal, Universal, Illumined. References also to a fourth, Unified, tier.	StAGES sentence completion form, taking an Integral approach to scoring.
William G. Perry (1968, 1981, 1999) Pioneering educational psychologist; proposed that students pass through a predictable sequence of positions of epistemological growth in their college years.	Nine positions, moving from a belief in absolutes to more flexibility, in four stages: dualism, multiplicity, relativism, and commitment. The theory describes the positions and how they are achieved.	Interview.

Appendix: Selected theorists and practitioners in adult development

continued

Names and what they are known for	Stage structures	Assessment methodologies
Maretha Prinsloo (Prinsloo & Barrett 2013) A theory-based model of cognitive processes and associated measure of cognitive functioning, the Cognitive Process Profile (CPP).	Contextualised in terms of Elliott Jaques' Stratified Systems Theory (SST), CPP results are related to the cognitive requirements of work environments of increasing complexity: Pure Operations, Diagnostic Accumulation, Tactical Strategy, Parallel Processing or Pure Strategy. These equate to the first five of Jaques' work levels (Strata).	Cognitive Process Profile, an assessment of cognitive styles and processes. Participants undertake a computerised simulation that requires the deciphering of 'hieroglyphic' messages.
David Rooke and Bill Torbert (1998, 2005) Elaine Herdman-Barker and Bill Torbert (2011). Developmental Action Logics in work/ organisational contexts, as measured by the Leadership Development Framework (LDF). Based on the work of Loevinger and developed in collaboration with Cook-Greuter.	LDF: Impulsive, Opportunist, Diplomat, Expert, Achiever, Individualist, Strategist, Alchemist, Ironist.	Leadership Development Framework (LDF).
Bill Torbert (1994, 2004) Development in work/organisational contexts, rooted in the work of Loevinger alongside the theory and practice of Collaborative Developmental Action Inquiry (see Erfan and Torbert 2015). Led development of the Leadership Development Framework (LDF) and Global Leadership Profile (GLP) in collaboration with Cook-Greuter and others.	GLP: Dependent - Impulsive, Opportunist, Diplomat, Expert; Independent - Expert, Achiever, Redefining; Inter-independent - Transforming, Alchemist; Ironist.	Global Leadership Profile (GLP).
Ken Wilbur (1996, 2000, 2007) Integral theory: an integrative approach to experience, drawing on philosophical traditions regarding stages of consciousness and including approaches from Loevinger, Cook-Greuter, Kegan and Beck/Cowan.	Brings together multiple types of development using the idea of an Integral Operating System (IOS). Stages of progression move through from Body to Mind to Spirit, including emotional, psychosexual, interpersonal, moral and cognitive. The IOS map is perhaps best known as AQAL (All quadrants all levels/lines/states/types), with the quadrants representing four perspectives arrived at by looking at Individual/Collective and at Internal/External, so I, It, We and Its.	Measures as relevant can be used for elements but no specific measurement method(s) of its own – it's a map intended to invite conscious(ness) development.

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Carol Jefkins is a business psychologist with more than 25 years' experience in assessment and development consultancy. Her areas of expertise include capability framework design, Assessment and Development Centres, executive assessment, development planning and coaching. She has a particular interest in the intersection of assessment with vertical development, helping people understand their transitions to new ways of framing the world and making sense of experience.

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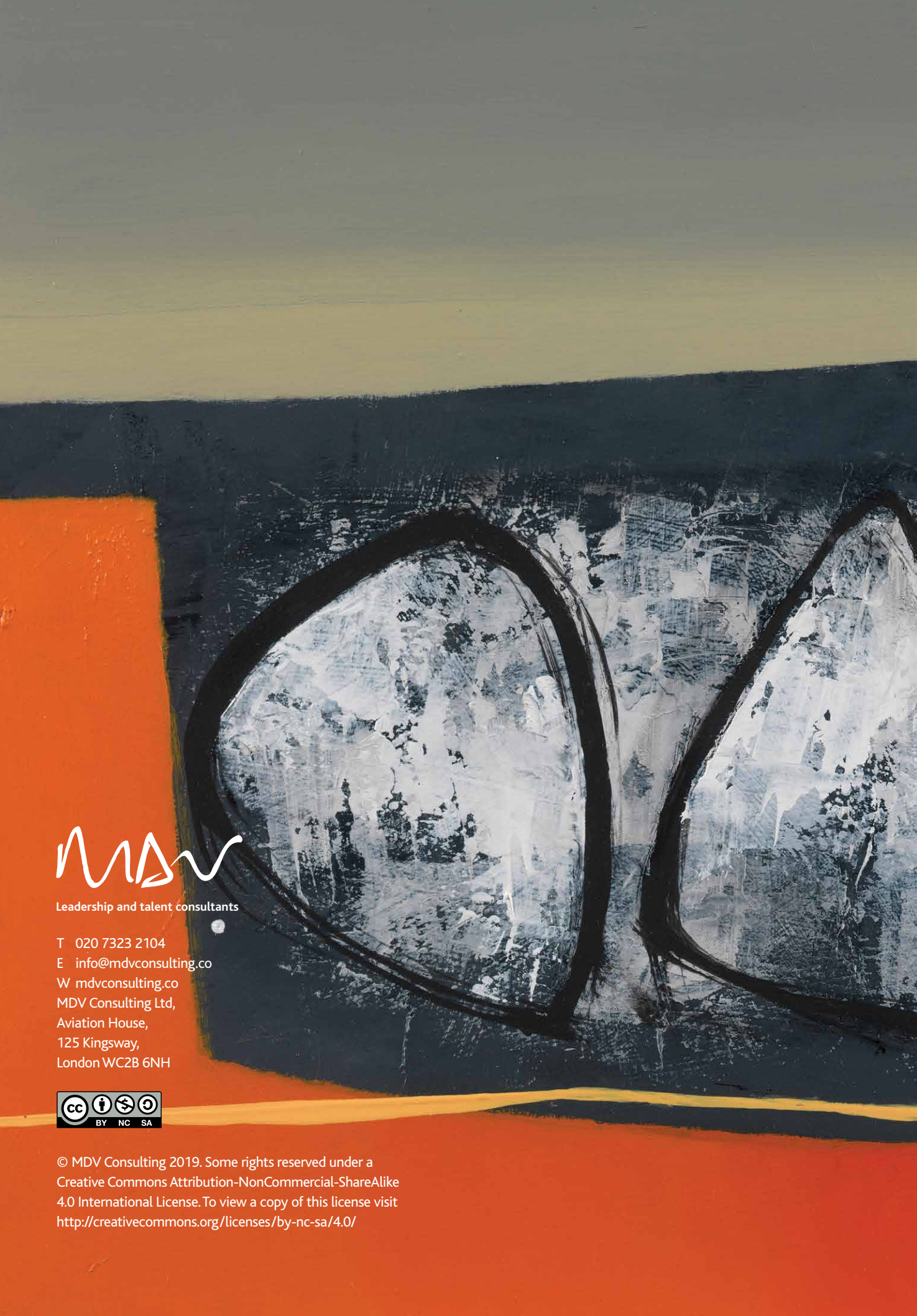

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