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Appendix 1

Detailed Description of the Different Stages of the Spiral according to Beck And Cowan¹

Beige

BEIGE/purple: Exiting phase

Informal band-type human existence is seriously challenged by competition over food resources, mates, and territory. As the LC1 basic survival needs are met, new brain connections form which create a distinct awareness of ‘me, myself, and I’ as different from other people, vegetation or animals. With time to think about why things happen, direct observations begin to link cause with effect, whereas before, everything else was attributed to magic (Beck and Cowan, 1996, p. 202).

Purple

beige/PURPLE: Entering Phase

Life Conditions 2 call on the internal (neurological) equipment designed to connect events into cause and effect sequences. The early roots of animism are planted as beige/Purple concern with natural phenomena, like rivers, mountains, sun, sky and fire. With some adaptation these forces became fertility symbols, totems, amulets and relics. In this zone there is no sense of being able to control nature, only to placate the indwelling spirits in hope of achieving harmony and avoiding harm. This process is also seen in the end of infancy, and the beginning of childhood in the developmental process of children.

PURPLE: Peak Phase.

The animistic or Purple level of existence is marked by ‘signs’ that explain the everyday world. (The metaphor that would fit this description is that Purple individuals must read the ‘signs’, in order to understand their world, and that they are powerless to do anything but look out for these signs). These signs are described as:

The mind of Purple is animistic, shamanistic, and mystical.

¹ This Appendix is largely an edited version of some of the salient material contained in Beck and Cowan’s 1996 book.

This v-Meme is heavily laden with ‘right brain’ tendencies such as heightened intuition, attachment to places and things, and a mystical sense of cause and effect. Individuals move about fearfully in a cauldron of omens and spells, while the mind is pre-occupied with totemism, fetishes, charms, shamanism, sorcery, hexes, superstitions and myths or origin. By itself, Purple is pre-literate, although it is rich in folk stories, songs, drawings, dances, artworks, and elaborate customs passed from one generation to the next. Purple thinking is also dichotomous, in that people are here or there, or it is us or them.

The collective memory carries the little memes for Purple.

The Purple collective memory holds vast wisdom, which is often amplified and mystified and extended through the folk ways of people. Sagas, fables and legends likely trace back to actual events.

The group is concerned with its survival and well-being of its own kind.

The group always sees itself, as ‘The People’ and others are outsiders. This intense in-group/out-grouping is both a strength and weakness for Purple. Traditional ways are always inherent to the nature of things, and not arbitrarily chosen. Purple cannot imagine another way to be.

One for all, all for one.

Reciprocity is part of the Purple compact and is a key organising principle in every tribal society. Property is communal, due to the uncertainty in the world. “If I find food today, I shall gladly share it with you, because tomorrow you may be lucky while I am not”. In this sacrifice-self view, even one’s life belongs to the tribe, as seen in the World War II Kamikaze pilots and modern-day zealots who are popularly referred to as suicide bombers who are prepared to blow themselves (and others) up for a cause.

Shaman, Elders and Chieftain.

To deal with the awesome and inexplicable ways of nature, Purple groups seek out people whose views are more elaborated than those of the rest. Such people, like shamans, medicine men/women, appear closer to the spirit realm and hence more in touch with the great forces at work in nature. Purple relies on taboos and the people’s customs for direction.

Spirits, spirits everywhere.

Beneficent and malignant forces must be kept in balance and harmony. Purple assigns life force and intentionality to nature and objects. In this case the oak tree is not just a source of

potential timber and aesthetic comfort, but also a home to spirits. The heavier the Purple, the more relics and sacred ground are needed. Family heirlooms attach to Purple too.

Calling on the mother when times are tough.

Some of the deepest Purple aspects relate to parental bonding and the nuclear family.

The map is the territory.

The word is the thing and the map becomes the territory. An example of this would be the American flag, where the flag represents everything about the country and more.

Gender, Sex, and Kinship.

Social life is shaped by small cohesive groups with tight kinship bonds. There tends to be a gender-based division of labour and social roles. Nepotism is natural to Purple with its extended kinship structure. The family takes care of its own. Purple could also be polygamous and polytheistic.

Impact on the environment.

Purple living is very organic and as long as populations are small, it has little impact on the environment.

PURPLE/red: Exiting Phase

Greater exposure to the world reveals how baseless many of the superstitions are, challenging the credibility of the Purple leaders. Secondly, meeting the security needs of people releases energy and resources, thus placing the system in a state of readiness for change. Thirdly, to keep Purple under control, leadership pours on more ritual and tradition. By doing this they stifle the yearning to break free and the need for personal autonomy creates anarchy in a well-wrought tribal order. Fourthly, natural competition for richer niches ultimately puts Purple groupings against each other, rewarding those who assert themselves and take charge. At the exiting Purple/red range, the person starts dreaming of taking direct action as the person's ego pops up. Individuals begin to find weaknesses in their leadership and come to the conclusion that the spirits are not all-powerful and even be manoeuvred. As Red looms up, there is a growing sense that a powerful individual can actually influence the world. Placating the spirits does not always work, since they are unreliable and unpredictable and sometimes whimsical. In the exiting phase there is much reliance on strong persons as the spirits and the chiefs take on new authority – the leader of the pack with charisma (Beck & Cowan, 1996).

Red

purple/RED: Entering Phase

Red is the first clearly express-self, I-orientated V-Meme. It may be raw, impulsive and wild, but also very liberating and creative. For children this thinking flares in the ‘terrible-twos’ and again around middle school time. Red-dominated periods are marked by warlords, exploitation, exploration, empires and the idea that nature is there to be conquered. Red stubbornly resists power exercised over it.

The description for the various aspects of Red is known as ‘red flags’, just as Purple is described by ‘signs’. (The metaphor in this is that just as a bull will allegedly charge a red flag, just so is the nature of this level of existence). In the entering phase these Red Flags are the following:

From magic to machismo.

As the spirits, magic, and myths of Purple fade into Red, the spirits turn god-like. Reverence for the god-mother turns into a contest with her and magic becomes a weapon that is used to control other people.

From consensus to dominance

Purple leaders denounce consensus and serve to balance the group, but as Red intensifies, strong leaders take unilateral control. Purple as a sacrifice-self level of the Spiral backs up against Red as a dominant express-self level. Red desires are met by the powerless since their reverence was attained by being strong, breaking bonds and standing free. Red would use intimidation, charisma and physical force to impose his or her will onto others. Red would then guiltlessly exploit Purple’s superstitions, control the people and eliminate competitors.

It’s in every one of us

Red is not an aberration, but a normal part of the v-Meme repertoire. People in this purple to Red transition zone, become unwilling or unable to tolerate constraints.

RED: Peak Phase

One of the biggest challenges for society today is to find new horizons where Red can be released constructively. This proves to be a problem, because bottling it up only leads to anger.

Red Flags for the Peak phase in Red are:

It isn't my fault

Graves found that Red people tend to locate the cause of difficulties and failures outside themselves. Unable to exercise restraint or plan very well, Red fails to save for a rainy day, engage in preventative maintenance, or keep daily commitments.

Grandiosity

Red wants to be bigger than life, and Red needs include breaking loose from the clan, exerting independent control and testing the self against others to establish domination. Ultimately, the object is to challenge death and win. Red thinking is thus egocentric and unabashed.

When Red first appears

This v-Meme awakens in us during childhood. Inflated Red ego often puts a person in harm's way because of the belief that: "I am special...I'll live forever...I'm immortal, not like other humans". The concentration on immediate gratification and refusal to think about negative outcomes escalates in the Red thinking pattern.

LC3 or Red is the real world for millions of people

Negative Red often dominates the milieu of the urban poor. Mugging tourists or dealing in drugs may be effective behaviour for someone who sees the world as Red, whose Purple anchors lie in a gang, because there is no family left, and who sees insurmountable barriers to moving up on the Spiral.

A life is not worth very much

Peak Red does not learn through punishment since actions do not connect with deferred consequences, guilt is absent, and problems are always someone else's fault. The major question for Red is: What is in it for me now? If there is no payoff, no learning occurs. For people truly trapped in negative Red, confinement and some argue, elimination, may be the only treatments.

Life is a jungle

Living in the Red zone is like surviving in the jungle. The weak will lose and they deserve to, because they are weak. Red people might pool their strength, but only when it is mutually useful, and when it is no longer convenient or necessary, they will cast the relationship aside. It is a world of predators and victims, eaters and those that get eaten. A lack of concern for others is taken as a demonstration of toughness and self-control.

A society of unequals

A few dominated 'Haves' and many 'Have-Nots'. The aggressive 'Haves', flaunt their victories, knowing that they can get away with it. These 'Haves', will contrive to keep the 'Have-Nots' subservient and needy, tossing out enough crumbs to keep them interested, but weak. The behaviour of Red 'Have-nots' is usually clandestine and devious. Organisations built on Red, see kickbacks and bribes as natural ways of doing business. There is no altruism at this level, but there is a manipulation of indebtedness and an exchange of favours. Something like: "you scratch my back, and I'll scratch yours". The world of Red is tactile, concrete, and specific. A roll of cash in the pocket or gold chains around the neck are far better than 'worthless' scraps of paper (bonds or even cheques).

Who's at-risk anyway?

The Red v-Meme is a vital part of human nature, and it is neither inherently good nor bad. This proud, lusty, assertive way of being can be energising and imaginative. In breaking with the system, Red produces innovations that would be impossible within the bonds of Purple customs or Blue mandates. At the peak, Red cannot look at itself objectively. Ego involvement is very high, and there is instant defensiveness when ideas are challenged. Since Red individuals are unable to step away and appraise the situation objectively, practically everything is taken personally. When this v-Meme is in control, calm rational discourse is unlikely (Beck & Cowan, 1996).

RED/blue: Exiting Phase

At this point in the Spiral, guilt begins to sneak in and the v-Meme is desperately hanging on to dominance. Doubts about unbridled desires and impulsive acts are creeping in and brazen courage is maladaptive in a more orderly world that seeks meaning and purpose in life. In this stage people see that both the haves and the have-nots die, seeing that they both share mortality if nothing else. They have come to rejoice in learning that their good fortune is also God's will. The have-nots justify their long suffering with the hope that everything will be

set right in the great by and by. Both these groups begin to feel an overarching power may be intervening in spite of their best laid plans and intentions. The slave and the master are both sinners in the hands of an angry God. Those centred at RED/blue show concern over self-serving impulses, since awareness of others is creeping in. These people will start to think about consequences. The essence in BLUE is the obedience to the ultimate authority (Beck & Cowan, 1996).

Blue

red/ BLUE: Entering Phase

The little bit of guilt present in RED/blue becomes centralised in red/ BLUE. Egocentric impulsiveness is replaced with attention to consequences and deferred gratification. This might sound very civilised, but the red/BLUE thinking produces the self-righteous fault-finder and condemnatory judge, who tend to sort the 'good' from the 'bad' and make others feel ashamed for who they are. The red side wants to vanquish impure, unrighteous thoughts while BLUE imposes justice and order. According to Beck and Cowan (1996), this v-Meme awakens to stabilise the tumultuous rivalries of RED, because a higher authority that is stronger than any of them must quell individual egos. This v-Meme binds impulses within, rather than wildly expressing them outward. As BLUE awakens, penance feels good and a bit of suffering is inspirational. This v-Meme really stirs when LC4 starts closing in and morality is at hand. The tough red streak should not be overlooked in this transitional zone. If the BLUE is not yet solid or during a stressful regression, one may slip back to stronger RED. A driving force in red/BLUE is the purging of impure thoughts or the conversion of those who think wrongly. This is often the home of militancy, because awakening BLUE needs purpose and red craves action. Examples of this are the radical Zionists, old guard Palestinians, the Ku Klux Klan, Black Muslim community and neo-Nazi's.

BLUE: Peak Phase

Then this v-Meme take hold, one feels the pure joy of purpose, reason and direction in life. The right brain capacity to recognise and bond with abstract ideas increases. There is an identifiable higher power watching over and regulating human existence. An example of this v-Meme is the 'born again' religious conversion.

BLUE Motto's for the Peak phase is:

Bringing order to the chaos and structure instead of anarchy

BLUE movements are forged from conditions of chaos, deprivation, and suffering. LC4 cause people to seek order instead of anarchy, and BLUE thinking is required to sort the social mess out. When this v-Meme arrives, people gladly accept authoritarianism to clean things up and get everything running on time again. It puts everyone into right-and-proper social roles, castes, grades, races, classes, seniority levels or military ranks. This then provides the well-ordered stability that LC4 craves. In this v-Meme, you are expected to know your place and keep it. The expectations of the system require what is right and wrong. Individual priorities shift from express-self to sacrifice-self to the common good. This thinking tends to be polarised, and any thinking that is not the same as the system, is seen as implicitly wrong. This categorical world that BLUE creates is hierarchical. The absolute authority sits at the pinnacle and speaks down to the chain-of-command.

The Mood of BLUE comes across as rigid, dogmatic, and redundant

That is fine as long as you are in agreement, because here there is no room for variance in interpretation. Guilt speaks in BLUE and is integrated as a routine and part of living.

The rightful exercise of just authority

BLUE assumes a stern demeanour, but not a joyless or unloving one. The pleasure in life comes from serving The Way and through obedience. Most people need a BLUE rock (be it Christianity, Confucian, Krishna, or secular) to tie their lives and anchor morality and ethics.

Right and Wrong

Good opposes Evil in an ongoing battle for dominion. The outcomes may include enlightenment, eternal life, oblivion, or unimaginable torment, and there is no room for compromise or gray areas among the devout True Believers. In its extreme forms, BLUE must call down evil-doers, and the transgressor faces punishment after doing wrong. In BLUE behavioural freedom is tightly restricted by guilt and the fear of punishment.

A reason and a purpose

Every thing in BLUE has a purpose, a place, and a reason. There is a grand design behind existence and purpose to everything, though mere mortals may not comprehend it. These BLUE doctrines are generally documented in 'the book' since written language is part of this v-Meme's intelligence.

Who goes there? Friend or foe?

People respond judgmentally, not compassionately, when their BLUE is enraged. Understanding and tolerance is limited. In BLUE, people are even selective in their choice of friends, and close associates tend to share the same beliefs, religion and politics. When conflicts break out in BLUE, they are vicious, because both sides know too much to hurt the other deeply.

Order and regimentation, everything in its proper place

When in BLUE, people tend to prefer tight structure, certain schedules and clear consequences. This v-Meme lives on absolutes, namely a lifetime guarantee and metaphysical certitude. Oaths and promises are inviolable, so honour codes are most effective when people are in BLUE. This v-Meme produces an orderly life, a neat toolbox and a strong need to stabilise turbulence.

BLUE/orange: Exiting phase.

Once BLUE stabilises the world and brings reliable order, 'me' has the luxury to begin stirring again. At the exiting phase of BLUE/orange we find a cautious, inoffensive, controlled move back toward independent thinking. Peak BLUE was compliant and obeisant to authority, and even some doubts arise whether this authority is all it is cracked up to be. The truth for BLUE/orange is what one hears from one's own respected proper authority. Although there might still not be any latitude in interpretation of this authority, but this authority is no longer seen as the universal standard. In this view there is still a greater need to submit than to express one's own point of view, but the scales are tipping towards autonomy. This person would do what the authority wants, but would start thinking about doing it in his or her own way, especially when the authority is not watching. This calls for careful self-control and marks the beginning of disingenuousness. This lack of freedom under BLUE causes bitterness, which stirs the ORANGE issues of independence, personal competence and self-control.

When service to the cause is viewed as one's purpose for being, the ability to have compassion for human weakness is hard to come by. BLUE/orange may assist others out of a sense of duty, obligation and sympathy, true empathy is rare. BLUE/orange when would flaunt its self-righteous discipline and condemns weakness in others while to exceed standards themselves.

The motto for the exiting phase of BLUE/orange is:

Work is still supposed to be work in BLUE/orange

There is no time for RED playing around and self-enjoyment. While RED is prone to push the envelope, daring the impossible and risking it all in the hope of glory; BLUE on the other hand is good at preventative maintenance, inventory control and monitoring the specifications. As BLUE/orange takes over the trains will not just run on time, they become faster and more reliable while adding restricted first class. This area is still a tight, narrowly confined BLUE zone. Rules are rigidified and sometimes used as punitive sticks to beat uppity people into submission or lazy ones into production. Often employees feel assaulted and restrained by excessive authority that demands more production. The individual functioning here is cordial and deferential to superiors but can be cruel with subordinates. BLUE/orange feels ridden by authority and therefore may ride anyone below like a mini-tyrant. These individuals carry a monkey of obedience on their backs, resent its presence, but are too fearful to cast it off. This monkey, although heavy, represents the stability they still need. Leadership in this zone is concerned about their fellows, but is constantly evaluating both their performance and who they are as people. BLUE/orange managers tend to drive workers, becoming beneficent dictators who continue to push for more and faster results. Entities that are blocked in BLUE/orange thinking reach an impasse. They achieve a level of competence and cannot move on to greater complexity. Managers entrench and built authoritarian fiefdoms that perform adequately, but often with high turnover, low morale and much grouching from those under their control. Parents that are closed at this level often engender simmering hatred in children. An example of this would be the old-time military family. On the positive side, BLUE/orange thinking excels at organising things and taking charge according to authority's directives.

Authority on the move

When centred near the middle of BLUE, the authoritative opinions of those with seniority or recognised position power weigh most strongly. Towards the exiting phase BLUE/orange, it becomes possible to deviate from the certified Truth, so long as one remains proximate to authority. The emerging independence still does not allow much latitude for experimentation, so one tends to avoid the extremes or the risk of experimentation. While the BLUE view is 'sacrifice now to obtain later at the behest of proper authority', the Exiting phase becomes openly disdainful of any authority, which does not act like good authority

should. The assessment of proper authority is moving from the outside locus back within one's own right-thinking mind. According to Graves: "...that knows that it knows that it knows..." (Beck & Cowan, 1996, p. 242). In a quiet way, BLUE/orange comes to believe that it is a better authority. The exiting phase can be strife-ridden and turbulent, because on the one hand the person tries to hang onto absolute Truth to maintain stability, yet on the other authority is also teaching independence of thought. Contradictions between anchor-points, within and without of the person, stimulate confused guilt. This may sometimes take the form of negativism and the zealous drive to expunge evil and make things right. Questions about where Truth lives, who is authorised to interpret it and how to enforce it are constant issues. This range of the Spiral is both painful and invigorating. While the old certainties are in jeopardy, the pendulum swing toward independence is also invigorating. The world has new complications as well as possibilities, and the infectious enthusiasm of ORANGE catches on (Beck & Cowan, 1996).

Orange

blue/ORANGE: Entering phase

This v-Meme awakens a middle class between the haves and the have-nots with the recognition of a way by which anyone can supposedly pull him- or herself up in this world. Pre-ORANGE existence is often one of considerable poverty, disease, feudal empires, and stagnation. ORANGE provides a new kind of hope for individual achievement. Emergent ORANGE carries with it a sense of personal power that was derived from RED, and purposeful existence derived from BLUE. Furthermore, ORANGE gained from RED the desire to do as the self wishes, and this need is tempered with BLUE's recognition of the rules and a compulsion to strive for a cause that gives meaning to life. Autonomy layered over a belief in absolute truth, leads to a sense of one's own total rightness.

Freedom from constraints imposed by relations with other people or the limitations that accompany faith in doctrine are central to this v-Meme. The elitism creates interpersonal distance. Individuals in this zone are too critical and discriminating to build many trusting relationships, though they may be surrounded by people agreeing with them. Anyone who risks getting close will be vulnerable to attacks of emotional dumping and efforts to displace faults while absorbing credit. Always evaluative, people in this zone usually come across as snobbish, disgusted, and distant instead of comforting and supportive. A useful trait of

blue/ORANGE is the ability to excel at start-ups or initiating action. However, the person with all the ideas might begin time and again, without carrying anything through to completion. There may therefore be many enthusiastic and sometimes ingenious initiatives, but they will only move forward if complementary v-Memes help them to see the process through. Blue/ORANGE desperately needs others, yet the picky, demanding temperament often makes it very difficult for them to stay close. When individuals in this range are better with ideas and objects than they are with people, their vulnerability is interpersonal skills. While people in this group may use teams and appreciate productive outputs from group activities, they will never join them. Such individuals are reluctant to contribute to group efforts in which they have to yield control or risk looking inferior. It is also difficult to give a group its due, when one is convinced that all good thought exist within the self.

Individuals in the blue/ORANGE entering phase hunger for opportunities to express themselves and excel. Yet the intense, achieving behaviour can lead to premature burn-out. This v-Meme becomes unbound by what other people say or do. There is not yet enough individuality to disregard what others think, while at the same time there is a strong desire to lead the pack. While the awakening of ORANGE lessens the BLUE-based guilt, it does not eliminate awareness of it, because other people are still a factor in life's equations. BLUE sees dissenting ideas as diabolical, blue/ORANGE will dismiss them as merely dumb. Other people need to come into compliance with the best and proper way to do things, namely one's own way.

ORANGE's Peak phase

Orange peak phase is described in terms of Orange Flashes like:

Change, and not permanence is how nature works

Evidence from a number of fields suggest that systems are active and in constant flux. Eventually humans can manipulate nature as to learn its secrets and create a better life here on Earth, because science and technology equip us to do virtually anything. 'Modern' life results from labour-saving devices that free the spirit for better things, superior health care, improved animals and plants, and the belief that we hold dominion over things. Whereas BLUE thinking is absolutistic in seeing only one right way, ORANGE takes a multiplistic view that sees many possible ways, but only one is best.

Authority lies with experience, experiments and one's own right-thinking mind

Opposition to authority becomes less important and the faith in dogma is gone. These are replaced by experimental data and 'the scientific method' and ongoing appraisals of what works best for now. Possibility thinking and opportunity abounds and autonomy rules. Above all else the person is independent and in control. Self-confidence intensifies as ORANGE becomes convinced of its correctness. There is no time for guilt or for time and energy to be wasted. Individual in this zone appear to be materialistic acquisitive.

People are meant to succeed and become winners

This v-Meme arises in the individual or group seeking to exploit opportunities to create 'the good life'. Orange embraces values and beliefs that stress materialism over spiritualism, pragmatism over principle, and short-change victories over long term guarantees. Multiplistic thinking is comparative, and life is competitive. Situationalism and prudent pragmatism replaces BLUE ideological standards. Flexibility and rapid responses to a changing marketplace are the name of the game.

Conforming to the image-of-success fashion

Much of this v-Meme's self-concept is reflective, in spite of protestations of individuality and personal freedom. One is free to conform to the ways of the elites and success really depends on their views. When ORANGE is active, image often counts more than substance. In view of the fact that facades work, one need not actually own the tangible goods to appreciate 'the good life'.

Growing up with the ORANGE world

One would think that the children of affluent parents and circumstances would automatically acquire their values and aspirations. Some do, most do not, because learning to handle LC5 requires more than having possessions. This v-Meme produces personalities which are calculating, accepting of responsibility, and anxious to dominate. They command out of a sense of greater capabilities and maintain this self-image in spite of criticism, rarely changing their minds as a result of feedback. Yet ORANGE is constantly asking for feedback, but then rejects the critique if it does not fit preconceptions. They believe their way is obviously the best and must be convinced otherwise.

Life is a series of challenges, opportunities and tests to do better

Truth for ORANGE depends on self-discovery and their own keen observations. Sometimes they might even deny the validity of contrary information and turn and attack the source. Greatest credit goes to adversaries who give as good as they get and anyone unable to join the game is discounted.

Run it up the flagpole and see who salutes

ORANGE lives are full of military and sports metaphors. Life is a series of manoeuvres with espionage, liaisons and allies. One attacks the competition and out-flanks their marketing with an end-run. Orange lives are directed, focused, intense and connected.

Humans are resources, so ‘...to thine own self be true’

Criticism is cold-blooded and intensive, but straightforward. There is superficial warmth for those who are useful, while they are useful, but ORANGE has more contacts than colleagues. Loyalty is based on utility and not obligation.

Self-assurance comes with the territory. These individuals appear masterful and forceful because they are accomplishing their goals. On the negative side, ORANGE may lack conscience; they can be unscrupulous, justifying harms done to others as necessities. Yet ORANGE is never purely ruthless as RED can be, since it does not pay off in the long run. Most of all ORANGE is equipped for independent action.

Free-market, free enterprise, and laissez-faire models are the favourites

Each is responsible for him or herself. The best will succeed and prosper.

ORANGE/green: Exiting phase

The exiting ORANGE/green is still a self-centred way of existing, but the person is now feeling encroachments from others and their needs. This stage in the Spiral also introduces pangs of loneliness brought on by constant competition. The strategy of choice here is to keep other satisfied, in their places, and off one’s back, yet they must be close enough to be of use when they are needed. ORANGE/green thinking allows people to meet-and-deal very successfully. They are not intimidated by complicated situations, although they may not perceive the full complexity at hand. The superior talents and confidence of the person prevail. A characteristic of ORANGE is the sense of unlimited self and limitless possibilities. Those in the exiting ORANGE/green zone dislike their new-found need for others, seeing it

as a weakness, but still recognise these people's importance in achieving objectives. In the exiting phase guilt begins to reappear when the spotlight shifts from 'me' towards a 'me and thee' arrangement.

Green

orange/GREEN: Entering phase

According to Beck and Cowan (1996), the GREEN v-Meme is the climax of the First Tier of thinking systems, the culmination of these 'old brain' subsistence-based modes of living. It is thus the result of the successes as well as the failures of the previous five v-Memes. GREEN awakens when BLUE and ORANGE v-Memes reach the end of their life cycles. The former modes of living trap minds in belief systems which are often rigid, intolerant, and full of dogmatic ideology. Although GREEN is an elaboration of the Communal/Collective family, the 'boxes' it places people in are much more elastic, the rules are fuzzy and walls are covered with roses. As ORANGE weakens, many who have succeeded start asking: 'Is this all there is?' Material abundance have been achieved, but at a significant price. As the GREEN v-Meme brightens it illuminates the fact that there is still not parity among human beings, many have more than they really need while many more do without. The person who has 'made it' through peak ORANGE, often does not feel genuine acceptance from others. Once again, in terms of the Spiral, individuals feel the need to belong somewhere. The GREEN v-Meme builds interest in legislating behaviour for the community's good and lending support to worthy causes that favour the down trodden and helpless, which reflects the view of 'sacrifice now to obtain now for self and others'. Interpersonal skills are often at a peak, because constructive warm interaction is so integral to self-satisfaction. Intuition and insight are valuable commodities and individual strive to polish their interpersonal skills, like empathic listening.

In the previous ORANGE/green zone others are resources to manipulate and use as necessary, but with kinder regards than the RED zone. In the GREEN entering phase others are at less risk of being burned, but instead may have to fly in circles until exhausted due to a lack of direction. Feelings replace the need for achievements that dominated ORANGE and lead to its sense of isolation and loneliness. The individual in orange/GREEN is still entrepreneurial, but needs a circle of friends in the business in a caring, but profitable

confederation. Yet orange/GREEN is still unwilling to commit fully, because the orange needs for control limit the openness and trust required.

Thus, orange/GREEN replaces the certainties of BLUE truth and ORANGE tried-and-true experience with relativism. Orange/GREEN has already tried the PEAK ORANGE material thing and found it wanting. Now the search is for that ‘centeredness’ that can bring real inner peace. When people are blocked in this zone, life often consists of a series of ‘ah, ha!’ experiences, awakenings and growth steps that are repetitious and even cyclic. This could explain why orange/GREEN hops from guru to guru, and from one peak experience to the next.

GREEN: Peak phase is described in ‘Fuzzy’ concepts like:

Togetherness, harmony, and acceptance drive decisions.

The group orientation of GREEN resolves the problems of isolation and loneliness that rise at the end of ORANGE and become so prominent in LC6. Therefore by abandoning the competitiveness and one-upmanship, at least in the immediate group, people in GREEN reconnects with others in forming extended communities that offer support and meet the belonging needs that endure from PURPLE.

Metaphysics and feelings begin to replace old scientific analysis

Spirituality will return in the GREEN entering phase, but as non-denominational, non-sectarian ‘unity’. The doctrine of competitiveness yields to themes of sharing, understanding, appreciating and tolerance. Only judgementalism may be judged very harshly, for GREEN can be very rigid in its demands for open-mindedness, so much so that it will be quite willing to go to war for the liberation of oppressed human rights.

Plenty of room for everyone

In this v-Meme, gender roles are derigidified, glass ceilings opened, affirmative action plans are implemented, and social class distinctions blurred. The mindset is that everyone is in it together, and outfits are un-tailored so as to make everyone feel comfortable and able to fit in.

We, the people who share a common vision, have our weaknesses, GREEN is susceptible to group-think

The need to fit in and to feel accepted may overwhelm the person's willingness to disagree and may lead to moves that may be regretted when other v-Memes take over again. A similar pattern to the group-think that exists in GREEN is that of collective guilt. GREEN will feel guilty for the shortcomings of the group as in a nation, a class, a race, a company etc.

Communicating both content and feeling

Part of the sensation of warmth is the abundant communication in GREEN organisations. These are low in dogmatism, because many beliefs are quite acceptable and no single truth is 'it' for long. This v-Meme is high in rigidity though.

To bring diversity together into community

GREEN believes in bringing diverse people together as long as they are willing to share the common experience. As GREEN intensifies, it does the desire to level people out of classified hierarchies and into clusters of equals with shared possibilities and few judgments. Sometimes the balancing is mandatory. All talk of harmony and warmth can drop away quickly when other factions compete for the same group niche GREEN occupies.

To sacrifice self for love because everyone is beautiful, in their own way

Being liked and accepted is more important than winning or material gain in this v-Meme. In this range whatever the community thinks is best, true, right, and proper is acceptable. The members accept each other unquestioningly, thus ensuring reciprocal acceptance for themselves. There is great tolerance for differences (because it keeps the group intact) and legitimising of alternatives in lifestyle and behaviour as long as they do not harm (Beck & Cowan, 1996).

GREEN / yellow Exiting Phase.

The move along the Spiral from Peak GREEN to yellow comes with doubts about the effectiveness of collectivism and a resurgence of the individuality that has been stifled in LC6 or GREEN. The person in this phase feels a surge of personal power from a mind that can reach out to the universe with or without a hand holding on to the group. Disillusionment sets in when questions arise as to the cost of so much caring, both in terms of economics and human energy. In organisations profitability and productivity tend to drop, while costs unexpectedly increase (Beck & Cowan, 1996).

Yellow

green/YELLOW: Entering Phase

The green/YELLOW entering phase continues the quest for peace of mind, but this is no longer a singular objective. The interactive universe becomes more intriguing than autonomy or even community. At the entering phase of this v-Meme other people's opinions still weigh heavily, their opinions swaying decisions as much emotionally as rationally. Tempered individualism is, however, also rising from the collective, but not without confinement of ORANGE islands of independence or tough RED exploitiveness. This interdependence releases one to be as he or she chooses on personal terms. This person may sometimes seek inclusion or cooperation, but if necessary the same person may be cold and ruthless.

YELLOW: Peak Phase

The Life Conditions 7 (LC7) that awaken the YELLOW v-Meme echo BEIGE-like survival questions, but in the context of the fast-moving, information laden, highly interactive world. YELLOW senses that that successful human living in the First Tier has put everything in jeopardy, yet the complex Life Conditions that jeopardise the very survival of the species are also opening unprecedented opportunities.

YELLOW generates what Beck and Cowan (1996, p. 277) call a 'FlexFlow' perspective. This view honours the value system differences and facilitates the movement of people up and down the human Spiral. This produces a recognition of the layered dynamics of human systems operating within people and societies. If PURPLE is sick it needs to be made well; if RED is running amuck, the raw energy needs to be channelled; If BLUE turns sour or becomes punitive, it must be reformed.

Yellow is 'flexible' in that it can enter the conceptual worlds of the first six systems and interact with them on their frequencies, thus speaking their psychological language. Yellow therefore respects, although this does not mean being in agreement with, the different worldviews, modes of expression, and unique habits, customs and cultures of the previous six levels on the Spiral. YELLOW is 'flowing' in that it is in touch with the natural evolutionary processes that appear to characterise our kind. Each system is seen as a next step, and not the final one. As Graves remarked "...each successive stage, wave, or level of existence is a

stage through which developing people pass on their way to other states of being” (Beck & Cowan, 1996, p. 277).

In Beck and Cowan’s view the YELLOW mind sees the ebbing and flowing of human systems all over the planet. These determine the interactions of peoples and societies. Yellow gets behind the scenes in a hurry and acts directly on the deepest dynamics that are causing the problem.

YELLOW is described in terms of FLOW, and the following are examples of this flow (Beck & Cowan, 1996, p. 283):

- YELLOW is open to learning at any time and from any source
- YELLOW thinkers rely on what is necessary, natural and next.
- YELLOW thinkers display Second Tier lifestyle priorities and preoccupations.
- YELLOW engages a number of unique problem-resolution and decision-making processes that are both highly complex in design and remarkably simple in execution.

YELLOW: Exiting Phase

Within the YELLOW v-Meme individualistic worldview, we are sensitive to differences, uniqueness, and people at diverse levels. People at this level of existence learn that there are inevitable differences and that a great deal of knowledge and information about their origins, characteristics and contours is accumulated. There is even the search for ways to integrate these different entities and open up the flow of energy among them. There is much reliance on ‘the self’ in this process, trusting in their own evaluative capacities. Yellow will stand virtually alone, relying on the power of knowledge and information, and not colleagues, to affirm the uniqueness of life. According to Beck and Cowan (1996), because the Spiral swings between ‘me’ and ‘us’, a new sense of community begins to replace individualism. Turquoise, or the global collective of individuals, rises to enfold Yellow. It turns out that the great Yellow questions cannot be answered, and sometimes cannot be adequately addressed, by lone human beings.

Appendix 2

Lens Questionnaire Research

The Lens questionnaire was developed² based on Graves's original conceptualisation of the emergent cyclical, double helix model of the adult human biopsychosocial systems (1970, 1971, 1974, 1981, Graves, Huntley, & Douglas, 1965).

Standardisation sample

The draft Lens questionnaire was administered to a group of 176 South African adults. The participants were drawn from primary, secondary, and tertiary education, the information technology industry, banking, heavy manufacturing, professional private practice, and publishing.

An attempt was made to ensure that the standardisation sample was as representative as possible of the South African population in terms of gender and ethnic composition. Bearing in mind that proportionally more men than women operate in the formal employment sector, it is to be expected that the sample characteristics would represent the situation in the formal employment sector, rather than the general demography of the country. Similarly, when it is borne in mind that Lens was developed for literate populations, and taking into account the socio-political situation which is the heritage of the pre-1994 dispensation in South Africa, it is to be expected that whites will be somewhat over-represented when a direct comparison is made with general population demographics. The gender and ethnic composition are shown in Table 1 below.

² It is important to note that in the development of the Lens questionnaire, and despite a rigid adherence to Graves's precepts, the empirical results were, at times, difficult to interpret despite the contributions that had been made by Beck and Cowan (1996). This led the author of this thesis to explore the heuristic value of existentialist theory to deal with the initially baffling results that were found in some of the individual Lens profiles.

Table 1: Ethnic and gender composition of standardisation sample

	<i>African</i>	<i>Asian</i>	<i>Coloured</i>	<i>White</i>	<i>Total</i>
<i>Male</i>	36	7	22	34	99
<i>Column %</i>	52.1	58.3	88.0	49.3	
<i>Female</i>	33	5	3	35	76
<i>Column %</i>	47.8	41.7	12.0	50.7	
<i>Total</i>	69	12	25	69	175

The educational levels of the participants ranged between one person with a Grade 9 qualification, to two candidates with PhD degrees. The participants' educational distribution in terms of years of formal education completed is shown in Table 2.

Table 2: Distribution of education in years successfully completed

<i>Years of education</i>	<i>N</i>	<i>Cumulative N</i>	<i>Percentage</i>	<i>Cumulative Percentage</i>
9	1	1	0.58	0.58
10	1	2	0.58	1.17
11	3	5	1.75	2.92
12	70	75	40.94	43.86
13	38	113	22.22	66.08
14	5	118	2.92	69.01
15	28	146	16.37	85.38
16	22	168	12.87	98.25
17	1	169	0.58	98.83
19	2	171	1.17	100.00

Descriptive statistics relating to age at last birthday, and educational level (in years of formal education successfully completed) are shown in Table 3.

Table 3: Descriptive statistics: Age and educational level

	<i>N</i>	<i>Mean</i>	<i>Median</i>	<i>Mode</i>	<i>Mode freq</i>	<i>Min</i>	<i>Max</i>	<i>SD</i>	<i>Skewness</i>	<i>Kurtosis</i>
<i>Age</i>	174	30.98	28.00	24	16	18	60	9.59	1.09	0.44
<i>Education</i>	171	13.35	13.00	12	70	9	19	1.70	0.75	0.13

The *t*-value for differences between males and females for years of formal education is 1.86 and the associated *p*-value for 169 degrees of freedom is 0.06. As far as age is concerned, there is also not a significant difference between males and females. ($t = 1.87, df = 172, p = 0.06$).

When, however, the means of years of formal education are compared across population groups, the differences are significant at the $p < 0.001$ level. The distribution of the means is shown in Figure 1. As might be expected in the South African context, the white group's education is appreciably higher than that of the other three groups. When the differences are evaluated by means of the Duncan's multiple range test, it is clear that the white group is also statistically significantly different from the three other groups. The latter may, for all practical purposes be regarded as constituting a single group. The results of the Duncan test are shown in Table 4.

Table 4: Duncan's multiple range test for years of formal education of participants

<i>Population group</i>	<i>{African}</i>	<i>{Asian}</i>	<i>{Coloured}</i>	<i>{White}</i>
	12.677	12.909	13.04	14.145
<i>African</i>		0.602	0.446	0.002
<i>Asian</i>	0.602		0.769	0.008
<i>Coloured</i>	0.446	0.769		0.013

White 0.002 0.008 0.013

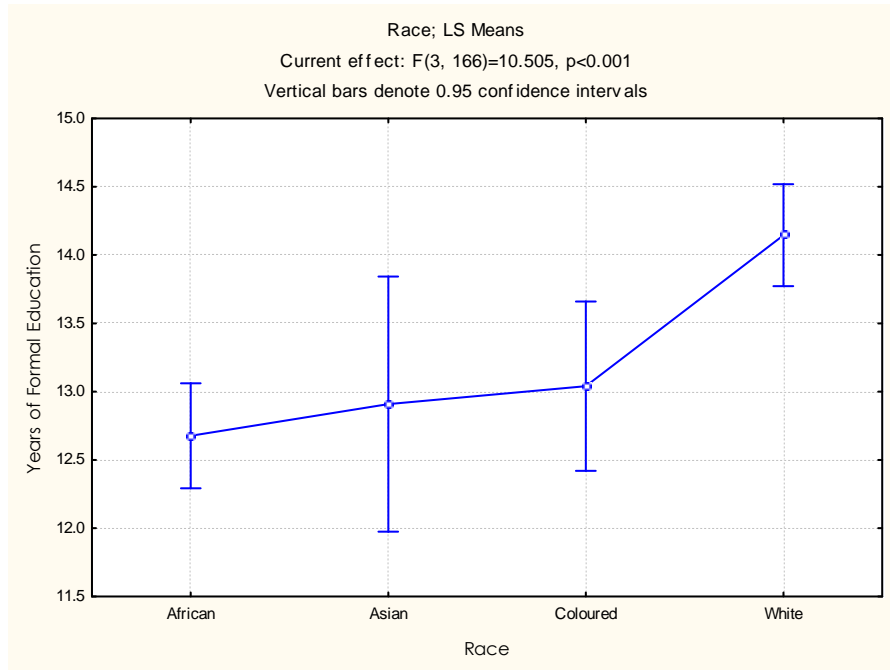


Figure 1: Distribution of educational means by population group

A similar situation to that of educational level obtains with regard to the age of the participants. Once again using the Duncan's multiple range test, the African, Asian and Coloured groups do not differ significantly, while the white group differs from these three. The results are shown in Table 5 below.

Table 5: Duncan's multiple range test for age of participants

Population group	{African}	{Asian}	{Coloured}	{White}
	29.118	28.583	25.583	34.783
African		0.829	0.179	0.022
Asian	0.829		0.225	0.016
Coloured	0.179	0.225		0.000
White	0.022	0.016	0.000	

A graphic presentation of the age means of the standardisation sample is shown in Figure 2.

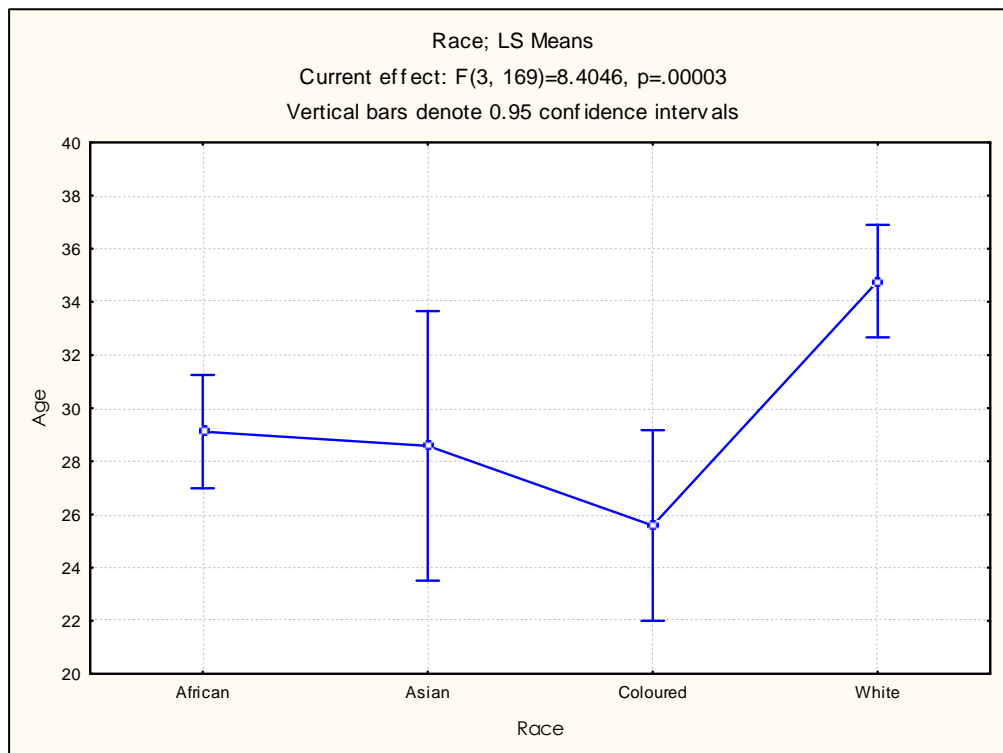


Figure 2: Distribution of age by population groups

Various occupations, representing a range of skill levels, are to be found in the standardisation sample. A broad categorisation of these skill levels for those participants who provided the relevant information is shown in Table 6.

Table 6: Skill categories of standardisation sample

	<i>N</i>	<i>Cumulative N</i>	<i>Percentage</i>
<i>Executive Manager</i>	1	1	0.61
<i>Senior Manager</i>	5	6	3.05
<i>Junior Manager</i>	34	40	20.73
<i>Professional</i>	8	48	4.88
<i>Educational</i>	20	68	12.20
<i>Technical</i>	40	108	24.39
<i>Sales/administration</i>	52	160	31.71
<i>Student</i>	4	164	2.44

Within the South African context, it would be difficult to conceive of the structural situation regarding the distribution of jobs at various levels of skill and the traditional population groups having attained equity in the time that has elapsed since the 1994 general elections. The actual situation as far as the skill categories of the research participants, and the population groups from which they hale, is shown in Table 7.

Table 7: Skill categories and population group

	<i>African</i>	<i>Asian</i>	<i>Coloured</i>	<i>White</i>	<i>Total</i>
<i>Exec Management</i>	0	0	0	1	1
<i>Row %</i>	0.0	0.0	0.0	100.0	
<i>Senior Management</i>	0	0	0	5	5
<i>Row %</i>	0.0	0.0	0.0	100.0	

	<i>African</i>	<i>Asian</i>	<i>Coloured</i>	<i>White</i>	<i>Total</i>
<i>Junior Management</i>	16	3	4	11	34
<i>Row %</i>	47.1	0.8	11.8	32.3	
<i>Professional</i>	0	0	0	8	8
<i>Row %</i>	0.0	0.0	0.0	100.0	
<i>Educational</i>	4	1	0	15	20
<i>Row %</i>	20.0	5.0	0.0	75.0	
<i>Technical</i>	16	3	11	10	40
<i>Row %</i>	40.0	7.5	27.5	25.0	
<i>Sales / Admin</i>	26	4	7	15	52
<i>Row %</i>	50.0	7.7	13.5	28.8	
<i>Student</i>	1	0	0	3	4
<i>Row %</i>	25.0	0.0	0.0	75.0	
<i>Total</i>	63	11	22	68	164

Bearing in mind that the relatively limited sample size necessarily results in a table in which a number of the cell frequencies are lower than five, it would be inappropriate to use Pearson's χ^2 test to estimate the significance of the observed differences. One could, however, make use of uncertainty coefficients for much the same purpose. These are indices of stochastic dependence, a concept which is derived from the information theory approach to the analysis of frequency tables (Kullback, 1959; Ku & Kullback, 1968; Ku, Varner & Kullback, 1971; and also Bishop, Fienberg & Holland, 1975, pp. 344-348). In the case of the uncertainty coefficient $X = 0.13$, $Y = 0.10$, and $X|Y = 0.11$. Sommer's d (Siegel & Castellan, 1988, pp. 303-310) ought to reveal similar insight into the degree of association between population group and the skill category of jobs occupied by the participants. The values for Sommer's d are, respectively, $X|Y = 0.14$ and $Y|X = 0.17$.

Item analysis and internal consistency of scales

It is common knowledge that even the most careful writing and conceptual review of items in any questionnaire, or test, virtually invariably leads to a situation in which some of the items are not suitable for inclusion in the final version of the instrument. A variety of factors contribute to this situation, and it is exacerbated in the South African context in which English, though increasingly used as the language of business and industry, is not necessarily the first, or even second, language of many of the people who constitute the labour force. In many cases, the subtler connotations of words, which are self-evident to native speakers, are lost on those whose mastery of English is largely of a functional nature. The meanings of words for second and third language English speakers is often functional, and frequently rather concrete. Examples of the manner in which instruments which were developed or standardised in South Africa using first-language English speakers are to be found in the research of, for example, Abrahams (1996), Abrahams and Mauer (1999a, 1999b), Spence (1982), and Taylor and Boeyens (1991).

To counteract the potential militating factors associated with language, the draft LENS questionnaire was developed with the number of items per scale considerably in excess of what was anticipated for the final version of the instrument. Although the aim was to try to retain approximately 10 items per dimension, it was decided to develop at least 20 for each dimension during the initial phase. The numbers of draft items per dimension eventually ranged between 21 and 25. In addition to the items generated to assess the dimensions of the Spiral dynamics theory, the 40-item Dogmatism scale of Rokeach (1960) was included with the Lens items. The Lens and Dogmatism items were presented to the research participants in a randomised order in an attempt to avoid undue response set from setting in, and also to limit the possibility of second guessing the nature of the instrument.

The reduction of the items per dimension was done during the process of item analysis. In essence, a balance was sought between parsimony in terms of the number of items, and the maximisation of the internal consistency reliability using Cronbach's α -coefficient. The number of items that were included in the draft version of the Lens, and the number of items retained in the final version of the instrument, as well as the internal consistency coefficients

associated with the two versions are shown in Table 8. Included are the statistics associated with the Dogmatism scale.

Table 8: Number of items per dimension and reliability estimates

<i>Dimension</i>	<i>Number of original items</i>	<i>Cronbach α-coefficient</i>	<i>Final number of items</i>	<i>Cronbach α-coefficient</i>	<i>% items retained</i>
<i>Purple</i>	21	0.676 (0.707) ³	11	0.724 (0.745)	52.4
<i>Red</i>	24	0.761 (0.767)	13	0.796 (0.799)	54.2
<i>Blue</i>	21	0.801 (0.802)	13	0.820 (0.825)	61.9
<i>Orange</i>	22	0.791 (0.800)	15	0.780 (0.786)	68.2
<i>Green</i>	25	0.862 (0.871)	15	0.855 (0.862)	60.0
<i>Yellow</i>	23	0.668 (0.679)	12	0.732 (0.737)	52.2
<i>Dogmatism</i>	40	0.846 (0.847)	25	0.835 (0.836)	62.5

From the above table it is evident that very adequate reliability estimates can be attained on the six Lens dimensions and the Dogmatism scale with an instrument consisting of 104 items. Self-evidently, the administration of a scale of this length should not be unduly time consuming, and the standard errors of measurement of the raw scores are likely to be within reasonable bounds, as will be shown below.

³ The figures that appear between brackets are the standardised α -coefficients. These coefficients may be interpreted as the reliability that would result if all values for each item were to be standardised (transformed to z-scores) before computing Cronbach's α . The computational formula is $\alpha = k \cdot r_{avg} / (1 + (k-1) \cdot r_{avg})$, where r_{avg} is the average inter-item correlation, and k is the number of items in the scale.

Table 9: Descriptive statistics and standard errors of estimates

	<i>Valid cases</i>	<i>Mean</i>	<i>Median</i>	<i>SD</i>	<i>Standard error of mean</i>	<i>Skewness</i>	<i>Kurtosis</i>	<i>Standard error of estimate</i>
<i>Purple</i>	169	54.07	55	9.36	0.72	-0.52	0.78	4.727
<i>Red</i>	170	63.89	65	12.41	0.95	-0.35	0.02	5.537
<i>Blue</i>	156	71.83	73	11.54	0.92	-0.63	0.13	4.827
<i>Orange</i>	170	78.44	80	12.03	0.92	-0.67	0.49	5.565
<i>Green</i>	172	85.47	87	11.84	0.90	-0.99	1.49	4.398
<i>Yellow</i>	167	67.11	68	8.68	0.67	-0.58	0.75	4.451
<i>Dogmatism</i>	161	104.86	104	21.58	1.70	0.16	-0.18	8.739

Normal usage of the Lens and the associated shortened Dogmatism scale would imply that an individual's scores on the dimensions would be converted to stanine scores. The standard errors of measurement for stanines would obviously be considerably smaller than those shown in Table 9. These standard errors of measurement, as well as the 95% confidence limits are shown in Table 10.

Table 10: Standard errors of estimate for stanines and 95% confidence limits

	<i>Se</i>	<i>95% confidence limits</i>
<i>Purple</i>	1.110	±1.980
<i>Red</i>	0.897	±1.757
<i>Blue</i>	0.837	±1.640
<i>Orange</i>	0.925	±1.813
<i>Green</i>	0.743	±1.456
<i>Yellow</i>	1.026	±2.010

Dogmatism

0.810

±1.587

Validity

One of the major considerations in the development of an assessment device relates to the issue of validity. It is virtually always the case that in the development of an inventory to measure constructs such as personality, temperament, interest, and in the case of the present instrument worldviews, use is made of construct validation. In the standardisation administration of the Lens, participants were requested to rate themselves on the original 176 items, as they perceived themselves at present, and, in addition, to rate themselves on the same items as they would like to, or hope to, be at some undefined time in the future. This effectively led to a situation in which it was possible to compute 12 scores for each participant — six for current views and six for future views.

The intercorrelations between the 12 variables are shown in Table 11 below.

Table 11: Intercorrelations between current and future Lens dimensions

	<i>PC</i>	<i>RC</i>	<i>BC</i>	<i>OC</i>	<i>GC</i>	<i>YC</i>	<i>PF</i>	<i>RF</i>	<i>BF</i>	<i>OF</i>	<i>GF</i>	<i>YF</i>
Purple current (PC)	1.00	0.37	0.71	0.43	0.42	0.31	0.90	0.37	0.67	0.37	0.35	0.27
Red current (RC)	0.37	1.00	0.50	0.73	0.35	0.44	0.40	0.94	0.52	0.71	0.30	0.39
Blue current (BC)	0.71	0.50	1.00	0.46	0.44	0.37	0.62	0.48	0.95	0.42	0.39	0.34
Orange current (OC)	0.43	0.73	0.46	1.00	0.42	0.48	0.40	0.72	0.44	0.92	0.35	0.41
Green current (GC)	0.42	0.35	0.44	0.42	1.00	0.66	0.38	0.30	0.41	0.35	0.88	0.59
Yellow current (YC)	0.31	0.44	0.37	0.48	0.66	1.00	0.28	0.39	0.34	0.38	0.59	0.91
Purple future (PF)	0.90	0.40	0.62	0.40	0.38	0.28	1.00	0.41	0.63	0.37	0.40	0.28
Red future (RF)	0.37	0.94	0.48	0.72	0.30	0.39	0.41	1.00	0.54	0.75	0.31	0.39
Blue future (BF)	0.67	0.52	0.95	0.44	0.41	0.34	0.63	0.54	1.00	0.45	0.40	0.34
Orange future (OF)	0.37	0.71	0.42	0.92	0.35	0.38	0.37	0.75	0.45	1.00	0.33	0.37
Green future (GF)	0.35	0.30	0.39	0.35	0.88	0.59	0.40	0.31	0.40	0.33	1.00	0.64
Yellow future (YF)	0.27	0.39	0.34	0.41	0.59	0.91	0.28	0.39	0.34	0.37	0.64	1.00

The intercorrelation matrix was subjected to maximum likelihood factor analysis and three factors were extracted in terms of the well-known Kaiser (1960) criterion. The factors were rotated using the standardised Varimax method. The factor matrix is shown in Table 12.

Table 12: Lens Varimax rotated factor matrix

	<i>Factor 1</i>	<i>Factor 2</i>	<i>Factor 3</i>
<i>Purple current</i>	0.675	0.187	0.189
<i>Red current</i>	0.260	0.897	0.194
<i>Blue current</i>	0.930	0.232	0.212
<i>Orange current</i>	0.248	0.686	0.280
<i>Green current</i>	0.303	0.176	0.635
<i>Yellow current</i>	0.128	0.199	0.876
<i>Purple future</i>	0.590	0.248	0.184
<i>Red future</i>	0.253	0.932	0.159
<i>Blue future</i>	0.903	0.293	0.188
<i>Orange future</i>	0.231	0.717	0.203
<i>Green future</i>	0.250	0.148	0.659
<i>Yellow future</i>	0.109	0.229	0.888
<i>Eigen values</i>	5.66	1.31	1.71
<i>% total variance</i>	47.17	10.88	14.26
<i>Cumulative %</i>	47.17	58.04	72.31

Factor loadings equal to or greater than 0.6 are shown in italics in the preceding table.

A graphic representation of the factors (see Figure 3 below) shows the way in which the dimensions cluster quite clearly. The factor labels that are used here refer to the discussion that follows.

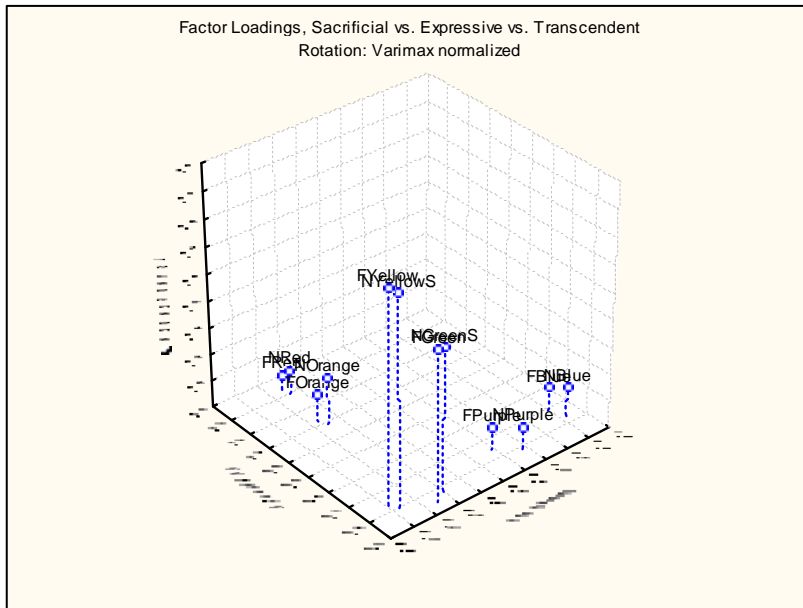


Figure 3: Three-dimensional plot of factor loadings

A three-dimensional surface plot of the three factors which were extracted can also prove insightful. Such a plot is shown in Figure 4 below.

The factors which have been extracted lend themselves quite readily to interpretation in terms of the theoretical basis that underpins Lens.

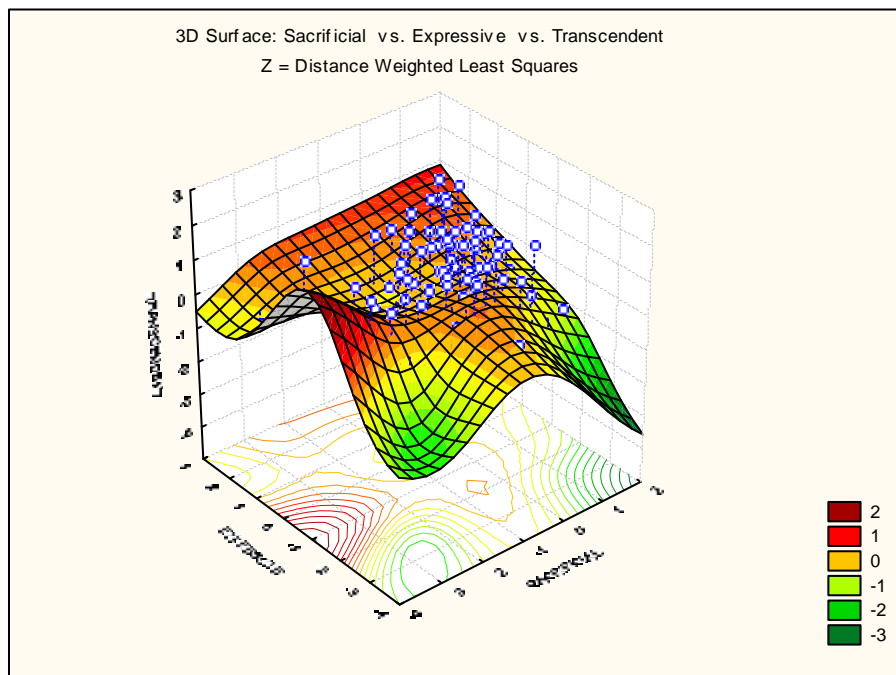


Figure 4: Three-dimensional surface plot of factor loadings

Factor 1

The items that have loadings of 0.6 or more are Purple current, Blue current, Purple future, and Blue future. In terms of the theoretical basis of the instrument, the Purple and Blue dimensions are regarded as Sacrificial worldviews. Factor 1 can therefore quite readily be labelled *Sacrificial*.

Factor 2

The items that have loadings of 0.6 or more on this factor are Red current, Orange current, Red future, and Orange future. Once again, the theoretical underpinnings of Lens describe these dimensions as Expressive worldviews. It would therefore make sense to label Factor 2 as *Expressive*.

Factor 3

The items with loadings of 0.6 or more on Factor 3 are Green current, Yellow current, Green future, and Yellow future. In the case of these two dimensions one finds that they differ from the preceding worldviews in the sense that they no longer deal with the immediate and anticipated needs of the individual, but tend, rather, to concern a broader perspective, and address issues related to communities, nations, or even the world order. These worldviews presuppose a stance that transcends most everyday issues, by dealing with a search for a greater truth. To aspire to a Yellow worldview necessarily implies dealing with the issues that are inherent in a Green worldview, and ultimately of being able to transcend Green issues. Because of the complexity of Green and Yellow worldviews, because they are probably beyond the reach of most people, and because they are frequently worldviews to which many individuals aspire, it would appear that the most suitable — albeit provisional — label would be *Transcendent*.

The Rokeach Dogmatism scale was administered in conjunction with the Lens questionnaire. One of the reasons was further to establish aspects of the construct validity of Lens.

Table 13: Correlations between Lens factors and Dogmatism

	<i>Sacrificial</i>	<i>Expressive</i>	<i>Transcendent</i>
Dogmatism current	0.45	0.56	0.20
Dogmatism future	0.48	0.53	0.16

It is clear from the above table that people who endorse Expressive worldviews are more likely to express belief systems and values that can be termed dogmatic than is the case with those who endorse Transcendent worldviews. There is also a substantial relationship between Sacrificial worldviews and dogmatic belief systems, but it is not as strong as in the case with Expressive worldviews. The very nature of Expressive worldviews suggests that, in the main, those who endorse them would need to have belief systems which are more dogmatic if they are to succeed in attaining the ends to which they aspire in terms of their worldviews. While people endorsing Sacrificial worldviews are less inclined to adopt strongly dogmatic belief systems, it has to be borne in mind that these worldviews still tend to place a considerable degree of emphasis on individual attainment.

It is worth noting that the same pattern of correlations applies to how individuals evaluate their degree of open and closed mindedness on the Dogmatism scale in terms of their current perceptions, as it does insofar as they imagine they would prefer to be at some future date.

Intergroup comparisons

A major concern in South Africa is to establish the extent to which psychological instrumentation is biased. This is particularly the case where instruments are used as part of the decision-making process associated with the recruitment and selection of employees in an organisational context. Quite simply, it would constitute unfair labour practice if an instrument used in selection discriminates unfairly against one group or more in situations where people are compared with one another. Although an extensive list of potential categories against which discrimination would be regarded as unfair appears in the Labour Relations Act (56 of 1996), the categories which are most likely to be contended in terms of the Act are gender and race, or population group.

Gender

To determine whether males and females react differently to the items of the Lens questionnaire, the various dimensions were compared by means of *t*-tests for independent groups. The relevant values are shown in Table 14.

Table 14: *t*-values for Male/Female comparisons

	Mean Male	Mean Female	<i>t</i> -value	<i>df</i>	<i>p</i>	Valid <i>N</i> males	Valid <i>N</i> females	<i>SD</i> Male	<i>SD</i> Female	<i>F</i> -ratio Var	<i>p</i> Var
Purple current	53.14	55.30	-1.50	167	0.14	96	73	9.37	9.26	1.02	0.93
Red current	64.37	64.75	-0.20	168	0.84	95	75	12.35	12.42	1.01	0.96
Blue current	71.24	72.59	-0.72	154	0.47	88	68	11.61	11.50	1.02	0.94
Orange current	79.27	77.41	1.00	168	0.32	94	76	11.03	13.17	1.42	0.11
Green current	78.17	80.32	-1.59	165	0.11	94	73	7.61	9.81	1.66	0.02
Yellow current	53.12	52.51	0.18	159	0.86	92	69	19.93	23.76	1.42	0.12

From the table above it may be seen that the mean scores of the males and females who constituted the sample do not differ significantly on any of the dimensions of Lens. As far as the variances of the male and female members of the group of participants are concerned, the only statistically significant difference is that of 0.02 for Green. This is not a major issue as the probability is not equal to or smaller than 0.01.

Population group

The statistical differences between the means of the four population groups, referred to as African, Asian, Coloured, and White in this manual were compared using one-way analyses of variance. Where the differences between the means of the population groups were found to be significant, Scheffé's post-hoc test was applied to explore the nature of these differences. The analysis of variance results, a graphic representation of each of the six dimensions of Lens, and the relevant Scheffé results are presented below.

Purple

Table 15: One-way analysis of variance — Purple

<i>Effect</i>	<i>SS</i>	<i>df</i>	<i>MS</i>	<i>F</i>	<i>p</i>
<i>Intercept</i>	281 726.06	1	281 726.06	3317.81	0.000
<i>Race</i>	778.49	3	259.50	3.06	0.030
<i>Error</i>	13 925.79	164	84.91		

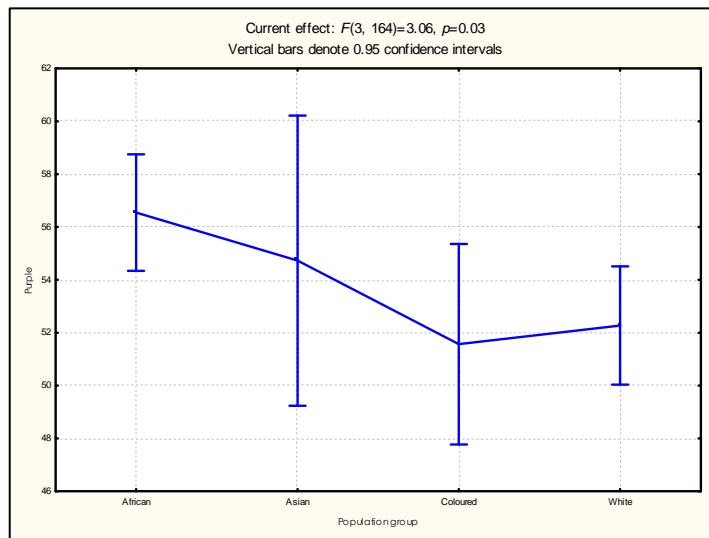


Figure 5: Means for the population subgroups — Purple

Table 16: Scheffé p-values for observed mean differences — Purple

	<i>African</i>	<i>Asian</i>	<i>Coloured</i>	<i>White</i>
	56.544	54.727	51.565	52.273
<i>African</i>		0.947	0.175	0.070
<i>Asian</i>	0.947		0.831	0.880
<i>Coloured</i>	0.175	0.831		0.992
<i>White</i>	0.070	0.880	0.992	

The analysis of variance results indicate that the means of the four groups differ at the $p < 0.05$ level. Although the post-hoc comparisons are not necessarily indicated, it was nevertheless decided to compute them to gain a clearer understanding of the extent of the differences. The

means of the four population groups appear in the column headings of Table 16, and the probability values for each pair of comparisons is shown in the body of the table. It is clear that the difference between the African and White groups is fairly large, although it is not statistically significant.

Red

Table 17: One-way analysis of variance — Red

<i>Effect</i>	<i>SS</i>	<i>df</i>	<i>MS</i>	<i>F</i>	<i>p</i>
<i>Intercept</i>	394755.96	1	394755.96	3305.50	0.000
<i>Race</i>	5445.78	3	1815.26	15.20	0.000
<i>Error</i>	19704.96	165	119.42		

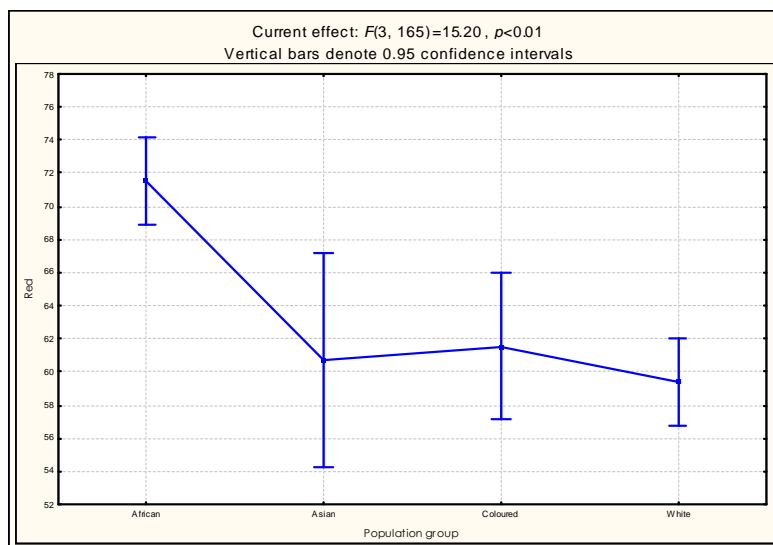


Figure 6: Means for the population subgroups — Red

Table 18: Scheffé p-values for observed differences — Red

	<i>African</i>	<i>Asian</i>	<i>Coloured</i>	<i>White</i>
	71.544	60.726	61.542	59.409
<i>African</i>		0.029	0.003	0.000
<i>Asian</i>	0.029		0.998	0.987
<i>Coloured</i>	0.003	0.998		0.880
<i>White</i>	0.000	0.987	0.880	

In the case of the Red dimension of Lens the mean for the African group differs significantly from those of the other three groups. There is no apparent reason for this result, and there cannot be any a priori reason to believe that the African sub-sample should attain higher scores than the Asian, Coloured and White groups.

Blue

Table 19: One-way analysis of variance — Blue

<i>Effect</i>	<i>SS</i>	<i>df</i>	<i>MS</i>	<i>F</i>	<i>p</i>
<i>Intercept</i>	466788.75	1	466788.75	3852.25	0.000
<i>Race</i>	2206.43	3	735.48	6.07	0.001
<i>Error</i>	18297.12	151	121.17		

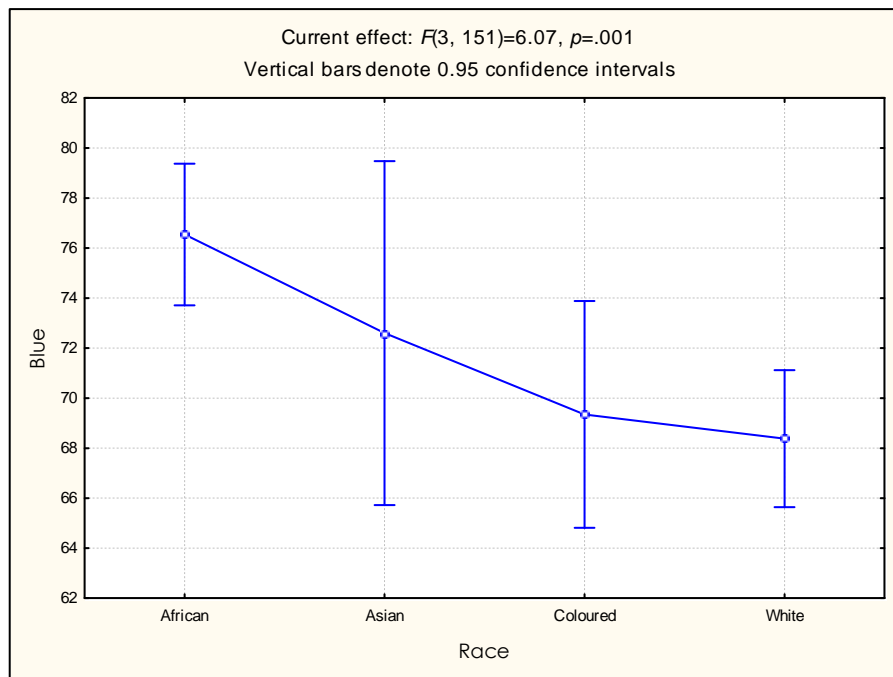


Figure 7: Means for the population subgroups — Blue

Table 20: Scheffé p-values for observed differences — Blue

	<i>African</i>	<i>Asian</i>	<i>Coloured</i>	<i>White</i>
	76.542	72.600	69.348	68.381
<i>African</i>		0.778	0.074	0.001
<i>Asian</i>	0.778		0.894	0.737
<i>Coloured</i>	0.074	0.894		0.988
<i>White</i>	0.001	0.737	0.988	

The results indicate that the observed differences between the means of the African, Asian, and Coloured participants are not statistically significant. The mean on the Blue dimension for the White group is, however, statistically different from that of the other three groups in that it is somewhat lower. There is no apparent reason why this should be the case, although it is similar to the situation with regard to the Red dimension.

Orange

Table 21: One-way analysis of variance — Orange

<i>Effect</i>	<i>SS</i>	<i>df</i>	<i>MS</i>	<i>F</i>	<i>p</i>
<i>Intercept</i>	594693.74	1	594693.74	4732.33	0.000
<i>Race</i>	3693.21	3	1231.07	9.80	0.000
<i>Error</i>	20734.92	165	125.67		

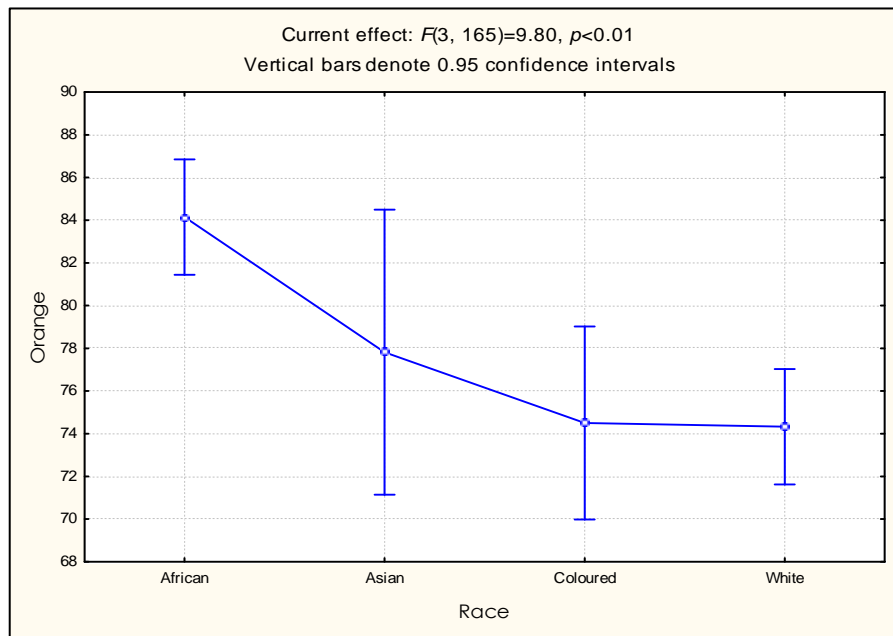


Figure 8: Means for the population subgroups — Orange

Table 22: Scheffé *p*-values for observed differences — Orange

	<i>African</i>	<i>Asian</i>	<i>Coloured</i>	<i>White</i>
	84.149	77.818	74.500	74.328
<i>African</i>		0.392	0.005	0.000
<i>Asian</i>	0.392		0.882	0.822
<i>Coloured</i>	0.005	0.882		1.000
<i>White</i>	0.000	0.822	1.000	

The means of the African and Asian subgroups do not differ significantly from one another on the Orange dimension of Lens, nor do the means of the Coloured and White groups. Both the Coloured and White subgroups do, however, differ significantly from the African subgroup. There is no clear reason why the observed differences in the mean scores of the subgroups should have been found.

Green

Table 23: One-way analysis of variance — Green

<i>Effect</i>	<i>SS</i>	<i>df</i>	<i>MS</i>	<i>F</i>	<i>p</i>
<i>Intercept</i>	719560.39	1	719560.39	5393.04	0.000
<i>Race</i>	1531.18	3	510.39	3.83	0.011
<i>Error</i>	22281.78	167	133.42		

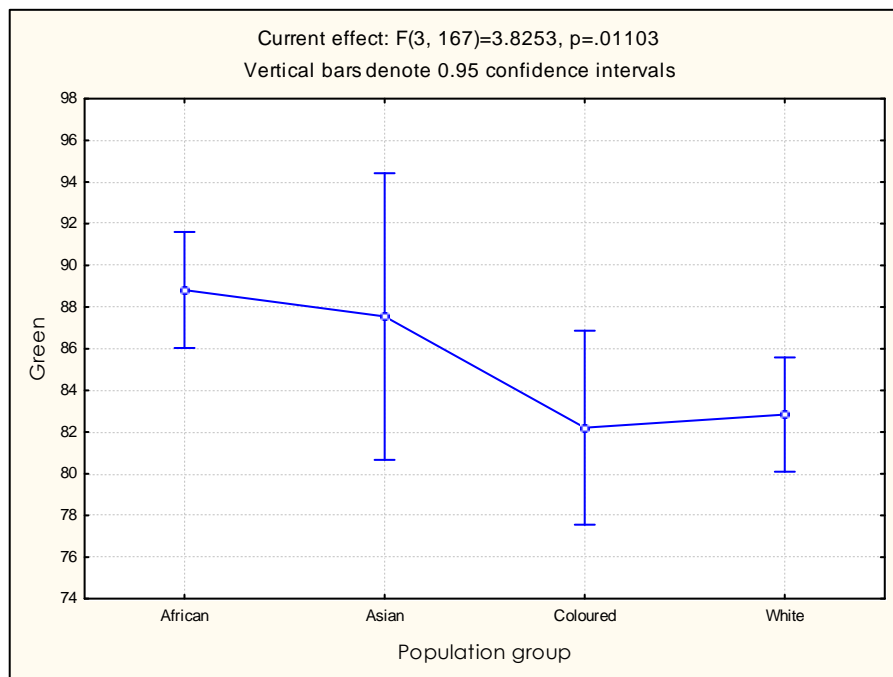


Figure 9: Means for the population subgroups — Green

Table 24: Scheffé p-values for observed differences — Green

	<i>African</i>	<i>Asian</i>	<i>Coloured</i>	<i>White</i>
	88.821	87.545	82.208	82.841
<i>African</i>		0.990	0.127	0.031
<i>Asian</i>	0.990		0.658	0.666
<i>Coloured</i>	0.127	0.658		0.997
<i>White</i>	0.031	0.666	0.997	

Although the one-way analysis of variance of the Green dimension of Lens indicated a statistically significant difference between the means of the four population groups, the Scheffé post-hoc test shows that the only difference is that between the African and White subgroups. As the p-value is greater than 0.01, the difference is not sufficiently important to merit a great deal of attention.

Yellow

Table 25: One-way analysis of variance — Yellow

<i>Effect</i>	<i>SS</i>	<i>df</i>	<i>MS</i>	<i>F</i>	<i>p</i>
<i>Intercept</i>	429157.00	1	429157.00	6241.53	0.000
<i>Race</i>	1285.67	3	428.56	6.23	0.000
<i>Error</i>	11138.85	162	68.76		

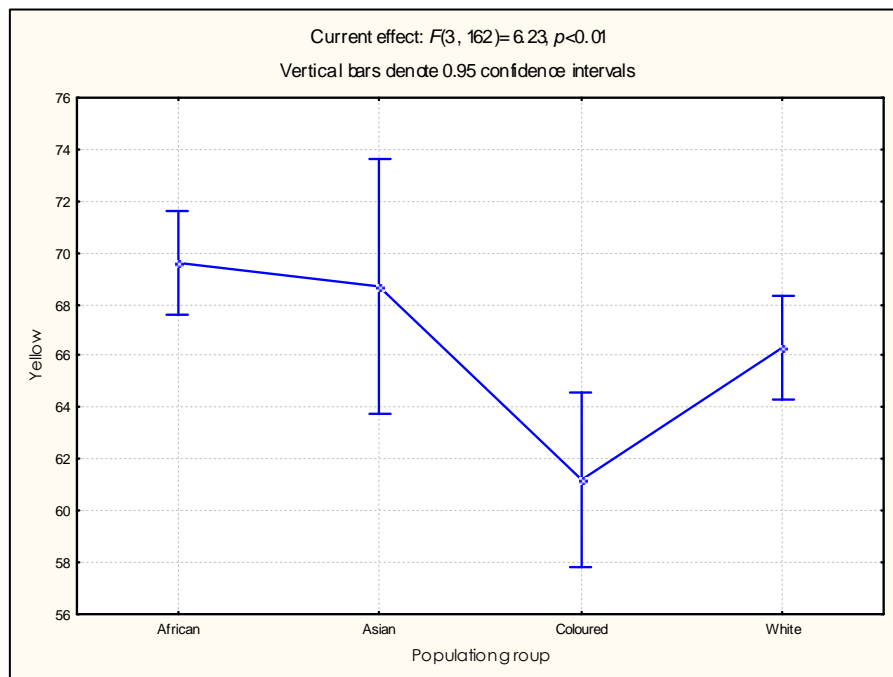


Figure 10: Means for the population subgroups — Yellow

Table 26: Scheffé *p*-values for observed differences — Yellow

	<i>African</i>	<i>Asian</i>	<i>Coloured</i>	<i>White</i>
	69.631	68.727	61.217	66.284
<i>African</i>		0.990	0.001	0.151
<i>Asian</i>	0.990		0.111	0.844
<i>Coloured</i>	0.001	0.111		0.098
<i>White</i>	0.151	0.844	0.098	

The Scheffé post-hoc test results shown above indicates that the original statistically significant difference reflected in the analysis of variance for the Yellow dimension of Lens is largely attributable to the Coloured subgroup scoring substantially lower than the other three groups. The Coloured subgroup is, however, rather small ($n = 22$), and results attributable to it are bound to be somewhat unstable.

Although the consistent differences that have been observed between the four population groups would have been a cause for grave concern had it been intended that Lens would have been used exclusively in a normative manner. This is particularly the case in the light of the provisions of Section 8 of the Employment Equity Act (55 of 1998). The manner in which the results of Lens are interpreted is discussed more fully in a later section. However, the way in which Lens is interpreted in practice owes more to the ipsative approach than to the normative. It is, consequently, relevant to pay some attention to the issue of ipsative measurement. Many of the arguments which are raised in the following section refer to devices which have been developed on an entirely ipsative basis, which is not the case with *Lens*. They are, nevertheless, presented so that the issues may be well understood. While the interpretation of *Lens* owes a great deal to the notion of ipsativity, the scales which form the basis of *Lens* were developed in a normative fashion.

Ipsative measurement

Definitions

Definitions abound, but essentially, they amount to something of the nature of that contained in *the Comprehensive dictionary of psychological and psychoanalytical terms* (1958/1974), namely, *a method of assigning scale values that takes the individual's own characteristic behavior as the standard of comparison* (English & English, 1957/1974, p. 278). Bartram's (1996, p. 25) definition is slightly more technical — *[a] set of measurement scales is ipsative when the sum (or mean) of the scores obtained across the scales for each person is a constant*. Much the same is said by Greer and Dunlap (1997, p. 200) who define ipsativity as *[m]easures with more than one score per participant, when the total for each participant equals the same constant, are said to be ipsative*.

Cattell and Brennan (1994) distinguish between four types of ipsative scoring but, for the purposes of this discussion, such distinctions may be left aside.

Historical background

The debate about the relative merits of normative and ipsative measurement began largely because of the relative positions of Stephenson (1936) and Burt (1937) on the relation of R- and Q-techniques of factor analysis. Burt's (1937) original position, that R- and Q-techniques led to the same factors, was supported by scientists like Cattell (1966), Ross (1963), Clemans (1966), and Tucker (1956).

Johnson, Wood, and Blinkhorn (1988), following the lead of Hicks (1970) and some other writers, argued that there are a number of “uncontroversial facts” about ipsative measuring devices. These, according to Bartram (1996, p. 26), are that:

1. “they cannot be used for comparing individuals on a scale by scale basis;
2. correlations amongst ipsative scales cannot legitimately be factor analysed in the usual way;
3. reliabilities of ipsative tests overestimate, sometimes severely, the actual reliability of the scales: in fact the whole idea of error is problematical;
4. for the same reason, and others, validities of ipsative tests overestimate their utility;
5. means, standard deviations, and correlations derived from ipsative test scales are not independent and cannot be interpreted and further utilised in the usual way.”

Current confusion

While it is easy enough to come up with a list of alleged inadequacies of ipsative methodology if one is sufficiently selective about the sources which one cites, the matter is not at all so simple.

For the purpose to which ABSA wishes to put *Giotto* it would be wise to evaluate the importance of the five so-called “uncontroversial facts” mentioned by Johnson *et al.* (1988) in terms of research findings and their relevance for ABSA.

Interindividual scale-by-scale comparisons

It is a truism to claim that one cannot make such comparisons. The very nature of ipsative measurement — one could even be pedantic about the matter and refer to the Latin roots of the word ‘ipsative’ — is that it concerns the relative importance of a given set of attributes within a single person. If one, for example, were to use a scale which measures six traits such traits as optimism and pessimism, hope and despair, and Protestant work ethic and idleness, it is of little interest in making appointment decisions whether Applicant A is higher or lower than Applicant B on, say, optimism. What really matters is to know whether the applicant is higher on optimism than on pessimism, on hope than on despair, and on Protestant work ethic rather than on idleness. Stated differently, there are circumstances in which ipsative measures are more useful than normative ones.

Factor analysis/principal components analysis of ipsative scores

The dispute about whether one can legitimately factor analyse ipsative scores lies at the very heart of the battle. While Johnson *et al.* (1988) maintain that the lack of suitability of ipsative data for factor analytic purposes is an uncontroversial fact; the evidence in the literature is not at all clear-cut about this issue.

Cattell and Brennan (1994, p. 271), for example, claim that “with matrices of typical size [that used by these authors had 10 variables], for many practical substantive researches, the modification produced by converting to ipsative scores is much smaller than has commonly been expected. The interpretation of factors by their high loaded variables is little affected.” Further, on the same page they say, “[t]hese results may give some encouragement to those personality researchers who are forced by scoring methods to factor ipsative scores.”

In investigating the structure of a revised normative version of Kolb's Learning Style Inventory, Geiger, Boyle, and Pinto (1993) conclude that the normative solution approximates Kolb's model. It is, however, clear that the normativity of the instrument added nothing beyond that which would have been yielded by the original ipsative version. Similarly, McDermott and Glutting (1997, p. 163) claim that ipsatised Wechsler "subtest scores provide no information beyond that already available through conventional normative subtests." What is important is that the authors do not indicate that anything is detracted from the scores either.

Closs (1996) applied the JIIG-CAL Occupational Interest Guide in both ipsative and normative (Likert scale items) to a sample of 2 808 16-year old research participants. Pronounced differences were found between the ipsative and "nonipsative" intercorrelation matrices. Based on these findings Closs claimed that factoring ipsative correlation matrices was inappropriate. The assumption that matrices derived from nonipsative data are necessarily the norm in terms of which all other types of measurement ought to be judged is neither substantiated nor defended by the authors.

It is possible to continue in this fashion, but the major issue is that there is still a good deal of disagreement among authors about the suitability of data derived from ipsative measures for factor analytic purposes. In general, it would appear that some authors are able to produce useful results while others used data sets which do not live up to their expectations. There is an emerging notion that larger sets of ipsative variables are more suited to factor analytic procedures (or principal components analysis) than smaller matrices. What is meant by larger sets of variables is also not consistent among authors — it may vary between 10 and 30 or more. As the major reason for using factor analysis for inventories such as the *Grotto* is to investigate the construct validity of such an instrument, the extent to which such data may be factor analysed is not of much consequence to ABSA.

Alleged overestimation of reliability

The third "uncontroversial fact" relates to the claim that ipsative measuring devices overestimate the actual reliability of scales. Authors of recent literature on this issue appear not to regard the matter as quite as uncontroversial as Johnson *et al.* (1988) had believed.

Baron (1996, p. 49) for example found that “... for larger sets of scales (around 30) with low average correlation, ipsative data seem to provide robust statistical results in reliability analysis ...” In the same year, Bartram (1996, p. 25) supported this view by saying that “... ipsatized measures are unreliable when the number of scales is less than about 10 ...” Tamir and Lunetta (1977) found similar Cronbach alpha coefficients for normative and ipsative data. In a comparative study, Olson and Gravatt (1968, p. 13) found that test-retest reliabilities of normative and ipsative measures were high and that “... neither procedure seemed significantly more reliable than the other.” By producing an alternate form normative inventory and comparing it with the original ipsative version, Merritt and Marshall (1984a, p. 78) found the normative instrument to be “... at least as reliable as the original ipsative inventory”. Fletcher (1983) reported similar findings.

Saville and Willson (1991) investigated the reliability of normative and ipsative approaches to personality measurement and concluded that ipsative scaling did not produce spuriously high reliability estimates.

Considering the results of the majority of more recent studies that address the issue of the reliability of ipsative instruments, it is clear that there is not much evidence for the notion of inflated reliabilities. On the contrary, there is much more evidence that suggests a great deal of similarity between reliability estimates derived from normative and ipsative instruments.

The types of reliability estimates that have been used in the published literature are mainly Cronbach’s alpha coefficient, test-retest reliability and split-half reliability (see Meyer, 1998). Some authors have used correlations between normative and ipsative versions of the same inventories as measures of parallel-form reliability, while others have used the same approach as indicators of construct validity. Normative-ipsative correlations can, however, not be used for either of the functions indicated above.

Alleged overestimation of validity by ipsative measures

Criterion-related validity

As a rule, criterion-related validities refer to correlations of some sort against an independent measure of performance or of the dimensions that are being measured. Meyer (1998) conducted a validation study of an ipsative interest inventory in which the courses which

groups of university students had selected were compared with the three top-scoring fields of interest. Nine courses (e.g. M.B., Ch.B.) were selected and the ranking of interests agreed in all cases with what could reasonably have been expected. Similarly, most preferred school subject also accorded with the measured interests.

A similar approach was followed by Blood (1970), who preferred ipsative measures for assessing the impact of motivational attempts, when he compared the scores of six dissimilar groups and found that the scales acted in accordance with his expectations.

Using the Graduate Record Examination (GRE) results of 231 individuals who had completed their doctoral programmes with their Grade Point Average and other information, Roscoe and Houston (1969) found correlation coefficients ranging between 0.16 and 0.53 for normative judgements and between 0.14 and 0.30 for ipsative judgements. Their main concern was with the predictive validity of the GRE rather than with the merits of ipsative measures. The differences clearly contradict the oft made statement that ipsativity inflates correlations.

Construct validity

Investigations into the construct validity of assessment devices very often make use of factor analytic techniques or principal components analysis. This issue was addressed in some detail in section 3.7.3.2 above. What has, however not been touched upon is the use of other methods of investigating construct validity.

Although Broucek and Randell (1996) were unable to demonstrate convergent and discriminant validity in their study, they could indicate that no differences were found between normative and ipsative measures. Similarly, Merritt and Marshall (1984b) claimed that an alternative normative form of the Learning Style Inventory displayed “... construct validity that was at least comparable to that for the ipsative instrument.” Geiger, Boyle, and Pinto (1993) reported similar findings relating to the structure of Kolb’s Learning Style Inventory when using both the original ipsative and an alternate normative version.

In an investigation of both the ipsative and normative versions of the Edwards Personal Preference Schedule (EPPS), it was found that the ipsative nature of the original EPPS appeared to lower the validity coefficients, and to decrease convergent and discriminant

validity (Piedmont, McCrae, & Costa, 1992). These findings also contradict the statements made about the inflation of validity findings when ipsative measures are employed.

Construct validity studies of ipsative instruments are closely associated with the findings on factor analysis and principal components analysis. Although earlier publications tended to condemn factor analysis of ipsative scores without hesitation, the issue has been revisited in recent times. Although differences of opinion still exist, the modern notion is that it is possible to conduct construct validity studies provided care is taken regarding a number of considerations.

Criterion-related validity studies of ipsative measures appear to be infrequently undertaken. Part of the reason may be the kinds of applications to which ipsative measures have been put in the past. An interesting and useful criterion-related approach is that of comparing the extent to which scores on ipsative measures can discriminate sensibly between predefined groups.

Non-independence of ipsative scale scores

That the degree of interdependence between ipsative scores is also matter of dispute is an issue that has been amply demonstrated. Cattell and Brennan (1994) believe that the interdependence is not of such a nature that a great deal of information is lost. There is ample support in the preceding sections of this addendum to the effect that the scores derived from ipsative measure can, and are, interpreted and used — presumably in what Bartram (1996) following Hicks (1970), refers to as “the usual way”.

Until final, and definite, answers are available to prove the inferiority of ipsative measures in an unambiguous and consistent manner, there is no good reason not to use them. This is especially the case if normative devices are not available, and where a suitable ipsative device will provide human resources practitioners with systematic information that can be shown to be reliable, valid, and unbiased.

It is a truism that it is impossible to derive normative scores from instruments which were designed using an ipsative methodology. There are, however, occasions when ipsative scores are more useful in a practical application than normative scores. If, however, an instrument

has been devised following a normative approach, it is a simple matter to derive ipsative scores for each candidate. In view of the fact that statistically significant differences were detected between South African population groups in the standardisation of Lens, and because the instrument has not been devised for the type of application where it is used to select between a number of candidates for appointment purposes, the clearest interpretation of Lens results is likely to be on the basis of an ipsatisation of an individual's stanine scores. This matter is dealt with in greater detail in the section devoted to the interpretation of results.

Item format

To reduce the likelihood of test takers' possible inclination to a response style in which central tendency features, the items in Lens were constructed using a six-point scale. The scale values shown on the answer sheet ranged from -3 to +3 and the zero scale-point was omitted. In the final scoring of the items, a constant of 4 was added to each item to dispense with the possibility of negative total scale scores.

It was initially thought that test takers' aspirational worldviews could be assessed by asking them to rate how they perceived themselves at present, and also how they would like to be at some future, unspecified time. Although the future perspective notion was not included in the final version of the questionnaire because of the very high correlations between current and future perceptions, the original item format is shown below:

Everyone benefits when I do things for other people.

Question number	Now						At some time in the future					
	I disagree very much	In general, I disagree	I disagree a little	I agree a little	In general, I agree	I agree very much	I would disagree very much	In general, I would disagree	I would disagree a little	I would agree a little	In general, I would agree	I would agree very much
	-3	-2	-1	+1	+2	+3	-3	-2	-1	+1	+2	+3
1.												
2.												

While a computerised administration version of the instrument was also developed, it was not applied during the standardisation exercise.

Norms

The raw scores of the standardisation sample were normalised and transformed to stanine and sten scores. While stanines are frequently used in the interpretation of ability batteries, stens are more frequently encountered in tests used to assess personality and related matters.

In the case of stanines, the raw scores take on values ranging between 1 and 9, with a mean of 5 and a standard deviation of approximately 2. The percentage of cases occurring at each stanine level is shown in Table 25 below.

Table 27: Stanine distribution

Stanine score	1	2	3	4	5	6	7	8	9
% for each score	4.0	6.6	12.1	17.5	19.7	17.5	12.1	6.6	4.0

It is customary to make use of descriptive terminology for the various stanines so as to make the concepts more readily accessible to those not trained in psychology. Stanine 1 is usually referred to as *very low*, 2 as *low*, 3 *below average*, 4 as *average minus*, 5 as *average*, 6 as *average plus*, 7 as *above average*, 8 as *high*, and stanine 9 as *very high*.

Stens are standardised 10-point scales with a mean of 5.5 and a standard deviation of approximately 2.0. The percentage of cases falling under each sten is shown in Table 26 below.

Table 28: Sten distribution

Stanine score	1	2	3	4	5	6	7	8	9	10
% for each score	2.28	4.40	9.19	14.98	19.15	19.15	14.98	9.19	4.40	2.28

In the case of stens the descriptive terms that are most frequently employed are *very low* for a sten of 1, *low* for 2, *below average* for 3, *average minus* for 4, *lower average* for 5, *higher average* for 6, *average plus* for 7, *above average* for 8, *high* for 9 and *very high* for 10.

For the sake of comprehensiveness, the conversion tables from raw scores to stanines and stens are shown below.

Table 29: Conversion to stanines for Purple

Raw score	Stanine
≤ 35	1
36 – 42	2
43 – 47	3
48 – 52	4
53 – 56	5
57 – 60	6
61 – 64	7
65 – 69	8
≥ 70	9

Table 30: Conversion to stanines for Red

Raw score	Stanine
≤ 41	1
42 – 46	2
47 – 54	3
55 – 62	4
63 – 67	5
68 – 72	6
73 – 78	7
79 – 84	8
≥ 85	9

Table 31: Conversion to stanines for Blue

Raw score	Stanine
≤ 51	1
52 – 55	2
56 – 61	3
62 – 69	4
70 – 75	5
76 – 80	6
81 – 85	7
86 – 88	8
≥ 89	9

Table 32: Conversion to stanines for Orange

Raw score	Stanine
≤ 54	1
55 – 61	2
62 – 70	3
71 – 77	4
78 – 81	5
82 – 86	6
87 – 91	7
92 – 96	8
≥ 97	9

Table 33: Conversion to stanines for Green

Raw score	Stanine
≤ 63	1
64 – 68	2
69 – 77	3
78 – 84	4
85 – 89	5
90 – 95	6
96 – 98	7
99 – 101	8
≥ 102	9

Table 34: Conversion to stanines for Yellow

Raw score	Stanine
≤ 51	1
52 – 56	2
57 – 60	3
61 – 65	4
66 – 70	5
71 – 73	6
74 – 77	7
78 – 81	8
≥ 82	9

Table 35: Conversion to stanines for Abbreviated Dogmatism scale

Raw score	Stanine
≤ 69	1
70 – 77	2
78 – 87	3
88 – 96	4
97 – 107	5
108 – 118	6
119 – 131	7
132 – 144	8
≥ 145	9

Table 36: Conversion to stens for Purple

Raw score	Stanine
≤ 26	1
27 - 39	2
40 - 44	3
45 - 49	4
50 - 54	5
55 - 58	6
59 - 62	7
63 - 66	8
67 - 70	9
≥ 71	10

Table 37: Conversion to stens for Red

Raw score	Stanine
≤ 38	1
39 - 43	2
44 - 51	3
52 - 58	4
59 - 64	5
65 - 70	6
71 - 76	7
77 - 82	8
83 - 85	9
≥ 86	10

Table 38: Conversion to stens for Blue

Raw score	Stanine
≤ 39	1
40 - 51	2
52 - 58	3
59 - 65	4
66 - 71	5
72 - 77	6
78 - 82	7
83 - 86	8
87 - 89	9
≥ 90	10

Table 39: Conversion to stens for Orange

Raw score	Stanine
≤ 49	1
50 - 57	2
58 - 64	3
65 - 74	4
75 - 79	5
80 - 84	6
85 - 89	7
90 - 93	8
94 - 98	9
≥ 99	10

Table 40: Conversion to stens for Green

Raw score	Stanine
≤ 58	1
59 - 66	2
67 - 74	3
75 - 81	4
82 - 87	5
88 - 92	6
93 - 96	7
97 - 99	8
100 - 102	9
≥ 103	10

Table 41: Conversion to stens for Yellow

Raw score	Stanine
≤ 48	1
49 - 54	2
55 - 58	3
59 - 63	4
64 - 68	5
69 - 72	6
73 - 75	7
76 - 78	8
79 - 82	9
≥ 83	10

Table 42: Conversion to stens for Dogmatism

Raw score	Stanine
≤ 62	1
63 - 71	2
72 - 80	3
81 - 90	4
91 - 99	5
100 - 111	6
112 - 124	7
125 - 138	8
139 - 148	9
≥ 149	10