

Within-person variation in personality and psychological  
well-being

By

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# Abstract

Personality is one of the most broad and complex areas in psychology. This has led to many researchers attempting to reduce this complexity by focusing solely on how habitual personality differs between each individual (inter-individual differences). This is important to study, but it has been focused on so heavily that research into how each individual personality varies within the person (intra-individual differences) has been neglected in comparison.

Recent research has started to examine intra-individual variation in personality more thoroughly. One research aim of this programme was to establish the nature of several different types of within person variability including inter-item variation (variation within the test responses for a personality trait), and cross-contextual variation in personality (variation according to context), to see whether these types of variability are associated with psychological outcomes. Three research questions were examined to this end:

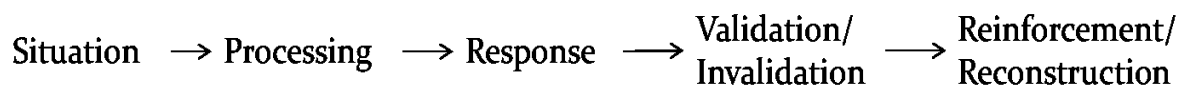
- 1) What is the extent of meaningful variability in personality trait test responding?
- 2) What are the predictors of intra-individual variability in personality?
- 3) What is the relative importance of the person and situational factors in personality variability?

The first question was developed to try and determine whether the individual can display meaningful inter-item variation in ratings of specific behaviours within personality trait measures. Trait questionnaires are usually only analysed at the between subject level, and within subject variation in inter-item ratings have not been extensively examined in relation to meaningful psychological outcomes. The second and third questions were developed to look into the nature of cross-contextual personality, and establish whether within person personality differences are influenced more strongly by the person or situation. The studies conducted towards answering these questions demonstrated a person-based capacity to

display intra-individual variability. A second aim of the research programme was to see whether the capacity to display these types of variability can be utilised in behaviour change. The fourth research question was developed to try and understand how a person can display intra-individual variability, yet still be resistant to changing negative habits:

4) How do the different aspects in personality variability help explain why some people are resistant to change, especially with regard to behaviours that are bad for them?

This question was answered by theoretically discussing the findings from the three previous studies which proposed that positive or problematic behaviour could be interpreted with a simple path to understand the process of behavioural action:



The individual receives feedback from a behaviour response which either validates or invalidates their action in the situation context (does or does not receive a desired outcome). Reinforcement of the behaviour happens if it is validated by positive feedback. Alternately reconstruction of the situation happens if the behaviour is invalidated. This allows for two types of intra-individual variability. One is flexibility in behaviour responses to different situations under the individual's control. The other is change according to the situation, where the behaviour is invalidated and an alternative is attempted. A problematic behaviour may have benefit in stopping something invalidating, but if repeated it may become a habit needed for psychological functioning. As part of the second research aim a behaviour change strategy was developed and piloted to try and bring the individual closer to their construct of the ideal self. Instructions were provided for the individual to experiment with that differed from their disposition. The programmes had varied degrees of success depending on the participant. The implications for personality research and behaviour change are discussed.

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**Glossary of terms:** An alphabetical list of common terms and abbreviations used, with definitions.

**BAS:** Behaviour Activation System, the system which activates behaviour in Reinforcement Sensitivity Theory proposed by Gray (1981).

**Big Five:** A personality model consisting of five broad personality traits, also known as the Five Factor Model.

**BIS:** Behaviour Inhibition System, the system which inhibits behaviour in Reinforcement Sensitivity Theory proposed by Gray (1981).

**CAPS:** Cognitive Affective Personality System, a model of personality proposed by Mischel and Shoda (1995).

**ESM SD:** The standard deviation of a personality state around the mean of that state, where state data are collected via repeated measurements across many short time intervals.

**FFM:** Abbreviation for the Five Factor Model of personality, a personality model consisting of five broad personality traits. Also known as the Big Five.

**FIT:** Framework for Internal Transformation, a model of cognitive and behavioural performance, proposed by Fletcher and Stead (2000).

**HEXACO:** A personality trait model that measures 6 broad traits, essentially the Big Five and an additional measure of Honesty-humility. This was first proposed by Ashton, Lee and Son (2000).

**Inter-individual:** A term meaning differences between individuals.

**Intra-individual:** A term meaning differences or variation within the same individual.

**IPIP:** International personality item pool; a collaboration which has produced many versions of personality inventories for public use, which have been psychometrically validated.

**NEO-FFI:** A Big Five trait inventory developed by Costa and McCrae (1985); measures the Big Five traits at the broad trait level.

**NEO-PI-R:** A Big Five trait inventory developed by Costa and McCrae (1992), measures the Big Five at the broad trait level and 6 facets within each broad trait.



PANAS: Positive and Negative Affect Scale, measures various types of positive and negative affect (developed by Spielberger, Lushene, & McAdoo (1977).

RST: Reinforcement sensitivity theory, a theory explaining behaviour performance, proposed by Gray (1981).

SCD: Self-Concept Differentiation. An index designed to account for variation in trait personality across five interpersonal roles used by Donahue, Robins, Roberts and John (1993).

SCC: Self-Concept Clarity. The individual own understanding of their self-concept, proposed by Campbell (1990).

SPS: Self-Pluralism Scale (developed/published by Altrochhi and McReynolds, 1997; McReynolds, Altrochhi & House, 2000). Self-pluralism is the self-perceived variation in behaviour across situations.

SP: Sensitivity to punishment. Refers to how sensitive an individual is to punishing stimuli.

SPSRQ: Sensitivity to Punishment, Sensitivity to Reward Questionnaire, measures sensitivity to punishing and rewarding stimuli within the Reinforcement Sensitivity Theory framework. Developed by Torrubia, Avila, Molto and Ceseras (2001).

SR: Sensitivity to reward. Refers to how sensitive an individual is to rewarding stimuli.

WS SD: Within Subject Standard Deviation, a measure of inter-item variability in the ratings of a particular personality trait or facet measure for a specific individual.

# Preface

This thesis, submitted towards the award of a Doctorate in Philosophy (PhD), is an investigation into various types of intra-individual variation in personality, such as inter-item variation within a personality test and variation according to the context of measurement. What predicts this variability, and how the capacity for intra-individual variation can be applied in behaviour change will be examined. This thesis is separated into seven chapters; the first and last being an introduction to the area of personality research, and a general discussion of the implications of this research programme respectively. Chapters 2-4 each look at answering a research question after drawing on literature and methods from somewhat divergent areas within personality research. On this basis each chapter will consist of a separate review of the literature relevant to answering the question, prior to describing a study that contributes to answering the research question raised. Chapter 5 will theoretically discuss the findings from the previous three chapters in order to help answer the fourth research question. This will be followed by discussing literature relevant to the applied use of these findings. Chapter 6 will describe a pilot of a strategy for bringing the individual closer to their ideal view of the self, developed to give the findings of this thesis an applied use.

The literature review searches in this thesis were conducted using the ISI Web of Knowledge database for broader searches, although when searching for specific references the Google Scholar search engine was also used. This research used various methods of data collection in adult samples including questionnaires, a diary study and the repertory grid technique. As the methods used were quite varied, it seemed appropriate to describe these in the context of the studies or literature reviews. The appendices lists the measures used in each study and the repertory grid interpretations and tailored programme designs from the pilot

study. The word count of this thesis is 79,004 words excluding the reference list and appendices.

The study reported in chapter 2 has been published in SAGE Open (Churchyard, Pine, Sharma & Fletcher, 2014) while the study reported in chapter 4 has been published in the Journal of Constructivist Psychology (Churchyard, Pine, Sharma & Fletcher, 2013).

The thesis begins with an introductory chapter, which introduces some background to the two main approaches of examining personality, the nomothetic and the idiographic approaches. Then the reasons why it is important to study intra-individual variability in personality as a whole using both these approaches will be discussed with reference to the person-situation debate/ resolution.

# **Chapter 1: A brief history of personality research, and why intra-individual variability is important to study.**

Personality is an important psychological topic for everyone, academics and lay-people alike. Our personality consists of the thoughts and behaviour that define us as an individual and forms a part of our identity. Understanding of personalities allows us to interpret and assess not just our own behaviour, but that of other people we engage with. People behave in a particular way for a reason, whether this because certain behaviours are adaptive, and benefit psychological functioning, or because a consistent environment has led us to develop certain patterns of responses. The importance of understanding personality to the general public is apparent in the mass of online personality tests and self-help books aimed at a non-scientific audience. People want to understand themselves and how they can best be validated (how their actions can achieve a desired and normally positive outcome) in society by other people. Every individual performs behaviour that requires validation, whether this is behaviour commonly shared by many, and likely to receive reciprocal validation, or patterns of behaviour unique to an individual (Kluckhohn & Murray, 1953).

Even with the most robust psychological phenomena, researchers will find considerable individual differences in behaviour. In everyday living, how different people respond to apparently identical situations is a major question for psychology. Both habitual and variable behaviour responses are essential, though apparently conflicting, processes to make the most of experience and opportunity. Digman (1997) proposed a five level hierarchal structure of personality (displayed by figure 1, note stability and plasticity labels later added by DeYoung, Peterson & Higgins, 2002). At the higher levels (three, four and five) are the aspects of personality arranged by narrow aspects of personality (facets), the stable behaviour trait characteristic that broadly encompasses these facets and two higher order stable traits

(combinations of the level four traits). At the lower levels (two and one) are the habitual behaviour responses and specific responses to situation cues (also referred to in Eysenck, 1947 model of personality).

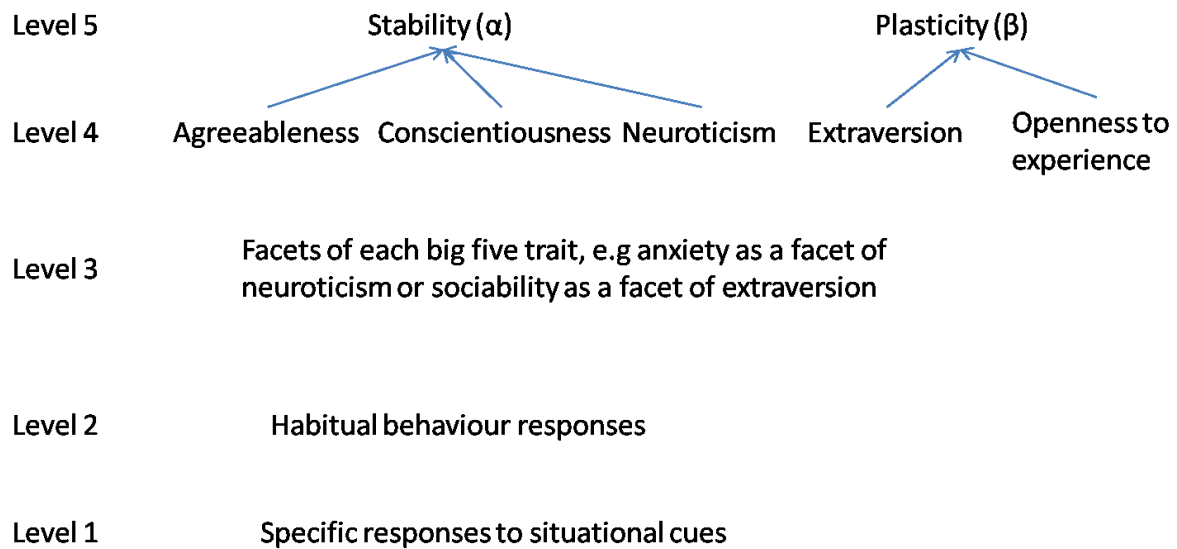


Figure 1: Five level hierarchal structure of personality based on Digman (1997) structure (note stability and plasticity labels later added by DeYoung, Peterson & Higgins, 2002).

This suggests that both habitual behaviour responses (level 2) and specific behaviour responses to situation cues (level 1) are important in the greater picture of individual differences in personality. Exploration of human personality should take account of both habitual and specific responses for situations, but research tends to value consistency over variability when measuring individuals (the focus being on levels 2-5 of Digman, 1997, structure). Studies of personality in the dominant trait paradigm are generally conducted with the reductionist assumption that the individual expresses little variation in personality across different situations. This stance makes personality easier to operationalize and study. However, it is the ability to vary that sets humans apart from other species and is central to adaptability. The consistent nature of being and accepting yourself as you are is a strong belief held by Western societies while Eastern societies acknowledge individually consistent

dispositions, but also attribute more to flexibility to do what is best in context (Choi, Nisbett & Norenzayan, 1999). The Western cultural belief of individuality may discourage the view that the individual can or should be able to vary or change if they wish, without feeling stigma as a consequence. This is an assumption that needs to be corrected.

This research programme has two broad aims. One aim is to examine several sources of within person (intra-individual) personality variability including inter-item variation in responses within the test of a personality trait, and cross-contextual variability in personality to see whether these types of intra-individual variability are associated with psychological outcomes.

If the capacity for intra-individual personality variability is present and established as a relevant individual difference, then this means not everyone may display an innate capacity to vary for adaptive outcomes. This may lead to developing habits that are not beneficial. So a second aim is to see whether the capacity for intra-individual variability can be utilised in changing behaviour. A strategy tailored to focus on developing the capacity for beneficial intra-individual variation will be designed. In order to establish this, a good understanding of the nature of intra-individual personality variability will need to be developed through this research programme. This will be done by performing reviews of research and conducting studies to establish the nature of the various types of intra-individual variation (e.g. inter-item and cross-contextual variation), and understand why habitual personality initially develops. The knowledge obtained will be used to design and pilot a strategy focused around developing a more varied, flexible personality in order to help the individual come closer to their ideal self.

In order to understand the general background to personality research and why research into the different types of intra-individual variation is important; a brief history of

the development of personality research through the use of nomothetic and idiographic approaches will be provided. This will be discussed in relation to intra-individual variability, in particular through the person-situation debate/resolution. Several research questions will then be described to develop a more thorough understanding of intra-individual personality variability.

### *Nomothetic and Idiographic approaches to personality research*

Historically research been conducted from one of two approaches. One of these is the nomothetic approach which focuses on collecting data from a large number of people to determine individual differences in commonly shared personality traits and facets (Costa & McCrae, 1992; Digman, 1997; Eysenck, 1947; Goldberg, 1992; Lee & Ashton, 2004; Musek, 2007). The other is the idiographic approach which focuses on features unique to the individual (Allport, 1937; Kelly, 1955; Mischel & Shoda, 1995). The development of nomothetic personality questionnaires will now be discussed.

### *Nomothetic personality questionnaire development*

Nomothetic questionnaires have been developed to operationalize personality by using adjectives to describe personality attributes or behaviour statements that tap into a personality attribute. Adjective based questionnaires were developed earlier with statement questionnaires coming along later.

Allport and Odbert (1936) performed the first in-depth look into English adjectives that describe personality (Baumgarten, 1933; conducted a similar in-depth analysis with German). Allport and Odbert suggested there were four categories which the 18,000 adjectives they found fell under:

- 1) Stable personality traits (e.g. expressive, sincere, unforgiving)
- 2) Temporary states and moods (e.g. happy, sad, confused)
- 3) Evaluative judgements (e.g. good, bad, satisfactory)
- 4) Physical and other characteristics (e.g. tall, short, strong)

Having concluded that some sort of framework needed to be established to provide a structure for personality traits, researchers began performing studies using these adjectives to produce a framework. Cattell was the first to attempt this with the 4,500 adjectives from Allport and Odbert (1936) stable personality traits category, that he eventually turned into a framework of 35 variables from which 12 factors emerged (Cattell, 1945).

Fiske (1949) was the first to produce the Big Five structure (often referred to as the five factor model or FFM) from 22 of Cattell (1945) original 35 variables. The five factor structure was found by several other researchers (Tupes & Christal, 1958; Goldberg, 1992; Costa & McCrae, 1992). Analyses performed by Thurstone (1934), Fiske (1949), Tupes & Christal (1961), Norman (1963) and Digman & Takemoto-Chock (1981) all consistently support the presence of five common trait factors (cited from a review of these analyses performed by Goldberg, 1995). These dimensions are:

- 1) Extraversion
- 2) Agreeableness
- 3) Conscientiousness
- 4) Neuroticism/Emotionality (or emotional stability if reversed)
- 5) Open to experience (alternatively cultured or intellect/imagination)

Although not encompassing all of personality, these five traits are thought to reflect a large range of behaviours within each trait. The Big Five is the most commonly applied model in nomothetic personality research (Digman, 1996). These traits and how they relate to



various psychological outcomes (e.g. emotions, goals, motives and life satisfaction) will be discussed in more detail during the chapter 2 review. Goldberg (1992) developed the Trait Descriptive Adjective inventory which is the most commonly used adjective based inventory of the five factor model. Research has also focused on the development of questionnaires using more specific behaviour statements to tap into these five factors.

The first real statement based questionnaire measuring the Big Five was the NEO personality inventory which was published by Costa and McCrae (1985). The NEO inventory trait measures were found to display self and other report convergence with adjectives describing the five factor model (McCrae & Costa, 1987). A revised version of this inventory, the NEO-PI-R, was released which described six sub-facet scales within each of the five traits (Costa & McCrae, 1992). Several other prominent statement based inventories have emerged since the NEO inventory including the Hogan personality inventory (Hogan, 1986), Big Five inventory (John, Donahue & Kentle, 1991) and the HEXACO-PI questionnaire (Lee & Ashton, 2004). A source of information and statement based personality measures is hosted at the International personality item pool (IPIP) website.

Other popular models in nomothetic personality research include developments of Cattell (1945) personality factors into the 16 Personality Factor model (Cattell, Eber & Tatsuoka, 1970), Wiggins Interpersonal Circumplex which measures 8 interpersonal focused categories (Wiggins, 1979), and the Myers-Briggs Type Indicators (Briggs & Myers, 1987) which measures four types; Extraversion-Introversion, Sensing-Intuition, Thinking-Feeling and Judging-Perceiving based on Jung (1971) ideas. All of these models have been found to display convergence with the five factor model (for the MBTI see Furnham, 1996; McCrae & Costa, 1989a; for the 16PF see Gerburg & Tuley, 1991; for the IPC see Hatcher & Rogers, 2009; McCrae & Costa, 1989b; Schmidt, Wagner & Kiesler, 1999).

There are varying views on whether nomothetic factor models of commonly shared traits are merely descriptive or causal. Those who conduct adjective studies tend to believe that the models found are merely descriptive (Saucier & Goldberg, 1996). However, those using behaviour statement questionnaires view models such as the FFM as causal due to the specific behavioural content that is predictable by internal or external variables (McCrae & Costa, 1996). McCrae and Costa (1996) elaborate on the five factor model as part of a five factor personality system. This system suggests the individual has internal basic tendencies which the Big Five reflect, and that the individual also displays external characteristic adaptations of their personality. These characteristic adaptations of personality are changeable according to social role, expectations and the environment. Basic tendencies as well as characteristic adaptations contribute to the individual's self-concept. These are all thought to be linked by underlying cognitive and affective dynamic processes which are best explained by the processing theories discussed later in this chapter. Although the trait personality perspective acknowledges the ability for variation in personality behaviour according to situational circumstances (McCrae & Costa, 1996), most nomothetic trait personality research has focused solely on the basic tendencies or personality trait dispositions.

A big validity issue in trait personality research is whether nomothetic models of commonly shared traits can be applied cross-culturally and cross-linguistically. Do trait models such as the Big Five extend beyond English speaking samples? Studies have been conducted that replicate the five factor trait structure in languages including Chinese (Yang & Bond, 1990; Zheng et al, 2008), Croatian (Mlacic & Goldberg, 2007), Dutch (De Raad, Mulder, Kloosterman & Hofstee, 1988; Hofstee et al., 1997), German (Angleneiter, Ostendorf & John, 1990), Greek (Saucier, Georgiades, Tsouasis & Goldberg, 2005), Polish

(Szarota, 1995), Russian (Shmelyov & Pokhil'ko, 1993), and Turkish samples (Somer & Goldberg, 1999). This suggests the model is applicable worldwide. Most studies have found the first four of the Big Five (extraversion, agreeableness, conscientiousness and neuroticism), but some differ slightly on the fifth factor according to culture (e.g., Hofstee et al., 1997; Saucier et al., 2005). For example, Hofstee et al. found that in German samples that this factor comes out as intellect while in Dutch samples it comes out closer to unconventionality. This thought to be due to some differences in the adjectives used, as the set of German study adjectives included more intellect based adjectives, but not evaluative adjectives while the set of Dutch study adjectives frequently used did the opposite. Saucier et al., (2005) labelled the fifth factor prowess/heroism in their analysis which is quite different from the intellect or openness factor normally found. However, in general the Big Five structure is replicated across cultures.

Recently the six factor HEXACO structure (the Big Five and an additional Honesty-humility trait, developed by Lee & Ashton, 2004) has also been found to be conceptually replicated across languages by Lee and Ashton (2008). Lee and Ashton asked participants to rate a set of six adjective lists for a language (from which a six factor model had been derived in a previous study) for the similarity of those lists to definitions of each of the six HEXACO dimensions. There were 12 different languages sets of six adjective lists examined across the sample for their similarity to definitions of the HEXACO dimensions (11 sets of lists were translated into English). Lee and Ashton found high conceptual similarity of the HEXACO model to the 12 different languages lists (including English). Although the intellect/openness to experience factor was the least conceptually similar across languages which is in line with the Big Five research.

It can safely be assumed that nomothetic trait personality questionnaires are a valid and reliable way of deriving behavioural information about personality across languages and

cultures. However, as good as nomothetic trait models of personality are at obtaining common behavioural information, they lack the ability to surface unique information about the behaviour of an individual.

### *Idiographic methods of examining personality*

The idiographic approach focuses on the unique personality attributes of the individual rather than personality attributes they share in common with other people. An important idiographic perspective in personality research is Personal Construct Theory. Personal Construct Theory (developed by Kelly, 1955/1991) is a theory of how the individual constructs everything in their life. Personality researchers tend to apply Personal Construct Theory in terms of how the individual construes and relates to the interpersonal others in their life. The aim of personal construct methods is to determine a selection of bipolar personal constructs unique to the individual. An example construct would be *Talkative vs. Quiet*. Personal Construct Theory uses qualitative and quantitative methods to examine the individual's constructions of the world, and report on how the self and the interpersonal others behave on these constructs. Qualitative methods include participants providing self-characterising narratives and the researcher analysing autobiographical texts (Epting, Probert & Pittman, 1993; Feixas & Villecas, 1991) while the main mixed qualitative and quantitative method of producing constructs is the repertory grid technique (Fransella, Bell & Bannister, 2004). Personal construct methods allow the researcher to gain a picture of how the individual construes their own, and significant interpersonal others behaviour using unique constructs. Constructs can be elaborated on using elicitation procedures to find out their deeper philosophical meanings for the individual which are referred to as superordinate constructs (elicited using laddering procedures developed by Hinkle, 1965), or the specific behaviours the constructs may represent which are referred to as subordinate constructs

(elicited using pyramiding procedures developed by Landfield, 1971). An advantage of the repertory grid over conventional questionnaires, apart from the unique information it elicits, is that the procedure is a lot more interesting for the participant to take part in. The repertory grid elicitation procedure allows the participant to elaborate and talk about themselves and the people they know rather than fill in broadly aimed questionnaires. This means it will hold participants attention, making it less likely that they lie or respond neutrally. Furthermore, the repertory grid provides information in relation to an individual's specific interpersonal associates, thus giving more individual specific information than standard questionnaires. Personal Construct Theory, elicitation procedures and repertory grid research into the self and couples will be discussed more in chapter 4.

Other idiographic approaches focus on the use of diaries to establish knowledge of the ever-changing circumstances of the individual. An example quantitative application is through personality diary studies measuring the Big Five across repeated diary measurements (Fleeson, 2001, 2007; Fleeson & Gallagher, 2009). Another example is using the Interpersonal Circumplex to examine between subject dispositions and within subject signature behaviours characteristic to a situation (Fournier, Moskowitz & Zuroff, 2008). Although these methods measure commonly shared nomothetic attributes each individual manifestation of the attributes across the time period is captured, giving a measurement unique to that participant. So these may be considered combined nomothetic-idiographic approaches, rather than solely idiographic. Querstet and Robinson (2013) demonstrate an alternate combined method using the Ten Item Personality Inventory in Three Contexts (TIPI-3C) to screen participants for high cross-contextual variability, before performing an idiographic qualitative thematic analysis on further interview transcripts of the selected respondents.

Research with an individual focus on the underlying personality processing that mediates *if situation-then behaviour* models in terms of various components including goals, affect, capacity to self-regulate, and encoding the situation in terms of who is present has been conducted and discussed by Mischel and Shoda (1995), and Mischel (2004). This theory and some research based on the theory will be discussed in more detail later this chapter.

Although idiographic methods provide unique and detailed information about the participant, modern personality research tends to focus on studies using nomothetic methods rather than idiographic methods. The main reason for this is the findings can be more widely generalised and the studies are usually easier to conduct.

Two measurement types for gathering personality data have been described within the nomothetic and idiographic traditions; statement and adjective type measurements. Statements and adjectives are both commonly used in the nomothetic approach while adjectives are commonly elicited from idiographic approaches. There are advantages and disadvantages to each measurement type. Table 1 lists some advantages and disadvantages. From table 1 it can be suggested that the appropriate type of questionnaire is dependent on the nature of data collected, whether it is single measurement or repeated measures data.

The nomothetic-idiographic distinction in personality research has been discussed and it is clear that both approaches have positive and negative points. Although predominantly a supporter of idiographic approaches at the earliest stages of personality research Allport (1937) supported the integration of nomothetic and idiographic approaches. Allport suggested that if behaviour patterns are found over many people, then these can be thought of as common traits.

Table 1: A list of some advantages and disadvantages of using a particular measurement type.

Measurement type	Advantages	Disadvantages
Statements	More specific behavioural detail in statements.	Makes questionnaires large. Not appropriate for quick or repeated measurement.
	Less ambivalence regarding language used.	Statements may still be quite generic and not surface important idiographic information.
Adjectives	Quick and easy to administer, making them useful for repeated measure studies.	Do not always get the behavioural detail required.
	Useful to providing unique descriptions as in personal construct methods.	Participant can easily see what is being tapped into.

In personality research, a big issue is the reliability of self-reporting personality. After all, what use is asking the participant how they behave if they will not tell you accurately? In order to help determine whether self-report measures are a reliable approach to use, researchers have conducted studies to find out how others describe and perceive the person to see if it matches the self-report description.

#### *The Self-other report relationship*

Much research has examined the relationship between self-report and peer-report ratings of personality. This is an important issue to help researchers know whether participants are reporting their actual personality, or if they are providing a self-enhanced or pessimistic, self-detrimental image of themselves.

Buss (1996) suggests that people have evolved ways of accurately perceiving individual differences in others for socially adaptive purposes. According to Buss, the Big

Five provide the trait framework for these perceptions. This is supported by Riemann, Angleneiter and Strelau (1997) who found in a behavioural genetics study that there is a genetic influence on both self reports and peer reports of the Big Five (the mean self-peer correlation was  $r = .55$ ). This study suggested that genetics can influence peer reports as well as self-reports, indicating that innate heritable tendencies are predictable by close others based on behaviour.

Socio-analytic theory (Hogan, 1996) proposes that there is a social aspect of creating a particular impression in self-report behaviour. When the individual self-reports their personality using a questionnaire they may think about others perceptions of them. The individual may be self-deceptive when reporting if their view of others perceptions do not hold up to their own self-concept. This occurs as many questionnaires ask participants to rate how they view themselves in comparison to others in their demographic.

Studies by Church et al., (2006); De Vries (2010); Lee, Ashton, Morrison, Cordery and Dunlop (2008); Paunonen (1989, 1991); Ready, Clark, Watson and Westerhouse, (2000); Simms, Zelazny, How Yam and Gros (2010) and Vazire (2006, 2010) have generally found decent self-other convergence in trait ratings for various models of personality (convergence correlations between .30 and .70). This suggests that the use of self-report is a reasonably valid and reliable method in personality research. Paunonen (1989) and Vazire (2006, 2010) suggest that the better the other knows the self reporter, e.g., peer rather than stranger, the higher the convergence will be (part of the self-other knowledge asymmetry). Although findings from Paunonen (1991) and Beer and Watson (2008) suggest that significant convergence in self-stranger ratings that can occur is due to assumed similarity based on the very brief time period the stranger gets to know the person they rate. Assumed similarity is when a rater assumes that the person they are rating is similar to themselves. This is because the rater has no prior information to base their judgement on. Ashton and Lee (2010) found



that there are two bias factors in self-other reports which bias results to provide a more favourable impression. A self-report bias has an egotistic element which encourages social desirability, as would be expected by socio-analytic theory while the other-report bias has a communal element that makes the other rater's judgement more favourable. Ready, Clark, Watson and Westerhouse (2000) suggest that on difficult to judge traits, peer raters will report on their own personality. Examples of difficult to judge traits from Ready et al's study include mistrust and eccentric perceptions.

With regard to personal construct research, not much is available on the convergence of self report-other report ratings in repertory grid constructs. The intimate level of individual construction is not expected to be outwardly obvious to anyone but the individual, and not even the individual a lot of the time. Although self-other convergence is expected in closer relationships where similarity in construct complexity is displayed (Neimeyer & Neimeyer, 1983). Adams-Webber suggests that people rate others on the same poles of constructs as themselves around 62% of the time which is referred to as the Golden section hypothesis (supported by Adams-Webber, 1985, 1992; and Benjafield & Adams-Webber, 1976).

It can be argued that non-perfect self-other convergence relationships suggest that there is behaviour the individual does not display in the company of the other. This could be an indication of a potentially varied personality. After all, it is highly unlikely that the individual spends all of their time with the other they are being rated by. Although self-other convergence studies raise some issues, the general consensus is that self-other convergence is high enough to continue using self-reports of personality in research as they provide a convenient measurement.

*So how is all this important to the topic of intra-individual personality variability or change?*

Both the nomothetic and idiographic perspectives are important to think about when looking into the person as a whole. There are aspects of our personality that we share, or are similar, and these are often what bring individuals closer together. However, there are distinctly unique aspects of the personality that are influenced by highly personal experiences. In looking at ways that people can vary and ways to modify behaviour both the common and unique ways that the individual behaves need to be considered. The now resolved person-situation debate between personality and social psychology emphasised the importance of both personal and social components in the manifestation of behaviour according to specific contexts.

The person-situation debate was the discussion of what primarily accounts for behaviour; the individual or the social situations they encounter. In the early stages of this debate, personality psychologists took the view that the individual is the cause of their behaviour and that this is where the focus should be. This has been pursued through examining individual differences variables using questionnaires (Carver & White, 1994; Costa & McCrae, 1992; Goldberg, 1992; Hogan, 1986; John, Donahue & Kentle, 1991; Lee & Ashton, 2004 to note a limited selection of prominent questionnaires). The nomothetic approach in personality has the focus on the dispositions of the individual; with consistency in behaviour across situations as support of the person being the predictor of behaviour. Although earlier research into the consistency of personality behaviour also suggested there is considerable inconsistency across personality measurement (Alker, 1972; Dudycha, 1936; Endler, 1973; Hartshone & May, 1928, 1929; Hartshone, May & Shuttleworth, 1930; Newcomb, 1929; all cited from Bem & Allen, 1974). Social psychologists on the other hand took the view that the situation is responsible for the display of particular behaviour. This has been pursued by focusing on participants in highly specific circumstances. Classic

examples of this include Asch (1952) study into social conformity of jury in the courtroom, Darley and Latane (1968) examination of the bystander effect after a serious crime, Milgram (1973) study of obedience in the experimenter-participant context, Tajfel and Turner (1979) examination of social identity in groups, and Zimbardo, Haney, Banks and Jaffe (1971) Stanford prison experiment of obedience and role assimilation. The result of this is that social psychology produces data about contextual effects that leads to the individual performing a particular behaviour as part of a group of people in context.

More modern behavioural genetics research suggests that both genetic and environmental factors influence personality. Loehlin, McCrae, Costa and John (1998) have found the Big-five traits to be influenced by heritable genes and non-shared environmental factors in about a 50:50 split in twin studies ( $N = 807$  pairs of twins,  $n = 490$  monozygotic pairs,  $n = 317$  dizygotic pairs). However, Loehlin, Neiderhiser and Reiss (2003) found that when monozygotic twins (twins who have completely identical genes) are excluded, the impact of the shared environment increases ( $N = 708$  families). Every individual has differing levels of neurotransmission which are uniquely affected by genetic differences in enzymes of synthesis and destruction and in genes coding for enhanced or reduced receptor binding (the genotype). This will influence individual differences in personality traits (the phenotype characteristics). For example, genetic differences leading to increased dopamine presence and lower levels of enzymes or receptors to break it down are associated with trait extraversion (Tochigi et al., 2006) and lower neuroticism (Dragan & Oniszczenko, 2007). Genetic differences leading to increased serotonin presence are associated with greater trait dominance and being less quarrelsome (Moskowitz et al., 2001) and lower neuroticism (Harro et al., 2009). Recent research by Laceulle, Ormel, Aggen, Neale and Kendler (2013) helped confirm how genes impact on trait neuroticism by examining genetic and non-shared environmental influences on trait and state neuroticism. This found that the influence was

split equally on trait neuroticism while non-shared environmental factors had a much greater impact than genes on state neuroticism. Lacey et al. further established that younger twins displayed a greater genetic influence on trait neuroticism while older twins displayed a greater impact of the non-shared environment on trait neuroticism. This suggests that genetic factors are associated with stability in personality while environmental effects are associated with changes in behaviour. Twin studies suggest that both the person (via genetics) and the situation (the non-shared environment) have a substantial influence on behaviour.

Eminent researchers early on suggested that the situation is interpreted according to the person (Bem & Allen, 1974; Kelly, 1955; Mischel, 1973). On this basis both the person and situation circumstances interact. Interactional psychology arose as a research approach to support the interaction of the trait disposition and situation (Bowers, 1973; Diener, Larsen & Emmons, 1984; Ekehammer, 1974; Endler & Magnusson, 1976 to list a few examples of research in this area). Funder (2008) provides an example of how there is an interaction between the person and situation using Milgram (1973) classic obedience study. Funder suggested two different interpretations of the results. One interpretation being that situation prompts towards obedience (the encouragement of the experimenter) were stronger than those towards disobedience (the screams of the learner). The other interpretation was that dispositional nature towards obedience was stronger than disobedience. Funder suggests either interpretation could be right. Milgram (1973) discussed several case examples with a variety of dispositions, where each case stopped obeying at different points in the study. Therefore, it is likely that the situation and trait disposition may have interacted to cause the behavioural outcome of obedience or disobedience in Milgram's study.

Buss (1977) has suggested two ways that the person and situation interact. One way being the individual seeks out situations appropriate to their traits (selection, the environment engaged with as a function of the individual's disposition), which is supported by Emmons,

Diener & Larsen (1986). Alternately, the individual enters a situation and performs behaviour to alter the situation to their requirements (evocation, the individual as a function of their current environment). Buss (1987) discusses a third way the person and situation can interact in terms of manipulation (as well as emphasising the selection and evocation types already referred to) that distinguishes the individual performing behaviour to alter the situation to their requirements as intentional. This is a view where both disposition and situation are important, but the individual is the central active force. However, in some instances higher-order situational influences may be too powerful for the individual to resist. Zimbardo (2007) describes the person-situation-system model, in which the system; a combination of rules, regulations and group identity has a powerful social influence that cannot be resisted by the individual. Recent research conducted by Gurney, McKeown, Churchyard and Howlett (2013) also demonstrates how social identity and dispositional personality traits are associated via dogmatic thinking. Gurney, McKeown, Churchyard and Howlett observed a strong relationship between dogmatism and identity strength, with no significant differences in dogmatism or identity strength between atheist and Christian groups. However, atheists displayed positive relationships of dogmatism to inquisitiveness and unconventionality while Christians displayed a negative relationship of dogmatism to inquisitiveness. This supports the association of system level social identity to certain trait personality behaviour characteristics indirectly via dogmatism. Invariant dogmatic beliefs will lead to invariance in personality behaviour, meaning system level social identity will powerfully influence interactions with people across different groups, particularly with demonized groups (Zimbardo, 2007, pp 3-22). However, Zimbardo suggests many people also have a capacity to regulate their behaviour, overcoming the influences of negative system effects.

The conclusion was drawn from the person-situation debate that both the person and situation matter. You cannot have one without the other. The interaction between person and

situation is particularly important for varied behaviour in terms of behaviour modification. A specific situation may be a personal cue for experimenting with a particular behaviour. Taking this further, specific interpersonal others may cause subtle changes in the personal interpretation of a situation. Kenrick and Funder (1988) suggest that people come into situations with trait dispositions, but regulate their behaviour according to the situation as it develops. Seeking out situations suited to the trait disposition may be the automatic default for most people, but upon finding a suited situation the individual may alter the situation further by situation evocation. Beneficial situational evocation that makes situation selection to the trait personality unnecessary is the ideal outcome of any strategy to increase adaptive intra-individual variability in behaviour, likely developing through a process of intentional manipulations.

Personality research from a nomothetic perspective mainly focuses on personality as being mainly invariant across all experiences which makes personality much easier to operationalize and measure. The researcher does agree that the individual displays a habitual personality style to an extent, but there are so many variants within our individual experience that affect how we should act that being too invariant would not be beneficial. An example of a theory that takes this approach is Reversal theory (Apter, 1984; and Apter, Fontana & Murgatroyd, 1985). Apter suggested four different domains of experience with bipolar dimensions along which we reverse (listed by table 2). Reversal between these domains could be provoked by the situation, frustration or to satiate all possible states. Apter proposed that individuals differ in their capacity to reverse between states, and may show dominance of a particular state, in essence a trait, due to a limited breadth of experience.

Table 2: Apter (1984; Apter et al., 1985) four domains of experience and bipolar dimensions.

Domain	Focus	Bipolar dimension
Means-end	Sense of direction	Telic (serious) - Paratelic (playful)
Rules	How one should behave	Conformist - Negativistic
Transactions	Interaction with others	Mastery-Sympathy
Relationships	Identification with objects of attention	Autic (self-orientated) – Alloic (other orientated)

Research into FIT science and CAPS theory has examined the processes underlying varied behaviour performance. FIT science focuses on how inner cognitive constancies and behavioural flexibility can influence the regulation of varied external behaviour. CAPS theory focuses on how the situation and specific internal and external features may promote varied behavioural responses, along with how feedback influences future behaviour.

#### *Framework for internal transformation (FIT) science*

The framework for internal transformation (FIT) science was proposed by Fletcher and Stead (2000). This suggests that there are three main capacities in behaviour performance:

- Inner FITness, consisting of five dimensions of how the individual thinks:
  - *Awareness*; the degree to which the individual monitors their internal and external world
  - The *Balance* between the degree of effort put into every area of life
  - *Conscience*; the capacity to tell the difference between right and wrong
  - *Fearlessness*; the capacity to think and act without fear
  - *Self-responsibility*; the degree of individual acceptance of accountability for their world.

- Outer FITness; how behaviourally flexible the individual is.
- Emotional FITness; the degree that the individual has anxious and depressed thought and feeling.

Both Inner FITness and Outer FITness form a feedback loop into each other. Being more behaviourally flexible according to environmental circumstances will have an impact on the external feedback the individual receives, and influence their cognitive Inner FITness. Their inner FITness will influence their potential to perform different specific behaviours and be flexible. Emotional FITness is thought to mediate the link between Inner and Outer FITness. Finding a good balance of all five constancies is the ideal result of applying FIT Science in practice. FIT science has been applied in many community and corporate settings; with Inner and Outer FITness found to predict several outcomes including workplace satisfaction and aggression, employment, health, exam performance, family functioning and life engagement (FIT research reports are available from the University of Hertfordshire Psychology department research pages).

### *The cognitive and affective personality system (CAPS) theory*

Mischel and Shoda (1995) advanced the cognitive and affective personality system (CAPS) which is a social–cognitive theory of personality to help explain intra-individual differences in displayed behaviour. This suggests that *if situation x – then behaviour a/if situation y – then behaviour b* profiles are mediated by cognitive and affective processes. The psychological features of a situation are encoded by cognitive affective units (CAUs) which interact and connect to other mediating units in a network between situation and behaviour.



There are five main types of CAU:

- Encodings: Constructs of the self, others and situations.
- Expectancies and beliefs: About the social world and anticipated outcome of the behaviour and self-efficacy.
- Affects: Feelings, emotion and physiological responses.
- Goals and Values: Desirable and aversive outcome based goals and values.
- Competencies and self-regulatory plans: Potential behaviours that can be performed and plans for organising action.

The CAPS theory allows for conscious and automatic behaviour performance with two regulatory systems referred to as the hot and cool regulatory systems. Hot and cool represent the emotional and cognitive elements of regulating behaviour respectively. The hot system underlies automatic and rapidly performed behaviour based on feeling while the cool system performs conscious rational thought before behaviour performance (Metcalf and Mischel, 1999).

There is a huge selection of variables and patterns that could be examined as part of CAPS theory. Anderen and Chen (2002) and Zayas, Shoda and Ayduk (2002) focus on interpersonal relationships in their discussions of personality in the context of dyadic relationships. Both papers elaborated extensive theories of the individual having multiple interpersonal selves that operate with different if situation-then behaviour profiles according to specific relationships with others. Different relational selves and behaviours manifest as primed by contextual interpersonal situation cues. Friesen and Kammarth (2011) examined if-then situation-behaviour profiles in close relationships ( $N = 89$  dyads), by determining individuals 'triggerability' of negative emotional reactions in themselves as well as the

degree to which they think it would trigger a close friend. Friesen and Kammarth developed the If-Then Trigger profile. They used this to demonstrate that if an individual displays greater knowledge about the If-Then Trigger profile of a friend, then there was reduced conflict and increased depth in the relationship. These studies emphasise the importance of understanding interpersonal situational features in determining how the individual should act in different situations. CAPS theory also suggests that consistency and variability can co-exist, with the display of cross-contextual variability according to the situation, and consistency in personality behaviour in that particular situation.

Our capacity to display varied behaviour away from the trait disposition according to our current experiences is what helps us to engage with the different challenges life throws at us. Idiographic approaches such as the Cognitive Affective Personality System and Personal Construct Theory are more open to the possibility that each individual will display intra-individual variation across different situation contexts, and change according to unique experiences. Nomothetic perspectives focus more on the common attributes everyone shares, on which many people are highly invariant in order to retain their identity, or the social validation this common habitual behaviour provides. Using both idiographic and nomothetic methods will capture a greater picture of personality, and how the different nomothetic and idiographic components are related. This is important to find out where the individual needs to vary in order to promote adaptive behaviour and beneficial changes for that person specifically. Some of the research conducted in this programme will examine inter-item and cross-contextual variations in behaviour for commonly shared personality dimensions, so it will be important to use a set of dimensions found to be reliable by previous research. This is so the researcher can determine whether any inter-item variability found between items in a

questionnaire or across repeated state measurements is likely to be accurate, or just caused by measurement error.

The intention of this chapter was to introduce the topic of this research programme which is to develop a greater understanding of intra-individual personality variability. The chapter provided some background and methodological history to the area of personality research, as well as highlighting why it is important to study intra-individual variability in personality. The account of this research programme can now begin.

### *The research questions*

Chapters 2-4 of this thesis review a selection of literature relevant to different types of intra-individual variation in personality, and then discuss a study developed based on this literature to explore the research question. Three studies were conducted which focus on research questions that help determine or clarify the nature of the different types of intra-individual personality variation highlighted in the first research aim:

1) What is the extent of meaningful variability within personality trait test responding? This is looking at the variation in responses people make to different items designed to measure a particular personality trait (inter-item variation). The review of literature in chapter 2 demonstrates the co-existence of both habitual traits and varied responding in personality trait questionnaires. The aim of the study in chapter 2 was to further demonstrate the extent of meaningful inter-item variability. . In particular, it examines the extent to which an individual measure may be unstable due to meaningful or 'true' source of intra-individual, inter-item variation, rather than 'random' measurement error. The study used a behaviour statement trait personality questionnaire in order to establish whether there is meaningful inter-item variation in ratings of different statements within a

personality attribute. This study also examined if the inter-item variability indices were associated with a range of psychological outcomes.

## 2) What predicts intra-individual variability in personality?

Based on previous research into cross-situational consistency/variability (e.g., Fleeson, 2001, 2007; Mischel & Shoda, 1995), it has been established there are intra-individual differences in the display of personality states. Chapter 3 reviews this literature which is often referred to as experience sampling method studies (ESM). The literature review then looks into the role of between subject and within subject (cross-contextual) predictors of this type of intra-individual variability. Cross-contextual variability refers to variation in the displayed personality that is predictable from a particular context. The nature of this cross-contextual variability is then investigated with a diary study that looks into a combination of factors not yet examined together in the literature.

## 3) What is the relative importance of the person and situational factors in personality variability?

The ability to behave differently across a range of interpersonal environments is an important benefit of intra-individual cross-contextual variation. Chapter 4 aimed to establish the impact of interpersonal demands upon intra-individual, cross-contextual, personality variation using personal construct methods. This was examined using the repertory grid technique to elicit individual personal constructs, and collect ratings of interpersonal self and matched significant situational others behaviour on these constructs and other commonly shared trait attributes. Two indicators of cross-contextual variability were established. One indicator was the distances between interpersonal selves, indicating the importance of the personal self. The other indicator was the differing strength of

relationships between these interpersonal selves and matched others, indicating the importance of the situational other. These were examined in relation to psychological outcome measures. Prior to the study, chapter 4 gives an overview of personal construct theory and establishes how it relates to the research reviewed in earlier chapters.

Research question 4 focuses on the second broad aim:

4) How do the different aspects in personality variability help explain why some people are resistant to change, especially with regard to behaviours that are bad for them?

Cross-contextual variability is a critical adaptive need, essential for selecting appropriate behaviour in a range of different contexts and interpersonal situations. By being stuck in habitual behaviour patterns people start to display similar behaviour across situations which may lead to inappropriate responding in other situations. This is discussed in chapter 5 which considers the findings of the first three studies and previously reviewed research. Chapter 6 presents the final study which is derived from this discussion. Study 4 aimed to encourage behaviour different from the individual's dispositional norm, to enhance meaningful and useful intra-individual personality variation with the goal of making the individual less resistant to beneficial changes in behaviour.

The final chapter discusses the implications of this research programme for personality research and behaviour change.

## **Chapter 2: Personality traits and meaningful variation within trait questionnaire responding.**

Much quantitative research in personality has used trait personality questionnaires designed to measure personality as a set of stable dimensions. Research suggesting that personality is a mainly habitual is well established in the literature. However, within these personality traits there are likely specific behaviours in which the individual displays variation from their normal dispositional style. Perhaps due to contextual factors associated with that particular behaviour? This capacity for meaningful intra-individual variation in behaviour needs to be examined more closely. The following review will cover both bases by reviewing research into general habitual trait dispositions, and situation context based measurements of personality traits, as well as response inter-item variability (traitedness) research.

Specifically the review will briefly cover:

- Theories of trait personality.
- Trait personality and co-occurrence with minor and major habit behaviours.

Before discussing more extensively:

- Self-perceived variation in behaviour.
- Trait personality as rated by situational context.
- Traitedness research (intra-individual, inter-item variation in ratings of traits)

*Traditional trait personality theory:*

Trait theories focus on personality as a set of stable behaviour traits (Allport, 1937; Cattell, 1945). Personality as a set of traits is the long standing dominant paradigm in dimensional personality research. The main issue of debate in trait personality research is how many different traits there are. One approach suggests that there are many narrow personality traits which are referred to as lower order factors or minor personality traits (very specific dimensions such as expressive or creative). For example, Cattell (1945) suggested that there were 35 important personality variables that fit a 12 factor structure which eventually went on to become a 16 factor structure (Cattell, Eber & Tatsuoka, 1970). However, much research has considered broader personality dimensions which are referred to as higher order factors or major personality traits. Eysenck (1947) thought that there were three major trait types: extraversion, neuroticism and psychoticism. These traits encase a large selection of habitual behaviours and more specific responses. The Eysenck dimensions are still used in research (usually with an additional lie scale to weed out social desirability). However, the majority of personality trait research has applied the big-five traits (the five factor model; FFM) which are: extraversion, agreeableness, conscientiousness, neuroticism (sometimes reversed as emotional stability) and openness to experience (Tupes & Christal, 1958; Goldberg, 1992; Costa & McCrae, 1992). To briefly summarise these traits: Extraversion describes how outgoing, sociable, and lively a person is. Neuroticism describes how anxious, sad or emotional a person is. Conscientiousness describes how organised and self-controlled a person is. Agreeableness describes how empathetic a person is. Agreeableness has been found to moderate neuroticism (Ode & Robinson, 2007). Openness to experience describes how susceptible people are to artistic or unusual experiences.

Personality traits and positive/negative affect variables are closely intertwined. Extraversion has consistently been associated with positive affect while neuroticism is

associated with negative affect (DeNeve & Cooper, 1998; DeRaad & Kokkonen, 2000; Guetierrez et al., 2005; Harris & Lucia, 2003; Lucas, Le & Dyrenforth, 2008; Watson & Clark, 1992, to list a selection of the work in this area). Burns and Machin (2010) in particular found this pattern in a large sample ( $N = 679$ ), and also that agreeableness and conscientiousness were positively related to positive affect and inversely to negative affect (also supported by Guetierrez et al, 2005). Burns and Machin found openness to experience was positively related to both positive and negative affects. Costa and McCrae (1992) include positive emotion as a facet of extraversion, and various negative affects (including anxiety, angry hostility, depression and vulnerability) as facets of neuroticism.

With regards to motives, Costa and McCrae (1988) examined the Personality Report Form (PRF) needs association to the FFM ( $N = 296$ ). Combinations of needs that form orientation factors suggested that orientation towards work vs. play, aesthetic-intellectual and outgoing, social leadership were strongly positively related to conscientiousness, openness to experience and extraversion respectively. Many of the specific needs loaded onto particular personality traits (or combinations of personality traits). Olson and Weber (2004) found that many social motives (from the Reiss profile of fundamental goals and motivation sensitivities) were related to single traits or combinations of the FFM traits ( $N = 138$ ). This suggests motives and personality traits are intertwined. Engeser and Langens (2010) provide more recent support for the importance of the FFM in social motives (achievement, power, affiliation and avoidance). These motives loaded on the FFM through factor analysis ( $N = 587$ ). Achievement loaded positively on to conscientiousness, power loaded negatively on to agreeableness, affiliation loaded positively on to extraversion and avoidance loaded positively on to neuroticism.

Diener, Emmons, Larsen and Griffiths (1985) developed the Satisfaction with Life Scale (SWLS) which was found to display strong negative correlations with neuroticism and



a moderate positive correlation with sociability. Hayes and Joseph (2003) examined the NEO-FFI traits in relation to three measures of life satisfaction (Oxford Happiness Inventory, Argyle, Martin, & Crossland, 1989; Depression-Happiness Scale, Joseph & Lewis, 1998; and the SWLS) ( $N = 111$ ). Neuroticism negatively predicted all three measures. Conscientiousness positively predicted life satisfaction as measured by the Depression-Happiness and SWL scales while extraversion positively predicted life satisfaction measured by the Oxford Happiness Inventory. Herringer (1997) examined the NEO-PI-R facets of extraversion in relation to life satisfaction between gender ( $N = 162$ ). Assertiveness was the main predictor of life satisfaction for men (gregariousness was positively related in correlation analyses). Positive emotion was the main predictor of life satisfaction for women (warmth was positively related). However, to improve this research other traits important in relation to life satisfaction could have been examined (neuroticism for example). Vittro and Nilsen (2002) did this and found that every neuroticism and extraversion facet (apart from excitement seeking) was related to life satisfaction ( $N = 461$ ). Neuroticism explained eight times more variance in subjective well-being than extraversion in an SEM model. McGregor, McAdams and Little (2006) found that seeking social goals supported by sociable personality traits is associated with greater happiness ( $N = 437$  over three samples). This suggests that in order to be satisfied with life, personality traits which suit the individual's goals need to be displayed.

Lee and Ashton (2004) developed the HEXACO-PI questionnaire (measuring six broad traits each with four facet level scales). This was based on findings from previous trait adjective studies (Ashton, Lee & Son, 2000) which suggested the presence of six traits rather than the traditional five. The broad traits included are measures of the Big-Five and an added dimension of honesty-humility which integrates aspects of the agreeableness and conscientiousness dimensions. To examine the convergent validity of the HEXACO-PI

dimensions, Lee and Ashton compared the HEXACO-PI scales to corresponding IPIP FFM dimensions and primary psychopathy (for honesty-humility reversed). This found the HEXACO traits and facets show strong convergent validity with these comparative variables ( $N = 409$  students). However, Lee and Ashton did not compare the statement facet scales to adjective based trait scales for further convergent validity. Ashton, Lee and Goldberg (2007) produced an IPIP-HEXACO version of the questionnaire using IPIP items. This replicated the six trait model and displayed similar psychometric properties to the HEXACO-PI with a large community sample allowing for greater generalisation of the HEXACO model ( $N = 411$ ).

Digman (1997) suggested a model of two higher order factors that arise from five trait models which he labelled alpha (with emotional stability, agreeableness and conscientiousness loading) and beta (with extraversion and openness to experience loading). This was supported by DeYoung, Peterson and Higgins (2002) who labelled the factors stability and plasticity (extracted from the NEO-PI-R traits). By performing structural equation modelling DeYoung, Peterson and Higgins (2002) found stability was positively related to conformity while plasticity was negatively related to conformity. DeYoung, Peterson and Higgins suggested that some degree of conformity is healthy for social integration (stability), but that some degree of variation is necessary to adapt to novel situations (plasticity). This study compared both community ( $n = 222$ ) and student ( $n = 245$ ) samples allowing for generalisation. Musek (2007, overall  $N = 771$  across 3 samples) provides further support for two-factor structure with decent sample sizes. Musek went as far as suggesting a Big-one general factor of personality that could be extracted from the two higher order factors. Although Ashton, Lee, Goldberg and deVries (2009) suggest the higher order factors are caused by a blended variable model, where lower order facets may display correlations with more than one broad trait. By using the NEO-PI-R, DeYoung, Peterson and

Higgins also examined the relationship of facet level dimensions to conformity scales. Almost every facet was found to significantly relate to impression management and the Eysenck Personality Questionnaire Lie scale. However, at the facet level only the student sample was examined, although this sample was of a decent size.

Within trait personality research most research has been performed using the Big Five as the standard. However, within the past 10 years it has been recognised that using broad dimensions may not reflect behaviours accounted for by highly specific facets of the broad trait between individuals, as found by DeYoung, Peterson and Higgins (2001). More recent research usually explores dimensional personality using broad traits with multiple lower level facets. Much research in this vein has focused primarily on trait and facet level predictions of academic achievement and job performance (Barrick, Mount & Gupta, 2003; DeVries, DeVries & Born, 2011; Dudley, Orvis, Lebiecki & Cortina, 2006; Emerich, Rock, & Trapani, 2006; Nofle & Robins, 2007; O'Connor & Paunonen, 2007; Poropat, 2009). This generally shows that the conscientiousness trait, honesty-humility trait, and their facets, positively predict achievement and job performance. Particular facets often provided stronger predictive effects. Research has been conducted with broad trait and narrow facet scales being examined in relation to a multitude of minor behaviour acts and outcomes.

*Broad traits and narrow facets as predictors of general behaviour acts and outcomes*

Paunonen (1998, 2003), and Paunonen and Ashton (2001) have researched the influence of multi-facet personality trait questionnaires on behaviour acts and outcomes using the Behaviour Report Form. The Behaviour Report Form measures 18 different behaviour acts including buying a lottery ticket, dating frequency, number of parties attended per month, driving speed, ability to play musical instruments and participation in sports. Outcomes measured included an obesity index, prescription medication usage, traffic

violations, alcohol and tobacco consumption, and peer rated intelligence, attractiveness and popularity. Paunonen (1998, 2003) and Paunonen and Ashton (2001) found that the FFM traits and facets, as measured by the NEO-FFI and NEO-PI-R were related to these behaviour acts and outcomes (total  $N = 747$ , average sample size across the three papers was 149). Correlations varied between weak and medium strength (Paunonen, 1998, 2003), with effects increasing substantially in multiple regression analyses (Paunonen & Ashton, 2001). The NEO-PI-R facets accounted for 8% more variance in behaviours than broad traits did in multiple regression analyses.

Paunonen et al., (2003) examined trait and facet measures outside of the Big-Five, in comparison to the Big-Five in predicting several behaviours ( $N= 468$ ), by using the Supernumerary Personality Inventory (Paunonen, 2002), NEO-FFI and Behaviour Report Form. The Supernumerary Personality Inventory measures 10 facets which were used to produce broad traits using factor analysis. This produced the broad factors of Machiavellian (facets: seductiveness, egotism, manipulateness and thriftiness), traditional (conventional, religiosity) and masculine-feminine (femininity, humorousness, integrity and risk-taking). The narrow Supernumerary Personality Inventory facets had the greatest relationship to the Behaviour Report Form behaviours, but this predictive effect was lost with the three higher order broad Supernumerary Personality Inventory traits. The Supernumerary Personality Inventory facets had a greater relationship to behaviours than the NEO-FFI traits too. However, this research could have been improved by using the NEO-PI-R instead of the NEO-FFI as this would have allowed a comparison between the Supernumerary Personality Inventory and the NEO-PI-R at the facet level.

Gruzca and Goldberg (2007) conducted a comparison of the eleven best known inventories, including the NEO-PI-R and HEXACO-PI, for prediction of behaviours falling under the clusters drug use, undependability, friendliness, erudition, communication and

creativity. The data was collected through the Eugene-Springfield community sample ( $N = 759$ ). Gruzca and Goldberg found similar results to Paunonen and Ashton (2001), with the lower order facet measures generally predicting behavioural clusters better than broader traits, as would be expected due to their specificity. Informant reports from three close others of 88 items reflecting the FFM (from the John Big-Five, Benet-Martinez & John, 1998; and Saucier Mini-markers, 1994) were also obtained and compared to the previous Eugene Springfield Community Sample trait data. This found that the NEO-PI-R and HEXACO traits and facets were best at predicting the informant ratings.

The research of Paunonen and Gruzca and Goldberg (2007) provides support for personality trait and facet dimensions being related to many minor behaviour acts and outcomes, with facets often having a stronger predictive effect. Trait personality has also been found to be related to several major habit behaviours including alcohol consumption (Fox et al., 2010; Hopwood et al., 2007), smoking (Leventhal et al., 2007; Vanderveen et al., 2008a, 2008b), food consumption (Fischer, Smith & Cyders, 2008; Goldberg & Stryker, 2002), gambling (Bonnaire et al., 2006; McDaniel & Zuckerman, 2003) and exercise (Hoyt et al., 2009; Rhodes & Smith, 2006). A pattern in this research indicates that for negative habits (alcohol consumption, problematic food consumption, gambling, and smoking) impulsivity appears to be the most important predictor of the habit. For the beneficial exercise habit, greater extraversion and conscientiousness, in particular self-discipline, seem to form the profile (Hoyt et al., 2009; Rhodes & Smith, 2006). However, each habit may have other predictors at the facet level that may fall within the broad trait generally associated with the habit, or more specific attributes that lay outside of that trait predictor (or even model). An example of this was in Goldberg and Stryker (2002) dietary choice research. Most facets predicting dietary choice were openness to experience facets, but there was a sole agreeableness facet (tender-mindedness) that correlated with avoidance of meat fats. This is

important to note as the sub-facets of a personality trait reflect different aspects of the broader trait, on which the person may display intra-individual differences. For example, a seemingly introverted person may be sociable, yet not very expressive, socially bold or lively, they are just the quiet person in their social group. However, this does not mean they do not have the capacity to display some extravert qualities. Some of the negative habit research suggests that impulsivity is a sub-facet of sensation seeking, often referred to as impulsive sensation seeking. Developing alternative ways of fulfilling the need for broad sensations that normally lead to negative impulsive behaviour, such as thrill/adventure seeking or novel experiences, may help alleviate these impulses. Interestingly, none of the habit research has used the HEXACO model. This is surprising as the additional trait of honesty-humility would be expected to be related to sensation seeking and impulsivity. People displaying lower scores of honest-humility (facets: sincere, fair, modest and greed avoidant) would be expected to be more deviant, extravagant and prone to greed. This means they would be expected to seek sensations and act on impulses regardless of the consequences for others. DeVries, deVries and Feij (2009) examined the HEXACO model in relation to sensation seeking (thrill and adventure, experience, boredom susceptibility and disinhibition) and IPIP-risk-taking ( $N = 836$ ). They found modest to strong relationships for all 6 traits, with honesty-humility displaying the 3<sup>rd</sup> strongest set of correlations (openness to experience and extraversion were stronger). This shows the importance of the extra honesty-humility trait in the HEXACO model. DeVries, deVries and Feij devised an equation that best constructed a HEXACO sensation seeking scale from the most important HEXACO facets associated with the four dimensions of sensation seeking. Included in this scale were fearfulness, unconventionality, creativity, social boldness, sociability, fairness, and prudence.

The research reviewed so far in this chapter has shown that trait personality is related to habitual behaviours, and several important broad psychological outcomes including life

satisfaction, motivation, positive and negative affect. The relationship of personality traits to a number of major and minor habits suggests that trait personality may just be a collection of habits itself. But to what degree does variation in personality from the trait disposition occur? Research into self-perceived variation in behaviour, variation in trait ratings according to situation context and traitedness research (intra-individual, inter-item variation in behaviour ratings for traits) will be reviewed to determine this.

*Self perceived variation in behaviour:*

Researchers have explored and advocated theories of self-perceived variation in personality and designed questionnaires or indices to measure this (Altrocchi, 1999). Literature exploring several constructs in the field of self-perceived variation research will be discussed.

Donahue, Robins, Roberts and John (1993) performed research into self-concept differentiation (SCD); the extent that an individual perceives themselves to be variable across roles ( $N = 96$ ). The SCD index (developed by Block, 1961) represents the amount of variance in ratings of personality trait adjectives reported across five interpersonal roles (student, friend, romantic partner, son/daughter and worker), that is not shared (consistent and stable) across all five roles. Donahue et al. found that the SCD index was negatively related to agreeableness, conscientiousness and self-esteem, and positively related to neuroticism and depression. Sheldon, Ryan, Rawsthorne and Ilardi (1997) provide further support for high SCD being associated with negative adjustment (anxiety, depression, stress, low self-esteem). Sheldon, Ryan, Rawsthorne and Ilardi also examined the impact of authenticity on the same outcomes which found reversed associations to SCD, but when SCD and authenticity measures were examined as predictors of psychological well-being outcomes they were found to have independent predictive effects. This suggests that being inconsistent and

authentic are not negatively associated as may be expected based on trait focused approaches, and it raises the possibility that the person can be authentic and inconsistent at the same time. Eysenck and Wild (1996) examined cross situational variability in behaviour using Lennox and Wolfe (1984) Cross Situational Variability scale and found that self-reported cross situational variability was positively related to anxiety ( $N = 81$ ). This is consistent with the SCD research, although this differs from previous research in that reports from a close other were also requested. This found the self and other reports of cross-situational variability were strongly positively correlated, but that the same association with self-report anxiety was not present with the other-report. McReynolds, Altrocchi & House (2000) published an article describing the Self-Pluralism Scale (SPS; originally developed by Altrocchi and McReynolds, 1997) and its relationship to several variables across multiple samples (Overall  $N = 848$ ). McReynolds, Altrocchi and House (2000, pp349) define self-pluralism “as the degree to which one perceives oneself as typically feeling, behaving, and being different, in different situations, and at different times”. The SPS was found to be strongly positively correlated with the SCD while being strongly negatively correlated with self-concept clarity (SCC). This suggests that self-pluralism reflects similar self-perceived variation based on concept of roles across situations. The SPS was also found to be strongly positively related to neuroticism and anxiety while being strongly negatively related to self-esteem. McReynolds et al. (2000) studies used a range of community volunteers and students, emphasising the external validity of the SPS. Clifton and Kuper (2011) examined variability in self-reported Big Five trait ratings when with 30 different individuals using the Ten item Personality Inventory (Gosling, Rentfrow & Swann, 2003), and how this variability was related to types of interpersonal dysfunction. Intra-individual standard deviations calculated for agreeableness, openness and neuroticism were found to have predictive effects on interpersonal ambivalence, aggression and need for social approval. This provides further



support for self-perceived variation in trait ratings across specific interpersonal situations being associated with interpersonal dysfunction. Locke (2006) examined the nature of self-report consistency being associated with greater self-esteem based on the content of the consistency measure (desirable or undesirable attributes). Locke's findings supported consistency being associated with greater self-esteem as many previous studies have found. Although this was found for consistently acknowledging desirable attributes and not acknowledging undesirable attributes across situations. Locke's study suggests that consistency being associated with greater well-being is only relevant to desirable qualities, and not undesirable qualities.

Campbell (1990) explored and developed the construct of self-concept clarity (SCC) which is the individual's understanding of their self-concept. Campbell suggested that people with higher SCC are likely to have a greater knowledge, coherence and stability of the self-concept than those with low SCC. Campbell explored these aspects of SCC in relation to self-esteem, expecting these two constructs to be positively associated. Across the four studies Campbell conducted these various aspects of SCC were found to be positively associated with self-esteem.

Paulhus and Martin (1988) made the distinction between flexibility in social behaviour with a functional purpose and situation dependent changes in social behaviour. This distinction was made during a set of studies where Paulhus and Martin looked into the potential for displaying 16 different types of behaviour (derived from Wiggins, 1979) using four performance measures about each behaviour focused on capability, difficulty, anxiety and avoidance of situations involving the behaviour. Paulhus and Martin refer to the capability measure as the functional flexibility index. Paulhus and Martin (1988) also examined the association of these four performance types to a situationality index which involved rating the same 16 behaviours on a single rating scale that also includes a "depends

on the situation” response option. During the studies conducted they found that the four performance measures loaded onto dimension labelled functional flexibility with capability positively loading, with difficulty, anxiety and avoidance of situations all negatively loading. The situationality index loaded positively onto a separate dimension. The functional flexibility index (capability measure) was found to be positively related to self-esteem while the situationality index was found to be negatively related to self-esteem.

Based on Paulhus and Martin (1988) and Campbell (1990) results, Campbell suggested that low SCC and self-esteem may be associated with susceptibility to situational changeableness while high SCC and self-esteem may be associated with controlled flexibility in social behaviour when it is required. In support of this view a measure of self concept clarity developed by Campbell et al., (1996) has been shown to be positively related to extraversion, agreeableness and positive affect while being negatively related to neuroticism and negative affect ( $N = 1544$  over three samples). This fits with McReynolds, Altrochhi and House (2000) studies where self-pluralism was strongly negatively related to SCC, and positively to neuroticism. This suggests that negative behavioural variability across time may occur through having an unstable self-concept.

Self-complexity, as examined by Linville (1985, 1987) is the number of different representations of the self the individual perceives themselves to display. Each representation is described using sets of personality trait adjectives. In an example Linville (1985) provides that was produced by one participant, an *alone* representation was characterised by relaxed, reflective and quiet adjectives while in the same person a different *with friends* representation was characterised by relaxed, playful, soft-hearted, affectionate and humorous adjectives. Self-complexity score was calculated as lowest number of attributes needed to replicate all the representations produced, with higher self-complexity scores indicating more attributes needed. In these two studies Linville found that self-complexity score was negatively related

to affect variability (the variance of a general affect index across 14 days,  $N = 31$ ), and that higher self-complexity reduces vulnerability to depression and stress ( $N = 106$ ). This suggests that having a greater number of clear, stable self-representations was associated with better emotional adjustment. Rothermund and Meiniger (2004) looked into this further using a similar trait sorting procedure to that developed by Linville to measure the impact of the number of self-representations and the distinctiveness of self-representations on stress (average frequency of self-reported negative life events over the last week) and well-being. This found that complexity measured as the number of self-representations interacts with negative events to reduce the impact of negative events on depression. Self-complexity has also been found to be higher in those who display greater behavioural flexibility (Fletcher, 2007).

Research into the development of self-representations suggests that during development self-representations will become less global and undifferentiated, and more contextualised into role or situation specific representations based on experiences (Damon & Hart, 1999; Harter, 1998, 1999, cited from Diehl & Hay, 2007). This would suggest that people are able to develop a stable set of contextualised self-representations within the self-concept. This allows for varied personality behaviour display across differing contexts, in an adaptive and psychologically healthy way.

Much of the self-perceived variation across roles or situations research suggests that perceiving yourself to vary is associated with being neurotic, anxious or poorly interpersonally adjusted. However, the self concept clarity research indicates having a greater understanding of the self could lead to cross-contextual variation in personality in terms of being behaviourally flexible and psychologically well-adjusted. This is supported by the self-complexity/self-representations research being related to greater emotional adjustment and behavioural flexibility. The difference between these two views depends on whether the

individual displays a more global limited self-concept, in which the individual perceives themselves to display fragmented, unfocused varied behaviour, or a selection of stable contextualised self-representations developed through experience. So the specific individual's perception of variation in behaviour may be healthy or unhealthy depending on the nature of their self-concept structure. People with contextualised self-representations have had the appropriate experiences to develop a healthy selection of contextual representations while those who have not will display a narrow, limited self-concept that has provided little room for flexibility or experimentation in behaviour. Diehl and Hay (2007) conducted a diary study with each participant completing measurements across 30 days into affect and stress with SCD as a between subject variable. Those with low SCD were found to display greater positive affect and positive self-representations as well as lower negative affect, negative self-representations and stress as rated across the diary period than those with a higher SCD. Those with lower SCD also displayed less negative affect variability than those with higher SCD. Based on Linville (1985) this suggests that those with a lower SCD may actually be more self-complex, as Linville found higher self-complexity to be associated with lower affect variability. This would support a stable self-concept with the capacity for multiple contextual self-representations (high self-complexity) in those with low SCD, rather than a limited stability of self-concept as those with high SCD tend to have (supported by the negative relationship between SCD and SCC, and the positive relationship between self-pluralism and SCD found by McReynolds, Altrochhi & House, 2000). It is possible that the negative self-perception of behaviour variability across situations may be limited to individualist Western societies (Choi, Nisbett & Norenzayan, 1999). These pieces of research have been predominantly conducted in individualist societies, where the focus is on the self as stable and the situation as changing while collectivist cultures attribute more to the self

being adaptable to the environment. However, is there research suggesting variability in traits measured across contexts can occur for normal functioning and adaptive purposes?

### *Trait personality and situational context*

#### *Trait relevant behaviours and dispositions in relation to situation context*

Church, Katigbak, Reyes, Salanga, Miramontes and Adams (2008) examined the cross-situational consistency of self-report Big Five traits and trait related behaviours over several paired situation categories using the NEO-PI-R and Daily behaviour report checklist (10 behaviour statements related to each Big Five trait). An example paired situation would be: alone-friend in the relationship category, or work-home in the location category. This was examined with US ( $n = 68$ ) and Filipino students ( $n = 80$ ). For the paired situation categories 49% (US) and 38% (Filipino) displayed significant situational consistency of daily behaviour checklist statements. This consistency is supported by positive correlations of the NEO-PI-R trait scores with the total score of the daily behaviour report checklist scores for the corresponding trait. This finding supports some consistency in trait behaviours displayed across situations, but also indicates that many situations differ with regard to displayed trait behaviours. In particular, extraversion was found to display varied degrees of situational consistency across the paired situation categories. An example pairing involving individuals who are more distant from each other which showed less consistency was with a romantic partner-with stranger for extraverted behaviour. Further research by Church and colleagues (Church, Katigbak & del Prado, 2010) has examined whether participants felt a Big Five trait was suited to particular situations. This used five versions of a Trait-Situation Rating Form, where suitability of the trait to a specific situation was rated for 29 situations. Both US ( $N = 188$ ) and Filipino ( $N = 215$ ) samples were examined, with each participant completing a form for one trait across the 29 situation categories. The traits were found to be rated as differently

suiting across the different situation categories. There was no difference in the pattern of situation suitability across the five traits due to culture. This replicates Church et al., (2008) finding that different situations can promote different displays of personality trait behaviour, rather than traits being completely consistent across situations.

Leszczynski (2009) examined the impact of situational demands (cooperation or competition) and sex on the display of masculinity and femininity personality attributes in an origami figure building task ( $N = 200$ , 100 male, 100 female). Participants were asked to either work co-operatively or competitively when with a same or different sex partner. This study found that masculinity was higher in women when the situation demanded competitive, rather than cooperative behaviour. The situation demand of cooperation led to higher masculinity in men than women. Femininity was higher when women worked in same-sex dyads, than different sex dyads. These findings provide further support for the impact of situation context on personality characteristics.

Robinson (2009) performed research examining the Big-Five traits using the Ten Item Personality Inventory ratings for three different contexts (TIPI-3C): with friends, with parents and with work colleagues ( $N = 305$  students). There were differences in the reported display of personality in each of the 3 contexts. Extraversion and agreeableness in particular displayed differences between all three contexts. When correlations between the contexts (friends- parents, work-friends, work- parents) for each trait were examined the correlations varied between weak and strong. This supported a great range of variability in personality expression across contexts but also a degree of consistency in personality traits. Robinson (2009) suggested that people adapt their personality for different social situations to help fit in, and that consistency and variation coexisting means that traits give “parameters of behaviour within which social variation is possible” (pp206.). Robinson, Wright and Kendall (2011) further examined cross-context trait variability using the TIPI-3C in relation to

parental attachment ( $N = 209$ ). This found being more strongly attached to parents was significantly associated with greater parent context extraversion, agreeableness, conscientiousness, emotional stability and openness to experience. Robinson, Wright and Kendall also found cross-contextual variability indices were associated with greater extraversion and openness while in the friend context, but lower extraversion in the work context, as well as variability being associated with lower emotional stability and agreeableness in the parent context. Based on these findings Robinson, Wright and Kendall suggest that moderate variation across context is associated with adaptive sensibility while extreme variability is pathological and maladaptive. This suggests a positive and negative nature of intra-individual variability across context according to how variable the individual is. Querstret and Robinson (2013) used the TIPI-3C as a screening tool to find eight participants displaying extreme cross-contextual variability, who were interviewed further using a semi-structured interview. This found that these participants had emotional adjustment and identity problems, in support of Robinson, Wright and Kendall previous research. One limitation of the Robinson studies is that only three contexts are examined. Other contexts such as with a romantic partner or being alone could have also been examined.

#### *The frame of reference effect in trait questionnaires*

The frame of reference refers to the way in which the instructions or items on a questionnaire are framed. For example, is there a contextual frame for responding, such as an organisation setting, or is the questionnaire non-contextual. Schmit, Ryan, Stierwalt and Powell (1995) examined the ratings of behaviour for four of the NEO-FFI traits (openness to experience excluded), using different instruction types (general instructions vs. work applicant instructions) and item specificity (non-contextual items vs. work specific items). They found that the work related context in terms of both instructions and items received more positive ratings than non-contextual instructions and items. Higher extraversion,

agreeableness and conscientiousness and lower neuroticism were found for the work applicant instruction type, and the same was found for the work specific items, except there was no difference for extraversion. Schmit et al., also found that conscientiousness traits and facets were more strongly related to GPA when the test items, but not instructions, were set with hypothetical university application context. Bing, Whanger, Davison and Vanhook, (2004) also administered the NEO-PI-R conscientiousness trait and facet scales along with measures of cognitive ability and GPA which replicated the latter finding of Schmit et al.. Bing et al. expanded on this by showing that the use of contextual items strongly positively predicted GPA, even after accounting for the effects of cognitive ability. Hunthausen, Truxillo, Bauer, and Hammer (2003) expanded the frame of reference studies to employed samples, rather than just examining students. Hunthausen et al., examined the frame of reference effect in NEO-FFI data collected from employees of an airline. The findings were consistent with Bing et al., (2004) with extraversion and openness to experience both positively predicting job performance in the at work frame of reference, even after accounting for cognitive ability.

Holtz, Ployhart and Dominguez (2005) examined whether providing information about what the test aims to examine prior to administering the personality test would have an impact on the frame of reference effect. They administered non-contextual and at work versions of NEO-FFI measures for all of the Big Five except openness, and several applicant perception criteria, but there was also conditions where information was provided about the test measurements and what they aim to look at, or was not provided. This used a student sample. Again, they found positive responding for contextualised conscientiousness, agreeableness and neuroticism items (higher agreeableness and conscientiousness and lower neuroticism) in comparison to non-contextual items. Only conscientiousness was affected by the prior information with higher scores for the no information condition, in comparison to



being provided with information, suggesting this may have reduced socially desirable responses.

Smith, Hanges and Dickson (2001) examined previously collected data from the Hogan personality inventory for student, job applicant and already employed samples to see if the five factor structure was consistent across these samples. Smith, Hanges and Dickson suggest the frame of reference or social desirability effects would be expected to increase or decrease the numbers of factors respectively. A five factor structure was found for all three samples. Smith, Hanges and Dickson suggest that no support for the frame of reference effect was found, as no additional ideal employee factor arose for the job applicant context (a mix of agreeable and conscientious items) while fewer factors from consistently positive responding were also not present. However, both of these would require extremes in response consistency in particular to agreeable and conscientious items.

Bowling and Burns (2010) examined the predictive effects of non-contextual and altered work specific measures of four of the IPIP Big Five (except openness to experience as Schmit et al did) on work related outcomes including job satisfaction and frustration, but also non-work related outcomes including life satisfaction and physical health. This study collected a sample of employed people, rather than students. This found that work specific personality measures were more strongly positively related to both work and non-work outcomes than non-contextual measures. Schaffer and Postelthwaite (2012) provide meta-analytical support across 90 studies for contextual questionnaires consistently having greater predictive validity of job performance criteria and reliability, in comparison to non-contextual questionnaires for all of the Big Five traits. Although Birkeland, Manson, Kisamore, Brannick and Smith (2006) suggest this kind of responding may not be completely honest in the job application specific context. Job applicants scored more highly than non-applicants across 33 studies on extraversion ( $d = .11$ ), openness to experience ( $d = .13$ ), emotional

stability ( $d = .44$ ) and conscientiousness ( $d = .45$ ), likely for social desirability purposes. In particular it seems to be emotional stability and conscientiousness scores that are much higher in the job applicant frame of reference based on these average effect sizes.

Studies from both these traditions suggest that trait ratings do vary according to context as self-rated by questionnaires, whether this context is in the form of instructions, categories or items. However, when inter-item responding within trait level is examined in non-contextual trait questionnaires, does behaviour vary at the specific within trait level due to the context implicitly associated with that behaviour? Is there meaningful inter-item variation in behaviour ratings? Research into *traitedness* and *meta-traits* examines this.

### *Traitedness and Metatraits*

Some items within a non-contextual personality scale may be more relevant to certain contexts. For example, some trait conscientiousness items may be more applicable in the work context (e.g., diligence related content) than others (e.g., prudence related content). So it is important to examine the inter-item variation in responding to items within non-contextual personality trait measures. Several researchers have examined inter-item variations using classical test theory and item response theory approaches in specific attributes, an area of study referred to as *traitedness*. High *traitedness* refers to responding very consistently to items reflecting the trait while low *traitedness* indicates displaying variability in ratings of the trait. An early example of variations in behaviour that would be expected to be related was highlighted in Epstein (1979). Although most of the findings supported stability in behaviour, in the third study conducted by Epstein only weak, non-significant correlations were found for some directly observed behaviours that if measured together would be expected to be associated, including number of letters written and number of phone calls made

(communicative behaviours), as well as number of absences from class and number of papers not submitted (non-diligent behaviours).

Baumeister (1991) directly examined inter-item variations within personality measures by using the standard deviation of item responses as an index of inter-item variability. Baumeister examined whether inter-item variation indices derived from measures of self-esteem, self-attention and self-control would display test-retest stability. The standard deviation based inter-item variation indices displayed stabilities of .74, .66 and .69 across two week intervals. These measures of inter-item variation retained test-retest stability, suggesting that they may be meaningful psychological constructs, rather than random measurement error.

Reise and Waller (1993) examined inter-item variability in responses to trait measure content by using an item response theory approach. Reise and Waller administered the Multidimensional Personality Questionnaire to 1000 participants and calculated indices of across trait scalability, where high scorers respond to items as expected by their trait level, and lower scores display more varied responses regardless of trait level. These were calculated for the 11 different traits. This found moderate positive correlations of trait level to scalability indices in the positive outcomes of wellbeing and control, and moderate negative relationships to stress reaction, alienation and aggression. This suggested that low scalability was associated with negative outcomes.

More recent research by Shepherd and Belicki (2008) examined the association of four measures of trait forgiveness and the six traits of the HEXACO-PI, as well as whether traitedness in forgiveness had an impact on these associations. One measure of traitedness was a self-report measure of how likely forgiving someone depends on the situation, the other measure was inter-item variation indices calculated as the standard deviation of item

responses for each trait forgiveness measure. Responding more consistently (higher traitedness) was expected to predict stronger associations between the HEXACO and forgiveness scales. While this study supported the presence of varied degrees of traitedness, it did not find that the degree of traitedness was associated with the relationships of the six HEXACO-PI traits to trait forgiveness measures. However, Shepherd and Belicki suggest that this may have been due to the length of several of the measures used, rather than inter-item variation indices being poor constructs. Two of the four trait forgiveness measures only contained 4 and 5 items while a third was measured with three sub-scales only measuring 6 items each (the fourth measure contained 10 items).

Lievens, De Corte and Schollaert (2008) conducted a study into within subject respondent inconsistency (inter-item variation) whilst applying two frames of reference. In their first study they found no differences in reliability of non-contextual, at work and at school context measures of the Big Five as measured by the IPIP-50 item measure, and 10 item IPIP versions of achievement and self-discipline measures. Lievens, De Corte and Schollaert suggested that as reliabilities were found to be consistent across different frames of reference measured between subjects, then consistency would be more affected by inter-item variations in responding. So in their second study Lievens, De Corte and Schollaert got participants to complete both at work and at school versions of the IPIP-50 conscientiousness trait, and the IPIP measures of achievement and self-discipline. For the analyses, versions of the questionnaire with different combinations of responses from each frame of reference were produced, e.g., a non-context specific version with five at work and five at school items, or a more context specific version with two at work and eight at school items. The analyses found the reliabilities were higher when a larger number of items were consistent with the frame of reference for all three traits measured, e.g., five at work and five at school conscientiousness items displayed lower reliability (.74) than two at work and eight at school conscientiousness

items (.82). This led to Lievens, De Corte and Schollaert concluding that imposing a frame reference on a questionnaire has an effect on reducing the within subject inconsistency displayed with non context specific item responding. They further suggest that in questionnaires with standard instructions, the participant may be providing their own contextual frame of reference based on the item content. It is interesting to note that reliabilities were still adequate for the five items at work and five at school versions of the three questionnaires (between .65 and .77). This study suggests context has an impact on inter-item variation.

Reddock, Biderman, and Nyugen (2011) and Biderman and Reddock (2012) both examined the predictive impact of average inter-item variation indices (based on the average of the standard deviations of item responses across the five IPIP-50 measures) on GPA. Both studies found that the average inter-item variation indices had predictive effects on GPA, even after accounting for cognitive ability and trait conscientiousness. Reddock, Biderman, and Nyugen (2011) applied a within subject comparison of non-contextual and at school frame of reference conditions, and found that the average inter-item variation predictive effect on GPA occurred in both conditions, even after accounting for cognitive ability and trait conscientiousness. Biderman and Reddock (2012) also examined the average inter-item variation index in relation to three psychological outcomes of depression, self-esteem and proactive personality. No relationships were found. These two papers make the argument that inter-item variation is not trait specific as other studies have suggested, but is in fact a general personality attribute of inconsistency.

A potential explanation for traitedness comes from the meta-traits literature. Meta-traits are the individual's personal ability to categorise their particular behaviour as belonging to a trait category (Baumeister & Tice, 1988). Britt (1993) examined inter-item variation indices (the standard deviations across item responses) derived from measures of public self-

consciousness, private self-consciousness, personal identity and social identity in relation to their trait measures in their first study. In their second study trait and inter-item variation indices for extraversion and interpersonal locus of control were examined. This found that those who are traited on both measures displayed stronger relationships than those who are untraited on both. Being untraited on one measure and traited on another led to even weaker correlations. Britt suggested those with low traitedness are thought to view their behaviour less in terms of broad traits. Perhaps those with lower traitedness see things more in terms of contextual self-representations, based on the findings of the previously discussed research that personality ratings differ across contexts. Specific behaviours associated with an attribute may be the reason personality ratings differ according to context, and inter-item variation exists across non-contextual measurements.

Hershberger, Plomin and Pedersen (1995) examined whether there is a genetic influence on meta-trait indices, as well as traits. A wide selection of measures were collected from 474 sets of twins, including measures of Big Five traits and other psychological outcomes including life satisfaction, depression and anxiety (23 measures overall). This found that on average 69% of the genetic influence on meta-traits was shared with trait genetic influence, but 31% was unique to the meta-trait indices. Notably several specific metatraits displayed unique variance greater than 85%, extraversion = 100%, responsibility = 99%, inhibition of aggression = 90% and hostility = 86%. Meta-trait indices being predicted uniquely by genetics supports these being highly valid measures of actual behaviour variation in the trait, rather than solely being an artefact of measurement error. This provides more support for inter-item variation indices relevance as a psychological construct. However, considering the sheer amount of data collected here, it is unsurprising that Hershberger, Plomin and Pedersen could not also report correlations between metatrait indices and different (not corresponding) attributes were conducted.

Dwight, Wolf and Golden (2002) examined a self-report traitedness index of work safety in relation to supervisor reported measures of personal character at work, ability to follow orders and safety behaviour, but also an objective measure of job performance. This was conducted with a sample of 109 employees for a power company. This found that being traited on the work safety measure predicted more positive personal character at work as rated by the supervisor, as well as being associated with higher objective job performance. This suggests that inter-item variation indices can be associated with other reports of character and objective measures, providing an indication of their validity as a psychological construct.

What all these researchers have found in common is that there are inconsistencies in inter-item responses (intra-individual variation in inter-item ratings). However, within these studies only a limited number of associations of inter-item variation indices to other dispositional outcomes have been studied in each case, and do not usually include more than one major outcome such as life satisfaction, depression and anxiety in the same study. Often these studies have just focused on the relationships to GPA, or the relationship of the inter-item variation indices to other inter-item indices, or of the inter-item index to their corresponding trait measure.

The literature suggests that the individual displays general dispositional traits which are associated with other habitual behaviours, but that individual also displays variation in personality to fit the need for a contextual disposition. An attempt will be made to accommodate this literature within a single theory.

*An accommodating theory for the literature reviewed so far*

Self perceived variation research has found relationships between role differentiated personality adjective ratings (the SCD index) to negative adjustment (Donahue et al., 1993;

McReynolds, Altrocchi & House, 2000; Sheldon, Ryan, Rawsthorne & Ilardi, 1997) while research about traits across social context (Church et al., 2008; Church, Katigbak, & del Prado, 2010; Leszczyński (2009); Roberson, 2009; Roberson, Wright & Kendall, 2011), and frames of reference (Bing, Whanger, Davison & Vanhook, 2004; Bowling & Burns, 2010; Holtz, Ployhart & Dominguez, 2005; Hunthausen, Truxillo, Bauer, & Hammer, 2003; and Schmit, Ryan, Stierwalt & Powell, 1995) suggest display or report of different trait dispositions across contexts is part of normal functioning. This suggests that variability in personality can be adaptive or detrimental. Campbell (1990) suggested that high self-concept clarity (SCC) leads to flexible changes in behaviour while low SCC leads to situational changeableness in behaviour (based on prior research by Paulhus & Martin, 1988).

McReynolds, Altrocchi and House (2000) found a strong negative correlation between SCC and self-pluralism supporting this. Alternately, if the individual is more self-complex and has several representations of their personality (Linville, 1985, 1987; Harter, 1998, 1999; Rothermund & Meiniger, 2004); then they could flexibly express behaviour based on a contextual representation that fits their own requirements in the current situation context. This is supported by Fletcher (2007) who found that people who report greater behavioural flexibility also report greater self-complexity. Furthermore, displaying greater behavioural flexibility leads to greater life engagement (Fletcher, 2007), necessary for a satisfying and fulfilling life. If the individual has low SCC or self-complexity, then they will find it harder to be flexible and fit in across environments. This will cause anxiety when they do not fit in, and may lead to varied behaviour based on current situational events in an attempt to fit in.

This fits in with adjustment principles as individuals tend to seek out social environments and situations in which their trait behaviours are adaptive or they can alter displayed states to become adaptive (Buss, 1977). This allows individuals to display behaviour helping them to fit in and affiliate with others. This fits with Campbell et al.,



(1996) finding that SCC was positively related to trait extraversion and agreeableness. The individual with a clearer understanding of their behaviour would be able to display flexibility around their normal personality when it is required. Positive affect acts as a reward reinforcement mechanism for this kind of adaptive behaviour. If an individual participates in a situation where their trait behaviour is not adaptive or they cannot flexibly display a different adaptive state, then anxiety and situational changeableness may result. Those who perceive themselves to vary across different situations have likely been easily changed by the situations they find themselves in as a response to anxiety about not fitting in. In support of this, McReynolds, Altrocchi and House (2000) found self-pluralism was positively related to neuroticism and anxiety. Essentially behavioural flexibility and situation changeableness are positive and negative manifestations of intra-individual variability (represented by Figure 2).

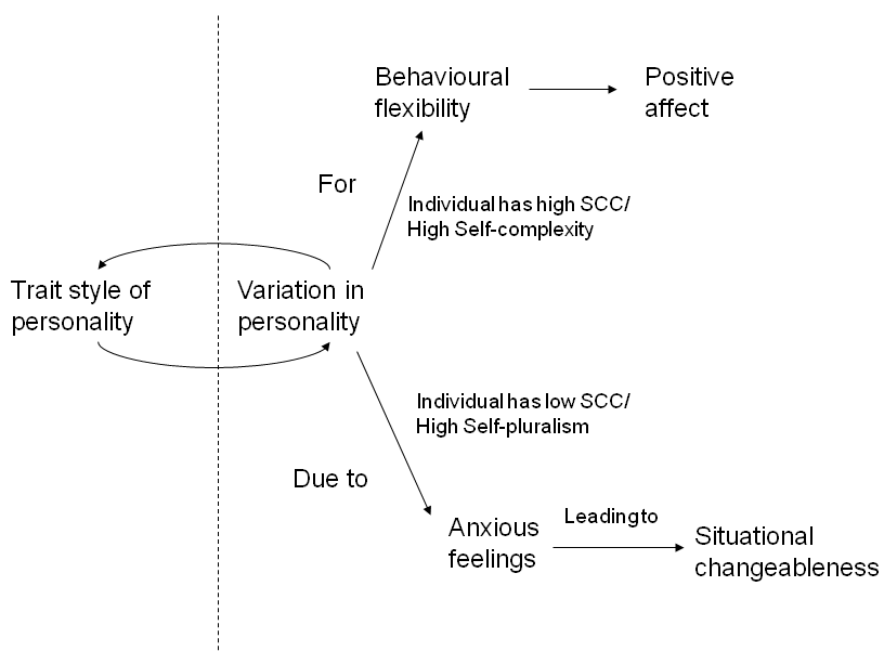


Figure 2: Two explanations for a varied personality.

It has been established that trait personality co-exists with habitual behaviour and predicts positive and negative outcomes, emphasising the habitual nature of personality in research. It has also been established that variation from general trait dispositions can take place in order to adapt to a particular situational context, or due to not fitting in. This raises the interesting point of whether the traits shown to co-occur with habits or outcomes display inter-item variation within the test that is generally not acknowledged by much previous research? Research in the area of traitedness suggests that variation in intra-individual, inter-item ratings of a personality trait does occur (Baumeister, 1991; Biderman & Reddock, 2012; Hershberger, Plomin & Pedersen, 1995; Reddock, Biderman, & Nyugen, 2011; Reise & Waller, 1993; Shepherd & Belicki, 2008) while research from the frame of reference tradition indicates context is important in inter-item responding (Lievens, De Corte & Schollaert, 2008). But how does variability in specific behaviour statement ratings (inter-item variation) within a personality trait or facet relate to the same positive and negative psychological outcomes that traits display? Prior traitedness research has not provided much of a focus on the associations to other major psychological outcomes.

The following study intends to highlight variability in inter-item responding within personality trait and facet variables in a normal population using the HEXACO model. Based on the research reviewed so far, the researcher has decided to apply the HEXACO model of personality (Lee & Ashton, 2004) across this research programme. The reason for this is that five of the six broad traits in the HEXACO constitute the Big Five traits that have been demonstrated to be highly valid and reliable as discussed in chapter 1. The Big Five traits have also been used in much of the literature discussed so far, making this consistent with past research. The additional honesty-humility trait in the HEXACO model was of interest in this research programme in terms of the individual acting authentically. For example, if the individual displays intra-individual variability in personality, yet also indicates they are

acting honestly then this would be an indication of intra-individual variability being authentic personality behaviour. It will also be of interest to see if honesty-humility displays this type of intra-individual variability itself, whether this is inter-item or cross-situational variability. The HEXACO model has been validated by Lee and Ashton (2004), and Ashton, Lee and Goldberg (2007) and is suited for research purposes. There is evidence that the HEXACO model demonstrates good conceptual validity across languages (Lee & Ashton, 2008). The HEXACO model also displays good self-other report convergence, as Lee, Ashton, Morrison, Cordery and Dunlop (2008) have found convergences between .50 (for agreeableness) and .64 (for emotionality). Indices of inter-item variability for each HEXACO trait and facet will be examined in relation to beneficial and detrimental psychological outcomes, to see if they represent meaningful *true* variation in behaviour within the attribute, rather than just being the result of error. If they do represent meaningful variation, then they may reflect developed capacity of behavioural flexibility or situational changeableness from the standard trait disposition.

### **Study 1:**

#### **Same traits, different variance: Within subject variation within personality trait measures**

Trait personality research takes the view that each individual possesses a set of stable traits which can be measured using personality questionnaires (Ashton, Lee & Son, 2000; Costa & McCrae, 1992; Eysenck, 1947; Goldberg, 1992; Lee & Ashton, 2004; Musek, 2007; Tupes & Christal, 1958). Personality traits have been found to be associated with a variety of outcomes and behavioural acts (Gruzca & Goldberg, 2007; Paunonen, 1998, 2003; Paunonen & Ashton, 2001). However, there are reasons to suggest that the pattern of situational responses, as well as habitual trait behaviour may be important (e.g. Digman, 1997; Eysenck,

1947). For example, situation context has been found to have an effect on the reported personality disposition an individual displays (Church et al., 2008; Church, Katigbak & del Pardo, 2010; Leszcynski, 2009; Robinson, 2009; Robinson, Wright & Kendall, 2011). So whilst the measurement and research in personality traits tends to encourage the view that individuals behave highly consistently across situations, in reality, situational demands do influence behavioural responses. The frame of reference for behaviour has been shown to be important. For example, Bing, Whanger, Davison and Vanhook (2004), Bowling and Burns (2010), Holtz, Ployhart and Dominguez (2005), Hunthausen, Truxillo, Bauer, and Hammer (2003), and Schmit, Ryan, Stierwalt and Powell (1995) show that context orientated items and instructions have an effect on item responses. Such contextually dependent behaviour implies and requires the measurement of same subject variations in the true score of a personality attribute which is rarely done or reported. Lievens, De Corte and Schollaert (2008) study is an example linking context to inter-item variations in responding. This component of the true variance, the context-dependent behaviour variations, are usually ignored in trait personality research and erroneously attributed to measurement error. Yet, according to McDonald (1999), measurement error remains moderately invariant in a test. Failing to account for within subject variance means past research may have missed out on meaningful predictable relationships between individual differences and outcomes.

In relation to trait personality tests an additional question is also raised. Past research has found personality traits to be related to other outcomes (Gruzca & Goldberg, 2007; Paunonen, 1998, 2003; Paunonen & Ashton, 2001), but this research has not distinguished between and within subject variances separately. This is understandable given that the focus of trait research is on between subject differences. Although previous research suggests participants display varied levels of consistency between behaviours thought to tap into the same disposition (Baumeister, 1991; Biderman & Reddock, 2012; Reddock, Biderman, &

Nyugen, 2011; Reise & Waller, 1993; Shepherd & Belicki, 2008). Such inter-item variability in responses is compatible with re-test stability (Baumeister, 1991), and is influenced by genetics (Hershberger, Plomin & Pedersen, 1995). This would not be expected, particularly if the inter-item variation is due to measurement error. The research does suggest, therefore, that individuals have the capacity to display behaviour associated with different aspects of a personality dimension in a predictable manner. The meta-traits literature suggests that greater inter-item variation occurs when the individual does not internally represent their behaviour in terms of a trait construct (Baumeister & Tice, 1988; Britt, 1993; Dwight, Wolf & Golden, 2002; Paunonen, 1988). However, this has not been examined in depth in relation to many other positive or negative psychological outcomes. It is surprising that within subject variance between behaviour statement items in personality tests has not been considered more seriously. Part of calculating test reliability through the Cronbach alpha equation (Cronbach, 1951) involves comparing the sum of item variances to the variance of the sum scale. The inter-item correlations that form part of the sum of the item variances represent the degree to which each item shares common true variance. Inter-item correlations are not always very strong (above  $r = .50$ ) even in high reliability tests. Items correlating above  $r = .50$  are likely to be too similar to be useful in a representative trait test for the wide spectrum of behaviours captured by that trait. This supports there being some meaningful true within subject variation in the inter-item ratings.

More recently behavioural flexibility has been shown to relate to personal outcomes such as weight loss and smoking (Fletcher, Hanson, Pine & Page, 2011; Pine & Fletcher, 2011), suggesting that within subject variation may indeed be important for well-being. The question is whether such within subject variation is captured in differential responses to statements representing a personality attribute? Based on the reviewed research this is likely, but does this inter-item variation predict meaningful outcomes?

In order to examine the differences in true variation relative to measurement error, observed variance data for the HEXACO personality attributes will be measured using a behaviour statement questionnaire (Ashton, Lee & Goldberg, 2007). The observed variances are expected to differ between traits/facets, but error is expected to be similar, as it is a characteristic of the test rather than the individual (McDonald, 1999). If the personality measures are found to be reliable in this dataset (a good ratio of observed to true variance), it will suggest that the differences in observed variances will be accounted for by true variation. The within subject component of variation will then be analysed by examining the differences in behaviour statement item ratings for each trait and facet using within subject analyses of variance. Previous research has found varied degrees of association within inter-item ratings, and so it is predicted that more variation will be explained by true within individual differences than error which is expected to be stable. Most within subject inter-item variability research has been limited to a single or few personality attributes, so this research aims to expand this to the entire HEXACO model.

Within subject standard deviations (WS SDs) of statement ratings will be calculated as indices of inter-item variability for each personality trait and facet. A WS SD is the standard deviation of the inter-item variance in ratings displayed by a participant for a specific personality trait. It is predicted that the WS SDs will tap into a similar inter-item variability construct, based on Biderman and Reddock (2012) who found a reliable inconsistent responding construct in their study. If the inter-item variability reflects useful context-specific responsiveness of particular behaviours within the attribute, the WS SDs are expected to correlate positively with the positive outcomes (life satisfaction and sensation seeking), and negatively correlate with the negative outcomes (anxiety, depression, self-pluralism and tendency towards habitual behaviour). For those WS SDs where inter-item

variability of behaviour might be detrimental, the WS SDs were expected to correlate positively with negative outcomes and correlate negatively with positive outcomes.

## **Method**

### **Aims, Research Questions and Hypotheses**

In relation to research question 1 - to examine if there is meaningful variability within inter-item personality trait test responding - there are two subsidiary aims. The first is to establish whether there is variation in inter-item ratings within a personality trait or facet that is not attributable to measurement error. The second is to determine whether this inter-item variation is related to psychological outcomes. This is a way of further demonstrating that this inter-item variation is meaningful.

For the first aim, one of the alternate hypotheses is that there will be differences in observed variances between traits/facets while the other alternate hypothesis is that there will be differences in error variances between traits/facets.

The alternate hypothesis for the second aim is that indices of inter-item variability (WS SDs) will be significantly related to the psychological outcomes measured.

The null hypotheses are that there will be no significant differences or relationships respectively.

### **Participants**

A psychology school subject pool and the community were used to recruit 160 adult participants via opportunity sampling (142 female, 18 male,  $M_{\text{age}} = 24.16$ ,  $SD = 9.54$ , range between 18 and 76). 120 of the participants recruited from the psychology school subject pool for course credit completed all measures (113 female, 7 male,  $M_{\text{age}} = 20.94$ ,  $SD = 4.73$ , range between 18 and 46). For technical reasons, some measures were unavailable for the 40

community volunteer participants, as these 40 participants were collected prior to including the additional measures. An a priori power analysis conducted using G\*Power 3.0.3 (Faul, Erdfelder, Lang, & Buchner, 2007), suggested that 120 participants would provide a statistical power of .80 to detect correlations of  $r = .25$  at an alpha level of .05 (two-tailed). Green (1991) sample size rule for partial correlations ( $N = 104 + k$ ) was more than fulfilled for an approximate power of at least .80 with an overall medium effect size ( $r = .36$ ,  $R^2 = .13$ ). Note:  $k$  is the number of variables (three for partial correlations where trait/facet score is partialled out, four for partial correlations where both trait/facet score and trait/facet score squared are partialled out).

## **Design**

This research used a non-experimental design. Six traits and 24 facets of personality from the HEXACO model (Ashton, Lee & Son, 2000; Lee & Ashton, 2004) were measured (listed in table 3). The psychological outcomes self-pluralism, anxiety, depression, life satisfaction, sensation seeking and tendency towards habitual behaviour were also measured.

## **Measures**

**IPIP-HEXACO Personality Questionnaire.** Developed by Ashton, Lee and Goldberg (2007), the IPIP-HEXACO is based on the HEXACO-PI (Lee & Ashton, 2004). The IPIP-HEXACO measures six traits and 24 facets of personality (as reported in table 3). Each facet consisted of 10 items. Behaviour statement items were rated on a 5-point Likert scale (response options: 1 '*very inaccurate*', 2 '*moderately inaccurate*', 3 '*neither accurate nor inaccurate*', 4 '*moderately accurate*', 5 '*very accurate*') to indicate the extent to which an item is characteristic of the individual. A score between 10 and 50 is yielded for each personality facet. The items were administered in a randomized order. The IPIP-HEXACO has sound psychometric properties with facet scale Cronbach alphas between .69 and .88 ( $M_\alpha$



= .81; Ashton, Lee & Goldberg, 2007). Trait scores were determined as a mean of the 4 facets in each trait. Trait scale reliabilities of the 40 items from the four facets, range between .88 and .92 ( $M_{\alpha} = .90$ ). Reliabilities for this study are reported later in table 5 ( $N = 160$ ). The IPIP-HEXACO is available in the public domain (International personality item pool, 2011). A copy of the IPIP-HEXACO is included as appendix A.

**Sensation seeking score.** Sensation seeking was computed as an outcome based on an equation developed and reported in deVries, deVries and Feij (2009) from the total facet scores for fearfulness, unconventionality, creativity, social boldness, sociability, fairness, and prudence. deVries, deVries and Feij do not list minimum or maximum scores. deVries, deVries and Feij found this score to converge highly with other sensation seeking measures.

**The Self-Pluralism Scale (SPS-30).** The SPS-30 was originally developed by Altrocchi and McReynolds (1997) and consists of 30 items with a *true/false* response that measures the individual perception of how much their behaviour varies across situations. The sum of the 30 items is the Self-Pluralism score (a 0-30 ratio scale, where every response associated with Self-Pluralism was coded 1). The SPS-30 has been found to be highly reliable ( $\alpha = .93$ , McReynolds, Altrocchi & House, 2000). In this study the SPS-30 displayed  $\alpha = .90$  ( $N = 160$ ). A copy of the Self-Pluralism scale is included as appendix B.

**Thoughts and Feelings scale.** The Thoughts and Feelings scale from the FIT Profiler (Fletcher & Stead, 2000), measures frequency of feeling anxious (4 items) and depressed (4 items) (each a 0-12 ratio scale). Items were rated on a 4-point Likert scale (response options: 0 '*never*', 1 '*very rarely*', 2 '*now and again*', 3 '*very frequently/often*'). These have been shown to display high reliability (anxiety  $\alpha = .80$ , depression  $\alpha = .78$ ) and have been validated against several other common measures of anxiety and depression (Sharma, 2010). In this study anxiety and depression were found to display reliabilities of  $\alpha = .76$  and  $\alpha = .82$

( $N = 160$ ). To avoid confusion with the anxiety facet in the IPIP-HEXACO; these two variables are referred to as anxiety(TF) and depression(TF). A copy of the Thoughts and Feelings scale is included as appendix C.

Table 3: The 6 HEXACO personality traits and 24 facets.

Broad personality trait	Four facets within each trait
Honesty-Humility	Sincerity, Fairness, Greed avoidance, Modesty
Emotionality	Fearfulness, Anxiety, Dependence, Sentimentality
Extraversion	Expressiveness, Social boldness, Sociability, Liveliness
Agreeableness	Forgiveness, Gentleness, Flexibility, Patience
Conscientiousness	Organisation, Diligence, Perfectionism, Prudence
Openness to experience	Aesthetic appreciation, Inquisitiveness, Creativity, Unconventional

**Life satisfaction ratings.** Life satisfaction was measured with 17 items ( $n = 120$ ). Five of these items were the item set from the Satisfaction with Life Scale developed by Diener, Emmons, Larsen and Griffin (1985), who found these items to display  $\alpha = .87$ . A copy of Diener et al. Satisfaction with Life items is included as appendix D. Additionally, 12 items were designed by the researcher to measure aspects of life satisfaction as single item indicators. These items tapped into satisfaction with social, family and romantic relationships; happiness and pride with their life, and satisfaction with career. An example item was: ‘I have satisfying social relationships.’ All the items were measured on a Likert scale ranging from 1 ‘*strongly disagree*’ to 7 ‘*strongly agree*’ (the same scale as Diener et al. Satisfaction with Life Scale). These 12 items were found to be highly reliable ( $\alpha = .88$ ). A

copy of these items is included as appendix E. The combination of these 17 items ( $\alpha = .92$ ), is referred to as life satisfaction (an interval score between 17 and 119).

**Tendency towards habitual behaviour ratings.** Three items were designed to measure tendency towards habitual behaviour. These general items were informed by Verplanken and Orbell (2003). The items were measured on a Likert scale ranging from 1 '*strongly disagree*' to 7 '*strongly agree*', giving a scale range between 3 and 21. High scores indicated a greater tendency towards habitual behaviour. An example item was: 'I do not find making changes easy.' The three items displayed a reliability of  $\alpha = .73$ . A copy of these three items is included as appendix F.

## **Procedure**

The participants accessed the study materials using the UK survey hosting site, Bristol online survey via a URL provided by the researcher. The first two pages provided an information sheet followed by a consent form. After providing informed consent, the participant then completed the measures in the order listed in the materials (IPIP-HEXACO, Self-pluralism scale, Thoughts and Feelings scale, Life satisfaction and Tendency towards habitual behaviour). A debriefing sheet appeared after the participant finished completing the set of questionnaires which provided some background information about the study and the measurements used. This study received ethical approval from the University of Hertfordshire Psychology department ethics committee, initial protocol number: PSY/05/10/JC.

## Results

A descriptive analysis of the differences in observed variances in comparison to error variance was conducted. After performing the descriptive comparisons, the degree of within subject variation in behaviour statement ratings was determined using within subject analyses of variance, as the observed variances previously examined also consist of between subjects variation. To determine how meaningful any within subject variation is psychologically, summary indices of within subject variation for each personality attribute were calculated for every participant. These are referred to as within subject standard deviations (WS SDs). These WS SDs were then examined in relation to the psychological outcomes measured using Pearson correlation analyses. The analyses in this study were conducted using SPSS (IBM, 2010).

Table 4 lists the means and standard deviations of the psychological outcome variables. Distribution analyses were conducted to determine whether all the personality and outcome variables were normally distributed. These analyses suggested the data was normally distributed for all variables used in the analyses (the skewness values were all below  $\pm 1.00$ ). To produce these statistics the Descriptive statistics option in SPSS was used. Figure 3 provides an example of a normally distributed facet. Pearson correlations were conducted between the psychological outcomes using the Bivariate correlations option in SPSS which suggested that there are significant correlations between some of these outcomes (see table 5).

Table 4: The descriptive statistics for the psychological outcomes.

Outcome variable	<i>N</i>	<i>M (SD)</i>
Anxiety(TF)	160	6.48 (2.58)
Depression(TF)	160	5.30 (2.91)
Life satisfaction	120	85.71(17.89)
Self-Pluralism	160	9.25 (6.68)
Sensation seeking	160	-0.41 (3.67)*
TTHB	120	12.49(3.69)

*Note:* TTHB = Tendency towards habitual behaviour. All outcomes were normally distributed. \*Sensation seeking minimum value = -10.77, maximum value = 9.38.

Table 5: The correlations between the psychological outcome measures (sample size differs by outcome).

	Life satisfaction ( <i>n</i> = 120)	Sensation seeking ( <i>N</i> = 160)	Anxiety(TF) ( <i>N</i> = 160)	Depression(TF) ( <i>N</i> = 160)	Self-pluralism ( <i>N</i> = 160)	TTHB ( <i>n</i> = 120)
Life satisfaction	1	.19*	-.63***	-.63***	-.61***	-.11
Sensation seeking		1	-.03	.02	.05	-.34***
Anxiety(TF)			1	.83***	.64***	.06
Depression(TF)				1	.57***	.11
Self-pluralism					1	.09
TTHB						1

*Note:* \* $p < .05$  \*\* $p < .01$  \*\*\* $p < .001$ .

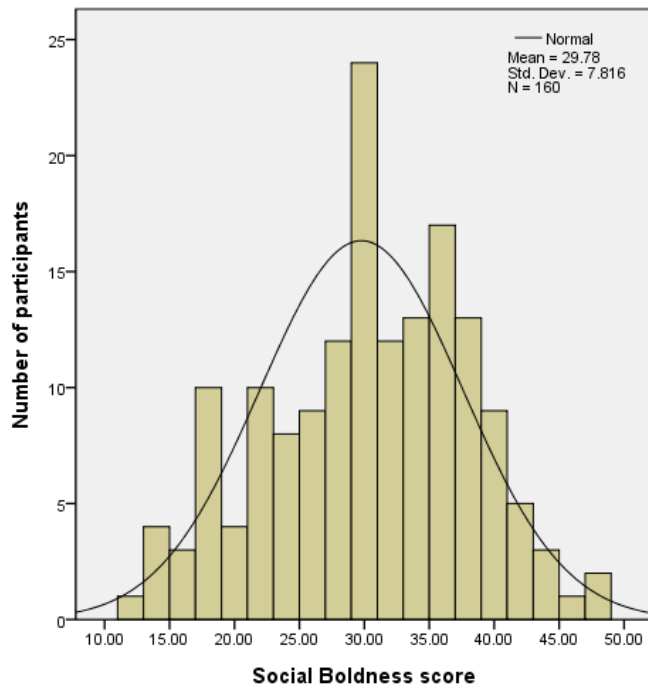


Figure 3: A histogram displaying social boldness score distribution.

### Observed variances and error in the HEXACO traits and facets.

To compare the widths of error CIs (distance between the lower limit to upper limit) as well as error variance, between the traits and facets to the observed variances, three equations were used to calculate the error CI widths.

$$\sigma_E^2 = \sigma_Y^2(1 - \alpha)$$

Equation 1. Calculating error variance.  $\alpha$  represents the Cronbach alpha coefficient.

$$SEM = \sqrt{\sigma_E^2}$$

Equation 2. Calculating the standard error of measurement.

$$95\% \text{ CI } Y = Y \pm (X * SEM)$$

Equation 3. Calculating error confidence intervals (score to upper or lower limit to score).

The formula for calculating error CIs (see McDonald, 1999) states that error variance (calculated using equation 1) is used to determine the standard error of measurement (calculated using equation 2). This is then used to determine CIs (the score to upper limit or lower limit to score) around individual observed scores (calculated using equation 3; where  $X = 1$  for 68% CIs and  $X = 1.96$  for 95% CIs and  $Y =$  observed score). Table 6 lists the mean and standard deviation, observed variance, error variance and 68% error CI width of each HEXACO trait and facet, as well as the Cronbach alpha coefficients (the ratio of observed to true variance, a high average with  $M_{\alpha} = .80$ ). The mean, SD, observed variance and Cronbach Alpha coefficients were obtained from SPSS using the Reliability Analysis options. The equations were used to calculate 68% CIs widths from lower to upper limit, by doubling the results of equation 3. More expansive 95% CI widths can be calculated by multiplying these doubled values by 1.96. The trait mean and observed variance values that have been reported were the result of dividing the original values by 4, as the overall trait score was computed as an average of the four facets in this study.

There were differences in the observed variances between traits ranging from 84.60 (openness to experience) to 164.70 (extraversion), a range of 80.01. There were differences in the observed variances between facets ranging between 31.78 (creativity) and 85.94 (patience), a range of 54.16. Patience showed higher observed variances than the other facets within the agreeableness trait. The organisation and diligence observed variances were greater within conscientiousness. All the extraversion facets displayed greater observed variances than most other facets. For the traits, error variances did not differ much between traits with 8.23 (extraversion) and 10.14 (openness) as the lowest and highest values respectively, a range of 1.91. The range of .07 between the highest and lowest Cronbach alpha values was fairly small for the trait measures (.95 and .88 respectively). Facet 68% error CI widths do not differ much with the lowest facet width equalling 5.74 (extraversion)

and the highest equalling 6.37 (openness). Error variances appeared not to differ much between facets with 6.38 (liveliness) and 10.24 (inquisitiveness) as the lowest and highest values respectively, a range of 3.86. Considering there is a wide range of .19 between the highest and lowest Cronbach alpha values (.92 and .73 respectively), the range of error variances being 3.86 is low. Facet 68% error CI widths do not differ much with the lowest facet width equalling 5.05 (liveliness) and the highest equalling 6.40 (inquisitiveness). Spearman correlation analyses were conducted between error variances and the Cronbach Alpha coefficients (using the Bivariate correlations option in SPSS). There is a strong negative association between error variance and Cronbach alpha (for the six traits,  $r_s(4) = -.89$ ,  $p = .02$ , for the 24 facets,  $r_s(22) = -.73$ ,  $p < .001$ ). This would be expected, but is not a perfect relationship probably due to differences in the observed variance between personality trait/facets, as the error variances were fairly stable across the test. These analyses support the importance of examining facet level measurements as well as broader trait measures. Overall, observed variances from reliable measures differed between the traits/facets while error variance and CI widths were fairly stable. This supports error being characteristic of the test while differences in observed variance are due to true variation. However, these values reflect variance as a whole, rather than just within the subject. The within subject component needs to be examined separately.



Table 6: Mean and standard deviation, Cronbach alphas, observed variances, error variances and error CI widths (68% lower limit to upper limit) calculated for the HEXACO traits and facets.

HEXACO variable	$M(SD)$	$\alpha$	Observed variance $\sigma_Y^2$	Error variance $\sigma_E^2$	Error 68 CI width
T: Honesty-Humility	35.08(4.69)	.89	88.04	9.67	6.22
F: Sincerity	35.31(6.48)	.79	41.93	8.79	5.93
F: Fairness	39.51(5.87)	.74	34.49	8.97	5.99
F: Greed avoidance	30.99(6.12)	.73	37.40	10.11	6.36
F: Modesty	34.50(6.99)	.84	48.88	7.81	5.59
T: Emotionality	34.18(5.24)	.91	110.04	9.89	6.29
F: Fearfulness	32.41(7.14)	.82	50.96	9.18	6.06
F: Anxiety	34.34(7.55)	.86	57.07	7.98	5.65
F: Dependence	32.94(6.60)	.81	43.59	8.29	5.76
F: Sentimentality	37.01(6.14)	.77	37.74	8.67	5.89
T: Extraversion	32.04(6.42)	.95	164.70	8.23	5.74
F: Expressiveness	29.26(7.66)	.83	58.69	9.99	6.32
F: Social Boldness	29.78(7.82)	.87	61.09	7.95	5.64
F: Sociability	35.38(7.69)	.88	59.18	7.10	5.33
F: Liveliness	33.74(7.28)	.87	53.04	6.38	5.05
T: Agreeableness	30.83(5.66)	.93	128.29	8.97	5.99
F: Forgiveness	32.26(5.94)	.74	35.26	9.18	6.06
F: Gentleness	32.83(6.05)	.78	36.63	8.07	5.68
F: Flexibility	29.61(5.82)	.74	33.91	8.82	5.94
F: Patience	28.61(9.27)	.92	85.94	6.86	5.24
T: Conscientiousness	34.32(5.27)	.92	110.97	8.88	5.96
F: Organisation	33.23(7.64)	.85	58.38	8.76	5.92
F: Diligence	35.31(7.07)	.85	50.03	7.51	5.48
F: Perfectionism	36.08(6.13)	.82	37.57	6.76	5.20
F: Prudence	32.66(5.97)	.75	35.60	8.91	5.97
T: OTE	33.15(4.60)	.88	84.60	10.14	6.37

F: AA	34.73(6.11)	.73	37.36	10.08	6.35
F: Creativity	35.43(5.64)	.78	31.78	7.00	5.29
F: Inquisitiveness	33.32(6.28)	.74	39.44	10.24	6.40
F: Unconventionality	29.12(6.36)	.78	40.40	8.88	5.96

*Note:* T = Trait attribute, F = Facet attribute, CI = Confidence interval, OTE = Openness to experience, AA = Aesthetic appreciation. The trait observed variance values reported here are the original values divided by 4 (as the trait score is computed as an average of the four facets), these were then used to calculate error variances.

### **Within subject level variation in each trait and facet.**

Within subject ANOVAs were conducted on the statements tapping into each trait (40 items) and specific facet (10 items) to see whether variation in behaviour statement responses observed for each personality attribute are due to true differences, rather than error. The within subject ANOVA allows for this as it partials out the between subject variation, and examines the within subject variance as separate from between subject variance. These analyses were set up using the Repeated measures option of the General linear model function in SPSS.

The Mauchly test of sphericity for every trait and facet within subject ANOVA suggested heterogeneous variances which would be expected with many different within subject response styles to the behaviour statements. The within subject ANOVA statistics (based on Huynh-Feldt adjustments), for each trait and facet are reported in table 7. The *F* statistics in this analysis represent the ratios of the mean square of differences between behaviour statements and mean square residual error. The results indicate there are significant within subject differences in the rating of behaviour statement items across the sample. Again, the error was found to be stable, with the mean square residual error (MSE) values for every trait being similar ranging between 1.41 and 1.56, and the MSE values for the facets were similar ranging between 0.79 and 1.26. For the traits, the Huynh-Feldt values were

below .75, so multivariate tests were also run based on Hertzvog and Rovine (1985) recommendation. *F* statistics from the multivariate tests are reported for the traits in table 7 which provided slightly reduced *F* statistics. Wilks Lambda effect sizes are reported for these analyses.

Table 7: The within subject ANOVA results for differences in ratings within each trait and facet.

HEXACO variable	<i>N</i> = 160		<i>n</i> = 40	
	<i>F</i> ( <i>df</i> )	Partial- $\eta^2$	<i>F</i> ( <i>df</i> )	Partial- $\eta^2$
T: Honesty-humility	36.37 (39,121)**	.08 <sup>†</sup>	4.84 (39,1)	.01 <sup>†</sup>
F: Sincerity	31.29 (8.17, 1298.98)**	.16	10.98 (7.47, 291.18)**	.22
F: Fairness	47.38 (8.16, 1297.06)**	.23	13.27 (8.16, 318.08)**	.25
F: Greed avoidance	53.33 (8.26, 1313.43)**	.25	11.17 (7.66, 298.62)**	.22
F: Modesty	24.36 (6.64, 1055.02)**	.13	5.77 (5.59, 233.59)**	.13
T: Emotionality	20.01 (39, 121)**	.13 <sup>†</sup>	28.20 (39, 1)	<.01 <sup>†</sup>
F: Fearfulness	28.08 (7.67, 1218.92)**	.15	6.06 (6.39, 249.15)**	.14
F: Anxiety	35.16 (7.83, 1245.57)**	.18	7.95 (7.36, 287.09)**	.17
F: Dependence	34.97 (8.11, 1289.04)**	.18	11.69 (8.64, 336.94)**	.23
F: Sentimentality	12.37 (6.12, 972.41)**	.07	5.53 (4.55, 177.25)**	.12
T: Extraversion	25.19 (39,121)**	.11 <sup>†</sup>	10.09 (39,1)	<.01 <sup>†</sup>
F: Expressiveness	16.63 (7.56, 1202.32)**	.10	3.19 (7.91, 308.47)*	.08
F: Social boldness	60.80 (7.47, 1188.26)**	.28	15.40 (7.45, 290.63)**	.28
F: Sociability	22.02 (8.27, 1314.50)**	.12	7.23 (8.81, 343.53)**	.16
F: Liveliness	43.62 (7.45, 1183.71)**	.22	7.98 (6.71, 261.63)**	.17
T: Agreeableness	26.40 (39,121)**	.11 <sup>†</sup>	1.75 (39,1)	.01 <sup>†</sup>
F: Forgiveness	40.62 (7.13, 1133.02)**	.20	9.66 (6.27, 244.65)**	.20
F: Gentleness	38.05 (8.36, 1329.66)**	.19	10.38 (8.49, 331.09)**	.21
F: Flexibility	24.08 (8.63, 1372.08)**	.13	6.25 (8.51, 331.92)**	.14
F: Patience	19.20 (7.99, 1271.02)**	.11	9.68 (7.34, 286.33)**	.20
T: Conscientiousness	12.68 (39, 121)**	.20 <sup>†</sup>	7.22 (39, 1)	<.01 <sup>†</sup>
F: Organisation	22.11 (7.11, 1130.51)**	.12	9.41 (7.49, 292.20)**	.19

F: Diligence	15.50 (7.79, 1238.76)**	.09	2.90 (7.84, 305.91)*	.07
F: Perfectionism	16.14 (7.78, 1236.88)**	.09	5.60 (7.45, 290.55)**	.13
F: Prudence	17.70 (8.44, 1342.77)**	.10	5.84 (7.89, 307.88)**	.13
T: Openness to experience	22.31 (39, 121)**	.21 <sup>†</sup>	7590.17 (39, 1)*	<.01 <sup>†</sup>
F: Aesthetic appreciation	29.77 (7.76, 1233.96)**	.16	4.42 (8.32, 324.45)**	.10
F: Creativity	18.32 (6.58, 1046.79)**	.10	5.51 (8.07, 314.73)**	.12
F: Inquisitiveness	21.79 (8.13, 1292.61)**	.12	5.48 (6.42, 250.54)**	.12
F: Unconventionality	25.69 (8.15, 1295.06)**	.14	8.44 (8.27, 322.49)**	.18

*Note:* T = Trait, F = Facet. \* $p < .01$  \*\* $p < .001$ . <sup>†</sup> = Wilks Lambda, rather than Partial- $\eta^2$ .

These statistics may be inflated to a degree due to high power, as SPSS treated the data as 160 participants completing 10 conditions/items for facets and 40 for traits. This analysis was also re-run using only the 40 community sample participants. Highly significant differences were still found for all the facet analyses (see table 7). This suggests that the within subject differences in behaviour statement ratings are not just statistical artefact due to the sample size, but are meaningful.

### **The within subject standard deviations (WS SDs).**

It has been established that true variation does differ between personality attributes, and that true within subject variation occurs in ratings for specific behaviours. It is now time to examine whether this within subject inter-item variation in ratings, as an inter-individual difference for each participant, is predictive of psychological outcomes. The within subject standard deviation (WS SD) of ratings for each trait and facet were calculated for each participant. The initial step was to calculate the within subject variance using the conceptual variance equation (equation 4).

$$\sigma_Y^2 = \frac{\sum (Y - \bar{Y})^2}{N}$$

Equation 4: The conceptual variance equation.

In equation 4:

$Y$  is the participant raw score of a single item.

$\bar{Y}$  is the participant mean across all the items (10 for the facets; 40 for the traits)

$N$  is the number of observations per participant (10 for the facets; 40 for the traits).

After the within subject variance was calculated, the square root of this value was used to obtain the WS SD for each participant. The computations required to calculate the participant means across all items (10 for the facets; 40 for the traits), the within subject variance and the WS SDs for each trait and facet were set up and run by using the Compute function and the Syntax editor in SPSS.

Table 8 shows the descriptive statistics for the WS SDs in the full sample ( $N = 160$ ), student subsample ( $n = 120$ ) and community sub-sample ( $n = 40$ ). The WS SD descriptive statistics were produced using the Descriptive statistics option in SPSS, with the student and community subsamples values produced using the split file option. The WS SDs were all normally distributed. Any differences in WS SDs between the full sample, student and community sub-samples were minor. The average WS SD in most traits and facets was close to or greater than 1 which is large on a 5 point rating scale. A reliability analysis to examine whether trait WS SDs and facet WS SDs all tapped into a similar general inter-item variability construct was conducted using the Reliability analysis option in SPSS, with the split file function utilised for the student and community sub-sample analyses. In the full sample the reliability analyses for the 6 trait WS SDs achieved a reliability of  $\alpha = .88$  (in the

student subsample  $\alpha = .86$ , in the community subsample  $\alpha = .91$ ). The analysis for the 24 facets achieved a reliability of  $\alpha = .87$  (in the student subsample  $\alpha = .86$ , in the community subsample  $\alpha = .90$ ). This suggested the WS SDs tap into a variability of inter-item response construct with good ratios of observed to true variance, and little measurement error.

Table 8: Descriptive statistics for the within subject standard deviations (WS SDs).

HEXACO variable	WS SD Mean ( <i>SD</i> )		
	<i>Full N = 160</i>	<i>Student n = 120</i>	<i>Community n = 40</i>
T: Honesty-humility	1.10 (0.22)	1.10(0.21)	1.11(0.23)
F: Sincerity	0.91(0.30)	0.89(0.28)	0.99(0.33)
F: Fairness	0.96(0.34)	0.96(0.34)	0.96 (0.34)
F: Greed avoidance	1.06(0.26)	1.05(0.25)	1.08(0.28)
F: Modesty	0.84(0.29)	0.83(0.28)	0.88 (0.33)
T: Emotionality	1.04(0.22)	1.03(0.22)	1.05 (0.22)
F: Fearfulness	0.95(0.28)	0.94(0.28)	0.98 (0.28)
F: Anxiety	0.90(0.31)	0.91(0.30)	0.84 (0.34)
F: Dependence	0.91(0.27)	0.92(0.25)	0.88 (0.31)
F: Sentimentality	0.84(0.35)	0.82(0.33)	0.88 (0.41)
T: Extraversion	1.02(0.21)	1.02(0.21)	1.04 (0.23)
F: Expressiveness	0.94(0.29)	0.96(0.29)	0.89 (0.27)
F: Social boldness	0.97(0.27)	0.97(0.28)	1.00 (0.24)
F: Sociability	0.82(0.30)	0.82(0.30)	0.79 (0.27)
F: Liveliness	0.82(0.31)	0.81(0.31)	0.85 (0.33)
T: Agreeableness	1.01(0.22)	1.02(0.20)	1.00 (0.27)
F: Forgiveness	0.98(0.28)	0.99(0.28)	0.95 (0.29)
F: Gentleness	0.90(0.28)	0.90(0.27)	0.90 (0.32)
F: Flexibility	0.91(0.29)	0.92(0.29)	0.88 (0.32)
F: Patience	0.79(0.29)	0.78(0.29)	0.81 (0.30)
T: Conscientiousness	0.97(0.22)	0.96(0.22)	1.00 (0.23)
F: Organisation	0.90(0.31)	0.90(0.30)	0.88 (0.34)

F: Diligence	0.81(0.28)	0.80(0.26)	0.84 (0.33)
F: Perfectionism	0.77(0.30)	0.77(0.29)	0.76 (0.32)
F: Prudence	0.90(0.26)	0.89(0.25)	0.92 (0.29)
T: Openness to experience	1.06(0.22)	1.06(0.22)	1.05 (0.23)
F: Aesthetic appreciation	1.00(0.30)	1.02(0.29)	0.93 (0.33)
F: Creativity	0.78(0.28)	0.78(0.27)	0.81 (0.29)
F: Inquisitiveness	0.98(0.30)	0.99(0.30)	0.95 (0.32)
F: Unconventionality	0.93(0.27)	0.92(0.26)	0.97 (0.28)

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The WS SDs were then examined in relation to the psychological outcome variables (self-pluralism, life satisfaction, sensation seeking, anxiety(TF), depression(TF) and tendency towards habitual behaviour).

#### **Correlation analyses between the WS SDs and psychological outcomes.**

The following Pearson correlation analyses were run for each specific WS SD, its total trait/facet score and the psychological outcomes using the Bivariate correlations option in SPSS. The analyses with  $N=160$  on outcome measures were run separately to those with  $n=120$ . Table 9 displays the correlations between the WS SD values for each trait/facet and the outcome variables. Many negative correlations were found between the WS SDs and trait/facet score (ranging between  $-.17$  and  $-.45$ ), suggesting that WS SDs reflect an opposing varied behaviour style for these particular attributes. The expressiveness and patience WS SDs show positive relationships with the respective trait/facet scores. Correlations between WS SDs and outcomes ranged between  $.16$  and  $.36$ . As some of these effect sizes were modest, bootstrapping analyses of WS SDs (based on 1000 simulated resamples) in relation to an outcome were conducted to help determine whether these findings were due to chance in this sample or are meaningful. If the confidence interval covered  $r = .00$ , this means the correlation lost significance. This was conducted by ticking the Perform Bootstrapping

command of the Bootstrap option within the Bivariate correlations option of SPSS. This resulted in a few of the correlations losing significance, although most retained significance suggesting the majority are meaningful significant relationships.

Partial correlations between the WS SDs and outcomes controlling for the trait/facet score were conducted using the Partial correlations option in SPSS. Table 10 displays the correlations between the WS SD values and the outcome variables when partialling out the trait/facet score. Two positive relationships to life satisfaction surfaced, with the extraversion WS SD,  $r(117) = .19, p = .04$ , and social boldness WS SD,  $r(117) = .22, p = .02$ . Several relationships lost significance - between honesty-humility facet WS SDs and outcomes, although the sincerity WS SD and anxiety relationship retained significance,  $r(157) = .18, p = .02$ . Most of the agreeableness facet relationships lost significance, although the flexibility WS SD to sensation seeking increased,  $r(157) = .17, p = .04$ . Most of the conscientiousness WS SD relationships decreased in strength, but still retained significance, with self-pluralism  $r(157) = .30, p < .001$ , with anxiety  $r(157) = .30, p < .001$ , depression  $r(157) = .29, p < .001$  (those related to negative psychological outcomes). The conscientiousness facet WS SDs were still significantly related to the outcomes, when the facet total score was partialled out. The organisation WS SD with self-pluralism,  $r(157) = .18, p = .03$ , with anxiety,  $r(157) = .17, p = .03$ , with depression,  $r(157) = .17, p = .04$ , and with sensation seeking,  $r(157) = -.17, p = .03$ . The prudence WS SD with self-pluralism,  $r(157) = .19, p = .02$ , with anxiety,  $r(157) = .19, p = .02$ , and with depression,  $r(157) = .22, p = .005$ . The expressiveness WS SD relationship to life satisfaction decreased,  $r(117) = .21, p = .02$ , as did the emotionality WS SD relationship to sensation seeking,  $r(157) = .21, p = .01$ , however both retained significance. All of these significant relationships retained significance after bootstrapping analyses.



Partial correlations between the WS SDs and outcomes, were then conducted when controlling for the trait/facet score and trait/facet score squared. Partialling out the trait/facet score squared helps to further account for the potential effects of participant traitedness on these relationships. Table 11 displays the correlations between the WS SD values and the outcome variables when partialling out the trait/facet score and trait/facet score squared. When compared to the correlations partialling out just trait/facet score, the relationship between the sincerity WS SD and self-pluralism regained significance,  $r(156) = .17, p = .03$ . The relationship of the sincerity WS SD to anxiety increased to  $r(156) = .20, p = .01$ . The relationship of the emotionality WS SD to sensation seeking remained the same at  $r(156) = .21, p = .007$ . The relationships of extraversion and expressiveness WS SDs to life satisfaction lost significance, but the relationship of the social boldness WS SD to life satisfaction remained significant,  $r(116) = .18, p = .048$ . In terms of the agreeableness facets, the relationship of the flexibility WS SD to sensation seeking lost significance, but a weak relationship of the patience WS SD to depression surfaced,  $r(156) = .16, p = .045$ . The conscientiousness WS SD relationships remained the same, with self-pluralism  $r(156) = .30, p < .001$ , with anxiety  $r(156) = .30, p < .001$ , depression  $r(156) = .29, p < .001$ . The organisation WS SD relationships to negative outcomes increased slightly, with self-pluralism,  $r(156) = .19, p = .02$ , with anxiety,  $r(156) = .21, p = .009$ , with depression,  $r(156) = .18, p = .02$ . However, the organisation WS SD relationship to sensation seeking lost significance. The prudence WS SD relationships with negative outcomes displayed minimal change with self-pluralism,  $r(156) = .19, p = .02$ , with anxiety,  $r(156) = .18, p = .02$ , and with depression,  $r(156) = .21, p = .007$ . All of these significant relationships retained significance after bootstrapping analyses, except for the social boldness WS SD and life satisfaction relationship.

Table 9: The correlations between the within subject standard deviations, the trait/facet scores and outcome variables (sample size differs by outcome).

WS SDs	Trait/facet score	Life satisfaction	Self-pluralism	Anxiety (TF)	Depression (TF)	Sensation seeking	TTHB
T: Honesty-humility	-.17** <sup>†</sup>	-.13	.16* <sup>†</sup>	.16*	.16*	.07	.04
F: Sincerity	-.29*** <sup>†</sup>	-.12	.26*** <sup>†</sup>	.27*** <sup>†</sup>	.16*	-.10	.20*
F: Fairness	-.42*** <sup>†</sup>	-.19*	.03	.06	.13	.17*	.03
F: Greed avoidance	-.03	-.01	.10	.05	.06	-.07	.15
F: Modesty	-.15	-.14	.15	.09	.10	.06	.02
T: Emotionality	-.15	.14	-.06	-.02	.01	.25** <sup>†</sup>	-.09
F: Fearfulness	-.09	.05	-.03	.06	.06	.09	-.05
F: Anxiety	.00	.06	.02	.00	.01	.08	-.02
F: Dependence	-.05	.15	-.11	-.02	-.06	-.09	-.03
F: Sentimentality	-.45*** <sup>†</sup>	.10	-.09	.05	.08	.16*	.01
T: Extraversion	-.07	.08	-.06	-.02	-.03	-.13	.17
F: Expressiveness	.36*** <sup>†</sup>	.35*** <sup>†</sup>	-.18* <sup>†</sup>	-.21** <sup>†</sup>	-.23** <sup>†</sup>	.11	.00
F: Social boldness	-.01	.17	-.02	-.03	-.01	-.07	.03
F: Sociability	-.35*** <sup>†</sup>	-.13	.14	.19* <sup>†</sup>	.19* <sup>†</sup>	-.06	.17
F: Liveliness	-.32*** <sup>†</sup>	-.28*** <sup>†</sup>	.13	.14	.15	.06	.12
T: Agreeableness	-.29*** <sup>†</sup>	-.10	.14	.15	.18* <sup>†</sup>	.14	.13
F: Forgiveness	-.09	-.05	.13	.16*	.16*	.07	.15
F: Gentleness	-.37*** <sup>†</sup>	-.18	.13	.11	.10	.14	.09
F: Flexibility	-.03	.11	.02	-.04	-.01	.16*	.01
F: Patience	.18*	.08	-.08	.06	.08	-.04	.00
T: Conscientiousness	-.31*** <sup>†</sup>	-.20*	.34*** <sup>†</sup>	.36*** <sup>†</sup>	.35*** <sup>†</sup>	.10	.14
F: Organisation	-.33*** <sup>†</sup>	-.05	.21** <sup>†</sup>	.22** <sup>†</sup>	.20* <sup>†</sup>	-.06	.13
F: Diligence	-.44*** <sup>†</sup>	-.16	.14	.16	.15	.06	.06
F: Perfectionism	-.42*** <sup>†</sup>	.00	-.01	.05	.04	.03	.11
F: Prudence	-.14	-.13	.23** <sup>†</sup>	.23** <sup>†</sup>	.26*** <sup>†</sup>	.00	.10
T: OTE	-.05	.05	.01	.10	.10	-.07	.09

F: AA	-.26*** <sup>†</sup>	.06	-.01	.11	.05	.04	.13
F: Creativity	-.26*** <sup>†</sup>	-.20* <sup>†</sup>	.07	.10	.10	-.13	.11
F: Inquisitiveness	-.30*** <sup>†</sup>	-.06	.04	.10	.07	.03	.10
F: Unconventionality	-.12	.06	.09	.05	.03	-.06	.06

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*Note:* TTHB = Tendency towards habitual behaviour. WS SD = Within subject standard deviation. T = WS SD based on a trait. F = WS SD based on a facet. OTE = Openness to experience. AA = Aesthetic appreciation. For correlations involving life satisfaction and TTHB  $n = 120$ ; all other correlations  $N = 160$ . \* =  $p < .05$ , \*\* =  $p < .01$ , \*\*\* =  $p < .001$ , <sup>†</sup> =  $p < .05$  after bootstrapping.

Table 10: The partial correlations between within subject standard deviations and outcome variables when partialling out the trait/facet scores (sample size differs by outcome).

WS SDs	Life satisfaction	Self-pluralism	Anxiety(TF)	Depression (TF)	Sensation seeking	TTHB
T: Honesty-humility	-.08	.11	.12	.13	.01	.06
F: Sincerity	.03	.14	.18* <sup>†</sup>	.09	-.09	.17
F: Fairness	-.10	-.04	-.02	.07	-.01	.07
F: Greed avoidance	.00	.10	.05	.06	-.07	.16
F: Modesty	-.15	.13	.08	.10	-.01	.05
T: Emotionality	.07	-.01	.03	.04	.21** <sup>†</sup>	-.03
F: Fearfulness	.02	-.02	.07	.07	.04	.00
F: Anxiety	-.02	.02	.00	.01	.08	.04
F: Dependence	.12	-.10	-.01	-.05	-.10	-.02
F: Sentimentality	.06	-.01	.11	.12	.11	.05
T: Extraversion	.19* <sup>†</sup>	-.09	-.07	-.07	-.11	.15
F: Expressiveness	.21* <sup>†</sup>	-.13	-.12	-.15	-.03	.08
F: Social boldness	.22* <sup>†</sup>	-.02	-.03	-.01	-.08	.02
F: Sociability	.12	.04	.06	.06	.01	.10
F: Liveliness	-.02	-.04	-.05	-.03	.14	.04
T: Agreeableness	.03	.01	.03	.07	.14	.08
F: Forgiveness	-.03	.11	.15	.14	.07	.13
F: Gentleness	-.03	-.05	-.04	-.03	.15	.04
F: Flexibility	.10	.02	-.06	.03	.17* <sup>†</sup>	.01
F: Patience	.01	-.01	.14	.15	-.04	.03
T: Conscientiousness	-.08	.30*** <sup>†</sup>	.30*** <sup>†</sup>	.29*** <sup>†</sup>	.00	.12
F: Organisation	.05	.18* <sup>†</sup>	.17* <sup>†</sup>	.17* <sup>†</sup>	-.17* <sup>†</sup>	.14
F: Diligence	.05	.03	.01	.01	.00	.00
F: Perfectionism	.06	.04	.06	.06	.00	.11
F: Prudence	-.08	.19* <sup>†</sup>	.19* <sup>†</sup>	.22** <sup>†</sup>	-.07	.09
T: Openness to experience	.05	.02	.10	.09	-.04	.10

F: Aesthetic appreciation	.10	-.02	.09	.04	.13	.11
F: Creativity	-.15	.05	.06	.07	.03	.07
F: Inquisitiveness	-.02	.02	.06	.05	.11	.07
F: Unconventionality	.04	.12	.08	.05	.03	.03

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*Note:* For correlations involving life satisfaction and TTHB  $n = 120$ ; all other correlations  $N = 160$ . \*

$= p < .05$  \*\* =  $p < .01$  \*\*\* =  $p < .001$ . † =  $p < .05$  after bootstrapping.

Table 11: Partial correlations between within subject standard deviations and outcome variables when partialling out the trait/facet scores and trait/facet score squared (sample size differs by outcome).

WS SDs	Life satisfaction	Self-pluralism	Anxiety(TF)	Depression (TF)	Sensation seeking	TTHB
T: Honesty-humility	-.08	.10	.12	.14	.02	.06
F: Sincerity	-.03	.17* <sup>†</sup>	.20* <sup>†</sup>	.13	-.07	.16
F: Fairness	-.06	-.08	.00	.06	-.04	.07
F: Greed avoidance	-.02	.11	.07	.08	-.08	.15
F: Modesty	-.10	.09	.07	.12	.01	.01
T: Emotionality	.05	.00	.05	.06	.21** <sup>†</sup>	-.03
F: Fearfulness	.04	.00	.07	.06	.09	.03
F: Anxiety	-.08	.10	.08	.08	.11	.06
F: Dependence	.03	-.05	.05	.00	-.03	-.05
F: Sentimentality	.02	.02	.14	.15	.14	.06
T: Extraversion	.17	-.08	-.05	-.05	-.10	-.14
F: Expressiveness	.16	-.12	-.06	-.06	-.04	.06
F: Social boldness	.18*	.00	-.01	.02	-.07	.02
F: Sociability	.11	.01	.08	.09	.00	.05
F: Liveliness	-.03	-.01	-.01	.01	.13	.04
T: Agreeableness	.02	.01	.03	.07	.13	.11
F: Forgiveness	-.03	.10	.13	.15	.08	.13
F: Gentleness	-.03	-.07	-.05	-.03	.09	.08
F: Flexibility	.08	.00	-.04	-.01	.11	.04
F: Patience	-.09	.03	.15	.16* <sup>†</sup>	-.04	.18
T: Conscientiousness	-.08	.30*** <sup>†</sup>	.30*** <sup>†</sup>	.29*** <sup>†</sup>	.00	.13
F: Organisation	.03	.19* <sup>†</sup>	.21** <sup>†</sup>	.18* <sup>†</sup>	-.13	.15
F: Diligence	.03	.07	.07	.07	-.01	.00
F: Perfectionism	.05	.05	.07	.05	-.01	.11
F: Prudence	-.08	.19* <sup>†</sup>	.18* <sup>†</sup>	.21** <sup>†</sup>	-.06	.11
T: Openness to experience	.02	.03	.12	.10	-.05	.10

F: Aesthetic appreciation	.08	.02	.13	.08	.13	.10
F: Creativity	-.16	.08	.08	.09	.04	.08
F: Inquisitiveness	-.01	.05	.10	.08	.11	.06
F: Unconventionality	.03	.11	.07	.05	.02	.03

*Note:* For correlations involving life satisfaction and TTHB  $n = 120$ ; all other correlations  $N = 160$ . \* =  $p < .05$ , \*\* =  $p < .01$ , \*\*\* =  $p < .001$ , † =  $p < .05$  after bootstrapping (1000 simulated resamples).

As a large number of correlation analyses have been performed during this study it is possible that there may be some false positives (an issue discussed by Sherman & Funder, 2009).

Therefore these correlation analyses could be interpreted at the significance level  $p = .01$  to reduce the possibility of false positives.

If interpreted at  $p = .01$  the following correlations (without any partialling, presented in table 9) lose significance:

- The three positive correlations between the honesty-humility WS SD and self-pluralism, anxiety and depression.
- The sincerity WS SD positive correlation with depression.
- The fairness WS SD the negative correlation to life satisfaction and positive correlation to sensation seeking.
- The positive correlation between the sentimentality WS SD and sensation seeking.
- The negative correlation between the expressiveness WS SD and self-pluralism
- The two positive correlations between the sociability WS SD with anxiety and depression.
- The agreeableness WS SD positive correlation with depression.
- The forgiveness WS SD positive correlations with anxiety and depression.
- The flexibility WS SD positive correlation with sensation seeking.
- The conscientiousness WS SD negative correlation to life satisfaction.
- The organisation WS SD positive correlation to depression.
- The creativity WS SD negative correlation to life satisfaction.

If interpreted at  $p = .01$  the following correlations (when partialling out trait/facet score, presented in table 10) lose significance:

- The positive partial correlation between the sincerity WS SD and anxiety.
- The positive partial correlations between life satisfaction and the extraversion, expressiveness and social boldness WS SDs.
- The flexibility WS SD positive partial correlation with sensation seeking.
- The organisation WS SD positive partial correlations to self-pluralism, anxiety and depression and the significant negative partial correlation with sensation seeking.
- The prudence WS SD positive partial correlations to self-pluralism and anxiety.

If interpreted at  $p = .01$  the following correlations (when partialling out trait/facet score and trait/facet score squared, presented in table 11) lose significance:

- The two positive partial correlations between the sincerity WS SD with self-pluralism and anxiety.
- The social boldness WS SD positive partial correlation to life satisfaction.
- The patience WS SD positive partial correlation to depression.
- The organisation WS SD positive partial correlations to self-pluralism and depression.
- The prudence WS SD positive partial correlations to self-pluralism and anxiety.

Although a lot correlations lose significance, there are still many that retain significance at  $p = .01$ .



## Discussion

This study was conducted in order to determine the importance of within subject variation in personality trait tests. The results show strong support for the prediction that there are meaningful within subject inter-item variations between personality test behaviour statement items, at both the trait and facet level which are not simply due to error. These inter-item variations are also associated with a range of psychological outcomes.

The error variances and 68% error CI widths suggested that error is a stable characteristic of the test while the observed variances differed. The facet observed variance patterns indicated that stand alone facets contributed to the broader trait variances, except in the case of extraversion, where every facet variance was wide. The fact that there are relatively smaller differences between the error variances and CI widths, in comparison to the reliable observed variances, is significant for personality psychometrics which generally ignores the likelihood that variation in item ratings or scoring may be meaningful. Within subject ANOVAs of the items revealed that there were significant differences in the within subject item ratings, whether in the full sample or a smaller community sub-sample. These analyses support previous research suggesting there is inter-item variability (Baumeister, 1991; Biderman & Reddock, 2012; Dudycha, 1936; Hershberger, Plomin & Pedersen, 1995; Reddock, Biderman, & Nyugen, 2011; Reise & Waller, 1993). This suggests that not all behaviours that tap into a disposition are consistently displayed by an individual - people can and do display behaviour within a trait or facet differently. Based on the heterogeneous variances between items within a trait or facet, and the error remaining stable across the test, individual response styles were displayed. Based on these findings the alternate hypotheses that there will be differences in observed variances between traits/facets can be accepted. The other alternate hypothesis that there will be differences in error variances between

traits/facets is rejected. The research here supports the need to take account of the true variation in responses to scale items ignored in the vast bulk of personality research.

When the WS SDs were calculated and examined in relation to psychological outcomes relationships were found with positive and negative outcomes, many of which were independent of trait scores. It is difficult to completely remove measurement error, but the Cronbach Alpha reliability values suggested the indices calculated predominantly reflect true variation. The pattern for the correlations was that many relationships lost significance when partialling out trait score, then trait score squared. There were many negative relationships for life satisfaction. This was expected as the IPIP-HEXACO scale orientation is mainly towards positive functioning. However, the expressiveness WS SD displayed the opposite with life satisfaction; and some WS SDs were positively related to sensation seeking. This suggests that WS SDs can reflect the beneficial impact of varied behaviour as well as the negative. As the WS SDs are calculated from the same items used to calculate the trait/facet score, confounding of measures is an issue. However, many relationships remained even after partialling out both trait/facet score and trait/facet score squared. Overall, the findings suggest the alternate hypothesis that indices of inter-item variability (WS SDs) will be significantly related to meaningful psychological outcomes was partially supported. Some relationships came out significant while many others did not. These results supported Britt (1993) finding in his study that one outcome being untraited and the other outcome being traited would lead to substantially lower correlations. If considered altogether the impact of WS SDs on outcomes is considerable. Each individual has their idiosyncrasies in terms of behaviour variation, and will likely display a combination of several WS SDs.

It is possible that a participant with a midpoint trait score might have a small or large WS SD, depending on whether they responded in a varied way or used the midpoint response repeatedly. These are important factors which emphasise the need to calculate WS SDs

separately to trait/facet scores as was done here. Other researchers in this area may find examining within subject variation in responding, as well as the between subject variation in scores valuable in their own data for surfacing new relationships or for checking data quality.

This study suggests that analyses of trait personality tests need to examine within subject inter-item variation as well as the between subject variation. Individuals may display behaviours relevant to a trait to different degrees based on specific facet level content variations, or intra-individual inter-item variations within the facet itself. Moreover, the degree to which the individual displays these inter-item variations can impact upon psychological outcomes. At present, most personality research focuses on the positive functioning of the stable trait personality, and views varied behaviour as having a solely negative impact. The research here indicates that inter-item variability in ratings may have both positive and negative outcomes, depending on the attribute that varies. Although many of these relationships in the correlation analyses were modest, bootstrapping resampling analyses helped confirm that the majority of these are meaningful relationships. Furthermore, as well as discriminately correlating with certain psychological outcomes, these indices were found to tap into a similar dimension of inter-item variability. This gives these indices of inter-item variability some conceptual validity.

The question remains as to whether meaningful inter-item variations in questionnaire ratings shown here represent real variation in displayed behaviour. The study reported here cannot answer this question, although it does provide grounds for being more optimistic about the value of self-report data that is commonplace in this area. If there are grounds for distinguishing between psychologically meaningful true variation and stable test based error, perhaps we can be more confident that the meaningful inter-item variations will reflect actual behaviour. The fact that the majority of WS SDs did not show any relationship to self-pluralism ratings (self perceived variation) is additional indirect evidence. These findings can

be applied in the administration of behaviour statement based trait questionnaires to help indicate whether a person displays variability in behaviour, rather than solely examining trait dispositions in future research. Application of these analysis techniques would give a good indication of each individual's display of variation in a specific attribute for a single measurement occasion.

### *Strengths and limitations*

All the measures used in this study were shown to be reliable according to Cronbach alphas. This is important here since the study was interested in comparing the true aspect of variance in descriptive terms. At least 10 statements or items were available to calculate the WS SDs for each trait, providing the WS SDs with validity as an index of inter-item variability.

The sample size provided decent statistical power to find significant findings for the correlation analyses. Although the sample collected did contain mostly female participants, so there could be a bias with the results potentially being more relevant to the female population rather than males or mixed populations. This study only used a five point response scale with the IPIP-HEXACO. However, this was necessary as the IPIP-HEXACO measures 240 items which would take participants a long time to complete if a seven or ten point scale was used. A five point response scale was enough to provide a decent inter-item variability measure, but not so long that filling in the questionnaire would take too long resulting in the participants losing focus.

The calculation of the sensation seeking measure involved total facet scores from seven facets, so this could have raised a potential confound in the analyses between the WS SDs for these facets and the sensation seeking score. However, of the seven facets used to calculate this, only the fairness WS SD was found to be weakly associated with sensation

seeking. Also the WS SDs rather than trait scores are examined which reduces the potential confound even further.

Behaviour was not measured in context, although it was suggested that inter-item variation in behaviour ratings on a trait or facet would be due to contextual-dependent behaviour. This was based on previous research reporting differences in personality according to different self-representations (Linville, 1985, 1987; Rothermund & Meiningier, 2004), or situation context (Church et al., 2008; Church, Katigbak, & del Prado, 2010; Leszcynski, 2009; Robinson, 2009; Robinson, Wright & Kendall, 2011). Perhaps with more contextual information, the underlying reason for the observed within attribute variation can be determined. Particularly as Lievens, De Corte and Schollaert (2008) found that providing a frame of reference reduced within subject inter-item variation in responding. Future research should take this further by using shorter behaviour statement questionnaires that also allow the participant to note what context is the most relevant for a specific behaviour (from a list of contexts provided). Those specific behaviours that get frequently assigned a particular context could be examined together in a Cronbach alpha analysis to see if they tap into contextually appropriate behaviour sets. This would help reveal reliable contextual patterns of behaviour statement responses. This style of contextual measurement has only been developed for adjective based inventories so far, e.g. Robinson (2009), with his adaptation of Gosling, Rentfrow and Swann, (2003) Ten Item Personality Inventory.

More psychological outcomes should be examined in relation to WS SDs, including approach and avoidance motivation, self-complexity, self concept clarity and social desirability, as well as behaviour acts and more specific habits such as drinking and smoking. As a minimum, it is recommended future trait research using behaviour statement questionnaires calculate and report WS SDs in order to verify and extend the findings reported here. It would be also be beneficial to have replication with other tests such as the

NEO-PI-R (Costa & McCrae, 1992), and minor trait tests, for example the attributes measured by the Supernumerary Personality Inventory (Paunonen, 2002).

This research was conducted in order to examine the nature of within subject variation in personality item ratings and its impact on a selection of psychological outcomes. Most of the personality attributes measured displayed a degree of within subject inter-item variation considered to be true variation rather than due to error. This supports the view that within subject variation matters in research involving trait personality tests.

### *Chapter summary*

This chapter reviewed literature which has established that although people display a habitual trait personality, there is a definite capacity for variation in personality behaviour. An accommodating theory was proposed that explains why personality may vary from a trait personality for positive or negative reasons, integrating literature from self-concept, self-reported personality across situational context and traitedness research. Based on the potential for display of varied behaviour, differences in ratings of behaviours within specific traits and facets were examined. Within subject differences were found when measured using a psychometrically validated questionnaire while error was found to be a stable characteristic across the test. Within subject standard deviation indices representing this inter-item variation were calculated, and found to be significantly related to positive and negative psychological outcomes, independently of trait behaviour in several cases. The next chapter explores the underlying processes and causes of intra-individual variation in personality.

## **Chapter 3: Understanding the processes and predictors of intra-individual variability in personality.**

The previous chapter demonstrated that people display true inter-item variability in ratings of behaviour statements within specific personality attributes in trait tests. These were found to have a meaningful impact on psychological outcomes. These differences in ratings may be caused by the individual recalling contexts where they behaved in a way not in accordance with their general disposition. However, the previous study measured the behaviours within traits and facets at a single moment in time. To measure variability in personality more realistically, repeated measures diary studies are required.

So what could specifically cause a person to display varied personality behaviour? What underlies behavioural flexibility or situational changeableness? To understand how variation in personality state behaviour may occur, an understanding of the theory and research into behaviour formation, sensitivity to stimuli and self-regulation theory needs to be reviewed prior to conducting the study. The following review briefly will cover:

- Modern behaviour formation research
- Reinforcement sensitivity theory
- Self-regulation theories (Locomotion and Assessment, Self-regulatory strength)

Before more extensively discussing:

- Diary recording state personality research

These literatures will be then discussed in relation to social-cognitive theories of personality previously mentioned in the introductory chapter (FIT Science and CAPS theory), before going on to conduct a study examining personality states more realistically.

*Modern behaviour formation research:*

Recent research into habitual behaviour formation has been performed mainly by Bas Verplanken and Wendy Wood (and their colleagues). This examines behaviourist style stimulus priming, but moves away from the classical ideas that solely repetition of behaviour and reinforcement are involved in priming (Pavlov, 1928; Skinner, 1938; Thorndike, 1911) and advocates thoughts, feelings, and goals as further primes for behaviour.

Verplanken and Orbell (2003) originally designed the Self-report habit index (SRHI) which measures habit strength as how automatic the behaviour is. This includes components about lack of control and awareness, history of repetition and expressing identity, rather than just the frequency with which the behaviour is performed. The SRHI was found to have high reliability and validity in four studies (Overall  $N = 387$ ), and the SRHI score converged with a simple behavioural frequency index of habit. Verplanken and Melevinik (2008) used the SRHI to demonstrate that exercise habits can be predicted not just as a behaviourally frequent activity, but as displaying the behaviour automatically (referred to as automaticity). Lally, van Jaarsveld, Potts and Wardle (2010) provided support for automaticity by getting participants to learn an intrinsically rewarding eating, drinking or activity behaviour in a set context, the stimulus, over a period of time ( $N = 82$ ). Automaticity was measured using the Self-Report Habit Index on a daily basis. On average 66 days was the time taken to form a habit (within a range of 18 to 254 days). The degree of automaticity increased in a steep curve early on during the first 20-30 days when reward was still apparent, followed by gradual increases in automaticity once the behaviour became automatic.

Orbell and Verplanken (2010) demonstrated that automaticity in smoking is associated with attention bias to smoking cues in the stroop task ( $N = 47$ ) and unintended smoking response to a cue previously associated with smoking ( $N = 65$ ). Orbell and



Verplanken further demonstrated that automaticity in flossing was enhanced by implementation intentions (when I encounter *X*, I will perform *Y*) of a particular situation and time ( $N = 274$ ). This showed that automaticity is associated with bias to cues and implementation intentions in positive and negative habit behaviour. Wood, Quinn and Kashy (2002) examined the thoughts and feelings associated with behaviours using repeated measure diary studies ( $N = 279$ ). It was found that thoughts tended to correspond with behaviour when the behaviour was non-habitual, rather than habitual. This supported the idea that habit behaviour is more automatic than conscious. Habitual behaviour was found to correspond with less stress and emotional intensity than non-habitual behaviour. Wood, Tam and Witt (2005) examined the effect that context has on habits by examining the exercising, TV watching and newspaper reading habits of students who have just moved university ( $N = 115$ ). It was found that the change of context disrupted habits as the cue for the habit was removed. This was often found to return conscious control to behavioural intentions. Neal, Wood, Labrecque and Lally (2012) further examined performance contexts and goals on habit strength which found that performance contexts trigger strong habits while moderate strength habits were primed by goals. Wheeler, Smeesters and Kay, (2011) have found that culture has an impact on prime-to-behaviour effects via construal of competitive or cooperative situation primes and perception of others for both Western-born (Dutch) and Eastern-born (Chinese) cultures. The Eastern-born participants displayed a perceptual bias towards the situation being relatively more competitive, and the other player being relatively more co-operative in a competitively primed situation. This makes sense based on the more collectivist nature of Eastern societies which focus more on situational attributions rather than dispositional attributions. This suggests that culture may have a system level influence on behaviour priming.

The studies described suggest that habits performed in context are responses to contextual cues. This is unsurprising considering the existence of varied personality behaviour alongside habitual behaviour described in the previous chapter. What personality factors may be involved in the process of behaviour formation? A theory of personality that integrates reinforcement principles is reinforcement sensitivity theory.

*Reinforcement sensitivity theory:*

Reinforcement sensitivity theory (RST) explores dimensions examining the activation of behaviour (behavioural activation system; BAS) and inhibition of behaviour (behavioural inhibition system; BIS) as proposed by Gray (1981). BAS is associated with approach behaviour, sensitivity to reward and positive affect while BIS is associated with avoidance behaviour, sensitivity to punishment and negative affect. Individuals displaying behaviour activation when sensing rewarding stimuli tend to perform the behaviour response when prompted by the potentially rewarding stimulus. Individuals with greater BAS are more likely to display behaviour in response to negative stimuli which alleviate negative affect. The individual with a more active BAS will also display a behaviour response more regularly to the stimulus, inducing repetition of the behaviour response until the stimulus-response association becomes automatic. The individual displaying behaviour inhibition will avoid behaviour activation when prompted by the potentially punishing stimulus, and so behaviour formation would not occur. The two scales mainly used in RST researches were developed by Carver and White (1994), and Torrubia, Cesar, Molto and Caseras (2001).

Carver and White (1994) developed scales to measure BIS-anxiety and three dimensions of BAS (drive, reward responsiveness and fun-seeking,  $N = 732$ ). To measure BIS-anxiety in relation to self-report nervousness, participants performed a task attempting to recognise patterns in strings of letters and numbers, in which cold pressor immersion was a

punishment for poor performance ( $N = 69$ ). To measure BAS dimensions in relation to self-report happiness, a separate sample of participants performed the same task with extra course credit indicated as a reward cue for good performance ( $N = 90$ ). Carver and White found that initial BIS was positively related to nervousness while initial BAS dimensions were positively related to happiness. Torrubia, Cesar, Molto and Caseras (2001) developed the Sensitivity to Reward Sensitivity to Punishment Questionnaire (SPSRQ) with the Sensitivity to Punishment (SP) and Sensitivity to Reward (SR) scales as measures of BIS and BAS respectively ( $N = 1563$ ). These overcome an initial problem with Carver and White (1994) BIS/BAS, as the SP and SR scales contain items more focused on specific behavioural instances of risk aversion and approach to specific reward cues respectively, rather than generic anxiety and BAS content. This gives a more realistic indication of the BIS and BAS. The SP and SR scales show correlations with extraversion (measured by the Eysenck Personality Questionnaire,  $N = 372$ ) and sensation seeking (SSS,  $N = 828$ ) (SR positively, SP negatively), neuroticism (measured by the Eysenck Personality Questionnaire,  $N = 372$ ) and anxiety (State-Trait Anxiety Inventory-Trait Form,  $N = 372$ ) (SP positively). Perkins, Cooper, Abdelall, Smillie and Corr (2010) have further examined response to threats, based on a list of threat scenarios, in relation to variables measured by the Eysenck Personality Questionnaire and BAS/BIS scale scores. This found patterns consistent with RST theory.

In terms of convergence with the five factor model traits, analyses were conducted by Smits and Boeck (2006) using the BIS/BAS scales to predict the NEO trait scales ( $N = 550$ ), and by Mitchell et al., (2007) using the NEO-PI-R to predict sensitivity to reward and punishment as measured by the SPSRQ ( $N = 668$ ). Smits and Boeck (2006) found that BIS positively predicted neuroticism strongly, agreeableness and conscientiousness weakly, and negatively predicted extraversion. The opposite was found for BAS. Mitchell et al., (2007) found that neuroticism positively strongly predicted SP and negatively predicted SR weakly.

Extraversion negatively predicted SP, and positively predicted SR strongly.

Conscientiousness and agreeableness positively predicted SP, and SR negatively. In both articles all their hypotheses were supported apart from the relationship between BAS and neuroticism which was reversed. These studies suggest that several traits from the five factor model and RST theories both can predict and be predicted by variables in each theory.

Neurotic people are more sensitive to punishing stimuli which is expected as anxious people have a more sensitive nervous system. Extraverted people are more sensitive to reward as rewarded responses become extinct more quickly in extraverts than introverts. It also suggests that conscientiousness and agreeableness have an impact on sensitivity to stimuli.

The RST research suggests that approach and avoidance behaviour, and being sensitive to particular types of stimuli are related to dispositional trait personality. But in those who do not display the personality disposition towards approach or avoidance can personality states that facilitate approach or avoidance be performed when they are required? This would require self-regulation of behaviour. Reviews of the habit literature suggest habits are performed as fulfilling a goal when cued and no conflicting tasks need to be performed, or when self-regulatory resources are low if other priority tasks need to be performed (Neal, Wood & Quinn, 2006; and Wood & Neal, 2007). This suggests the ability to self-regulate is also involved in determining performance of behaviour that differs from their dispositional norm. Self-regulation refers to the direction of resources to control behaviour. Two of the main theories in self-regulation research will be briefly reviewed. These are regulatory modes of locomotion and assessment, and the theory of self-regulatory strength and ego depletion.

*Regulatory modes: Locomotion and assessment*

Higgins and Kruglanski (1995, cited in Kruglanski et al., 2000) originally proposed the self-regulatory dimensions of locomotion and assessment. Locomotion refers to variation from state to state by committing psychological resources to help achieve goals (to just do it, a behaviour/action orientated style). Assessment refers to the evaluation of goals and alternate goals, and which to pursue (to do the right thing, an evaluative thinking based style). Kruglanski et al., (2000) designed scales to measure these dimensions. Factor analyses revealed two dimensions, matching items designed to measure locomotion and assessment appropriately ( $N = 2,530$ , across 4 aggregate samples). Locomotion ( $M_\alpha = .82$ ) and assessment ( $M_\alpha = .78$ ) were found to be fairly reliable across 13 samples (Overall  $N = 4,256$ ). These dimensions were examined in relation to the five factor model and several motivational and evaluative dimensions. Locomotion was found to be positively related to agreeableness, extraversion and conscientiousness, and negatively to neuroticism. This selection includes the two strongest predictors of BAS, and two positive predictors of BIS without the neurosis element. Assessment was found to be positively related to neuroticism and openness to experience, and negatively to agreeableness. Further confirmatory factor analyses suggested that the locomotion and assessment dimensions were discriminate of the five factor traits. Table 12 displays the relationship of locomotion and assessment dimensions to several variables relevant in encouraging or inhibiting varied intra-individual behaviour, as found by Kruglanski et al., (2000).

Table 12: The relationship of locomotion (of states) and assessment to several important outcomes relevant to intra-individual personality variation, as reported by Kruglanski et al. (2000)

Outcomes	Locomotion	Assessment
Action-Indecision	.42**	-.26**
Functional impulsivity	.32**	-.17*
Self-esteem	.30**	-.26**
Interaction anxiety	-.36**	.25**
Performance goal orientation	.24**	.41**
Achievement goal orientation	.45**	-.01
Intrinsic motivational orientation	.43**	-.02
External motivational orientation	.29**	.36**

Note: \*Significant at  $p < .01$  \*\*Significant at  $p < .001$ .

Shalev and Sulkowski (2009) found that assessment positively predicted impulsivity, anxiety and obsessive compulsive symptoms. They found locomotion negatively predicted impulsivity, suggesting locomotion represents controlled change of state behaviour ( $N = 330$ ). Shalev and Sulkowski suggested the positive association between assessment and impulsivity may be due to negative self-appraisals which deplete self-regulatory resources and lead to impulsivity. This suggests that the locomotion of states has a positive impact on psychological outcomes while over-assessment can be problematic, but in moderation assessment can be beneficial. Locomotion seems similar to the use of BAS to plan and execute behaviour, with BIS being similar to assessment in comparing predicted and actual states. People displaying locomotive regulatory modes have been found to display happier romantic relationships, than those with assessment modes (Kumashiro, Rusbult, Finkenauer & Stocker, 2007). This is because the individual with an assessment orientation tend to self-evaluate and compare themselves against others more which leads to the individual becoming

more critical of their partner. Those with a locomotive orientation tend to be more focused on doing things and encouraging their partners to do things as well which leads to greater development of the relationship. While this theory focuses on what happens during self-regulation, the theory of self-regulatory strength and ego depletion focuses on the processes behind self-regulation.

### *Self-regulatory strength and ego depletion*

Self-regulatory strength refers to the internal cognitive resources available to alter behavioural responses. Ego depletion refers to the reduction of these self-regulatory resources which leads to poor self-restraint. Baumeister, Bratslavsky, Muraven and Tice (1998) conducted four studies which showed that performing actions required self-control (overall  $N = 220$ , split over four different task scenarios). For example, making a healthy eating choice over a more tempting unhealthy choice led to worse task performance and reduced persistence in later tasks. Baumeister, Bratslavsky, Muraven and Tice suggest that once the individual has used up their self-regulatory resources (the ego is depleted), then the individual reverts to automatic habitual form. People who smoke tend to be highly impulsive (as supported by research in the previous chapter). If the individual has the self-regulatory strength to control acting on impulse, they can. Once these resources are depleted, impulsiveness manifests and the urge to smoke increases. Vohs and Heatherton (2000) examined the impact of ego depletion on eating behaviour ( $N = 100$ ). Dieters and non-dieters were exposed to a depleting (sitting next to candies) or non-depleting situation (sitting far away from the candies). After exposure participants were offered ice cream. It was found that dieters ate more ice cream than non-dieters in the depletion situation. Muraven, Collins and Nienhaus (2002) examined ego depletion on alcohol consumption ( $N = 58$ ). Participants were asked to suppress a forbidden thought (experimental group), or perform very simple arithmetic problems (control group). After this, participants were asked to take part in an

alcohol taste test in which they were allowed to consume as much as they liked in a 20 minute session (within reason). Those in the experimental group were found to consume more alcohol in this session than the control group. These studies are just a few examples of the ego depletion paradigm format. Baumeister, Gailliot, DeWall and Oaten (2006) provided an extensive review of studies into ego depletion. Their review of this literature suggests that ego depletion affects several areas including: dieting/restrained eating (Kahan, Polivy & Herman, 2003; Vohs & Heatherton, 2000), stereotype suppression (Gordijn, Hindriks, Koomen, Dijksterhuis & Van Knippenberg, 2004), temptation to drink (Muraven, Collins & Nienhaus, 2002), and sexual restraint (Gailliot & Baumeister, 2005 in press, published in 2007). Baumeister et al., (2006) suggest that underlying trait behaviour can be overcome via self-regulation, and that the individual may revert to trait behaviour after ego depletion. Baumeister et al., (2006) also suggested that self-regulation may be a possible reason why only weak relationships are often found between traits and specific behaviours in some past research.

Taken together, the modern behavioural research into habits, reinforcement sensitivity theory and self-regulation suggests that within the individual, both habitual behaviour and variation in behaviour can and do co-exist. However, the main focus of interest in the area of trait personality literature has been on examining the habitual personality traits of individuals. The individual does have the capacity to display particular behaviour states alternate to their standard trait or disposition. To study how personality behaviour or affect varies across short time periods diary studies (often referred to as experience sampling methods research, Bleidorn & Peters, 2011; Bolger, Davis & Rafaeli, 2003) have been conducted. Many of these ESM studies have also focused on personality states in order to examine how personality states vary within the individual.



*Diary studies of personality states:*

Diary studies have previously been conducted which find that individuals display variability in positive and negative affect mood states across repeated measurements (Larsen, 1987; Penner, Shiffman, Paty & Fritzsche, 1994). Most of these studies use standard deviations across repeated measurements as the summary measure. Eid and Diener (1999), Watson, Clark, McIntyre and Hamaker (1992) and Kardum (1999) all examined intra-individual affect states and social activity in relation to trait personality. Eid and Diener found trait neuroticism was consistently related to variation across repeated measurements (summarised as standard deviations) in a selection of negative mood states across 52 days. Watson, Clark, McIntyre and Hamaker found that trait extraversion was positively related to averages of positive affect and state social activity measured on a daily basis. On the whole Watson et al., found that there were only weak within subject correlations of state social activity and positive or negative affect outcomes, suggesting differing degrees of variability in each outcome across measurements, as these are normally strongly related outcomes at the between subject level. Kardum (1999) found that trait psychoticism was negatively related to positive affect intensity (how strongly positive affect is felt) while trait neuroticism and psychoticism were negatively related to frequency of feeling positive affect across 42 days worth of measurements taken three times per day. Frequency was found to be positively predicted by average positive mood and negatively by negative mood and positive mood variability. More recent research shows intra-individual variability in affect states across repeated measurements is negatively related to agreeable and conscientious behaviour (Eaton & Funder, 2001; Kuppens et al., 2007). Ilies and Judge (2002) found the novel finding that neuroticism strongly positively predicts intra-individual variability across measurements in job satisfaction and negative mood (as measured four times per day over four weeks). Nezlek, Schutz, Schroder-Abe and Smith (2011) have applied a diary study over a two week period to

show that trait extraversion and openness are associated with greater quality of daily social interactions (more enjoyable and fruitful) in a US sample, and agreeable and conscientious to be associated with greater quality of daily social interaction in both German and US samples. These studies have mainly focused on how personality traits relate to intra-individual variation in affect states, but what about variation in the personality attributes themselves?

William Fleeson in particular has published important work on the distribution of personality states as measured through extensive diary recording studies. Fleeson (2001) proposed the density distribution of personality states theory. The density distribution theory suggests that in the same way as between subject personality trait can be rated and compared along a measurement dimension, within subject variations in personality states can also be distributed along that same measurement dimension. Fleeson outlined three outcomes that would support the relevance of density distribution in states within the subject as a meaningful individual differences construct. One outcome was that there will be substantial within subject variability in states across repeated measurements present. The second outcome is that within subject distributions across states will be a stable individual difference. The third is that variability across repeated measurements will be predictable by external or situational outcomes.

Fleeson (2001) explored the standard deviation of personality states and affect in individuals by using repeated measurements with handheld computers to see whether the density distributions theory was supported (Overall  $N = 103$  students across three studies). A short set of adjectives (at least 4 per dimension depending on the study) were used to measure the Big-Five (all three studies) and positive and negative affect states (study 1) for each diary entry. Diary entries were taken for 2-3 weeks depending on the study. Standard deviations across repeated measurements were calculated as indices of within subject variation (referred to as ESM SDs in some later studies). Within subject variability across repeated

measurements was present in all three studies. Standard deviations differed significantly in size from each other for all seven variables (tested in study 1), suggesting differences in distribution characteristics for each state. In study 1 within subject variation, measured as the average of each of the 46 participants repeated measure standard deviations, and between subjects variation, measured as the standard deviations in trait level and mean state measures across the sample (the trait level measure was the same items administered in the diary, but a one off measurement with general behaviour instructions), were compared in relation to the standard deviation calculated across the entire sample of repeated state measurements. As all of these were measured on the same measurement scale these were comparable. This found that the within subject and between subject variation measures displayed approximately equal standard deviations in comparison to the standard deviation calculated across the entire sample of repeated state measurements. In study 1 the within subject variation was found to be closer to the overall state standard deviation for extraversion and conscientiousness. For studies 2 and 3 within subject variation and between subject variation measures were approximately equal, except for extraversion in study 3 where within subject variation was closer to the overall state standard deviation. This supported Fleeson's first suggested outcome of substantial within subject variation in states across repeated measurements being present, with within subject variation displaying the same if not greater degrees of variation than between subject measurements. This suggests this is definitely a meaningful individual difference. This finding is interesting, as in study 1 of this research programme, the expressiveness and conscientiousness WS SDs of inter-item variation in trait/facet ratings were found to vary independent of trait personality scores. Differences were also found in the average across-state correlations of the standard deviations for each of 46 participants ( $M r = .38$ , maximum = .70, minimum = -.08). So if the individual is variable on one state they were generally more likely to be variable on other states, suggesting some stability in the size of

standard deviation indices across states for each participant. The standard deviation across repeated measurements for a state was also found to predict itself when splitting the data in half to see if one half predicts the other half. This was the case for all five state standard deviation measures. Studies 2 and 3 found similar results. These findings supported the second point Fleeson raised, that variation in states across measurements would be a stable individual difference, although this finding also highlights the potential for some within subject differences in the size of the standard deviation indices displayed for each particular state. In studies 1 and 2, time of day the measure was taken was also consistently found to have an effect on state extraversion and agreeableness. This supported the second point Fleeson raised, that the variability can be predicted by external outcomes. On the whole the findings of Fleeson (2001) supported Fleeson's density distribution of states theory.

Fleeson and Gallagher (2009) performed a meta-analysis on 15 ESM samples of Big-Five states ( $N = 495$  students, every repeat state measurement totalled 21,871). This supported the findings from other diary studies with similar results (see table 13). Strong significant correlations were found between the mean of states and global trait measures (correlations ranging between  $r = 0.42$  and  $0.56$ ). This supports the dominant or frequent state as the trait personality view. When comparing the density distribution of personality states in people high and low on a trait, Fleeson and Gallagher found that both display variation in personality states across measurements, to the extent that there is considerable overlap in distributions. Every Fleeson piece of research has examined personality using several narrow trait adjectives to describe each broad trait. Based on the facet level research examined earlier, the narrow personality descriptors could display different degrees of intra-individual variability across measurements. This would be a future direction to explore. Reliabilities would be an issue if exploring data at the multiple facet level in ESM studies with single item indicators. Cronbach alpha values would not be appropriate and test-retest reliability may not

be very strong if states are expected to vary. This would make this a difficult avenue to explore validly and reliably.

Table 13: Ratios of between subjects (left) to within subject variance (right) in diary study papers.

FFM variable	Fleeson (2007)	Fleeson and Gallagher (2009)	Heller, Komar and Lee (2007)	Bleidorn (2009)
Extraversion	7%:93%	22%:78%	30%:70%	10%:90%
Agreeableness	24%:76%	37%:63%	51%:49%	37%:63%
Conscientiousness	10%:90%	25%:75%	51%:49%	22%:78%
Emotional stability	37%:63%	38%:62%	46%:54%	33%:67%
Openness/intellect	<i>Not measured</i>	51%:49%	52%:48%	47%:53%

Baird, Le and Lucas (2006) examined the relationships between self-conceptual measures of variability (the Self-Pluralism Scale and Self-Concept Differentiation Index) and standard deviations of repeated personality state ratings of the Big Five ( $N = 587$  students across three studies). The Self-Pluralism Scale and Self-Concept Differentiation Index were both found to be weakly correlated with an averaged aggregate of the ESM SD measurements (the mean ESM SD over the five factor states). This study is important to highlight as it suggests that self-conceptual indices and questionnaires share a small degree of capacity in examining within subject variability across repeat measurements. However, ESM SDs for each of the five states was not examined in relation to the Self-Pluralism Scale and Self-Concept Differentiation Index. More specific analyses may have found stronger significant correlations in some cases and non-significant correlations in others, which would explain the aggregate weak correlation between ESM SDs and the self-conceptual variation indices. Also if self-complexity (Linville, 1985, 1987) was examined there may have been a stronger relationship to the average ESM SD. Self-complexity reflects the nature of the varied self-

concept without framing it in terms of self-perceived variation by instead getting the participant to determine their own self-representations with trait adjectives.

More recent research by Nofle and Fleeson (2010) has examined whether intra-individual variability across repeated measurements of the Big Five is consistent across the lifespan in different age groups (young, middle age and older adults). This found that there was a consistent degree of variability in repeated measurements across the different age groups measured, indicating that people of all ages display behaviour variability across repeated measurements. Although emotional stability and agreeableness did become a bit more stable in older adults, extraversion and conscientiousness displayed consistent variability in repeated measurements across the lifespan.

Beckmann, Wood and Minbashian (2010) used diary study methods over 3 weeks to examine the between and within subject nature of neuroticism and conscientiousness separately. Beckmann, Wood and Minbashian found that there was a between subject level negative relationship between trait neuroticism and trait conscientiousness. This was found when examining both state measurement means and NEO-PI trait measures. However, when examined at the within subject level for specific state measures, the relationship between neuroticism and conscientiousness was consistently positive. This suggests that the relationship of personality characteristics differs depending on whether they are measured between subjects or within the subject.

The nature of within subject variability in state personality as authentic behaviour, and whether the individual feels authentic when displaying behaviour that varies from their trait disposition has been examined by Fleeson and Wilt (2010). They suggested two different hypotheses. One was the trait-consistency hypothesis, where authenticity would be associated with displaying consistent trait behaviour. The other was the state-content significance

hypothesis where the content and consequences of behaviour influence the feelings of authenticity. Across three studies the state-content significance hypothesis was supported, with greater feelings of authenticity for more positive quality states (extraverted, agreeable, conscientiousness, emotionally stable and intellectual states).

So the diary studies reviewed all suggest that variation in personality states across repeated measurements does occur, with authentic feelings associated with flexible state behaviour. But what may predict this variation in personality states?

Fleeson (2007) examined the ratios and stabilities in personality state variance ( $N = 57$  students). This found that more variance was explained from within rather than between subjects for four Big-five states (see table 13). The stability of between subject average state levels and stability in the amount of within subject variation displayed were high. The influence of highly specific situational influences on within subject states was also examined (examples: How many others were present? and Was what you were doing chosen by you or imposed on you?) Rating scales of 1-7 were provided for states and situational influences. Factor analysis was performed on the within subject variance of these influences (by taking the mean across occasions away from the raw scores to remove the between subject influence). This found three factors labelled: anonymity, task orientation and friendliness of the situation (friendliness was replaced by others status in the 2<sup>nd</sup> of two studies). These factors were used to predict different states in regression analyses. Friendliness was found to significantly predict state extraversion and state agreeableness. Task orientation was found to significantly predict state agreeableness and state conscientiousness. Others status was found to predict state extraversion. This study supported Fleeson (2001) results and found factors based on situational influences which predict personality states. A positive point is the response rate in these studies was decent (82% and 69% for studies 1 and 2 respectively) so this data likely reflects a wide variety of times and situations each individual was involved in.

Huang and Ryan (2011) performed a diary study of the Big Five personality states in the organisational context of customer service with 56 employees completing surveys on a daily basis for 10 days. Two situational contingency predictors were friendliness of the situation and immediacy of task based on the findings by Fleeson (2007) while a third was the context relevant predictor perception of service relationship ( $N = 56$ ). This found that state conscientiousness was associated with immediacy of task while state extraversion and agreeableness were associated with friendliness.

Heller, Komar and Lee (2007) explored the link between Big-Five personality states measured by the TIPI, affect as measured by the PANAS, and descriptions of approach and avoidance goals in a diary recording study ( $N = 101$  students, 1721 recordings in total). The Trait Descriptive Adjective Inventory was used to assess personality traits at the beginning of the study. Within subject variance was found to account for 48%-70% of total variance in personality states (see table 13 for exact ratios). Heller, Komar and Lee also examined the predictive effects of state extraversion and neuroticism on positive and negative affect. State neuroticism was negatively predicted by approach goals while state extraversion was positively predicted by approach goals (both at  $p < .01$ ). State neuroticism and extraversion were found to mediate 49% of the predictive effect of goals (approach and/or avoidance) on positive affect, and 57% of the predictive effect of goals on negative affect (both  $p < .001$ ). A limitation of this study is that only 2 items were used to measure each state, meaning content validity may be questionable.

Bleidorn (2009) examined how interpersonal roles and goal orientation predicted Big Five personality states over 10 days ( $N = 52$ , 2917 repeated measure occasions). Bleidorn found similar results to Heller, Komar and Lee (2007), with the ratio of within subject to between subject variance suggesting more variation in the Big-five was accounted for within the individual (see table 13). A student role was found to predict state conscientiousness and



neuroticism positively while the other three states were negatively predicted by the student role. A friend role predicted state extraversion, agreeableness and openness positively, and neuroticism negatively. Affiliation goals positively predicted extraverted and agreeable states ( $p < .01$ ). Achievement goals predicted all the Big-Five states positively, apart from neuroticism.

These studies support the idea that state personality can predict and be predicted by motivational (goal orientated behaviour) and social roles. In support of Fleeson's (2001) third expected outcome for a density distribution of states theory. Heller, Perunovic and Reichman (2009) suggest that short term goals and social roles are important to consider together as micro-level processes, however to the knowledge of the researcher, no studies have yet done this. The literature reviewed suggests contextual measurements of personality, and examining the factors that predict intra-individual variation across contexts should be a prime area of pursuit of research in personality. Literature from all these research areas will now be collated to provide a background for a detailed demonstration of the impact of context on intra-individual variation in personality.

## Study 2:

### **Intra-individual variation in HEXACO personality states as predicted by context.**

The two most prominent perspectives in personality research are the trait/state behaviour perspective (Costa & McCrae, 1992; Goldberg, 1992; Lee & Ashton, 2004; Fleeson & Gallagher, 2009) and social-cognitive processing perspectives (Mischel & Shoda, 1995, 2004). Trait personality models provide information about the type of behaviour people display and how these behaviours are related to other habits and psychological outcomes (see chapter 2 review). However, trait models generally do not provide any information about the underlying moderating or mediating processes that lead to particular behaviours. Mischel emphasises that CAPS theory fulfils this requirement with a capacity for integrating social-cognitive personality and self-regulation research with trait and state personality research (Mischel & Shoda, 1998; Mischel, 2004). The CAPS framework slots nicely into McCrae and Costa (1996) personality system (discussed in the introductory chapter) by helping explain dynamic processes linking basic tendencies, characteristic adaptations and external influences on the personality system. The CAPS framework offers a way of understanding the process of displaying stable intra-individual variation in behaviour according to *if situation-then behaviour* relationships (Mischel & Shoda, 1995). These greatly elaborate on the *stimulus-response* relationships proposed originally in early classical conditioning theory (Pavlov, 1928). These situation-behaviour relationships are mediated by several cognitive affective units (CAUs) including goals and values, affects, self-regulatory plans and competencies, expectancies of outcomes and encodings of the self, others and situation.

In a diary study, there are many factors that could be potentially examined as predictors of personality states, as highlighted by approaches such as CAPS theory. These could all act as intra-individual predictors of particular personality states in response to

particular situations, with varied states as situational dispositions. Personality traits can be classed as higher level dispositions reflecting broader tendencies to perform *if situation-then behaviour* patterns associated with particular traits (Digman, 1997; Mischel, 2004; Mischel & Shoda, 1995). Within the RST model the individual capacity to activate and inhibit behaviour (Carver & White, 1994; Torrubia, Cesar, Molto & Caseras, 2001) will influence self-regulation of behaviour (locomotion of states; Kruglanski et al., 2000). Although there is the potential for the individual to completely deplete their self-regulatory resources, the outcome being that automatic habits are performed without any possibility of conscious intervention (Baumeister, Bratslavsky, Muraven & Tice, 1998; Vohs & Heatherton, 2000).

This is quite an elaborate explanation of the processes behind dispositional trait and varied state behaviour that integrates ideas from several different theories, making this difficult to measure as a whole. However, diary recording methods have been used to find out what aspects of processing are important in predicting specific personality states by measuring small parts of this system at a time (Baird, Le & Lucas, 2006; Beckmann, Wood & Minbashian, 2010; Bleidorn, 2009; Fleeson, 2001, 2007; Heller, Komar & Lee, 2007; and Huang & Ryan, 2011). A diary study conducted by the researcher will now be described which highlights the importance of contextual factors in within subject personality variability across repeated measurements. To do this an approach similar to those of Heller, Komar and Lee (2007), and Bleidorn (2009) in examining motivation and situation as predictors of personality state will be applied. Heller, Perunovic and Reichman (2009) also recommended that these two contextual factors be examined together in a diary study which to the knowledge of the researcher has not yet been done. The personality states measured will not reflect the exact behaviour performed in the situation-behaviour relationship. However, state measures will provide an indication of the sort of behaviour an individual displays in response to a particular situation. The variables in this study include the between subject

predictors, dispositional anxiety and depression, and the within subject predictors interpersonal roles and social goal orientations.

As the previous study in this thesis found that the different indices of within subject inter-item variability reliability tapped in a common variability in responding dimension, the researcher chose to examine whether indices of personality state variation for each HEXACO state, referred to as ESM SDs (the standard deviation in state ratings across the number of state measurements collected) were correlated. It is predicted there will be correlations between the ESM SDs for the six personality states. Partialling out the trait/facet score was also found to have an impact on the relationship of the WS SDs to psychological outcomes in the previous study. Therefore, the impact of partialling out the ESM mean (the mean of state ratings across the number of state measurements collected) on the correlations between the ESM SDs will be examined. It is predicted that partialling out the ESM mean will have an impact on the correlations between the different ESM SDs.

It is predicted that dispositional anxiety and depression will positively predict emotional (neurotic) personality states, but negatively predict positive personality states such as honesty, extraversion, agreeableness, conscientiousness and openness to experience. More importantly, the context the person is in would be predicted to affect the expression of personality state. Goal orientation at the time (socialising with others, avoiding others, asserting yourself, personal or work achievement) and interpersonal role (with friend, with family member, with partner, as employee/student, or alone) are expected to HEXACO state ratings. The social goal orientation categories were drawn from Engeser and Langens, (2010), and the interpersonal roles were inspired by Bleidorn (2009). Heller, Perunovic & Reichman (2009) suggest that short term goals and roles are important to consider together as micro-level processes. This study will compare whether one set of contextual predictors may be

stronger than the other, as both have been found to be important contextual predictors separately in Bleidorn (2009) and Heller et al., (2007) studies.

## **Method**

### **Aims, Research Questions and Hypotheses**

In relation to research question 2 - to examine what predicts intra-individual variability in personality across repeated measurements - the study has two aims. The first is to see if the different personality state variability indices (ESM SDs) are all related, or if they are independent of each other. Is there a general tendency for states to vary across all traits or not (as found by Fleeson, 2001)? This is done in part by examining whether the ESM SDs are related to their corresponding ESM mean. For example, is the ESM SD for honesty also related to the ESM mean for honesty in a participant? The second aim is to see whether the HEXACO personality states can be predicted by a selection of different within subject interpersonal roles and goal orientations, or between subject anxiety and depression.

For the first aim, the alternate hypotheses are that the HEXACO ESM SDs will be significantly related to each other, and that each ESM SD will be significantly related to the corresponding ESM means. One alternate hypothesis for the second aim is that the HEXACO personality states will be significantly predicted by within subject interpersonal roles and goal orientations. Another alternative hypothesis is that the HEXACO personality states will be significantly predicted by between subject anxiety and depression.

The null hypotheses are that there will be no significant relationships or predictive effects respectively.

## Participants

Thirty-six participants took part (9 male, 27 female,  $M_{\text{age}} = 24.72$  years old,  $SD = 7.11$ ) after responding to online research recruitment sites or the University of Hertfordshire participant pool. Response rates for repeated measurements varied between 66.67% and 100% (completing at least 20 of 30 possible measurements,  $M = 98.33\%$ ). Overall, 1062 repeated measurements were collected between the participants.

## Design

This study used a non-experimental mixed design. Between subjects variables include measures of anxiety and depression. Extensive repeated measure variables include contextual indicators of interpersonal roles and social goal orientation, and personality state measures based on the six HEXACO trait dimensions (honesty, emotionality, extraversion, agreeableness, conscientiousness and openness to experience).

## Measures

A set of measurements were designed by the researcher to measure personality states and current social role and goals.

**HEXACO state items.** 18 bipolar item adjectives were used to measure the HEXACO states. For example, to measure dependence on others in the emotionality state *independent-dependent on others* was used. Another example for diligence in the conscientiousness state was *lazy-diligent*. These 18 items were measured on an interval scale between 1 and 7, where 1 represents the extreme of the left adjective and 7 represents the extreme of the right adjective. For example, in the *lazy-diligent* item, 1 represented very lazy while 7 represented very diligent. Each of the six personality states measured consisted of three items, based on three of the facet categories out of the four that form each trait in the

HEXACO model (Ashton, Lee & Son, 2000; Lee & Ashton, 2004). As an example, the following three items were used to measure state honesty: *insincere-sincere*, *unfair-fair* and *arrogant-modest*. Cronbach alphas were determined for each of the six personality states by examining every state measurement of every participant together using the Reliability Analysis option in SPSS. All the state measures were found to be reliable (honesty  $\alpha = .77$ , emotionality  $\alpha = .73$ , extraversion  $\alpha = .64$ , agreeableness  $\alpha = .80$ , conscientiousness  $\alpha = .63$  and openness to experience  $\alpha = .67$ ). These reliability values are decent considering each state scale only consisted of three items (for ease of repeated completion). Test-retest correlations would not be a reliable measure in terms of the prediction that within subject variation in states scores across repeated measurements is expected, and predicted by context.

**Interpersonal roles and social goal orientation markers.** To measure interpersonal roles, five options were included (friend, family member, partner, employee/student and alone). To measure social goal orientations, four options were included (socialising with others, avoidance of others, asserting yourself and personal or work achievement). These options were each rated using a Yes/No tick response option, when the participant was asked to tick which categories their activities came under within the past few hours. The interpersonal roles were drawn from those listed by Bleidorn (2009). The goal orientation categories were based on the outcome of a factor analysis of four social motives (affiliation, avoidance, power and achievement) onto the Big-Five conducted by Engeser and Langens (2010). Affiliation was relabelled as socialising, and power relabelled as asserting yourself to make them easier to understand and applicable for the contextual measurements of this study. These labels were considered appropriate based on the factor structure and correlations Engeser and Langens reported.

**Thoughts and Feelings scale.** The Thoughts and Feelings scales from the FIT profiler (Fletcher & Stead, 2000) were administered at the beginning of the study to measure

dispositional anxiety and depression. This measures frequency of feeling anxious (4 items), and depressed (4 items) over the last month. Each item uses a 4 point response scale: 1) Never, 2) Very rarely, 3) Now and again, and 4) Frequently/often. This gives total anxiety and depression scores between 0 and 12. Both scales have been shown to display high reliability (anxiety  $\alpha = 0.80$ , depression  $\alpha = 0.78$ ) and have been validated against other measures (Sharma, 2010).

Copies of all these materials have been included in Appendices G, H and C. An information page, consent form page and debriefing page were all also included. This study received ethical approval from the University of Hertfordshire Psychology department ethics committee, protocol number: PSY/08/11/JC.

## **Procedure**

The participants accessed the diary using Bristol online survey via a URL provided by the researcher. The first two pages provided an information sheet followed by a consent form. After providing informed consent, and before starting the diary the participant was asked to complete some basic demographic information (including age, gender) and the Thoughts and Feelings scale. During the diary period, the participant was asked to fill out diary recording questionnaires of HEXACO states and Interpersonal role/Social goal orientation markers, 1 or 2 times per day for around a month until 30 entries had been collected. The instructions given to participants requested that they try to leave at least five hours between entries with no more than 2 entries per 24 hour day to avoid overlap in entries. Participants were also requested to try and avoid leaving more than two days between entries. After completing 30 entries a debriefing page appeared. When the study recruitment was brought to a close, those who had completed 20 or more measurements were thanked for their participation and then sent a debriefing sheet.



## Results

All the analyses in this study were conducted using SPSS (IBM, 2011), except the multi-level modelling analyses which were conducted using the MLWin software (developed by Rasbash, Charlton, Browne, Healy & Cameron, 2009).

To provide a descriptive measure of how personality states vary within the subject density distribution histograms were produced. A histogram for each of the six HEXACO personality states per participant could be produced. The histogram displays the variation in the state ratings across measurement occasions, and also provides the mean (ESM mean) and standard deviation of the state measures (ESM SD). Experience sampling standard deviations (the ESM SD) were used as measures of the average deviation in a state by the participant. The mean of the states is thought to closely represent the dispositional trait personality, based on Beckmann, Wood and Minabashian (2010), and Fleeson and Gallagher, (2009) findings. These histograms were produced by setting up the data for each participant in a separate SPSS datasheet where each row represented one measurement occasion, with variables for the 18 items and the contextual predictors in separate columns. The state score for each of the six HEXACO states for each measurement occasions could then be computed as variables using the Compute function in SPSS. A histogram of the frequency of each state rating (between 1 and 7) across the measurement occasions collected could then be produced for each of the six HEXACO state variables using the Histogram option under Graph functions.

### *Experience sampling standard deviations (ESM SDs)*

The average deviation in states across the repeated measures entries was calculated for each participant (ESM SD). Table 14 lists the mean ESM SDs for each state (overall, in male and in female participants) produced using the Descriptive Statistics option in SPSS, with split file utilised for the male and female ESM SD descriptive statistics. Considering these were

measured on a 7 point scale, an average SD between 0.81 and 1.05 in both directions is considerable variation. A few examples of variation in a personality state are displayed by figures 4-6 using density distribution histograms that describe differing extents of variation across the repeated measurements.

Table 14: The mean ESM SDs for each personality state.

Personality state	Mean ESM SD ( <i>N</i> = 36)	Mean male ESM SD ( <i>n</i> = 9)	Mean female ESM SD ( <i>n</i> = 27)
Honesty	0.81 (.34)	0.72 (.27)	0.84 (.35)
Emotionality	1.03 (.31)	1.03 (.37)	1.04 (.29)
Extraversion	1.05 (.32)	1.05 (.37)	1.05 (.31)
Agreeableness	0.99 (.32)	0.98 (.34)	0.99 (.32)
Conscientiousness	0.86 (.26)	0.94 (.22)	0.83 (.27)
Openness to experience	0.82 (.28)	0.84 (.17)	0.81 (.31)

Note: There was no significant difference in ESM SDs between male and female participants ( $p > .05$ ), as checked using the Independent samples t-test option under Compare means in SPSS.

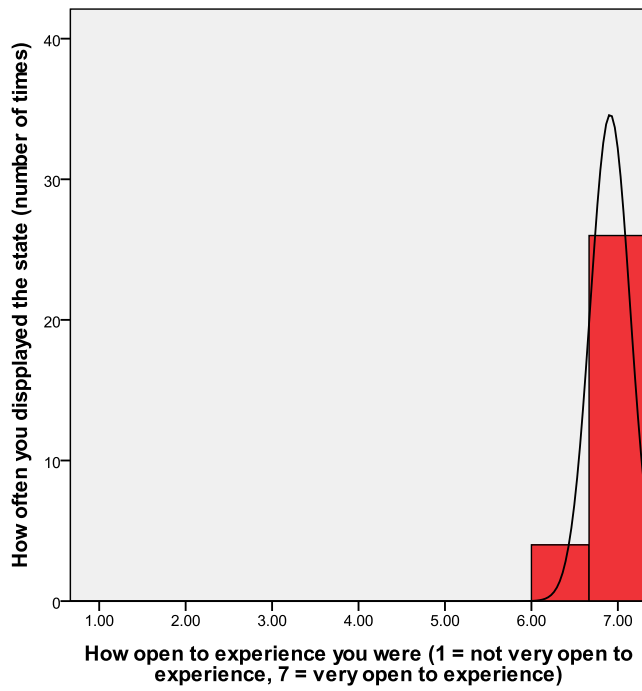


Figure 4: An example of someone who hardly varied at all in state openness to experience.

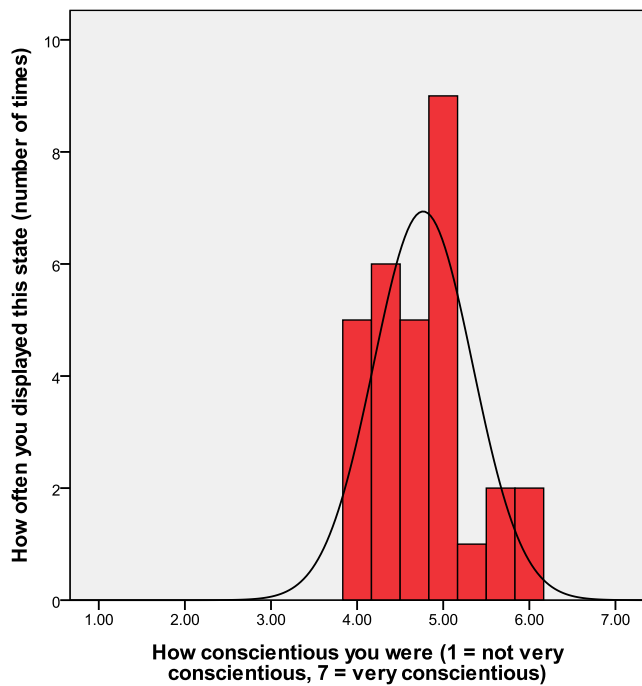


Figure 5: An example of someone who displayed moderate variation in state conscientiousness.

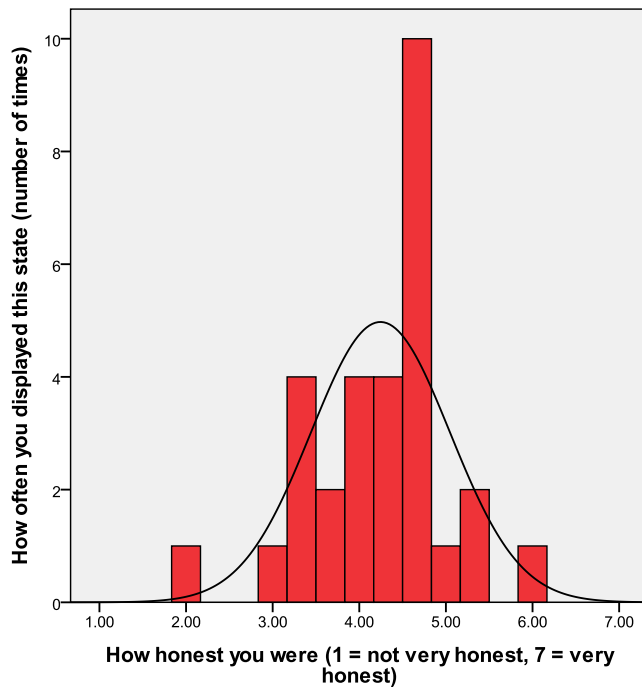


Figure 6: An example of someone who varied considerably in state honesty.

Table 15 displays the Pearson correlation matrix for each of the six states (ESM means correlated with ESM means, and ESM SDs correlated with ESM SDs). These analyses were conducted using the Bivariate correlations option in SPSS. All of the ESM SDs were found to be significantly correlated to each other, suggesting that there may be a general capacity for within subject variability across repeated measurements which support the findings of study 1 in the previous chapter. Many of the ESM means were found to be strongly correlated with each other. Table 16 displays the matrix of ESM means correlated with ESM SDs. Only the conscientiousness and openness to experience means were found to be negatively correlated to their respective SDs. The extraversion, agreeableness and conscientiousness means were all negatively correlated to the honesty SD. The emotionality mean was found to be positively correlated with the openness to experience SD while the extraversion SD was found to be negatively correlated with the emotionality mean. The conscientiousness mean was found to be negatively correlated with the agreeableness SD.

Table 15: Correlations of the ESM means and SDs of the six personality states ( $N = 36$ ).

Personality state	H	E	X	A	C	O
Honesty	-	-.24	.16	.64***	.37*	-.04
Emotionality	.66***	-	-.26	-.54***	-.36*	-.39*
Extraversion	.53***	.58**	-	.32	.50**	.56***
Agreeableness	.74***	.62***	.53***	-	.57***	.12
Conscientiousness	.65***	.57***	.52***	.69***	-	.24
Openness to experience	.62***	.61***	.39*	.42*	.54**	-

Note: The correlations of ESM means are in the upper diagonal; the correlations of ESM SDs are in the lower diagonal. \* =  $p < .05$ , \*\* =  $p < .01$ , \*\*\* =  $p < .001$ .

Table 16: The correlation matrix of the ESM SDs to the ESM means ( $N = 36$ ).

Personality state	H SD	E SD	X SD	A SD	C SD	O SD
Mean honesty	-.29	.14	-.02	.01	-.15	-.11
Mean emotionality	.20	-.04	-.22	-.03	.14	.34*
Mean extraversion	-.41*	-.31	-.15	-.17	-.29	-.57***
Mean agreeableness	-.50**	-.11	-.05	-.22	-.19	-.25
Mean conscientiousness	-.52***	-.13	-.07	-.50**	-.43**	-.27
Mean Openness to experience	-.12	-.17	-.07	-.07	.04	-.49**

Note: \* =  $p < .05$ , \*\* =  $p < .01$ , \*\*\* =  $p < .001$ .

Table 17 shows the correlations between ESM means and ESM SDs for each state. This indicated that two ESM SDs were significantly correlated with their corresponding ESM mean (conscientiousness and openness to experience). The correlations were then re-run partialling out the relevant ESM mean. For example, the relationship between the honesty and emotionality ESM SDs with the honesty ESM mean partialled out comes out at  $r(33) = .74, p < .001$ . Table 17 lists these partial correlations between one ESM SD to another ESM SD with the first ESM mean partialled out (conducted using the Partial correlations option in SPSS).

Table 17: Correlations of the ESM SDs of the six personality states with one of the ESM means partialled out ( $N = 36$ ).

Personality state	H SD	E SD	X SD	A SD	C SD	O SD
Honesty ESM SD with honesty ESM mean partialled	-	.74***	.54**	.77***	.64***	.62***
Emotionality ESM SD with emotionality ESM mean partialled	.68***	-	.58***	.62***	.58***	.67***
Extraversion ESM SD with extraversion ESM mean partialled	.52**	.57***	-	.52**	.50**	.37*
Agreeableness ESM SD with agreeableness ESM mean partialled	.74***	.62***	.54**	-	.68***	.39*
Conscientiousness ESM SD with conscientiousness ESM mean partialled	.55**	.57***	.54**	.61***	-	.48**
Openness to experience ESM SD with OTE ESM mean partialled	.66***	.62***	.41*	.52**	.64***	-

Note: \* =  $p < .05$ , \*\* =  $p < .01$ , \*\*\* =  $p < .001$ .

The following correlations changed substantially when an ESM mean was partialled out:

- When the honesty ESM mean was partialled out of the correlation of the honesty ESM SD to the emotionality ESM SD this increased from  $r = .66$  to  $r = .74$ .
- When the emotionality ESM mean was partialled out of the correlation of the emotionality ESM SD to the openness to experience ESM SD this increased from  $r = .61$  to  $r = .67$ .
- When the conscientiousness ESM mean was partialled out of the correlation of the conscientiousness ESM SD to the honesty ESM SD this decreased from  $r = .65$  to  $r = .55$ .
- When the conscientiousness ESM mean was partialled out of the correlation of the conscientiousness ESM SD to the agreeableness ESM SD this decreased from  $r = .69$  to  $r = .61$ .
- When the conscientiousness ESM mean was partialled out of the correlation of the conscientiousness ESM SD to the openness to experience ESM SD this decreased from  $r = .54$  to  $r = .48$ .
- When the openness to experience ESM mean was partialled out of the correlation of the openness to experience ESM SD to the honesty ESM SD this increased from  $r = .62$  to  $r = .66$ .
- When the openness to experience ESM mean was partialled out of the correlation of the openness to experience ESM SD to the agreeableness ESM SD this increased from  $r = .42$  to  $r = .52$ .
- When the openness to experience ESM mean was partialled out of the correlation of the openness to experience ESM SD to the conscientiousness ESM SD increased from  $r = .54$  to  $r = .64$ .

The nature of these changes reflects the previously conducted correlations between the ESM SDs and their corresponding ESM means where conscientiousness and openness to experience were found to be affected. Although the correlations are still generally strong overall, regardless of the impact of partialling out the ESM means. This suggests this has a minimal impact on the relationships between the ESM SDs.

As is done in most repeated measures personality diary study research, multi-level models were determined, using maximum likelihood estimation, to examine which between subject and within subject predictors affect particular personality states. As correlations were found between the ESM SDs, and many of the ESM means for the different states, multivariate multi-level regression models were conducted.

#### *Multi-level multivariate regression modelling analyses*

Three-level multivariate regression modelling analyses with interpersonal role and social goal orientation as repeated measure predictors, and anxiety and depression as between subject predictors of personality states were conducted. These analyses were inspired by Bleidorn (2009) analyses, except with six rather than five factors, as the HEXACO model includes the additional honesty state as well as the Big Five. The main benefits of this multivariate procedure in comparison to separate univariate procedures are that it does not require balanced data, meaning missing data can be handled. It also does not require equidistant time measurements, and it provides more powerful and accurate tests of the fixed effects and standard errors reducing chance capitalization (finding significant results that are not meaningful), that could have occurred with univariate testing (Snijders & Bosker, 1999).

The first step of the multi-level modelling process was to determine the personality state models without any predictor variables.



Level 1 was a multivariate measurement model for the personality states which is described by equation 5:

$$Y_{ijk} = d_{1ijk}\pi_{1jk} + d_{2ijk}\pi_{2jk} + d_{3ijk}\pi_{3jk} + d_{4ijk}\pi_{4jk} + d_{5ijk}\pi_{5jk} + d_{6ijk}\pi_{6jk} + e_{ijk}$$

Equation 5: The multivariate measurement model for the six personality states.

Where  $Y_{ijk}$  is the score of item  $i$  on occasion  $j$  for person  $k$ .

$d_{pijk}$  is a dummy coded variable which clarifies whether item  $i$  falls under state  $p$  (coded 1 = If the item falls under that state, 0 = If the item falls under one of the other 5 states).

$\pi_{pjk}$  is the latent true score of a personality state  $p$  for person  $k$  at occasion  $j$ .

$e_{ijk}$  is the measurement error.

So level 1 is a baseline measurement model for each state, summarised by equation 6.

$$Y_{jk} = \pi_{jk} + e_{jk}$$

Equation 6: The baseline level 1 model for each state.

Where for each state  $Y$  is the observed state score on occasion  $j$  for person  $k$ , where  $\pi$  is the latent true score of the state on occasion  $j$  for person  $k$ , and  $e$  is the measurement error.

This baseline model was set up using the Equation window under the Model function in MLwin. Responses were specified for each of the six HEXACO state variables through the Response option within the Equation window. Each response was then set to have 3 levels; level 1 being the measurement model level, level 2 being the occasion level and level 3 being the person level. The baseline model was then estimated.

Variance partition coefficients were calculated at baseline to determine the ratio of variance at the within subject (level 2) and between subjects (level 3). These are calculated as follows:  $VPC = \text{between subject variance} / (\text{between subject variance} + \text{within subject variance})$ . If the variance partition coefficient (VPC) is closer to 1, this means there is more variance at the between subject level than the within subject level. These coefficients suggested that there is more within subject variance present in all states. Extraversion (VPC = 0.11) and agreeableness (0.22), in particular show a very large degree of within subject variation. Although, honesty (VPC = 0.41), emotionality (VPC = 0.33), conscientiousness (0.35) and openness to experience states (0.39), still display considerable between subject variation as well.

These multi-level modelling analyses are performed under the assumption that the level 2 and level 3 residuals are normally distributed for each state. Residual analyses were performed in MLWin by using the Residual option under the Model function. First the level was set to 2 (within subject) or 3 (between subject), before requesting residual diagnostics for the state of interest. The residual analyses indicated the level 2 residuals were normally distributed for all six states, and the level 3 residuals were normally distributed for every state except honesty which displayed mild skew. As the skew was only mild for honesty at level 3, and everything else was normally distributed, it was deemed appropriate to continue with the analyses.

At levels 2 and 3 the following baseline equations apply for all 6 states:

At level 2:

$$\pi_{jk} = \beta_{0k} + u_{jk}$$

Equation 7: The baseline level 2 model.

$\beta_{0k}$  is the latent true state score for person  $k$  (so the dispositional trait score in effect),  $u_{jk}$  is the effect of occasion  $j$  for person  $k$  on the state score.

At level 3:

$$\beta_{0k} = \gamma_{00} + v_{0k}$$

Equation 8: The baseline level 3 model.

$\gamma_{00}$  is the latent true state grand mean and  $v_{0k}$  is the effect of person  $k$  on the state score.

So overall, the baseline model (separate equation for each state) can be summarised as:

$$Y_{jk} = \gamma_{00} + v_{0k} + u_{jk} + e_{jk}$$

Equation 9: The overall summary of the baseline model for each state, before any predictors are added.

Where  $\gamma_{00}$  is the latent true state grand mean,  $v_{0k}$  is the effect of person  $k$ , and  $u_{jk}$  is the effect of occasion  $j$  (for person  $k$ ) on the personality state and  $e_{jk}$  is the measurement error for person  $k$  on occasion  $j$ .

Table 18 displays the regularity that the sample displayed a particular interpersonal role while table 19 displays the regularity that the sample displayed a particular social goal orientation. These were obtained using the Frequencies option under Descriptive statistics in SPSS. There were enough occurrences of each category to use them all in analyses. Although the 36 participants completed 1062 diary measurements between them, due to a technical error in the diary questionnaire design, on one entry the markers for interpersonal roles were not included along with the social goal orientation markers. So there were 1026 responses for

each of the interpersonal role categories, with each participant missing one set of interpersonal role measurements. All participants were affected equally in the same way. As missing data are not assigned a category code, MLwin does not identify missing data as a valid category when the multivariate multi-level models including missing data are set up. So the missing interpersonal role data are not used when estimating the impact of interpersonal role effects on the personality states. The estimation procedures used by MLWin are designed to provide maximum likelihood estimates that are statistically efficient, even where some responses for a variable are missing (Rasbash, Steele, Browne, & Goldstein, 2009). The greater statistical power of a multivariate modelling strategy also helps to counter this, as the impact of the role on six variables is being simultaneously analysed. So there are 6156 interpersonal role measurements included in these models out of the 6372 cases (3.4% data missing). In a sample this size, 3.4% missing data is of minimal practical importance, particularly when the type of model and estimation procedures being applied help counter any effect of missing data. Therefore, multivariate models with all 6372 cases included from 1062 repeated measurements have been reported. The personality state and anxiety/depression data associated with the missing role occasions is used by the estimation procedure to provide more accurate and statistically powerful model estimates, than would be produced if these associated data were excluded.

Table 18: How often the sample of individuals ( $N = 36$ ) displayed a particular interpersonal role

Interpersonal role	Yes	No
Friend	498	528
Partner	447	579
Family	296	730
Employee/student	469	557
Alone	644	382

Table 19: How often the sample of individuals ( $N = 36$ ) displayed a particular social goal orientation

Social goal orientation	Yes	No
Socialising with others	643	419
Avoiding others	213	849
Asserting yourself	409	653
Personal or work achievement	581	481

The interpersonal roles, social goal orientations, anxiety and depression explanatory variables were applied to give fixed effects that predict variance in personality states at levels 2 and 3. Table 20 reports the -2Log likelihood statistics for the baseline multivariate 3-level model and models with the addition of predictors. The -2Log likelihood statistic for the model is always provided in the Equation window of MLWin, along with the estimates of coefficients and the unexplained variances at levels 2 and 3. A predictor was added to the baseline model using the Add Term option in the Equation Window of MLWin. For the

categorical predictors “No” was set as the reference category, with “Yes” as the predictive category of interest. In every instance of adding the repeated measures contextual predictors the -2log likelihood statistic significantly decreased compared to the baseline model (at  $p < .05$  at least, based on the chi square distribution). When depression was then added to the multivariate model it did not lead to a significant decrease in the -2Log likelihood statistic when compared to the baseline statistic, or in addition after adding any repeated measures predictor. However, there were several consistent patterns of significant fixed effects for depression in the multivariate model, that were worth mentioning and so these have been reported. The change in -2log likelihood statistic was most likely non-significant, with some fixed effects being significant, due to depression only having a considerable impact on the between subject variance, of which there was little in comparison to within subject variation. When anxiety was added to the multivariate model as a single predictor or in addition after a repeated measures predictor had been added to the baseline, there was not a significant change in the -2log likelihood statistic. Anxiety displayed a very similar pattern of -2LL statistics to depression. However, anxiety displayed no patterns of fixed effects in the full multivariate models like depression did, so the findings for these models are not reported.

Table 21 reports the impact of the fixed effect of a contextual predictor ( $\beta_c$ ) and fixed effect of dispositional depression ( $\beta_d$ ) on the personality state when added to the baseline models (for each state). How the unexplained within subject ( $\sigma_u^2$ ) and between subject ( $\sigma_v^2$ ) variance changes after the addition of the fixed effects is also reported. To determine whether the significance of specific fixed effects was  $p < .05$ , the fixed effect was compared against the value of the standard error of that fixed effect multiplied by 1.96 (the  $t$  statistic value that reflects 95% coverage of the distribution). If the effect value was greater than its standard error multiplied by 1.96, then  $p < .05$ . By setting  $t$  at 1.96 and multiplying this by the standard error it can be used as a significance check for fixed effects at  $p < .05$ .

Table 20: The -2log likelihood (IGLS deviance) statistics for each model

Multi-level model	-2log likelihood
Baseline( <i>ijk</i> )	17325.129
+ Anxiety	17319.744
+ Depression	17318.395
+ Friend	17258.605
+ Friend + Depression	17252.581
+ Friend (k)	17183.602
+ Friend (k) + Depression	17178.564
+ Partner	17298.448
+ Partner + Depression	17292.254
+ Family member	17309.851
+ Family member + Depression	17302.589
+ Employee/student	17289.782
+ Employee/student + Depression	17283.425
+ Alone	17251.768
+ Alone + Depression	17244.750
+ Socialising with others	17203.123
+ Soc with others + Depression	17197.381
+ Avoiding others	17266.097
+ Avoiding others + Depression	17259.918
+ Asserting yourself	17225.363
+ Asserting yourself + Depression	17219.133
+ Achievement	17239.481
+ Achievement + Depression	17232.949
+ Achievement (k)	17113.886
+ Achievement (k) + Depression	17103.448

Note: All the models reported were significant at  $p < .05$  at least when compared to the baseline model (on the chi square distribution), except for the +anxiety and +depression models. For the addition of one fixed effect

predictor to the 6 variable baseline multivariate model,  $df = 6$ ; for two,  $df = 12$ . Friend (k) and Achievement (k) are models where these predictors are allowed to vary according to participant (random slope). For the addition of one random slope predictor (to the baseline model),  $df = 57$ ; for one random slope and depression fixed effect,  $df = 63$ . The random slope dfs are much higher due to the additional variance parameters added.

The friend role and the personal or work achievement orientation predictors were also found to have an impact when the effect of the predictor was allowed to vary according to the participant in random slopes models. Of the models that converged when depression was added as well (some did not converge, most likely due to the complex structure of the data), only these two were found to be significant, and are reported. The altered effect of these two predictors, and their impact on the unexplained variances has been reported separately to the results for the standard form of these two predictors in table 21.

The extraverted state was significantly predicted by every role or orientation. Extraverted states were positively predicted by the friend role, partner role, family member role, employee/student role, socialising with others orientation, asserting yourself orientation and personal/work achievement orientation. Extraverted states were negatively predicted by the alone role and avoiding others orientation. State openness to experience was predicted by every role or orientation, except the partner role. The effects were all in the same direction as those for the extraverted state. State agreeableness was positively predicted by the friend role, the socialising with others and personal/work achievement orientations. Agreeableness states were negatively predicted by the alone role and avoiding others orientation. The emotionality state was negatively predicted by the socialising with others and asserting yourself orientations, but positively predicted by the avoiding others orientation. State honesty was also positively predicted by socialising with others, asserting yourself and personal/work achievement orientations, as well as being negatively predicted by the avoiding others orientation. State conscientiousness was positively predicted by the employee/student role,



and the socialising with others, asserting yourself and personal/work achievement orientations. The unexplained within subject variance in the personality state the predictor had an effect on decreased in every time. If the random slope effects for the friend role or achievement orientation were added to the baseline model, the within subject variance decreased, but the unexplained between subject variance also increased. This means part of the within subject variance in personality state is likely due to participant specific expression of the particular predictor.

When depression was entered with all but one of the repeated measure predictors, the exception being the friend predictor when random slope effects were applied, it showed a significant positive fixed effect on state emotionality. The unexplained between subject variance decreased considerably while the unexplained within subject variance also showed a small decrease. Depression was found to negatively predict state extraversion, agreeableness, conscientiousness and openness to experience, and positively predict state emotionality, when entered with the achievement predictor with random slope effects applied. In the state extraversion, agreeableness and conscientiousness models the unexplained between subject variance increased, but decreased in the state emotionality and openness to experience models.

Table 21: The fixed effects of each contextual predictor and depression on the HEXACO states.

State	Baseline	Depression (DP)	Friend and DP	Friend (k) and DP	Partner and DP	FM and DP	ES and DP	Alone and DP	SWO and DP	AO and DP	AY and DP	Achieving and DP	Achieving (k) and DP	
H	$\beta_c$	N/A	N/A	0.114	0.093	0.147	-0.006	0.097	-0.099	<b>0.214</b>	<b>-0.283</b>	<b>0.208</b>	<b>0.166</b>	<b>0.166</b>
		N/A	N/A	(0.061)	(0.066)	(0.080)	(0.064)	(0.064)	(0.061)	<b>(0.059)</b>	<b>(0.072)</b>	<b>(0.060)</b>	<b>(0.058)</b>	<b>(0.072)</b>
	$\beta_d$	N/A	-0.044	-0.042	-0.002	-0.039	-0.044	-0.043	-0.044	-0.038	-0.040	-0.041	-0.042	-0.040
		N/A	(0.053)	(0.053)	(0.048)	(0.053)	(0.053)	(0.053)	(0.053)	(0.053)	(0.053)	(0.053)	(0.053)	(0.051)
	$\sigma_{up}^2$	0.774	0.774	0.771	0.767	0.772	0.774	0.773	0.773	0.765	0.763	0.765	0.769	0.754
	$\sigma_{vp}^2$	0.533	0.522	0.529	0.551	0.518	0.523	0.523	0.517	0.517	0.521	0.529	0.515	0.565
E	$\beta_c$	N/A	N/A	-0.062	-0.075	-0.180	-0.087	0.109	-0.002	<b>-0.248</b>	<b>0.315</b>	<b>-0.151</b>	-0.037	-0.014
		N/A	N/A	(0.075)	(0.075)	(0.097)	(0.078)	(0.078)	(0.075)	<b>(0.073)</b>	<b>(0.088)</b>	<b>(0.074)</b>	(0.072)	(0.102)
	$\beta_d$	N/A	<b>0.116</b>	<b>0.114</b>	0.092	<b>0.110</b>	<b>0.118</b>	<b>0.118</b>	<b>0.116</b>	<b>0.109</b>	<b>0.111</b>	<b>0.113</b>	<b>0.115</b>	<b>0.129</b>
		N/A	<b>(0.052)</b>	<b>(0.053)</b>	(0.050)	<b>(0.052)</b>	<b>(0.052)</b>	<b>(0.052)</b>	<b>(0.052)</b>	<b>(0.052)</b>	<b>(0.052)</b>	<b>(0.052)</b>	<b>(0.053)</b>	<b>(0.045)</b>
	$\sigma_{up}^2$	1.166	1.166	1.165	1.165	1.162	1.165	1.165	1.166	1.153	1.152	1.161	1.166	1.123
	$\sigma_{vp}^2$	0.570	0.497	0.503	0.508	0.486	0.495	0.479	0.497	0.495	0.487	0.495	0.497	0.528
X	$\beta_c$	N/A	N/A	<b>0.569</b>	<b>0.604</b>	<b>0.425</b>	<b>0.213</b>	<b>0.225</b>	<b>-0.613</b>	<b>0.734</b>	<b>-0.552</b>	<b>0.567</b>	<b>0.168</b>	<b>0.169</b>
		N/A	N/A	<b>(0.072)</b>	<b>(0.113)</b>	<b>(0.092)</b>	<b>(0.076)</b>	<b>(0.076)</b>	<b>(0.072)</b>	<b>(0.070)</b>	<b>(0.087)</b>	<b>(0.072)</b>	<b>(0.071)</b>	<b>(0.100)</b>
	$\beta_d$	N/A	-0.053	-0.040	-0.010	-0.038	-0.060	-0.050	-0.050	-0.033	-0.044	-0.044	-0.051	<b>-0.072</b>
		N/A	(0.030)	(0.032)	(0.028)	(0.031)	(0.031)	(0.031)	(0.029)	(0.033)	(0.031)	(0.031)	(0.030)	<b>(0.026)</b>
	$\sigma_{up}^2$	1.200	1.200	1.130	1.072	1.169	1.190	1.189	1.123	1.080	1.153	1.127	1.194	1.146
	$\sigma_{vp}^2$	0.155	0.140	0.156	0.165	0.150	0.146	0.145	0.128	0.169	0.142	0.146	0.136	0.228

Table 21 continued: The fixed effects of each contextual predictor and depression on the HEXACO states.

State	Baseline	Depression (DP)	Friend and DP	Friend (k) and DP	Partner and DP	FM and DP	ES and DP	Alone and DP	SWO and DP	AO and DP	AY and DP	Achieving and DP	Achieving (k) and DP	
A	$\beta_c$	N/A	N/A	<b>0.282</b>	<b>0.280</b>	0.153	-0.033	0.047	<b>-0.196</b>	<b>0.455</b>	<b>-0.453</b>	0.074	<b>0.175</b>	<b>0.166</b>
		N/A	N/A	<b>(0.070)</b>	<b>(0.083)</b>	(0.090)	(0.073)	(0.074)	<b>(0.071)</b>	<b>(0.068)</b>	<b>(0.083)</b>	(0.070)	<b>(0.068)</b>	<b>(0.073)</b>
	$\beta_d$	N/A	-0.063	-0.056	-0.025	-0.058	-0.062	-0.062	-0.062	-0.050	-0.056	-0.062	-0.061	<b>-0.082</b>
		N/A	(0.040)	(0.041)	(0.034)	(0.040)	(0.040)	(0.040)	(0.039)	(0.040)	(0.040)	(0.040)	(0.040)	<b>(0.034)</b>
	$\sigma_{up}^2$	1.067	1.067	1.048	1.037	1.063	1.066	1.066	1.060	1.020	1.036	1.065	1.059	1.055
	$\sigma_{vp}^2$	0.297	0.275	0.293	0.352	0.272	0.275	0.276	0.257	0.282	0.271	0.278	0.274	0.345
C	$\beta_c$	N/A	N/A	0.112	0.091	-0.062	-0.034	<b>0.300</b>	-0.119	<b>0.177</b>	-0.106	<b>0.358</b>	<b>0.519</b>	<b>0.525</b>
		N/A	N/A	(0.062)	(0.073)	(0.081)	(0.065)	<b>(0.065)</b>	(0.062)	<b>(0.061)</b>	(0.074)	<b>(0.061)</b>	<b>(0.057)</b>	<b>(0.074)</b>
	$\beta_d$	N/A	-0.075	-0.072	-0.033	-0.077	-0.074	-0.070	-0.074	-0.070	-0.073	-0.069	-0.068	<b>-0.089</b>
		N/A	(0.047)	(0.047)	(0.044)	(0.047)	(0.047)	(0.048)	(0.046)	(0.047)	(0.047)	(0.047)	(0.045)	<b>(0.039)</b>
	$\sigma_{up}^2$	0.801	0.801	0.798	0.787	0.800	0.800	0.783	0.799	0.794	0.799	0.776	0.744	0.726
	$\sigma_{vp}^2$	0.434	0.404	0.407	0.408	0.408	0.403	0.425	0.389	0.404	0.398	0.396	0.375	0.438
O	$\beta_c$	N/A	N/A	<b>0.148</b>	<b>0.150</b>	0.125	<b>0.153</b>	<b>0.169</b>	<b>-0.121</b>	<b>0.185</b>	<b>-0.267</b>	<b>0.280</b>	<b>0.223</b>	<b>0.215</b>
		N/A	N/A	<b>(0.060)</b>	<b>(0.062)</b>	(0.078)	<b>(0.063)</b>	<b>(0.063)</b>	<b>(0.060)</b>	<b>(0.059)</b>	<b>(0.071)</b>	<b>(0.059)</b>	<b>(0.057)</b>	<b>(0.068)</b>
	$\beta_d$	N/A	-0.089	-0.085	<b>-0.090</b>	-0.085	-0.093	-0.086	-0.088	-0.084	-0.085	-0.084	-0.086	<b>-0.095</b>
		N/A	(0.049)	(0.049)	<b>0.046</b>	(0.048)	(0.049)	(0.049)	(0.049)	(0.050)	(0.049)	(0.048)	(0.048)	<b>(0.046)</b>
	$\sigma_{up}^2$	0.750	0.750	0.745	0.746	0.748	0.745	0.745	0.747	0.742	0.739	0.734	0.740	0.728
	$\sigma_{vp}^2$	0.486	0.443	0.449	0.499	0.430	0.444	0.441	0.442	0.454	0.444	0.420	0.430	0.418

Note: Each column represents a single multivariate model. Each cell contains in descending order the contextual fixed effect  $\beta_c$ , SE of contextual fixed effect (in brackets), depression fixed effect  $\beta_d$ , SE of depression fixed effect (in brackets), unexplained within subject variance ( $\sigma_{up}^2$ ), in italics, and unexplained between subject variance  $\sigma_{vp}^2$  in that order. H = Honesty, E = Emotionality, X = Extraversion, A= Agreeableness, C = Conscientiousness, O = Openness to experience. FM = Family member, ES = Employee/student, SWO = Socialising with others, AO = Avoiding others, AY = Asserting yourself. Friend (k) and Achieving (k) are the contextual effects allowed to vary by participant. Fixed effect and SE values in bold are significant at the 0.05 level at least. The intercepts were similar across models, considerable change to the intercept only occurred for very strong effects on particular states (extraversion mainly).

As in the previous chapter, a large number of analyses have been performed during this study, so it is possible that there may be some false positives. Therefore these fixed effects could be interpreted at the significance level  $p = .01$ , to reduce the possibility of false positives. This can be checked by substituting the 1.96  $t$  value used previously when checking fixed effect significance for 2.58 (to reflect 99% coverage of the distribution). Looking at table 21, this suggests that the following fixed effects lose significance at  $p = .01$ .

- The asserting yourself negative predictive effect on emotionality.
- The fixed effect for work/personal achievement on extraversion.
- Several effects where the personal/work achievement slope was allowed to vary by participant (those predicting honesty, extraversion and agreeableness).
- Some of the depression fixed effects included in these models with personal/work achievement (when predicting agreeableness, conscientiousness and openness to experience).
- The positive fixed effects for depression on emotionality lose significance, except for the effect in the personal/work achievement allowed to vary by participant model.
- The negative predictive effect for depression on openness to experience in the friend (k) model.
- Several interpersonal role predictive effects on openness to experience lose significance including friend, friend (k), family member and alone.

Although some of the fixed effects lose significance, there are still many that retain significance at  $p = .01$ .

## Discussion

This study demonstrates that HEXACO personality states varied across repeated measurements within the participant. As in previous diary studies, the descriptive statistics (ESM SDs) showed that repeated measurements of state scores for an individual displayed a fairly normal distribution around their mean state score. Average ESM SDs of approximately 1 either way suggests 95% coverage of the distribution spans across 4 points on the rating scale for the average person, with the capacity to be higher or lower depending on the participant. The ESM SDs for all six HEXACO states were found to be strongly correlated. Some of the ESM SDs were related to particular ESM means, in particular varied honesty was associated with being dispositionally low in extraverted, agreeable and conscientious behaviour. It was interesting to see that variation in the states across measurements was not significantly related to the respective state means in every instance, this was only the case for conscientiousness and openness to experience. Honesty was still modestly related, even if it was non-significant. Although when the ESM means were partialled out of the ESM SD correlation analyses little impact on the correlation strength was found. This suggests that personality state behaviour is somewhat independent of trait behaviour for the other states. The findings suggest the alternate hypothesis that the HEXACO ESM SDs will be significantly related to each other should be accepted. The alternative hypothesis that each ESM SD will be significantly related to the corresponding ESM means should be rejected or at most only partially accepted as only two of the six ESM SDs were significantly related to their corresponding ESM mean. These results support the second outcome of Fleeson (2001) density distribution of states theory, as the ESM SD indices for each state were found to be highly correlated, therefore suggesting a stable variability across repeated measurements individual difference.

The personality states with smaller ESM SDs displayed variance partition coefficients suggesting that more between subject variance was present, and the states with higher ESM SDs displayed variance partition coefficients suggesting more within subject variance was present. This provided support for the ESM SDs as being a valid measure of variation in personality states. The attributes in the traditional five factor model followed the variance partition pattern displayed in previous research (Bleidorn, 2009; Fleeson, 2007; Fleeson & Gallagher, 2009; Heller, Komar & Lee, 2007). The additional honesty state was found to display a greater degree of between subjects variation in the variance than the other states, although there was still considerable within subject variation. This might be expected – as if honesty varied considerably this would indicate maladjusted functioning, most likely with the display of manipulative behaviour. This is supported by the honesty ESM SD being negatively related to extraversion, agreeableness and conscientiousness means. This is also supported by the high mean of the honesty states, indicating honesty was on average high. This suggests the varied state behaviour is also sincere and authentic behaviour. The differences in variance component ratio size for each state support the personality state variations being meaningful to that state, rather than being generic to variation in measurement across all states. These findings support the first outcome Fleeson (2001) highlighted as supporting the density distribution of states theory as there was substantial within subject variability in states across repeated measurements which outweighed the between subjects variance present for all states except honesty.

The results of the multi-level modelling analyses strongly support the predictions made for the study. When momentary interpersonal roles or social goal orientations were added to baseline models, they were found to predict personality states. Relative to interpersonal roles, the social goal orientations generally had a greater impact on personality states. So goal orientations affected personality states more than the roles. Personality states

with more positive connotations in society, such as higher honesty, extraversion, conscientiousness and openness to experience, were positively predicted by roles and orientations focused on engaging with other people and achieving. The opposing alone and avoiding others orientations negatively predicted these states (honesty, extraversion, agreeableness, and openness to experience). The alone and avoiding others orientations were found to positively predict state emotionality. The finding that particular states are predicted by specific roles and goal orientations provides support for the view that situational dispositions are a result of experiences and feedback in the social environment as CAPS theory would suggest (Mischel & Shoda, 1995). Although the interpersonal roles and social goal orientations displayed different relative effect strengths, the effects displayed similar directions in terms of positive and negative behaviour states. This suggests they are associated and important to consider together as suggested by Heller, Perunovic and Reichman (2009). This suggests the alternate hypothesis that the HEXACO personality states will be significantly predicted by within subject interpersonal roles and goal orientations should be accepted. This also supports the third outcome for Fleeson (2001) density distribution of states theory in that should be predictable by external or situational variables.

The differences in predictive strength of the contextual predictors across the different states suggest there is differentiation in degree of state behaviour by context. For example, the friend role had a much stronger impact on extraversion, in comparison to other significant states, whereas the achievement orientation had a much stronger impact on state conscientiousness, when compared to the other significant states. This suggests some states were particularly facilitated by certain contexts. The fact that these are fixed effects, relevant across participants, indicates that they are adaptive ways to act in particular situational contexts. The FIT Science framework would suggest that the variability or flexibility in behavioural states has a beneficial effect on engagement with the environment (Fletcher &



Stead, 2000). This is supported by the lack of any predictive effects for anxiety on personality states and the finding here that depression only consistently predicted state emotionality. This means the alternative hypothesis that the HEXACO personality states will be significantly predicted by between subject anxiety and depression can only be partially accepted, as only depression displayed some consistent effect on state emotionality.

Particular personality states displayed in specific roles provides support for situational state dispositions arising in response to individual experiences and feedback. Although due to the sheer capacity of both theoretical processing systems (FIT Science or CAPS theory), this study represents only a small portion of either system. The varied display of states supports the capacity of the individual to self-regulate by activation and inhibition of their behaviour states according to particular roles or goals (Carver & White, 1994; Kruglanski et al., 2000; Torrubia, Cesar, Molto & Caseras, 2001).

A major strength of this study is that every participant completed between 20 and 30 measurements, with most closer to 30, providing a valid and statistically powerful measure of how each individual's personality states would vary in the short term. The extensive number of measurements collected from each participant was demanding, but the sample size obtained provided a valid sample to examine the display of personality states. Thirty-six participants was enough to provide sufficient confidence in statistical significance when taking into consideration the number of repeated measurements collected, and the additional statistical advantages of multivariate multi-level regression modelling (Rasbash, Steele, Browne, & Goldstein, 2009; Snijders & Bosker, 1999). Considering each measurement consisted of only three items, with reliabilities varying between .63 and .80 ( $M_{\alpha} = .71$ ), these were decent measurements of the personality states. The sex split was normal for most psychological research with a smaller number of male in comparison to female participants (9

male and 27 female participants), although it was found that there was no significant difference in the ESM SDs for any state due to sex.

The study only examined a limited range of roles and orientations. There may have been benefits of splitting the employee/student and personal/work achievement markers into separate marker categories or adding others. Although every addition would have expanded the demands on the participants, and this would introduce other difficulties. Previous studies have measured engagement in a role using rating scales to gauge how engaged a person was in each role in the moment (Bleidorn, 2009), whereas this study just asked the individual to mark any roles they fell within during the past couple of hours. This will have provided less detail and perhaps led to some minor overlap between variables, but it was felt to be necessary to ensure ease of completion and continued participation. The extensive number of repeated measurements collected also helps compensate for any possible overlap. Although this study examined both interpersonal roles and social goal orientations together, interaction analyses were not reported. This was due to the excessive amount of analysis entailed for all the potential combinations of predictors. To explore the potential interactions, future studies could examine specific interpersonal roles and social goal orientations that are likely to interact, based on these findings. For example, the with friend role and socialising with others orientation are likely to interact based on their contextual compatibility.

Future diary research might consider using a different selection of in-the-moment variables in order to expand the range of known intra-individual contextual predictors of personality states, perhaps these could be inspired by CAPS theory (Mischel & Shoda, 1995). Alternative dispositional variables could be included too. For example measuring self-complexity (Linville, 1985, 1987), based on the discussions in chapter 2, or including the behavioural flexibility scale from the FIT profiler may be good to include in future studies. Shorter studies with 10 or 15 repeat measurements might also be conducted to see if there are

an optimal number of measurements to collect data for. This would help logistically determine how many measurements are required to validly measure repeated measure state variation with decent power while at the same time encouraging continued and increased participation. This would lead to quicker conducting of diary studies to help develop a broad range of known contextual predictors.

These findings have interesting implications for behaviour change approaches and therapies because behavioural flexibility – or greater variation in personality states - is required to adapt to different circumstances (Fletcher, Hanson, Pine & Page, 2011). This research suggests that it is possible to predict the effect of engaging with particular roles or goals on current personality state. By getting an individual to perform behaviours associated with a particular state, they will emulate the behaviours associated with a particular goal orientation or interpersonal role, and this will increase the likelihood of them engaging with a particular role or goal in the process of performing the behaviour. The individual then receives feedback to promote further engagement with those specific roles and goals. In doing this, behaviour flexibility would be increased while providing positive feedback that helps alleviate an anxious or depressed disposition which may have been stopping them engaging with these roles or goals.

### *Chapter summary*

This chapter has shown through review of previous research, and the diary study conducted, that personality states do vary in a meaningful way to predict and be predicted by engagement with particular interpersonal roles or social goal orientations. The review brought together literature from Reinforcement Sensitivity Theory, self-regulation theory, and ESM personality diary study research. This was then used to discuss how and why personality varies, by an integration of trait and processing theories. The diary study that followed provided a good demonstration of the contextual nature of personality which examined two contextual predictors that past literature suggested needed to be examined together (Heller, Perunovic & Reichman, 2009).

Now that it has been established that intra-individual personality does vary meaningfully, and can be predicted contextually, it needs to be determined whether the person or the situation has more relative importance in the display of varied intra-individual personality behaviour. This will help us to understand how to be able to apply these findings appropriately. This will be examined from a personal construct theory approach in the next chapter.

## **Chapter 4: The relative importance of the person compared to the situation in intra-individual variability.**

Previous studies show that the individual personality attributes have the capacity to vary according to different situations, the study in the previous chapter included. Although in most of these studies the situational context provided was quite general, e.g. as family member, as a friend, socialising with others. In order to apply the findings found so far in changing behaviour, the person-situation mechanism needs to be more clearly understood for intra-individual personality variation specifically. The most obvious way to examine this is how we interpret ourselves and those others around us in particular interpersonal contexts. Adapting to highly specific interpersonal environments is one of the greatest advantages to being variable. However, this would be incredibly difficult to examine with diary study repeated measurements, due to the complexity of data that would have to be collected in each momentary instance. Could a single set of measurements be used to examine specific interpersonal others important to the individual in that context, who may encourage a particular behaviour style in that interpersonal context?

Personal construct theory has been used to examine how the individual constructs the world around them. The interpretation of self and significant interpersonal others is one of the predominant areas that personal construct theory has been applied in. The review of this research will cover personal construct theory, its corollaries and its main method of inquiry, the repertory grid. A selection of research contexts the grid is applied in will be reviewed.

The following topics will be covered in this review:

- Behaviour as an experiment – the PCT view on behaviour performance
- The triadic elicitation procedure for personal constructs
- The repertory grid technique and indices derived from the grid
- The construing of the self across different contexts
- Construing of two people within an interpersonal relationship
- Combined unique and trait construct grid studies

The study in this chapter will use the personal construct repertory grid to examine the importance of the personal self and situational other in intra-individual personality variation across particular interpersonal contexts.

### *Personal construct theory (PCT)*

George Kelly (1955) originally proposed personal construct theory as a theory of constructive alternativism. This is the idea that the individual constructs their surroundings. It is the individual's subjective view of the world which is open to revision. Personal construct theory has a fundamental postulate that states: "A person's processes are psychologically channelled by the way in which the individual anticipates events" (Kelly, 1955, pp46). There are a selection of corollaries that accompany this fundamental postulate. The most central corollary is that everyone constructs the world in their own way, and uses these constructions to anticipate events (the construction corollary). They may use some constructs similar to those another person uses (the commonality corollary), but there is no completely identical construing system, everyone has a unique construct system (the individuality corollary). Rather than just listing all the corollaries here, it will be easier to discuss them in the context of the methods as the chapter progresses.

#### *Behaviour as an experiment – the PCT view on behaviour performance*

In Personal Construct Theory, behaviour is seen as the experimental tool used to test the individual's construction of their world. The feedback provided to behaviour gives the individual some idea of whether their way of constructing the world is an accurate or beneficial way to do so. In those individuals whose constructs are not supported by feedback to behaviour (receiving consistently negative feedback) there may be problems with the way the individual is constructing the world. In this instance helping the individual construe the world in an alternative way would be beneficial to the way they proceed to behave. This is the aim of personal construct therapy. Klion and Pfenneger (1997) provide good examples in their review of applying PCT to addiction. In this instance, the addict self has become an interpersonal role after the invalidation of the individual's normal behaviour leads to substance abuse to numb the emotional pain of constant invalidating feedback. Part of the

therapy for this is to create a role, a new self that the client can use to gradually change. This happens once the client's motivation to change has manifested, usually by understanding the purpose of the addiction. Burell and Jaffe (1999) suggest an evolutionary perspective where a self focusing on substance use arises from efforts to adapt to social contexts. The use of a substance provides a solution to problematic constructs that the individual has trouble dealing with. The effects of personal construct therapy to control groups have been compared in meta-analyses (Holland & Neimeyer, 2009; Metcalfe, Winter & Viney, 2007; Viney, 1998). Holland and Neimeyer (2009) found that the effect of PCT was greater than that of the control groups for several disorders, but that effect size differed depending on the disorder. Personal construct therapy was found to be highly effective in treating anxiety and fear complaints ( $d = 0.86$ ), but not very effective for psychosis and delusion ( $d = 0.03$ ). Moderate effect sizes of personal construct therapy were found for trauma and stress ( $d = 0.34$ ), physical problems and aging ( $d = 0.33$ ) and problematic behaviour ( $d = 0.46$ ).

Modern interpretations of personal construct theory arise in social constructionist (Butt, 2001; Butt & Parton, 2005; Pavlovic, 2011) and positivist orientated research (Van Kampen, 2000; Grice, 2004; Grice, McDaniel & Jackson, 2006). PCT uses qualitative and quantitative methods such as the self-characterisation (a written description of the self in the third person), and the repertory grid (a quantitative grid of self-report ratings) to elicit personal constructs. The repertory grid is the most popular technique in personal construct theory. The main procedure used to determine how the individual constructs the world using the repertory grid is the triadic elicitation procedure.



### *Triadic elicitation procedure*

The triadic elicitation procedure is used to elicit dichotomous, bipolar constructs that describe the ways the individual constructs the world (the dichotomy corollary). The repertory grid has been applied in many different contexts. However, the main area of interest for this research is how the self and interpersonal others are constructed, and the varied types of behaviour this leads to. In an interpersonal context the repertory grid is designed to elicit bi-polar personality constructs about the self, and people who fulfil particular social roles (the elements) for the individual. For example, one way the individual may construct other people (the elements) is along the bi-polar construct dimension *organised vs. disorganised*. The importance using the repertory grid to elicit constructs about social behaviour was highlighted by Kelly's Sociality Corollary. The Sociality Corollary (Kelly, 1955, pp 95) suggests "To the extent that one person construes the construction processes of another, they may play a role in a social process involving the other person". Thomas (1979) expands on this with his Self-awareness and Social awareness Corollaries. The Self-awareness Corollary states "To the extent that a person construes his own constructions of experiences, he or she acquires consciousness. To the extent that a person construes his or her own processes of construction he or she acquires a more complete awareness of themselves as a person." (Thomas, 1979, cited from Winter, 1992, pp 8). The Social Awareness Corollary states "The forms in which a person construes his or her constructions of social interactional processes will condition their ability to consciously influence their processes of interaction with others." (Thomas, 1979, cited from Winter, 1992, pp 8).

Fransella, Bell and Bannister (2004) describe the triadic elicitation procedure. At the beginning of the triadic elicitation procedure the individual is asked to list people who each fulfil a particular defined role, e.g., me now, mother, and ex-boy/girlfriend. Groupings of three of these people are selected, usually randomly, and the individual has to list a quality

which two of the three people share that the third does not, e.g. *organised*. This is the emergent pole. The individual is then asked to provide the quality of the third person, referred to as the opposite or implicit pole, to produce a bipolar construct, e.g., *organised vs. disorganised*. This is referred to as triadic difference elicitation. A slight variant from the triadic difference procedure is the triadic opposite procedure. This is where a quality two people share is elicited as the emergent pole without having to specify that the third person does not share it, before asking for the opposite as the implicit pole (Epting, Suchman & Nickeson, 1971). This is a slightly easier to perform variant of the difference procedure. The triadic opposite procedure produces fewer bent constructs and more polarity in the constructs, but can cause less differentiation in constructs elicited and more extreme implicit pole descriptions (Hagans, Neimeyer & Goodholm, 2000). Bent constructs are when a pole from a different dimension is used to provide the implicit pole of the construct being elicited, e.g., *organised vs. spontaneous*. The latter point refers to the impact of the third element in softening the implicit pole description. The example Hagans, Neimeyer and Goodholm use is for a construct with the emergent pole *intelligent*, in which the implicit pole elicited using the opposite procedure is *stupid* while with the difference procedure the implicit pole elicited is *not intelligent*. The personal constructs are then applied in a grid format along with the elements (people fulfilling particular roles) referred to as the role construct repertory grid. The individual then rates how each element behaves on the bi-polar construct, most often using a 1-7 Likert scale spanning the construct, although some researchers use a purely dichotomous response. The researcher considers Hagans, Neimeyer and Goodholm (2000) point a matter of preference in the possible extremity of content, rather than a serious methodological flaw, as the participant refines their views somewhat when rating the construct using a Likert scale. For every construct there is thought to be a certain range of convenience in that “a construct is convenient for the anticipation of a finite range of events

only” (Kelly, 1955, pp68). This is referred to as the range corollary. For example, some constructs may only be applicable to those people they know at work, if the elements involved in elicitation are solely work colleagues. To account for an individual’s ability to construct a world with varied environments, Kelly proposed the fragmentation corollary. This suggests that a person may employ a variety of construct systems. These systems may contain different constructs that are not necessarily compatible with each other. So the individual may have separate systems of constructs for describing friends, family, or work colleagues. However, a construct is only limited by the permeability of the construct itself (the modulation corollary). So in some instances systems of constructs may overlap with some permeable constructs that fit elements from multiple systems, e.g., a construct that fits work and/or social elements could be *organised vs. disorganised*. Some people may have highly permeable constructs that account for most contexts and elements, whereas others may have constructs that not so permeable and are relevant only to specific sub-systems, e.g., separate friends, family, work construct systems. Most people likely have a mix of both. However, no matter how the person construes constructs are thought to be arranged in a hierarchal fashion (the organisation corollary). Methods of eliciting more specific behavioural detail or the deeper underlying philosophy behind personal constructs have been developed. These methods are pyramiding and laddering.

### *Pyramiding and laddering*

Personal constructs are thought to be organised in terms of superordinate and subordinate constructs (the organisation corollary). Superordinate constructs are those deeper underlying constructs that are meaningful to the way the individual lives their life, and often represent values that the individual strives towards. A common example of a superordinate construct is *to be happy vs. to be depressed*. Subordinate constructs are those constructs that distinguish between more specific behaviours. An example of a subordinate construct is

*organised vs. disorganised*. An even more subordinate example of *disorganised* would be *untidy vs. tidy*. Bannister (1970) describes this hierarchy of constructs as a pyramid, in which the superordinate constructs are at the top of the pyramid, with subordinate constructs progressing down the pyramid in order of specificity. Figure 7 depicts a hypothetical pyramid using some of the previously mentioned examples which progresses down the left side of the pyramid from the emergent pole of the most superordinate construct (*To be happy*).

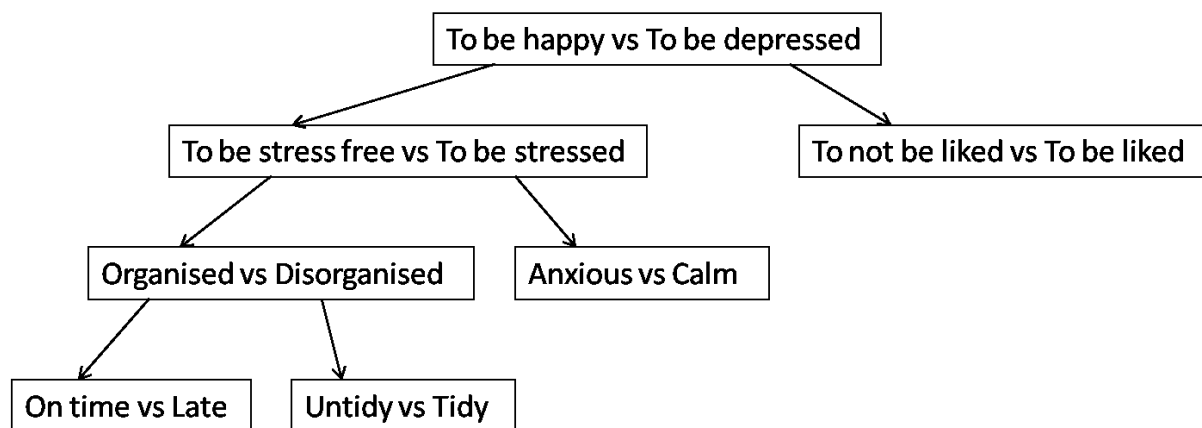


Figure 7: A hypothetical example of a pyramid of personal constructs.

Pyramiding and laddering are the methods used to elicit these construct pyramids. Pyramiding is the process of determining more concrete behavioural constructs (Landfield, 1971). For example, by asking the hypothetical individual described how someone who is *disorganised* behaves, they may reply that disorganised people are *untidy* and that the opposite behaviour is *tidy*. Laddering is the process used to move up the pyramid to core superordinate constructs (developed by Hinkle, 1965). In this hypothetical example, the individual would have been asked what their preferred pole of the construct is, *organised* or *disorganised*. On suggesting *organised*, the participant would be asked ‘So why is it important to be *organised*?’ To which they would reply ‘being organised means you become *free of stress*’, and the individual suggests the opposite of *to be stress free* is *to be stressed*.

The procedure would then be repeated for the *to be stress free* vs. *to be stressed* construct. This would occur until the highest superordinate construct is reached which is generally determined when the participant starts to repeat themselves. As Fransella and Dalton (2000) put it; “*Laddering* consists no more and no less than of asking the question “why?”” (pp63).

Conducting pyramiding and laddering procedures requires the skills of credulous listening, suspending and subsuming (Kelly, 1955/1991). Credulous listening involves assuming everything the participant or client says is fact, even if you know it to be wrong or a lie. It is the participant’s way of constructing behaviour and the world that is of interest, and not that of the interviewer. There is a reason behind the individual’s construction that would be shrouded by the interviewer’s interpretations during the interview process. In order to be listening credulously, the suspension of the interviewer’s construct system, and subsuming the interviewee construction system is required for the interview. This means the interviewer has to ignore their own construct system, in order to focus completely on the individual’s construct system and see how the other person constructs the world. Both pyramiding and laddering can be applied alongside the triadic procedures by choosing to ladder or pyramid the constructs elicited, and then inserting the end result of this into the repertory grid.

The techniques used to elicit additional information during the interview beyond the constructs provided by triadic elicitation have been discussed, but there are also many summary indices that can be derived from repertory grid data to enhance interpretation of the data.

#### *Cognitive complexity indices derived from the repertory grid*

A selection of different indices have been developed that can be calculated from repertory grid data to provide a summary of the structure of the participant’s repertory grid (Fransella, Bell & Bannister, 2004). One of the most frequently used is the cognitive

complexity index. Indices of cognitive complexity can be used to summarise how much the participant differentiates ratings of different elements and/or constructs in the repertory grid. Participants who are highly complex are expected to differentiate ratings more while less complex participants are expected to display similarity in ratings across elements or constructs.

One index of complexity is the explained variance by first component from a factor analysis of the repertory grid data (developed by Jones, 1954). This is often referred to as percentage of variance accounted for by the first factor (PVAFF). The more complex individual is expected to have a larger number of components derived from factor analysis to explain the variance in their grid ratings, so the first component is expected to be smaller. This means a low PVAFF index will indicate a more cognitively complex individual. Another index of complexity is the Bieri cognitive complexity index (developed by Bieri, 1955) which examines the degree to which construct ratings are matched in an element across all of the constructs (as a 0-1 proportion). The idea is that if ratings are closely matched on all constructs for an element, then the individual has a lesser capacity to discriminate between different constructs when constructing people. A lower score indicates less matching in ratings, and therefore greater cognitive complexity. Also used is the Intensity index (developed by Bannister, 1960). Intensity examines how 'tight' the individual's construction is. A tight construct system can only make limited predictions about how events will happen while a loose construct system can make a wide range of predictions. Intensity is calculated as the sum of the squared correlations (squaring each correlation is done to remove the negative signs on some correlations) found between all pairs of the constructs which is then multiplied by 100 to give a more interpretable scale. A low Intensity score indicates that the individual has a loose construing system where constructs are not substantially correlated that leads to more varied behaviour predictions. Extreme lows of the Intensity index have been

found in patients suffering from thought-disordered schizophrenia, in comparison to non-clinical or non-thought-disordered clinical conditions (Bannister, 1960; Bannister & Fransella, 1965).

Just three indices have been described here, out of the wide variety that exist (see Fransella, Bell & Bannister, 2004, for an extended description of many different types of complexity index). In each case described lower scores on the index highlight a greater degree of cognitive complexity. However, these indices have all been defined in slightly different ways. For example, the Bieri Index is defined by Bieri (1955) purely as a measure of complexity vs. simplicity in construct differentiation while the Intensity index is defined by Bannister (1960) as measuring whether the construct system allows for varied behaviour predictions. This would suggest they are interpreted as different variables rather than different versions of the same measurement, even though they are all interpreted in the same direction and are all derived from the same grid data. If this is the case then these types of index, if calculated from the same data, should display some discrimination in predicting other complexity indices or outcomes. Adams-Webber (1970) was one of the first to study this issue by calculating four different structural indices of cognitive complexity that supposedly tapped into different aspects of complexity focused around element differentiation or construct differentiation. Adams-Webber examined these in relation to the average similarity of the self to each of the other elements in the repertory grid (a content based measure). Adams-Webber found that the structural indices to be very strongly positively correlated to each other, and all of the indices were very strongly positively related to the content measure of average similarity of self and other ratings. This suggested there was little discrimination in complexity indices derived from the same repertory grid data. In more recent research Feixas et al. (2004) found PVAFF and Intensity to be strongly correlated, but Bieri was not strongly related to either index in both non-clinical and clinical

samples suggesting some discrimination of the Bieri index from both these measures. However, this is likely to be due to Likert scales being applied instead of dichotomous ratings as Bieri (1955) original calculations used. This would have increased the number of response options to choose from, and this will have had a substantial impact on the number of exact matches found which is what the Bieri index calculation is based on. Feixas et al., also examined these indices in grid data randomly generated using a computer, in comparison to the human samples. This found differences in the patterns of human and computer responses to grids, with human responders displaying less complexity across the PVAFF, Bieri and Intensity indices. This supports people having particular response styles in relation to their unique set of elements for their own constructs, and highlights these indices as a relevant individual difference to measure. Furthermore, Caputi and Keynes (2001) have found the PVAFF index to be stable across re-test measurement at baseline, 1 and 2 weeks in 51 students after their first version of grid was completed (they filled in grids based on the same elements and constructs each time).

On the whole studies suggest that there is little discrimination between the indices of cognitive complexity that are supposed to tap into slightly different constructs, suggesting they all tap into the same cognitive complexity construct. This degree of similarity in indices would be expected as all of them are derived from the same grid data. This issue of discriminant validity is not just limited to cognitive complexity indices, but to all indices derived from the same repertory grid data, e.g., the associations between measures of distances between elements and relationships between elements. Therefore, sets of indices derived from the same grid in relation to each other should be interpreted with some caution.

A background to personal construct theory and some important aspects of repertory grid technique have been provided. However, it may have come to the reader's attention that PCT discusses cognitive constructs and behaviour experimentation, but that emotions have



not been clearly classified. Lester (2009) provides a review of the positions taken regarding emotion in personal construct theory, in particular discussing the ideas of Kelly and McCoy.

*The role of emotion in personal construct theory*

Kelly originally took the stance that emotions do not exist within a personal construct framework, although Kelly did define four emotions of threat, fear, anxiety and guilt (Kelly, 1955/1991, cited by Lester, 2009). Kelly defined feeling threat as knowing that a substantial change in the way the individual constructs themselves and their world may happen soon which has the potential to seriously affect the individual's core identity. Fear was defined by Kelly as a knowing that a more minor change in core constructs was going to happen (a less severe version of threat). Kelly suggested anxiety would be felt when the individual is presented with a situation where their constructs are no longer able to anticipate the events that will happen in that situation. This could happen on entry to a novel situation, or even during a situation as it develops. Kelly also suggested that guilt has a place in personal construct theory. Guilt is felt when the individual considers their actions to have become separated from their core role identity, and that they are not acting in accordance with who they really are.

Anxiety and guilt in particular have implications for this research, as they identify two possible outcomes of displaying or not displaying a varied personality. The individual who displays little ability to vary the behaviour they experiment with may feel anxiety when a novel situation, or turn of events in a current situation, mean events occur that the individual may not possess the complexity in their construct system to respond to. This will lead to experimentation with behaviour leading to invalidating feedback (an undesired outcome) and further anxiety. However, someone with more flexibility who has experimented with a wide range of behaviour will have received feedback from others on this selection of behaviour,

and therefore have a greater ability to anticipate what behaviour may be suited to the novel circumstance and respond in such a way that their actions are validated. However, feeling guilt would suggest that being variable in your behaviour according to the current situation could be negative if this is perceived by the individual to be acting outside of their core role. This may happen if the behaviour the individual originally experiments with is invalidated, and they are forced to act according to the situation (being changed by the situation). An example of this would be peer pressure. There is also the possibility that being flexible across different situations to get the most out of life could form a part of the individual's core role identity, if enjoying life is the core or superordinate role in the construct system (which is the case for a lot of people). This means that varied behaviour according to circumstances would be considered positive by the individual. The perception of variability across situations will likely depend on whether the individual's core role structure allows for displaying varied behaviour according to circumstances. This is likely to depend on the complexity of the individual's construct system.

McCoy (1977, 1981, cited in Lester, 2009) agreed with Kelly's definitions of these four emotions, but also added interpretations for several more positive emotions relating to core role structure including love, happiness and self-confidence. McCoy defined love as the individual's core role being completely validated by someone else, while happiness was considered a less extreme variant of core role validation. McCoy essentially viewed self-confidence as the opposite of guilt, with self-confidence representing good fit of the self to the core role.

The personal construct definition of validation refers to anticipating an event and achieving an expected outcome and feedback (Kelly, 1955), rather than solely achieving and reinforcing a desirable outcome as reinforcement in behaviourist approaches refers to. So an undesirable outcome could also be considered validating if that outcome is expected, while a

desirable outcome could be considered invalidating if it is unexpected. However, for well-adjusted (non-clinical) individuals these outcomes should occur infrequently, as individuals who frequently experience desirable outcomes as invalidating or undesirable outcomes as validating their construct system are anticipating events from an abnormal perspective.

Is it possible to integrate these positive emotions into the displayed of a varied personality? The researcher believes so as long as the core role structure allows for variability in behaviour as potentially having positive outcomes. Self-confidence can be felt when displaying a varied personality if the varied personality fits well with the individual's core role structure, in opposition to guilt which would be felt if displaying a varied personality did not form a part of the core role structure. Love can be felt with a varied personality, as long as the variability in personality behaviour displayed across different circumstances by the individual is accepted, and validated as part of their personality by the other for who love is felt. Happiness can also be felt with a core role allowing for a varied personality, as less extreme forms of validation will occur across different situations where the behaviour experimented with in that context is accepted, e.g., with a friend or at work.

Studies have used the repertory grid technique to elicit personality constructs by providing an interpersonal frame using the self and other people the person knows as elements. Some of this research has focused specifically on the self, and how construing may change according to what particular context the individual is construing.

*The self across contexts as measured using the repertory grid*

Trevor Butt has written about constructs of the self according to context (Butt, 2013), in particular referring to Mair (1977, cited in Butt, 2013) who proposed the idea of the community of self, that the display of a variety different selves according to context is like having a community of selves within the individual. All of these selves are thought to be

authentic according to the situation (Butt, 2013). Butt, Burr & Bell (1997, cited in Butt, 2004) examined how the individual construes themselves according to who they are with in 11 different participants. The elements provided to participants in this study were not the traditional self, ideal self and other people elements normally provided, but the participant was asked to provide the names of other people they knew. The elements that were then used in the elicitation process requested the individual to consider how they acted when with those particular others. An example element would be *Me when I am with Clive* (if one of the names they provided was Clive). The grid applied then allowed the individual to rate themselves across the selection of me when I am with.... elements that were provided. Butt, Burr and Bell found that many individuals were applying a construct focused around the ability to be themselves (vs. not able to be themselves). When they pursued this further they found that it was not related to displaying trait attributes, but the ability to display behaviour suitable or natural to the current situation. Butt (2004) interpreted these findings as the individual displaying the capacity to “conjure up different selves in different situations, nonetheless we each have a sense of self” (page 133). This interpretation supports the stance that the core role structure doesn’t have to refer to a consistent way of behaving, but instead can consist of a capacity to display various situational dispositions as part of the core role structure.

Winter, Bell and Watson (2010) examined mid-point ratings of the ideal self on constructs. It was found that mid-point ratings of the ideal self tended to increase across the course of therapy (from 3 months pre-therapy until 12 months post therapy). Mid-point ratings of the ideal self were not related to measures of anxiety or depression, and were in fact found to be associated with greater cognitive complexity. Winter, Bell and Watson suggest this happens with constructs where the individual does not wish to be classified on either end of the construct pole. This supports Butt (2004) suggestion that the individual may

display a variety of selves as part of their core role structure, as the ideal self at a mid-point between two construct poles may encompass a variety of selves who display behaviour covering both poles of the construct. This suggests that mid-point ideal self ratings are beneficial, and it could be suggested that mid-points on the ideal self reflect a preference for the individual being flexible towards either pole of the construct. In further support of this Adams-Webber (2003) has also found that those who are more cognitively complex had more confidence in their self ratings.

In the chapter 2 review, research into self-concept clarity and self-complexity suggested that these were related to behavioural flexibility. This means there may be positive associations between cognitive complexity, behavioural flexibility and mid-point ideal self ratings. The mid-point ratings on the ideal self may be shrouding the varied nature of the ideal self according to circumstances. The ideal self being a variable makes sense in that it allows the individual to act in differing ways across situations that help facilitate the development of many different relationships. Research into the construing between couples and developing relationships will now be discussed.

#### *The construing of couples and experimentally created pairings using the repertory grid*

Much work has been done into the construing of couples, who are expected to display similar construing based on the Sociality Corollary. Adams-Webber (2001) has found that both members of a couple displayed similar cognitive complexity ( $N = 40$  men and 40 women) when measured using the Role Category Questionnaire. Adams-Webber suggested this similarity in complexity was due to sociality in the development of their relationship. This indicates a similarity in construing for those in a close relationship. Repertory grid research on couple interactions has been conducted at many different points in the development of social relationships.

Bruce (1986) examined the staff-client relationship between airline stewardesses and the passengers of British Airways using group repertory grids. This found that stewardesses placed most importance on constructs regarding socialisation with passengers, with constructs regarding professionalism also being important. The fact that passengers did not always reciprocate socialisation led to staff becoming impersonal, after reduced socialisation was reinforced. This led British Airways to change the definition of staff professionalism to being responsive to individual passengers, rather than focusing on socialisation in every instance (a prior study had found passengers desire to be treated according to their individual needs). This is a demonstration of construing in a one-shot relationship.

Neimeyer and Neimeyer (1983) examined the degree of similarity in cognitive complexity during the development of relationships using a group of 20 adults (in two separate 10 person interpersonal transaction groups) over a period of 20 weeks (2 hours per week). Fifteen constructs were elicited from each participant during the first week, and participants were asked to provide ratings on these constructs at 4 and 18 weeks using the self and 9 members of their group as the elements. Neimeyer and Neimeyer calculated indices of cognitive complexity, and then determined similarity in complexity by calculating the discrepancy between pairs of complexity indices. Attraction scores between pairs were determined as the total number of ratings on the positive poles of the 30 elicited constructs between two individuals (15 per individual in the pair). Three groups of high, medium and low similarity in complexity pairs were established. It was found that participants displaying similar cognitive complexity (less discrepancy in complexity) were more attracted to each other than those with less similar complexity after 18 weeks. This was not found at 4 weeks though. Using the data from this study (the demographics matched) Neimeyer and Neimeyer (1986) further examined similarity in two individuals ratings of another person on that person's constructs. This was done across the group to examine number of matches in pair's

ratings of every other group member in terms of those members construct content. Attraction ratings in these pairs were calculated on the basis of the number of positive pole ratings by the individual on the other half of the pair's own constructs. This was done at weeks 4 and 18. Those with worse relationships, established by at least one half of the pair's attraction ratings decreasing between week 4 and week 18, displayed less similarity in self-other ratings than those with good relationships (those pairs where both members attraction ratings increased). Across these two studies similarity in complexity and content appear to be greater for those more attracted to each other.

Neimeyer and Mitchell (1988) performed a longitudinal study of similarity and attraction by asking participants matched with same sex and race partners ( $N = 82$ , 41 pairs) to spend two hours a week in each other's company for 8 weeks. Measurements of cognitive complexity, personality and attitudes were derived at the beginning and end of this period. This found that those in developing relationships (derived using the same method as Neimeyer & Neimeyer, 1986) were more similar in attitudes compared to those in with relationships in worse condition.

Adams-Webber (1998) examined sociality in terms of getting the individual to try and infer the self-evaluations of a recently introduced acquaintance on the acquaintances elicited and some supplied constructs. Adams-Webber found that the individual was able to more accurately infer the self-evaluations of the partner on the partners elicited constructs, than the constructs supplied by Adams-Webber.

In general, interaction between couples research has shown more similarity in structure and content of construing and acting for those in positively functioning relationships, but distancing for those in unhappy relationships. However, there are many different kinds of functioning relationships people form or have to form in everyday life. In

order to develop optimally functioning relationships in different contexts (for example, with friends, with family, at work), some degree of flexibility in behaviour experimentation across interpersonal roles would be required (Butt, Burr & Bell, 1997; Butt, 2004). This is supported by Winter, Bell and Watson (2010), who found that midpoint ratings in the ideal self increased as therapy progressed. This is an indication that psychologically healthier people acknowledge the need to act on different ends of a bi-polar construct dimension.

When examining discrepancies between real self and ideal self, or social self and ideal social self, personal construct discrepancies have been found to have a greater predictive effect on neuroticism than discrepancies in supplied/common constructs (Watson & Watts, 2001). Watson, Bryan and Thrash (2010) also found results that support the theory that idiographic measures of self-ideal self/self-ought self discrepancy predict anxiety and depression better than conventional measures in clinical and non-clinical samples. Conventional measures were still found to be decent predictors of anxiety and depression. Although when McDaniel and Grice (2005) examined trait based self-ideal self/self-ought self discrepancies in big-five trait constructs they found few associations to psychological well-being outcomes. Actual-ideal discrepancies in only two traits (extraversion and conscientious) predicted depression and anxiety positively, and self-esteem negatively. McDaniel et al., (2010) provide support for conventional measures being decent predictors of outcomes by showing that discrepancies between the actual self and a poor role model on 15 supplied characteristics are associated with higher self-esteem, and lower anxiety, depression and anger rumination. These studies support the practice of eliciting unique constructs and supplying common constructs when examining the individual, based on the commonality and individuality corollaries. In personality research sets of constructs that have been applied to an extensive number of people showing some common ground are personality trait models. So should studies combine traditional self-report style personality trait markers with elicited



personal constructs to help explain more variance in participants self and interpersonal constructs? Several studies have examined this.

*Combined idiographic personal construct and nomothetic trait repertory grid studies*

Van Kampen (2000) applied the repertory grid with a selection of four personality traits of insensitivity, extraversion, neuroticism and orderliness. Van Kampen found that the average within-person correlation of these 4 broad traits to idiographic traits elicited from the participant ranged between  $r = .38$  and  $.40$ . This suggests that the broad traits provided some coverage of the idiographic personal constructs, but that some personal constructs were not accounted for. Grice (2004) examined the Big Five traits and personal constructs of personality. A multiple groups confirmatory components analysis was performed across repertory grids containing the Big Five markers and personal constructs. This found that around 50% of the explained variance in ratings for the personal constructs was explained by combinations of five factor components matching the Big Five traits. For example, in one grid a construct pole *quiet-thoughtful* was a combination of introversion and agreeableness. The other 50% of variance was explained uniquely outside the Big Five model. Grice, Jackson and McDaniel (2006) performed a follow up to this study which indicated an overlap of 51% in trait ratings and personal constructs. Adams-Webber (2004) examined confidence in self-evaluations of elicited and supplied constructs, and found that participants were more confident in self-evaluations of elicited personal constructs, rather than supplied constructs. Both were still considered useful by participants, suggesting that both elicited personal constructs and supplied constructs may be useful in determining individual personality models. Overall, elicited constructs appear more useful to the individual, but supplied constructs have also proved useful in explaining the variance in ratings between elements in the repertory grid.

### *Bringing PCT research together with previous processing research*

The repertory grid technique provides a report of the way the individual construct themselves and the interpersonal others they associate with. By eliciting the individual personal constructs using the triadic procedures, any underlying interpersonal processes associated with each interpersonal triad are drawn upon when determining the construct. Constructs are anchored in prior interpersonal experiences. The grid data helps map how the person interprets their interpersonal environment and predict others behaviour. So personal constructs essentially provide a simple sum product of the mass of variables in models such as CAPS theory (Mischel, 1973; Mischel & Shoda, 1995) and/or FIT science (Fletcher & Stead, 2000). These include interpretations and anticipations based on previous interpersonal feedback, that are involved in understanding the self and others, for a representative selection of elements. Furthermore, support for the usefulness of common trait markers suggests that people do share some common ways of processing, as well as their own unique processing styles. Based on this, the repertory grid could be used to determine the result of processing using elicited and supplied trait constructs for a selection of different interpersonal self roles, based on self-report values for different *me with interpersonal other* elements. This will allow the researcher to examine the differences between several interpersonal self roles within the range of convenience of interpersonal functioning. By including a selection of other person roles matched to each *me with interpersonal other* element, the effect of specific situational others can be examined based on the degree of similarity between the two elements. Although this is not a diary study repeated measures method, it can be used to understand intra-individual cross-contextual differences in interpersonal behaviour, as the constructs examined will be anchored in varied interpersonal experiences. The findings will be used to help answer the third research question, by indicating the relative importance of the person compared to the situation in cross-contextual personality variability.

### **Study 3:**

#### **A personal construct study of cross-contextual intra-individual variation in personality: Interpersonal self and situational other influences.**

The diary study conducted in the previous chapter suggests that the nature of interpersonal contexts changes according to who the person is with, for example a friend, a family member or someone they work with. The personality behaviour displayed also changes to correspond to these different contexts. The person is expected to experiment with different behaviour according to how they construe who they are with (Butt, Burr & Bell, 1997; Mair, 1977). According to the Sociality Corollary, people experiment with different behaviours according to how they construct who they are with (Kelly, 1955). Thomas (1979) Social Awareness Corollary, also states “The forms in which a person construes his or her constructions of social interactional processes will condition their ability to consciously influence their processes of interaction with others” (Thomas, 1979, cited from Winter, 1992, pp8). The Social Awareness Corollary suggests that the construction of the interpersonal situation has an effect on how the individual consciously experiments with their behaviour. Individuals who are strongly influenced by the situation may have construct systems that do not allow for a great deal of conscious influence in their behaviour experimentation when they interact with others. These individuals constructions of themselves and others are more likely to be invalidated in context, leading to anxiety through loss of interpersonal control as no adequate construct alternative is available or easily accessible (Kelly, 1955/1991). Although, another corollary proposed by Thomas (1979) The Self-awareness corollary states “To the extent that a person construes his own constructions of experience, he or she acquires consciousness. To the extent that a person construes his or her own processes of construction he or she acquires a more complete awareness of themselves as a person” (Thomas, 1979, cited in Winter, 1992, pp8). Those with a great deal of self-awareness and social awareness

are likely to have the ability to intervene, and be able to flexibly experiment with different behaviours confidently. Those who can be behaviourally flexible are likely to be able to apply behaviour to change the situation according to their requirements, with the environment becoming a function of the person in the moment (Buss, 1977).

Based on these ideas, examining variation across several interpersonal contexts would be an ideal way to examine whether the personal self or situational others are important in personality variation. This study will elicit the personal constructs from non-random element triads that are focused on an interpersonal self role and a significant other from a particular context (along with a third non-contextual positive, negative or neutral element). If the ratings of the selves are quite distant from each other then this suggests that there is some independence in the separate selves in interpersonal context. Also it is important to focus on interpersonal correlations between the interpersonal self and matched interpersonal other elements. If there are strong relationships between these two elements, then this suggests that the person construes themselves as acting similarly to the person they are with. This is because two people in a functioning relationship are expected to display similarity in construing which leads to similar behaviour experimentation and reciprocal validation (Adams-Webber, 2001; Neimeyer & Neimeyer, 1983, 1986). Winter, Bell and Watson (2010) found mid-point ideal self ratings were common during changes in therapy for anxiety and depression, and suggest this happens with constructs where the individual does not wish to be characterised by either end of the construct pole. It can be suggested these mid-points on the ideal self could reflect the individual having a preference for being flexible towards either pole of the construct. Research reviewed in chapter 2 by Linville (1985, 1987) on self-complexity as a buffer for depression, and Campbell (1990; Campbell et al., 1996) research into self-concept clarity as a marker of healthy psychological functioning would support this. Several indices of cognitive complexity will be calculated from the repertory grids to

examine their relationships to the distances and interpersonal correlations, as Fletcher (2007) has previously found self-complexity to be associated with behaviour flexibility, and Winter, Bell and Watson (2010) found mid-point ideal self ratings associated with cognitive complexity. So the research indicates that complexity of the self, behavioural flexibility, anxiety and depression could be associated with variation across interpersonal contexts. Both distances between interpersonal selves, as an indication of interpersonal self influence, and matched interpersonal element associations (self-situational other) as an indicator of situational other influence, are expected to display significant relationships with some of these outcomes. There may be some relationship between the distances and matched interpersonal element associations too, indicating interactions of the interpersonal self and situational other on outcomes. As previous research has suggested that supplied trait constructs may have an impact in explaining variance in personal construction (the Commonality Corollary, Kelly, 1955; and Van Kampen, 2000; Grice, 2004; Grice, Jackson & McDaniel, 2006) a selection of trait adjectives based on the HEXACO model will also be supplied.

To summarise, the main aim of this study is to determine the relative importance of the interpersonal self and related situational others in intra-individual cross-contextual personality variation, via the strength of interpersonal self distances, and matched interpersonal associations correlation with psychological outcomes (cognitive complexity, anxiety, depression and behavioural flexibility). It is predicted that there will be a difference in the correlation strength of interpersonal self distances to the psychological outcomes, when compared to the correlation strength of the matched interpersonal self-other associations with psychological outcomes. A secondary aim is to determine how much idiographic personal constructs converge with nomothetic supplied trait constructs based on the HEXACO model. It is predicted that the supplied constructs will tap into the HEXACO model appropriately (in

support of the alternate hypothesis). It is also predicted that the personal constructs will be divergent from the supplied HEXACO constructs (the null hypothesis will be supported).

## **Method**

### **Aims, Research Questions and Hypotheses**

Research question 3 involves examining the relative importance of person and situational factors in personality variability (cross-contextual). The study has two aims. The first aim is to establish whether supplied HEXACO constructs appropriately tap into the HEXACO model, and also whether these supplied constructs discriminate the personal constructs elicited by a participant. This will help determine whether elicited and supplied constructs should be examined separately or combined together. The second aim is to establish the relative effects of the two types of cross-contextual variability measurement in relation to psychological outcomes. The two types of cross-contextual measurements are the distances between different interpersonal selves, considered to reflect a interpersonal self influence, and the different matched interpersonal self-other associations, considered to reflect a situational other influence.

For the first aim, one of the alternate hypotheses is that the supplied constructs do tap into the HEXACO model. Another alternate hypothesis for the first aim is that the personal constructs display convergence with the supplied HEXACO constructs. The alternate hypothesis for the second aim is that there will be a difference in the correlation strength of interpersonal self distances to the psychological outcomes (cognitive complexity, anxiety, depression and behavioural flexibility), when compared to the correlation strength of the matched interpersonal self-other associations with psychological outcomes.

The null hypotheses for the first aim are that the common constructs will not tap into the HEXACO model, and that there will be no convergence between the personal and supplied constructs. The null hypothesis for the second aim is that there will be no difference in the significance of correlations of the interpersonal self distances to the psychological outcomes, and the correlation of the matched interpersonal self-other associations to psychological outcomes.

### **Participants**

33 participants were recruited for this study (3 male and 30 female) through opportunity sampling (age  $M = 20.79$ ,  $SD = 2.70$ ). This was performed by advertising the URL for the study through the University of Hertfordshire participant pool.

### **Design**

This was non-experimental research. The outcome variables measured were anxiety, depression and behavioural flexibility, along with supplied constructs for the six HEXACO traits. 12 individual personal constructs were elicited from each participant. These constructs were all considered to fall within the range of convenience of interpersonal behaviour, based on participant explanations when encouraged. Indices of cognitive complexity and distance were calculated from the repertory grid data collected.

### **Materials**

**Repertory grid.** The repertory grid was used to rate 12 constructs elicited from the participant, and 12 supplied constructs based on some of the HEXACO model facet categories (Ashton, Lee & Son, 2000; Lee & Ashton, 2004). Of the elicited constructs, nine were elicited using the triadic opposite elicitation procedure while three were ladderred from three of the previously elicited constructs. The role title elements used in the triadic

elicitation procedure included; a good friend, a family member I am close to, a person in authority at work, an admired person, a person unlike me, a not liked person and a person I don't quite understand. Three me with.... element roles were also provided (me with the good friend, me with the close family member, me with the person in authority at work).

The following 12 constructs were supplied to represent each HEXACO trait attribute:

Honesty: *Insincere vs. Sincere ; Unfair vs. Fair*

Emotionality (reversed): *Fearful vs. Fearless ; Dependent on others vs. Independent*

Extraversion: *Unsociable vs. Sociable ; Calm vs. Lively*

Agreeableness: *Harsh vs. Gentle ; Temperamental vs. Patient*

Conscientiousness: *Disorganised vs. Organised ; Impulsive vs. Prudent*

Openness to experience: *Uncreative vs. Creative ; Unconventional vs. Conventional (reversed)*

All the constructs, personal and supplied, were rated on a 1-7 scale, with 1 representing the extreme of the negative construct pole, and 7 representing the extreme of the positive construct pole. Personal construct poles were allocated to positive or negative in the grid during the interview session, based on participant perceptions of the elements used to elicit the poles of the construct. These repertory grid materials have been included as appendix I.

**Behavioural flexibility scale.** The Behavioural flexibility scale from the FIT Profiler was administered (Fletcher & Stead, 2000). The Behavioural flexibility scale measures a list of 15 personality attributes which describe bi-polar dimensions of behaviour. An example dimension is: *Systematic vs. Spontaneous*. Each item is measured on an 11 point scale, where the participant can tick as many boxes as they feel reflects their range of behaviour. Higher



scores indicate greater behavioural flexibility. Total scores can range between 15 and 165. This has been shown to display high reliability ( $\alpha = 0.91$ ). A copy of this measure has been included as appendix J.

**Thoughts and Feelings scale.** The Thoughts and Feelings scale from the FIT Profiler was administered (Fletcher & Stead, 2000). The Thoughts and Feelings scale measures frequency of feeling anxious (4 items) and depressed (4 items), each resulting in a total score between 0 and 12. These have been shown to display good reliability (Anxiety  $\alpha = 0.80$ , Depression  $\alpha = 0.78$ ). The 4 point scale for each item is measured is: 1) *Never*, 2) *Very rarely*, 3) *Now and again*, and 4) *Frequently/often*.

An information sheet, consent form and debriefing page were all included, this study received ethical approval from the University of Hertfordshire Psychology department ethics committee, protocol number: PSY/10/11/JC.

## **Procedure**

The Behavioural Flexibility and Thoughts and Feelings scales were administered before conducting the repertory grid interview. In the first part of the interview the participant provided names for all the role elements (except the interpersonal selves). It was emphasised that the same person could not be listed twice. Non-random triads were then used to elicit nine bipolar personal constructs using the triadic opposite procedure. Three constructs elicited were associated with each interpersonal context; with the good friend, with the family member I am close to, with the person in authority at work (if the participant did not have a job, they were asked to name the tutor for their tutor group instead). An example non-random triad of elements for the family member context was; me with the close family member, family member I am close to, admired person. Admired person was interchanged with person unlike me and not liked person in order to elicit positive, neutral and negative personal

constructs. The elicitation of a construct involved the participant first listing a personality attribute two of the elements in the non-random triad share (without having to specify that the third element does not share it). The participant was then asked for the opposite of the personality attribute provided to form a bipolar personal construct. Three of these nine constructs (one elicited from each interpersonal context) were then ladderred to elicit three superordinate core constructs. A core construct was thought to have been reached in the ladderred process when the participant started to repeat a particular core value. After the elicitation process, the participant was then asked to rate the 12 supplied HEXACO trait constructs while the experimenter set up the elicited construct grid. The participant then completed the elicited construct grid. After finishing the study, the participant was debriefed.

## **Results**

### *Multiple groups confirmatory factor analysis on the HEXACO trait constructs*

A multiple groups confirmatory factor analysis (MGCFA) was conducted on all participants responses to the 12 supplied constructs to represent honesty, emotionality, extraversion, agreeableness, conscientiousness and openness to experience. This was to check that they commonly tap into the six HEXACO dimensions. The analysis was run using the Idiogrid software (Grice, 2008). Note: this is referred to as Multiple-Group Components Analysis in Idiogrid. Markers for each factor were given a target loading of +1, reverse keyed items were given a target loading of -1 (the two emotionality items and the *unconventional vs. conventional* item are reverse keyed). Any non-target loadings were allocated a target loading of 0. The six factors explained 74.86% of the total variance in ratings for the supplied trait constructs grid from the orthogonal rotation, increasing to 110.40% in the oblique rotation. Table 22 shows that the supplied constructs load fairly well on to their expected components, even when allowing for correlations between the factors (the oblique rotation is

reported). The squared multiple correlations suggested that the components explained between 62 and 84% of the variance in the ratings which is good considering that only two items were included to represent each HEXACO trait. Table 23 shows that some of the factors displayed strong correlations with each other, in particular agreeableness was strongly positively related to honesty. Correlations between the factors ranged between +/- .01 and .62, anything above .36 was significant at  $p < .05$ . The honesty factor was strongly correlated with agreeableness, and correlated with medium strength with conscientiousness. Agreeableness and conscientiousness were also medium strength correlated. The average communalities of each participant for the supplied constructs were examined using MGCFA run in Idiogrid as an estimate of how well the HEXACO model overall fit the supplied construct data of each participant. This found that average of communalities ranged between .81 and .99 ( $M = .92$ ,  $SD = .04$ ), in instances where the model converged. This suggests that the supplied constructs fit the six factor HEXACO model well in most participants. Occasionally the full model would not converge as a participant provided the same rating for every person on a marker, so these participants were not included in this descriptive analysis (4 out of 33).

*How much did the idiographic personal constructs converge with the HEXACO model?*

The supplied constructs seem to fit the six factor HEXACO model well, but personal constructs were also elicited from the individual. To determine how well the individual personal constructs would converge with the HEXACO model, MGCFA analyses were conducted for each individual using Idiogrid. Both the supplied constructs and personal constructs were loaded on these models. The 12 supplied constructs were loaded in the same manner as described in the previous section while the 12 individual constructs were allowed to vary in how they loaded (in an exploratory fashion). The results suggested different patterns of convergence for each individual. The mean of the communalities of the individual's 12 personal constructs was taken as a measure of how well the individual's

constructs loaded on to the HEXACO model. Mean communalities for the 12 personal constructs loading onto the six factor HEXACO model ranged between .66 and .98 ( $M = .83$ ,  $SD = .07$ ), in instances where the model converged ( $n = 28$ ). This suggests the 12 personal constructs elicited fit the six factor HEXACO model with varied goodness of fit depending on the participant; some individuals' personal construction had a poor fit while some displayed excellent fit.

Based on the fact that idiographic personal constructs convergence with the nomothetic HEXACO model varied depending on the person, the main aim analyses will be conducted at the personal construct, HEXACO supplied construct and combined data levels.

Table 22: The factor loadings for each supplied construct in the concatenated grid oblique rotation for six components matching the HEXACO model ( $N = 33$ ).

Supplied trait constructs	Components						SMC
	1 (H)	2 (E)	3 (X)	4 (A)	5 (C)	6 (O)	
Sincere vs. Insincere	<b>1.00</b>	.03	-.01	-.14	.02	.03	.84
Fair vs. Unfair	<b>.82</b>	-.03	.01	.14	-.02	-.03	.84
Fearless vs. Fearful	.07	<b>-.77</b>	.08	-.03	-.12	.00	.63
Independent vs. Dependent on others	-.07	<b>-.78</b>	-.08	.03	.12	.00	.63
Sociable vs. Unsociable	-.04	.06	<b>.93</b>	.06	-.03	-.06	.82
Lively vs. Calm	.04	-.06	<b>.87</b>	-.06	.03	.06	.82
Gentle vs. Harsh	.02	.05	.04	<b>.92</b>	-.07	.00	.83
Patient vs. Temperamental	-.02	-.05	-.04	<b>.88</b>	.07	.00	.83
Organised vs. Disorganised	.09	.02	.08	-.11	<b>.89</b>	.07	.75
Prudent vs. Impulsive	-.09	-.02	-.08	.11	<b>.82</b>	-.07	.75
Creative vs. Uncreative	.15	-.03	.09	.14	.22	<b>.65</b>	.62
Conventional vs. Unconventional	.15	-.03	.09	.14	.22	<b>-.67</b>	.62

Note: Loadings in bold are expected factor loadings. SMC = Squared multiple correlation.

Table 23: The correlations between each of the six HEXACO supplied construct factors

	H	E	X	A	C	O
H	-					
E	-.32	-				
X	.28	-.31	-			
A	.62*	-.26	.22	-		
C	.36*	-.26	-.08	.43*	-	
O	.06	-.08	.26	.01	-.12	-

Note: \* $p < .05$ .

*Profile analyses: Distances and interpersonal correlations*

The Profile Analyses option in Idiogrid was used to determine the associations between elements in the personal, supplied and combined grids. The Euclidean distances between the *me with interpersonal other* elements, and the *me with interpersonal other-interpersonal other* relationships were examined. Note: This information can also be obtained using the Bivariate Statistics option in Idiogrid.

Table 24 provides the descriptive statistics for the distances. These were produced using SPSS (IBM, 2012). This suggests there was least distance between the *me with a good friend* and the *me with a close family member* role elements. Both these elements display similar distances to the *me with a person in authority* role element. Although, judging by the minimum and maximum statistics there were some lower extremes in distances. Within subject ANOVAs (Huynh-Feldt statistics), conducted using SPSS, suggested there were significant differences in the three distances for the personal,  $F(1.57, 50.30) = 9.64$ ,  $p = .001$ ,  $\text{partial-}\eta^2 = .23$ , Power = .95; supplied,  $F(1.47, 46.91) = 11.12$ ,  $p < .001$ ,  $\text{partial-}\eta^2 = .26$ , Power = .96; and combined grid data,  $F(1.42, 45.27) = 13.63$ ,  $p < .001$ ,  $\text{partial-}\eta^2 = .30$ , Power = .98. For all three analyses, pairwise comparisons revealed significant differences at  $p < .001$

between the *me with a good friend-me with a close family member* distance and the *me with a good friend-me with a person in authority* distance. For the supplied construct and combined analyses, pairwise comparisons revealed significant differences at  $p < .05$  between the *me with a good friend-me with a close family member* distance and the *me with a close family member-me with a person in authority* distance (supplied  $p = .02$ , combined  $p = .02$ ). A few individual examples from the combined grid data have been included below in Figures 8-10 (each figure was produced when using the Principal Components Analysis option on a specific participant's combined grid in Idiogrid). If two of the elements in these plots display close proximity, this means there was little distance between how the two elements were construed by the participant. So if two *me with...* roles were close together, then this indicates greater similarity between the two interpersonal self roles, whereas if they were not in close proximity then greater distance between the two interpersonal self roles was displayed. Figure 8 reflects someone who displayed very little distance between all three *me* roles, and considers themselves similar across all interpersonal contexts. This person also appears to have a very black and white construal of people they get on with and people they do not, indicated by the cluster around one area for many people, but the confusing person and person I do not like being very isolated. Figure 9 reflects someone who is similar in two roles (*me with the close family member* and *me with the person in authority*), but very different in the third (*me with the good friend*). The other interpersonal elements are more spread out as well, meaning that more personal distinctions are being made. Figure 10 reflects someone displaying large distances between all three roles.

Table 24: Descriptive statistics for the distances between the three different interpersonal me roles in the personal constructs, supplied HEXACO constructs and combined grids ( $N = 33$ ).

Distances	<i>M</i>	<i>SD</i>	Minimum	Maximum
<i>Personal constructs (12 elicited constructs)</i>				
Me with the good friend – Me with the close family member	4.86	3.24	0.00	12.49
Me with the good friend – Me with the person in authority	7.03	2.97	2.45	14.49
Me with the family member – Me with the person in authority	6.29	2.44	2.00	11.14
<i>HEXACO constructs (12 supplied constructs)</i>				
Me with the good friend – Me with the close family member	4.70	2.43	0.00	10.91
Me with the good friend – Me with the person in authority	6.53	1.94	3.16	11.05
Me with the family member – Me with the person in authority	6.20	2.09	2.45	10.49
<i>Combined (all 24 constructs, 12 elicited, 12 supplied)</i>				
Me with the good friend – Me with the close family member	7.20	3.24	1.00	15.91
Me with the good friend – Me with the person in authority	9.84	2.83	5.00	16.94
Me with the family member – Me with the person in authority	9.08	2.71	4.69	14.14

Note: For the Personal construct and HEXACO supplied construct distances, scores can range between 0 and 20.78; for the combined distances, scores can range between 0 and 29.39.

**PCA (no rotation) for JT121991 combined grid (deleted)**

Axis Range: -2.54 to 2.54

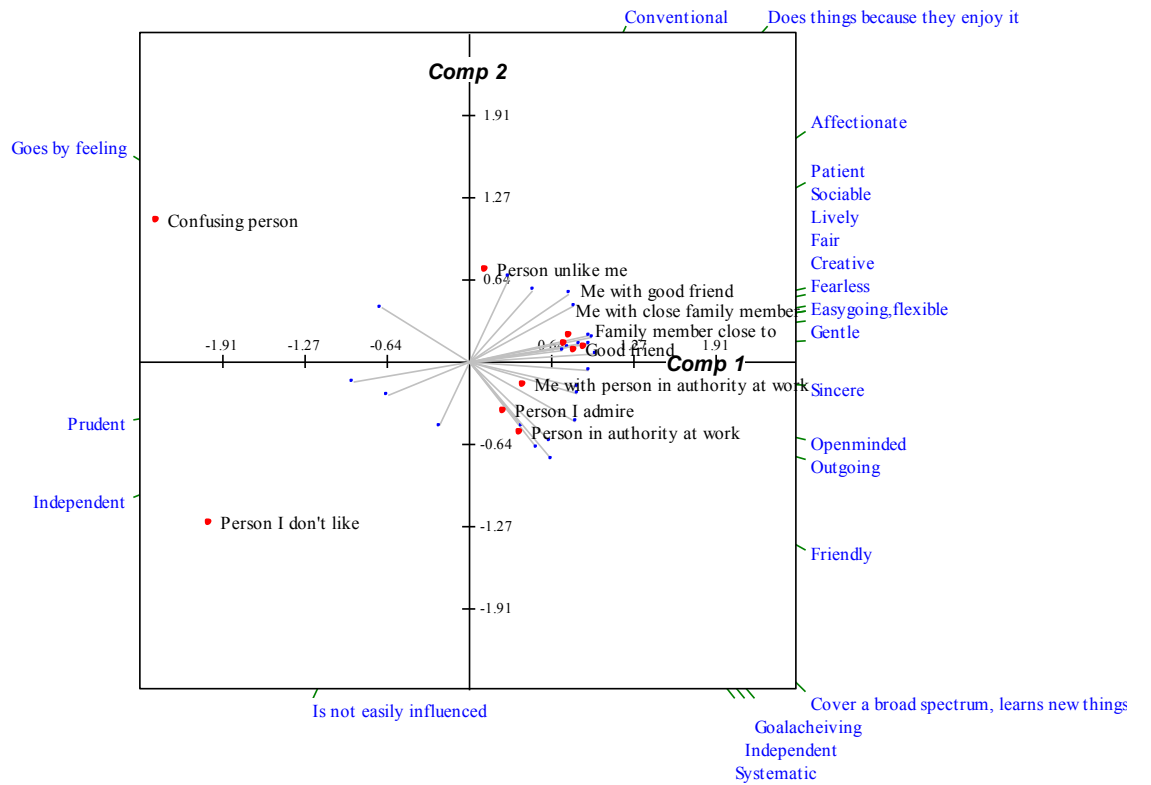


Figure 8: An example of a participant who displayed very little distance between all three self roles.



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**PCA (no rotation) for ach101987 combined grid**

Axis Range: -1.91 to 1.91

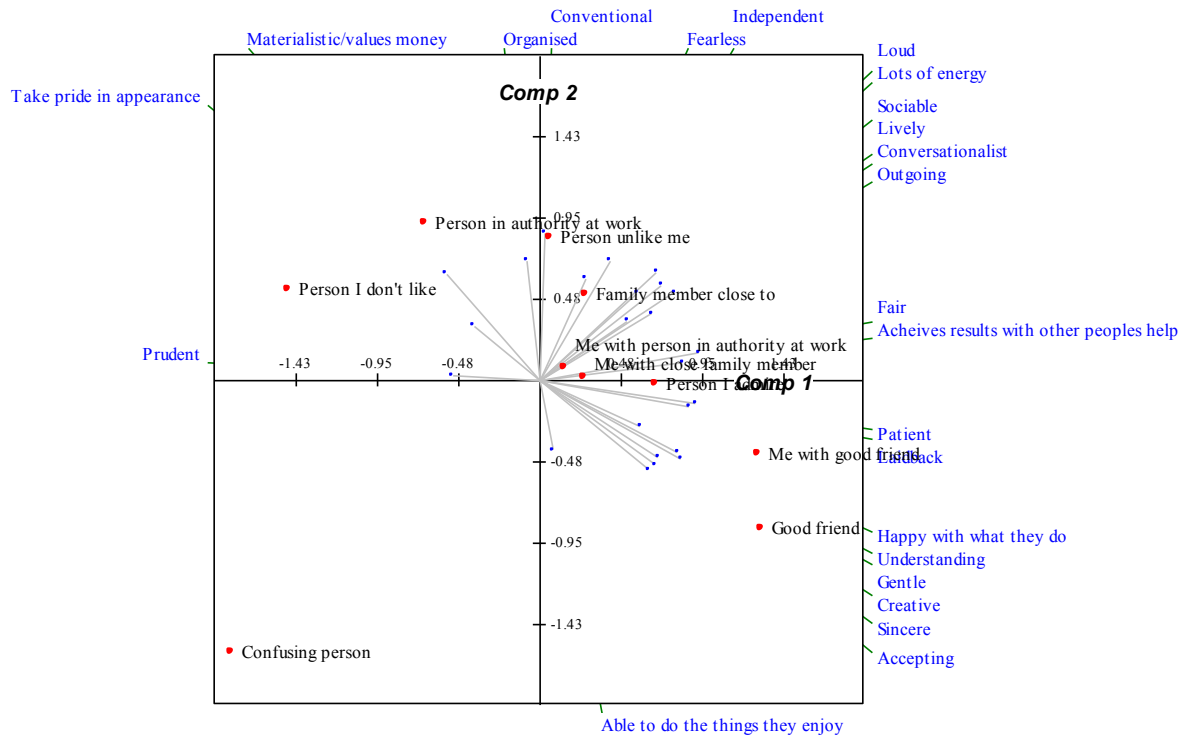


Figure 9: An example of a participant displaying distance in one self role, but similarity in the other two.

**PCA (no rotation) for jb011993 combined grid**

Axis Range: -1.63 to 1.63

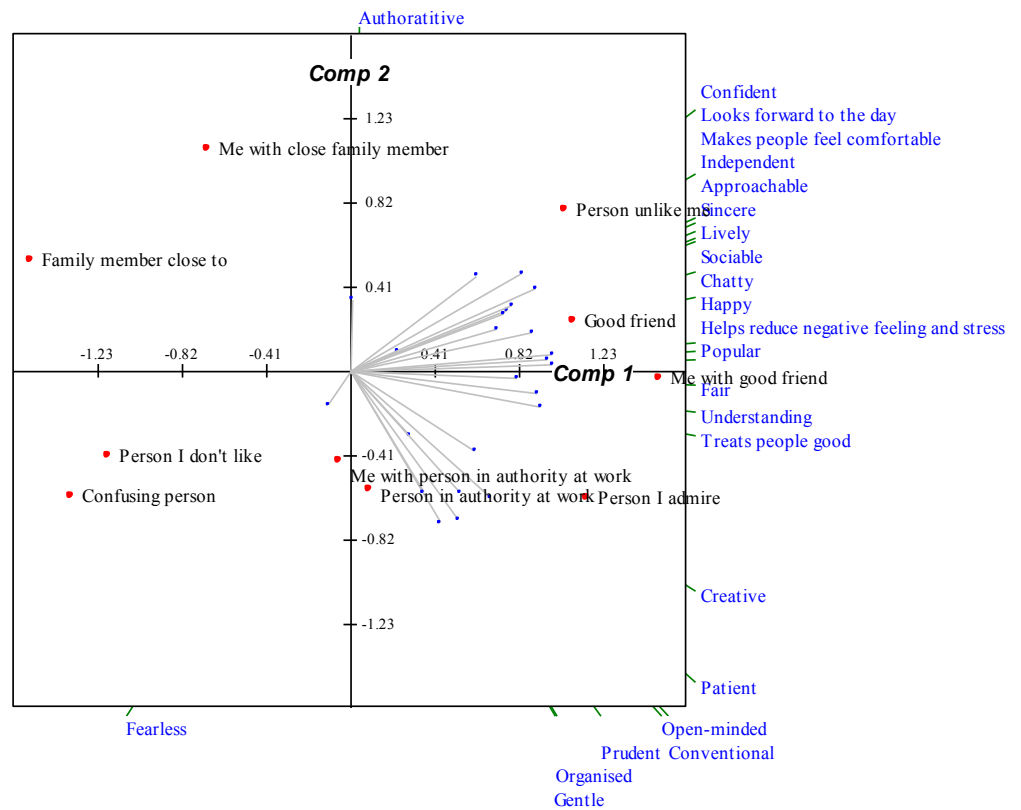


Figure 10: A participant who displayed considerable distance between the three self roles.

Participants also displayed differences in how similar they were in an interpersonal role to the interpersonal other they associated with. Table 25 provides the descriptive statistics reflecting this, for the personal, supplied and combined construct grids. These were produced using SPSS (IBM, 2012). There were extremes with negative and positive minimum and maximum values respectively. The mean correlation values were orientated towards the positive though, suggesting more similarity than differences between the individual and the matched interpersonal other. For the supplied construct and combined grid data, the participants displayed most similarity between the *me with the good friend* and *good friend* elements, followed by *me with the close family member* and *close family member* elements. The lowest similarity was the *me with the person in authority* and *person in authority* elements. In

particular, the *me with the good friend* and *good friend* correlations stood out as being the strongest. Within subject ANOVAs (Huynh-Feldt statistics), again conducted using SPSS, suggested there were significant differences in the interpersonal correlations for the supplied construct,  $F(1.94, 60.02) = 10.63$ ,  $p < .001$ ,  $\text{partial-}\eta^2 = .26$ , Power = .98; and combined grid data,  $F(1.72, 54.97) = 8.16$ ,  $p = .001$ ,  $\text{partial-}\eta^2 = .20$ , Power = .93; but not the personal constructs,  $F(2.00, 58.00) = 2.18$ ,  $p = .122$ ,  $\text{partial-}\eta^2 = .07$ , Power = .43. For the supplied construct and combined analyses, pairwise comparisons revealed significant differences between the *me with the good friend-good friend* and *me with the close family member-close family member* interpersonal correlations (both  $p = .001$ ), and between the *me with the good friend-good friend* and *me with the person in authority-person in authority* correlations (both  $p = .003$ ).

Overall, these analyses suggest that participants displayed significant differences in distances between each of the interpersonal roles. Participants also displayed significantly different degrees of relationship of each of these roles to their respective matched person. When the distances and matched interpersonal correlations were examined in relation to each other using SPSS, only the distance between the *me with a good friend-me with a close family member* roles, and the correlation between *me with a good friend* and *a good friend* were significantly negatively related in the personal construct,  $r(30) = -.53$ ,  $p = .002$ , and combined data,  $r(31) = -.35$ ,  $p = .045$ . This suggests the distances and interpersonal correlations are somewhat independent influences, excepting the case mentioned.

Table 25: The descriptive statistics for the interpersonal correlations between me with... and the matched interpersonal other element ( $N=33$  unless otherwise specified).

Correlation	<i>M</i>	<i>SD</i>	Minimum	Maximum
<i>Personal constructs</i>				
Me with the good friend – A good friend*	.48	.40	-.49	1.00
Me with the close family member– A close family member <sup>†</sup>	.30	.45	-.48	.97
Me with the person in authority – A person in authority	.32	.38	-.55	1.00
<i>HEXACO constructs</i>				
Me with the good friend – A good friend	.58	.33	-.33	1.00
Me with the close family member– A close family member*	.37	.37	-.68	1.00
Me with the person in authority – A person in authority	.26	.35	-.35	.93
<i>Combined</i>				
Me with the good friend – A good friend	.57	.29	-.12	1.00
Me with the close family member– A close family member	.35	.34	-.47	.97
Me with the person in authority – A person in authority	.28	.35	-.42	.97

Note: The personal constructs and HEXACO supplied construct interpersonal correlations are based on 12 data points. The combined correlations are based on 24 data points. \* $N=32$ , <sup>†</sup> $N=30$ .

The distances and interpersonal correlations were examined in relation to several indices of cognitive complexity, anxiety, depression and behavioural flexibility scores using SPSS. The indices of cognitive complexity will be briefly described.

### *Cognitive complexity indices*

Several indices of cognitive complexity were derived from the repertory grid, calculated using Idiogrid (Grice, 2008).

*PVAFF*. The explained variance by first component (in factor analysis) as an index of complexity in interpersonal construct differentiation was calculated (Jones, 1954). The lower this value is, the more cognitively complex the individual is. The other components will explain a good deal of variance, rather than having all construction explained by a single component. The Principal Components Analysis option in Idiogrid was used to obtain the PVAFF values for personal, supplied and combined grids separately.

*Bieri*. The Bieri cognitive complexity index (Bieri, 1955) examines how closely matched construct ratings are. The idea is that if ratings are closely matched then the individual has a lesser capacity to discriminate between different constructs when constructing people. A lower score indicates less matching in ratings (greater cognitive complexity). The Summary Indices option in Idiogrid was used to obtain Bieri values for personal, supplied and combined grids separately.

*Intensity*. The Intensity index (Bannister, 1960; Bannister and Fransella, 1965) examines how tight the individual's construction is. If the Intensity score is lower, this indicates that the individual has a loose construing system that leads to more varied behaviour predictions, whereas if the score is higher, it the individual has a tight construing system, leading to less varied predictions. The Summary Indices option in Idiogrid was used to obtain Intensity values for personal, supplied and combined grids separately.

The cognitive complexity indices were examined in relation to the distances and matched interpersonal correlations using SPSS. Tables 26 and 27 list the relationships

between the cognitive complexity indices, distances and interpersonal correlations respectively. For all three categories, the cognitive complexity indices displayed more, and stronger, relationships with the distances than the interpersonal correlations. For the personal and combined data, lower PVAFF and lower intensity were found to be associated with greater distances between interpersonal self roles, suggesting a pattern of people displaying greater distances being more cognitively complex. The interpersonal correlation values were found to be positively related to cognitive complexity indices, indicating that those with lower cognitive complexity displayed more similar behaviour to the people they associate with. This was particularly apparent for the supplied constructs.

Based on this latter finding, correlations were performed between the indices of cognitive complexity and the personal constructs convergence fit with the HEXACO model using SPSS ( $N = 28$ ). This found that all of the cognitive complexity indices were positively related to personal constructs degree of convergence with the supplied constructs, for the personal constructs (PVAFF,  $r(26) = .70, p < .001$  ; Bieri,  $r(26) = .50, p = .007$ ; Intensity,  $r(26) = .65, p < .001$ ), and combined grid (PVAFF,  $r(26) = .74, p < .001$  ; Bieri,  $r(26) = .44, p = .02$ ; Intensity,  $r(26) = .71, p < .001$ ). The complexity indices for the supplied trait constructs were not significantly related to degree of convergence, although the PVAFF and Intensity approached significance (PVAFF,  $r(26) = .36, p = .06$  ; Bieri,  $r(26) = .25, p = .20$ ; Intensity,  $r(26) = .37, p = .06$ ). This suggests participants whose personal constructs converge highly with the HEXACO model are less cognitively complex than those whose constructs are independent.

Table 26: The relationship of the cognitive complexity values to the distances.

	PVAFF	Bieri	Intensity	Dist: MGF- MCFM	Dist: MGF- MPIA	Dist: MCFM -MPIA
<i>Personal constructs</i>						
PVAFF	1.00	.71***	.93***	-.45**	-.40*	-.17
Bieri		1.00	.70***	-.37*	-.16	-.19
Intensity			1.00	-.36*	-.45**	-.33
<i>HEXACO constructs</i>						
PVAFF	1.00	.53**	.95***	-.11	-.14	-.16
Bieri		1.00	.47**	-.05	-.27	-.44**
Intensity			1.00	-.08	-.12	-.16
<i>Combined</i>						
PVAFF	1.00	.61***	.93***	-.30	-.42*	-.32
Bieri		1.00	.54***	-.21	-.19	-.33
Intensity			1.00	-.25	-.44**	-.38*

Note: \* $p < .05$  \*\* $p < .01$  \*\*\* $p < .001$ . MGF = Me with good friend; GF = Good friend; MCFM = Me with close family member; CFM = Close family member; MPIA = Me with person in authority; PIA = Person in authority. PVAFF = Variance explained by principal component.

Table 27: The relationship of the cognitive complexity values to the matched interpersonal correlations.

	PVAFF	Bieri	Intensity	Corr: MGF-GF	Corr: MCFM- CFM	Corr: MPIA- PIA
<i>Personal constructs</i>						
PVAFF	1.00	.71***	.93***	.14	.27	.30
Bieri		1.00	.70***	.10	.23	.38*
Intensity			1.00	.05	.19	.20
<i>HEXACO constructs</i>						
PVAFF	1.00	.53**	.95***	-.05	.36*	.30
Bieri		1.00	.47**	-.09	.14	.40*
Intensity			1.00	-.13	.41*	.24
<i>Combined</i>						
PVAFF	1.00	.61***	.93***	.07	.17	.20
Bieri		1.00	.54***	-.11	-.04	.38*
Intensity			1.00	-.07	.19	.08

Note: \* $p < .05$  \*\* $p < .01$  \*\*\* $p < .001$ . MGF = Me with good friend; GF = Good friend; MCFM = Me with close family member; CFM = Close family member; MPIA = Me with person in authority; PIA = Person in authority. PVAFF = Variance explained by principal component.



The distances (table 28) and interpersonal correlations (table 29) were examined in relation to the psychological outcomes of anxiety, depression and behavioural flexibility using SPSS. The distances were found to be positively related to anxiety, but not depression or behaviour flexibility. The interpersonal correlations were not related to any of these outcomes. The PVAFF, Bieri and Intensity values were examined in relation to the outcomes behaviour flexibility, anxiety and depression values. This found a single negative relationship between the Bieri index for the supplied constructs with anxiety ( $r(31) = -.41, p = .02$ ).

Table 28: Correlations between the distances and outcomes in each construct type group.

	Distance: MGF- MCFM	Distance: MGF- MPIA	Distance: MCFM- MPIA	Anxiety	Depression	Behaviour flexibility
<i>Personal constructs</i>						
D: MGF-MCFM	1.00	.59***	.24	.43*	.11	.03
D: MGF-MPIA		1.00	.71***	.38*	.20	.00
D: MCFM-MPIA			1.00	.31	.23	.12
<i>HEXACO constructs</i>						
D: MGF-MCFM	1.00	.55***	.11	.40*	.24	-.09
D: MGF-MPIA		1.00	.60***	.35*	.15	.15
D: MCFM-MPIA			1.00	.31	.29	.04
<i>Combined</i>						
D:MWGF-MWCFM	1.00	.62***	.28	.51**	.22	.00
D: MGF-MPIA		1.00	.73***	.44**	.18	.07
D: MCFM-MPIA			1.00	.41*	.33	.14

Note: \* $p < .05$  \*\* $p < .01$  \*\*\* $p < .001$ . MGF = Me with good friend; MCFM = Me with close family member; MPIA = Me with person in authority.

Table 29: Correlations between the matched interpersonal correlation values and outcomes

	Correlation: MGF-GF	Correlation: MCFM- CFM	Correlation: MPIA-PIA	Anxiety	Depression	Behaviour flexibility
<i>Personal constructs</i>						
C: MGF-GF	1.00	.22	.13	.05	.16	-.04
C: MCFM-CFM		1.00	.32	-.12	-.01	.03
C: MPIA-PIA			1.00	-.06	.09	.07
<i>HEXACO constructs</i>						
C: MGF-GF	1.00	.43**	-.05	.04	-.11	.00
C: MCFM-CFM		1.00	.14	.04	.11	.04
C: MPIA-PIA			1.00	-.29	-.01	-.10
<i>Combined</i>						
C: MGF-GF	1.00	.52**	.02	.03	.02	.04
C: MCFM-CFM		1.00	.01	-.03	.08	.05
C: MPIA-PIA			1.00	-.12	.14	.06

Note: \* $p < .05$  \*\* $p < .01$  \*\*\* $p < .001$ . MGF = Me with good friend; GF = Good friend; MCFM = Me with close family member; CFM = Close family member; MPIA = Me with person in authority; PIA = Person in authority.

These findings from this study will now be discussed in order to answer the research question.

## Discussion

In terms of the first research aim, the 12 supplied trait constructs fit the six factor HEXACO model fairly well, explaining between 62% and 84% of the variance in the supplied construct ratings across the sample. The average of the communalities for specific participants ranged between .81 and .99, suggesting decent fit for specific participants too. This study used a smaller number of adjectives (12 rather than 25 statements in the previous Grice studies), and for each HEXACO trait there was only 2 markers. Even so, these markers showed high loadings and discrimination between the six trait categories. Therefore, the alternate hypotheses that the supplied constructs will tap into the HEXACO model can be accepted.

The personal constructs were found to displayed varied fit onto the supplied HEXACO trait construct data. Some participants personal constructs converged well while others displayed a poor fit (average communalities of the 12 personal constructs when loaded in an exploratory fashion onto the six factor HEXACO model set up using the 12 supplied constructs ranged between .66 and .98, with a mean of .83). The convergence of personal constructs onto the HEXACO model appears to be highly dependent on the participant. The alternate hypothesis that the personal constructs will display convergence with the supplied HEXACO constructs can be accepted, as the mean convergence of .83 is high, although the individual differences in convergence led the researcher to conduct the rest of the analysis with both personal and supplied constructs considered separately, as well as combined together. These values were higher than in previous research by Grice (2004) and Grice, Jackson and McDaniel (2006), who found convergences averaging around .50 across these studies, and Van Kampen (2000) who found an average of .64. This suggests the HEXACO model provides information on a greater array of personality attributes than the more popular

five factor model. Although this study used broader adjectives markers, rather than specific behaviour statements which may have led to lower convergence rates in previous studies.

This finding implies that people whose personal constructs display some independence from a trait model are more complex, and are, therefore, better equipped to understand the world around them. Such individuals show a larger, more varied array of constructs for the environments they inhabit. In individuals whose personal constructs display high convergence with supplied trait constructs, there may be benefits in personal construct therapies to focusing on widening the array of personal constructs people use. These findings highlight the importance of including grids to obtain data for personal constructs and supplied trait constructs in repertory grid research.

To examine the second (main) aim, the distances and matched interpersonal associations were determined from the repertory grid data. This found that participants displayed differences in distances between each of the interpersonal self roles, and different degrees of relationship of each of these roles to their respective matched person (the main effect was only non-significant for the personal constructs). Finding that distances between the interpersonal self roles were present, and that there were differences in the size of the distances between each of the interpersonal self roles suggests some discrimination between different interpersonal selves. This supports Butt, Burr and Bell (1997) suggestion that the individual can display different selves according to the situation. The direction of the distances finding indicates that the distance between the roles may depend on the degree of emotional closeness of a particular role, as less distance was found between emotionally closer interpersonal roles (such as with a good friend and with a close family member). The matched interpersonal associations show most strength between friends, followed by close family then a person in authority at work which suggests more similarity of the interpersonal self to people the person feels closer to. The alternate hypothesis for the second aim

suggested there will be a difference in the correlation strength of interpersonal self distances to the psychological outcomes (cognitive complexity, anxiety, depression and behavioural flexibility), when compared to the correlation strength of the matched interpersonal self-other associations with psychological outcomes. The findings suggested that the distances displayed stronger relationships with the psychological outcomes anxiety and the cognitive complexity indices. This means that the alternate hypothesis can be accepted.

For all three data categories, the cognitive complexity indices displayed more relationships with the distances than the matched interpersonal correlations. For the personal and combined data, lower PVAFF and lower intensity were found to be associated with greater distances between interpersonal self roles. This suggests that those people who are more cognitively complex with a form of construction allowing for varied behaviour predictions displayed more distinct interpersonal roles, in particular distinguished by their own personal construction. This supports the study by Winter, Bell and Watson (2010), Linville self-complexity studies (Linville, 1985, 1987), and a study by Fletcher (2007) that found greater self-complexity in those who suggested they are more behaviourally flexible. The matched interpersonal association values were found to be associated with lower cognitive complexity for the supplied trait constructs, so displaying more similar behaviour to the person you associate with indicates lower cognitive complexity. This would support the concept of being situational changeable, with those who are less able to think about the world in a variety of ways being affected more by the interpersonal situation. This was only consistently found for the supplied trait constructs that people commonly share, in support of Buss (1996) evolutionary perspective on trait models being part of the framework used when perceiving self and others individual differences. This further supports the effect of the shared interpersonal situation on these people.

When the distances and interpersonal correlations were examined in relation to other psychological outcomes, this found the distances were mostly positively related to anxiety, but not depression or behavioural flexibility. The interpersonal correlations were not related to any of the psychological outcomes. This suggests that people who see themselves as behaving differently in particular roles are more anxious which supports invalidation (Kelly, 1955/1991). Although when the cognitive complexity indices were examined in relation to the outcomes, this only found a single negative relationship between the Bieri index for the supplied trait constructs with anxiety. So distances between roles and anxiety, and distances between roles and cognitive complexity are related, but cognitive complexity is not really associated with anxiety. There appears to be a difference between an individual acknowledging that they display behavioural distance between roles through complexity of construing, and those who perceive themselves as distant between roles which is associated with anxiety. This provides support for the concepts of behavioural flexibility and situational changeableness respectively. However, none of the interpersonal correlations were significantly related to anxiety or any other outcomes. This suggests that displaying similarity to the other person in a situation is not associated with negative emotional outcomes or behavioural flexibility. So the similarity developed in each interpersonal relationship may be very unique to that relationship, and somewhat independent of more broad psychological outcomes.

The behavioural flexibility scale was not found to be significantly related to any of the variables. Behavioural flexibility would have been expected to be related to the distances, but it may not have been because the individual does not acknowledge that they display varied behaviour in terms of personality dimensions, rather more in terms of how they view themselves across particular situations. Neurotic and anxious behaviour has been shown to be related to self-perceived variation across roles and situations (Donahue, Robins, Roberts &

John, 1993; McReynolds, Altrocchi & House, 2000; Sheldon, Ryan, Rawsthorne & Ilardi, 1997) while the second study of the research programme and previous diary studies (Bleidorn, 2009; Fleeson, 2001, 2007; Fleeson & Gallagher, 2009; Heller, Komar & Lee, 2007) show that people do display actual variation in personality states without feeling anxiety which can be predicted by social roles or particular goal types. So, the findings from this study support both perspectives. The individual does not acknowledge intra-individual variation in terms of personality, but more in terms of the situation, even if it is their personality behaviour that varies across the different situations.

The repertory grid technique used to examine the nature of cross-contextual variability in personality in this study and the diary used in the previous study are different from each other in ways that could have led to the outcome of each study. Firstly, the interpersonal self roles and matched interpersonal other elements named for the triadic elicitation procedure in this study provide a much more specific context than the more general interpersonal roles (e.g. with friend) provided in study 2. The specification of people to fit matched other element roles in this study may be a reason why this study found stronger relationships of the *interpersonal self with other* distances to outcomes in this study than the predictive effects of the more general interpersonal roles in the previous study. However, the grid format doesn't allow for such specific predictions on the personality constructs provided, when compared to the study 2 diary format. This may be why depression displayed no significant relationships in this study, but in the second study depression was found to predict state emotionality. Although this study revealed that anxiety was associated with distances across roles rather than specifically predicting personality constructs.

The repertory grid format also allows the participant completing the grid to compare and contrast each specific interpersonal context alongside the personality constructs in this study, unlike study 2 where the personality states were rated prior to reporting the

interpersonal role or goal orientation. The grid format could have provided the participant more of an opportunity to think about how the particular interpersonal roles and personality constructs are associated. Alternately the amount of information available could also provide too much information for the participant to work with when self-reporting. However in repertory grid studies the participant is normally encouraged to fill in the grid in a consistent way according to construct by construct or element by element (Bell, Vince & Costigan, 2002; Fransella, Bell & Bannister, 2004) rather than in a scattered way which helps counter this to some extent. Following on from this another reason anxiety may have been positively related to distances in this study is that all this information is available on a single measurement occasion which could lead to over-assessing the differences across situations as in individuals high in assessment (Kruglanski et al., 2000) or self-pluralism (McReynolds, Altrocchi & House, 2000). Those participants with greater cognitive complexity are more likely to have the capacity to handle all of this information together cohesively as part of their identity, without feeling like the individual is being inconsistent across situations or feeling like they do not have a stable identity (a fragmented self). Those who are complex are more likely to be able to handle the idea of displaying different personality characteristics in different situations as part of their whole identity (Butt, 2004), rather than viewing their identity as being fragmented. This is not an issue raised with study 2 as the individual rates the occasions separately without being over-burdened by all the information provided on a single measurement occasion as in this study. Although there were no relationships (or very limited at best) found between anxiety and cognitive complexity in this study which implies this may not be an inverse relationship. There are likely other factors that contribute to the individual's assumptions regarding the stability of their identity, e.g. self-concept clarity (Campbell, 1990).”



The individual who is more self and socially aware is able to interpret interpersonal situations differentially, and consciously test behaviour that has worked previously with a positive validating result (supported by self concept clarity research, Campbell, 1990; Campbell et al., 1996; Paulhus & Martin, 1988). For those with low social awareness, who interpret interpersonal situations incorrectly, this may lead to developing anxiety through the social learning history due to receiving regular negative feedback (based on CAPS, Mischel & Shoda, 1995). The individual may allow their behaviour to be dictated by in the moment situational circumstances in response to invalidation, rather than retaining conscious control of their actions. Overall, the main difference between being behaviourally flexible and situationally changed, is the individual ability to consciously influence and control the behaviour they experiment with.

This research has shown that the individual does rate their personality differently based on the interpersonal context they are involved in. The Choice corollary suggests that a person chooses for the behaviour alternative in a bi-polar construct through which he (or she) “anticipates the greater possibility for the extension and definition of his system” (Kelly, 1955, pp64). Furthermore, the individual is not always aware of their capacity for this intervention in their behaviour processing and experimentation. This is reflected in the lack relationship between the distances and behavioural flexibility. The ability for conscious intervention, stopping and thinking before deciding to act, allows us a right to choose how we behave in order for personal growth and development in each of our unique environments. This is not often acknowledged, as most of the time the individual acts on previously developed auto-pilot behaviour patterns that provide the same feedback over and over. The experience corollary in personal construct theory suggests that a person's construction system develops as different events happen (Kelly, 1955). Choosing to behave in a different way will provide a greater breadth of feedback. This will lead to a greater array of experiences for the

individual to draw upon when they decide how to behave. This means that it would be beneficial for behaviour change interventions to encourage a selection of behavioural choices the individual could perform to widen the feedback they provide. This is not just for long term breadth of understanding but also for in the moment interpersonal progression.

Those who are more cognitively complex display more distance between interpersonal self roles, suggesting a natural tendency towards varied behaviour in those who acknowledge the potential benefits of differences according to context. This supports the idea that those with a more complex construct system will allow for displaying a varied personality as part of their core role structure. Although, people who are more anxious are likely to have developed these distances through invalidation and attempts to change dictated by the situation rather than themselves. This susceptibility to situational changeableness through feedback received means that the behavioural types of therapies in which people try different behaviours to achieve positive results may have a greater affect on those who are anxious. However, the initial barriers to try new behaviours will be stronger in those who are highly anxious, due to considerable prior invalidation. Another interesting implication for behaviour change, based on the diary study in the previous chapter and this study, is that the individual acknowledges intra-individual variation in terms of the situation, rather than personality attributes directly. This can be used advantageously in behaviour change by getting the individual to try specific behaviours, rather than getting them to change in reference to a particular situation. By doing so the individual will be less likely to acknowledge what is happening and therefore be less likely to resist the behavioural change.

The main limitation of this research is the limited sample size that could be obtained, considering this is a single measurement occasion study, due to the extended amount of time the interviews took to conduct (over an hour). However, this was necessary to obtain the data to be able to draw such detailed conclusions at a quantitative and qualitative level. By

extension, the sex split could be considered a limitation, with the large majority of the participants being female. This will reduce the potential of these results to be generalised to male or mixed populations. There is a potential issue of confounding between the distance, matched interpersonal correlations and the cognitive complexity indices, as they were derived from the same repertory grid data (Adams-Webber, 1970). However, the differences in the relationship of the distances and cognitive complexity indices, according to separate analyses of personal and supplied constructs, provides support for these two measures being somewhat divergent of each other. The limited relationship of complexity indices to matched interpersonal correlation values for the supplied trait constructs, and the limited relationships of the distances to the interpersonal correlation values, also supports these indices divergence.

The Self-Pluralism Scale (Altrochhi & McReynolds, 1998; McReynolds, Altrochhi & House, 2000) could have been included to help determine whether the distances were purely self-perceived or realistic. This does raise an interesting point though. Self-perception of intra-individual variation will always be more emphasised in those who are anxious, due to the negative feedback consistently received from the display of varied behaviour across different situations with a negative outcome. Stable individualism in behaviour is emphasised in Western society (Choi, Nisbett & Norenzayan, 1999), an example of the influence of system level impact of culture, so this is to be expected. This means only the negative implications of intra-individual variation tend to be perceived, rather than the beneficial adaptive qualities as diary research would suggest do happen, but are not widely acknowledged. This also means that people displaying less adaptive stable dispositions, are only really encouraged to change when serious adverse consequences occur, such as anxiety and depression. Emphasising the potential for displaying varied behaviour with a positive effect is very important.

### *Chapter summary*

This chapter reviewed some of the literature from personal construct theory and its methods. Having established the usefulness of the repertory grid as a tool in interpersonal personality measurement, its application for helping determine the specifics of how the interpersonal self and situational other focuses influence cross-contextual personality variation was described. A study was performed to determine how personality varied across different interpersonal self roles (interpersonal self influence), and how these roles were related to how another person matched to that role behaved (situational other influence). It was found that the distance between the interpersonal self roles had a stronger relationship to other broad psychological outcomes, relative to the interpersonal self-other association values. Although differing degrees in the similarity in the relationships between self roles and matched interpersonal others was found, with emotionally closer pairings displaying more similarity. The study showed that it was important to distinguish between both personal and supplied constructs when measuring behaviour, as the relationships to cognitive complexity outcomes differed. The findings from the three studies conducted so far will be discussed in the next chapter to answer the fourth research question.

## **Chapter 5: Do personality variation and behavioural flexibility reduce resistance to change in habit?**

To summarise the previous research conducted, the first two studies in chapters 2 and 3 provide support for the theory that people naturally display varied cross-contextual personality behaviour. The study in chapter 4 has helped support the personal self being relatively more important than the situational other in terms of impacting psychological outcomes. So how do these aspects of inter-item and cross-contextual personality variability help explain why some people are resistant to change, especially with regard to behaviours that are bad for them?

### *Integrating research so far*

In chapter 2, research was reviewed that suggested varied ratings of personality can occur due behavioural flexibility or being susceptible to change by the situation. The study conducted in chapter 2 suggested inter-item variations in ratings of behaviours within a personality attribute are meaningful, and not attributable to measurement error. These inter-item variations were found to be associated with positive and negative psychological outcomes, providing support for the positive and negative impact of this type intra-individual variability. Chapter 3 expanded in more detail on studies examining how personality behaviour is displayed across context as situational dispositions. The diary study conducted showed that being in a particular interpersonal role or orientated towards a particular social goal had an influence on the personality states displayed. Only state emotionality was positively predicted by dispositional depression. If the behaviour feedback indicates that the behaviour performed is validated within the context by positive feedback then the behaviour is likely to be performed again (Kelly, 1955; Mischel & Shoda, 1995). If the behaviour is invalidated by negative feedback, then the behaviour is unlikely to be tried again in that

context. When the experience sampling method standard deviations (ESM SDs) were correlated against ESM means some relationships were found, but several were unrelated. This suggests some independence of trait disposition and variation to specific situational dispositions. Although it was apparent from the density distribution histograms that participants display both personality trait dispositions and variation in states across repeated measurements. People with situational dispositions that differ from their trait disposition with positive outcomes are likely displaying these for adaptive purposes and being more behaviourally flexible. Those who display varied behaviour as a response to negative outcomes are likely pressured by situational circumstances into behaving that way, after having initially failed to adapt to the situation. The findings suggest that even though personality behaviour varies, there is some consistency in the way it varies according to context. Particular behaviour being appropriate for particular contexts as a consistent finding across the sample of participants suggests that there are adaptive ways to behave. Individuals will come to form adaptive behaviours through experimenting with different behaviour around particular people, and acting on the feedback received over an extended period of time (growing up essentially). Situational changeableness is likely to be more prevalent during the development of behaviour in adolescence and late teens. This is the time when the individual's personality is forming and the individual will try out different behaviours/roles whilst seeking acceptance from peers. If behaviour is not accepted by peers, the individual will try and change according to the situation. In adults more stable, consistent behaviour in a particular context is likely to have formed through previous experimentation and feedback, although this is not always the case. Chapter 4 examined research from a personal construct framework to help determine whether the interpersonal self or the situation other has more relative importance in personality variation by interpersonal context. The findings from the study using the repertory grid suggest that the interpersonal self has more of an impact on

outcomes, as greater strength of effects was found for distances between interpersonal selves in association to other broad psychological outcomes. Variation across interpersonal self roles, as measured by distances, was associated with greater cognitive complexity and anxiety. However, cognitive complexity and anxiety were not really significantly associated. So support for beneficial and detrimental variation across the different interpersonal self roles was found. The difference between this beneficial and detrimental variation was suggested to be the degree of conscious control the person has over their personality variation. This suggests differences in construction according to context are normal, and that different behaviour will arise from personal experimentation in different contexts.

The findings of these studies, and the literature reviewed previously, supports the division of variation (inter-item and cross-contextual) from a general disposition into two types; behavioural flexibility and situational changeability, where the distinction occurs at the validation/invalidation step in which feedback is received in the behaviour path displayed as figure 11.

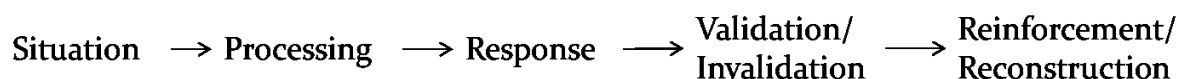


Figure 11: A path that accounts for behaviour performance and formation.

The individual engages with a situation, they process the situation, test a behaviour response to the situation and receive feedback which either validates or invalidates their action.

Reinforcement of the behaviour will occur if it is validated, or reconstruction of the situation if the behaviour is invalidated before trying something else. Those displaying behavioural flexibility will be in control of their behaviour which has been validated in the particular context, and will be reinforced and performed again. Those who display situational changeableness are under pressure to change their behaviour after receiving invalidating

(punishing) feedback and a need to reconstruct in the moment. Many negative major habits associated with particular personality traits (such as those mentioned briefly in chapter 2) may be performed initially in order to counter or shroud invalidating feedback to behaviour. Examples are invalidation imposed by the situation such as work stresses, or invalidation on a more personal level due to relationship trouble. In the case of alcohol consumption invalidation in the form of regular peer pressure or relationship trouble will encourage this. Gambling is an environmental temptation when feeling invalidated due a lack of exciting sensations or boredom in those with a highly sensation seeking disposition that needs attending to. Both of these habits shroud or counter the feelings associated with invalidation. When the situation next occurs, the person may choose to perform the negative behaviour as a response, rather than be invalidated again after performing their standard behaviour response. This is supported by Wood, Quinn and Kashy (2002) who found that performing habits is less stressful and emotionally intense than performing non-habitual behaviour. An alternative is that the individual resists change in the face of this invalidation by hostility. In personal construct parlance hostility is refusing to change the way the individual views themselves and others. Hostile individuals try to force other people to view or construct the world in the same way they do by repeating their behaviour, even if this is to the detriment of others well-being (Kelly, 1955/1991).

To answer the fourth research question, those displaying negative habits form these as a way of countering invalidating feedback that ensues from the individual acting on a maladaptive general disposition or a situational adaptation that is not effective. This is a form of negative reinforcement for the habit in either case. People reliant on this sort of crutch are going to be resistant to losing the crutch that alleviates their invalidation.

This research has been conducted in an individualistic Western society where the principle of disposition stability, of being unique and doing your own thing, is encouraged.



This has merit in application in that it promotes good getting behaviour in psychologically healthy individuals, and makes it easier for a person to predict how another person will behave after experience in a particular relationship. This provides a compound sense of overall control across various relationships, and encourages stability in context-specific behaviour by reciprocation. This is supported by the construing of couples literature reviewed in chapter 4, and by the differing strengths of matched interpersonal relationships in study 3. Collectivist cultural beliefs encourage contextual stability in a different way by prioritising the contextual over the dispositional in terms of acting in a way that is best for the current in-group as a whole (see Triandis, 2001, for a review of individualism vs. collectivism in personality and other related individual differences). The context is important in both individualistic and collectivist cultures, but Choi, Nisbett and Norenzayan (1999) argue that context has a much higher importance in collectivist cultures. Idiocentric (individual orientated) people consider the individual as stable and the environment as variable, whilst allocentric (collective orientated) people think of their different environments as stable and the individual as variable to be able to fit into their environments. This suggests the idea of being behaviourally flexible would come more naturally to someone from a collectivist background. The principle of individualistic stability tends to be advocated by Western societies in such a way that individuals perceive varied behaviour and acting out of disposition as strange from the self or others viewpoint (see the self-perceived variation research reviewed in chapter 2). This is the case even though there is evidence from the diary studies reviewed and studies conducted in this research programme that this naturally occurs in individualistic samples. If an individual is unhappy with their dispositional behaviour, then it is fine for them to want to change and be different. Only the person has to live with themselves at the end of the day, so if changed behaviour or a more flexible behaviour style leads to a happier and more confident way of being other people will respond to this. The

reason people are fearful or nervous about being variable is they fear the invalidating feedback if something goes wrong in trying something different. However, there are advantages to having a varied personality.

### *The advantages of displaying a varied personality*

From an evolutionary interpretation of personality traits it has been suggested that the display of a particular personality trait has benefits and costs for the individual (Nettle, 2005; Nettle, 2006). Nettle (2005) provides an example of this with extraversion ( $N = 545$ ) which shows that greater trait extraversion is associated with greater social activity, ambition, and more lifetime sexual partners, but also with greater infidelity in steady relationships and more accidents and injury. Certain personality attributes and behaviours will be more appropriate for particular situations or environments. For example, trait studies have found that higher conscientiousness predicts greater academic achievement and job performance (Barrick, Mount & Gupta, 2003; DeVries, DeVries & Born, 2011; and Nettle & Robins, 2007, to list a few supporting studies). Higher extraversion predicts greater relationship satisfaction (romantic relationships, Robins, Caspi & Moffitt, 2002; family relationships, Belsky, Jaffee, Caspi, Moffitt & Silva, 2003). Situations or contexts requiring the display of particular attributes that differ from the dispositional trait norm are when cross-contextual variation in personality is most likely to occur. In support of this, recent research by Grant (2013) suggests that ambiverts, those who have the capacity to perform both extraverted and introverted behaviour, are the most successful salespeople. This was supported by finding an inverse U-shaped curvilinear relationship between extraversion and sales revenue over three months. Grant suggests ambiverts have the flexibility to be assertive when talking about a product, but also listen to and notice the needs of the customer. Being able to display varied behaviour states is advantageous in order to provide the benefits of that state in context or to counteract the costs of having a particular trait disposition. A big cost of displaying

unchanging dispositional trait behaviour is the increased likelihood of performing a particular negative habit associated with that trait. For those who are not well adjusted or flexible, some help or direction may be required to help them change and put them in greater control of their behaviour.

*The importance of engagement rather than withdrawing*

To be able to change the person needs to acknowledge that some aspect of their behaviour needs changing, whether it is a specific aspect of their behaviour, or a desire to be more flexible generally. Ajzen (1991) classic work on the theory of planned behaviour emphasises that behaviour is not just the result of a personality disposition. Other factors such as emotion, values and experience have an impact on behaviour. The relationship between disposition and behaviour performance is also mediated by factors including behavioural beliefs, behaviour control and the intention to behave in a particular way. Participating in an intervention has an impact on these mediators of behaviour, as this is a sign of intention to change and behave differently. If the participant has the intention to change and is provided with appropriate different behaviours to try, they can choose to try something different from their dispositional behaviour pattern. The feedback loop as in FIT science (Fletcher & Stead, 2000), or CAPS theory (Mischel & Shoda, 1995) from performing novel, validating behaviours should encourage and reinforce any behaviour with a positive impact. If trying a particular behaviour gives good feedback, then the individual should keep performing this behaviour in other similar situations until it becomes disposition for that context. By getting the individual to perform a variety of different behaviours this enhances the belief that they can perform alternative behaviours, and have greater control than previously assumed.

Previous researches by Fleeson, Malanos and Achille (2002), McNiel and Fleeson (2006), McNiel, Lowman and Fleeson (2010) and Wilt, Nofle, Fleeson and Spain (2012)

have examined the impact of personality states on affect in a social interaction scenario. Fleeson, Malanos and Achille (2002), and McNiel and Fleeson (2006) examined the relationship of experimentally induced state extraversion on positive affect. McNiel and Fleeson also examined induced state neuroticism on negative affect. This was done by giving the participant instructions to act introverted or extraverted/neurotic or stable in an interaction and task with another participant who was previously unknown to them. This found that acting in an extraverted state increased positive affect as recorded after the experiment. McNiel and Fleeson found that acting in a state of neuroticism was found to increase negative affect. Dispositional extraverts displayed greater positive affect, but there was no effect of dispositional neuroticism on negative affect. However, in both experiments each subject participated in both conditions which could have created order effects. McNiel and Fleeson tested this and found order effects for participants first acting introverted then extraverted, and participants acting stable then neurotic. Using a similar scenario, McNiel, Lowman and Fleeson (2010) explored extraversion further on four types of affect; positive (excited, elated and enthusiastic), pleasant (happy, pleased, content), activated (aroused, alert, hyperactive) and negative affect ( $N = 192$  students). Positive, activated and pleasant affect increased when asked to act in an extraverted state, rather than introverted state. Dispositional introverts were generally found to report more negative affect across either session, whether being asked to act extraverted or introverted. In this study no order effects were found. This shows that asking people to act in a particular state can influence positive and negative affect outcomes, regardless of their dispositional personality. Wilt, Nofle, Fleeson and Spain (2012) found support for mediation through the path of trait extraversion to state extraversion to state positive affect to trait positive affect in natural and laboratory samples. So trait extraverts are more likely to initially display the behaviour patterns that lead to trait positive affect. However, encouraging more extraverted states can lead to state positive affect and then

through repeated experience into trait positive affect. Zelenski, Santoro and Whelan (2012) examined the emotional and cognitive consequences of varied introverted or extraverted state behaviour that was counter-dispositional to the trait disposition within a social interaction scenario. They found no significant negative affect costs of acting out of character while positive affect significantly increased for those acting extraverted, whether they were trait introvert or extravert. It was found that for extraverts acting introverted there was evidence of ego depletion while for introverts acting extraverted no ego depletion occurred. So this suggests that encouraging controlled engagement with stimuli has a lesser impact on self-regulatory resources than controlled withdrawal from stimuli. These are laboratory studies meaning the ecological validity is debatable, but they are encouraging for people with maladaptive dispositional personality attributes. One worry when attempting to modify behaviour in such a way is that the person may feel like they are losing a part their identity, and do not feel like they are behaving authentically. However, research by Fleeson and Wilt (2010) suggests that people feel more authentic when engaging in state behaviour significant to the context, rather than behaviour consistent with traits. State-content significant behaviour feels more authentic because of its consequences in context. Encouraging a focus in interventions of getting people to try new behaviour, rather than make it seem like they are withdrawing from old behaviours, will help encourage engagement. Engagement is the key aspect that leads to positive change. Engagement is the specific aspect of being extraverted that makes it such a central predictor of positive affect. The ways in which commonly applied intervention approaches use the principle of engagement with the novel, rather than withdrawal from the old will be discussed.

#### *Use of engagement in modern behaviour change strategies*

A multitude of behaviour change interventions have been designed in order to try and help people modify or change their behaviour, each with varying degrees of success. Fogg

and Hreba (2010) have described a simple classification system for behaviour change strategies based on the approach taken (Flavours), and the duration of behaviour practice (Duration). Fogg and Hreba's definitions of the five Flavours are:

- 1) Green: Performing a new behaviour.
- 2) Blue: Performing a behaviour that the individual is familiar with.
- 3) Purple: Increasing performance of an already familiar behaviour.
- 4) Gray: Decreasing performance of an already familiar behaviour.
- 5) Black: Terminating the performance of a particular behaviour.

Fogg and Hreba's definitions of the three lengths of Duration that include:

- 1) Dot: Performing a one-time behaviour.
- 2) Span: Performing the behaviour over a specific duration, e.g. 40 days.
- 3) Path: Performing the behaviour from the present onwards (as a habit).

A Green-Dot behaviour change would be to try eating fruit as a snack today, as a one-off unfamiliar behaviour. An example of a Gray-Span behaviour change would be to eat less fatty food this week. The types of therapies and interventions discussed will be classed using this system as a way of comparing and contrasting approaches. Some overlap between Flavours is expected, although most interventions will be Path durations.

The most commonly applied modern therapy is Cognitive Behavioural Therapy (CBT). This applies both cognitive restructuring which involves encouraging particular thinking strategies and patterns, and behaviour activation techniques which involve suggesting particular behaviours to perform according to specific cues to encourage change. This is a Green-path strategy which applies new thinking and behaviour strategies that are intended to become permanent changes, so essentially becoming Blue behaviours. There are a massive

number of studies examining and supporting the efficacy of CBT in the literature. The coverage here will be limited to reviews of meta-analyses. Butler, Chapman, Forman and Beck (2006) conducted a review of 16 meta-analyses on the efficacy of CBT on various outcomes including 13 different complaints, in comparison to a different therapy or control groups. Meta-analyses in several areas indicated that CBT is effective in treating a wide range of psychological outcomes including anxiety complaints (social phobia, Gould, Buckminster, Pollack, Otto & Yap, 1997; panic disorder, Gould, Otto, & Pollack, 1995; generalized anxiety disorder, Gould, Otto, Pollack & Yap, 1997; agoraphobia, Oei, Llamas & Devilly, 1999; obsessive compulsive disorder, Van Balkom, van Oppen, Vermeulen, van Dyck, Nauta & Vorst, 1994), anger (Beck & Fernandez, 1998), depression (adult depression, Gloaguen, Cottraux, Cucherat & Blackburn, 1998; adolescent depression, Reincke, Ryan, & Dubois, 1998), and schizophrenia (Rector & Beck, 2001). Tolin (2010) conducted a meta-analysis of CBT in comparison to other therapies with rigorous exclusion criteria. This resulted in 26 studies from an initial pool of 219, and found that the effectiveness of CBT is limited mainly to anxiety and depression complaints when compared to other therapies. Hofmann et al., (2012) conducted a more updated review of meta-analyses which supported Butler et al's (2006) review. Hofmann et al., (2012) also included studies that indicate CBT is effective in reducing substance abuse and addiction (Powers, Vedel & Emmelkamp, 2008; Song, Huttunen-Lenz, & Holland, 2010), insomnia (Okajima, Komada, & Inoue, 2011), and criminal behaviour (Wilson, Bouffard, & MacKenzie, 2005).

Recent CBT studies have examined skill acquisition and frequency of skill use which have been found to have a mediating impact in the treatment of depression (Hundt et al., 2012). The cognitive and behavioural components of CBT have been examined separately in studies on skill use in therapy to examine their efficacy, and to determine whether one has a greater relative impact. These studies indicate both can have an impact, as in Christopher et

al., (2009); Gallagher-Thompson et al., (2008); and Jacob, Christopher and Neuhaus, (2011). Although several studies find the behavioural component appears to have a stronger effect on psychological outcomes (Dimidjian et al., 2006; Jacobson et al., 1996). This suggests therapies tailored towards encouraging new behaviour may have a greater impact than those that encourage different thinking patterns. This is most likely because behaviour changes have a more noticeable impact on the environment, and the feedback the individual receives. Changes in thinking are internal and have no direct environmental impact, and because of this more easily revert to former habit, as nothing seems to be changing.

Positive Psychology is a more recently emergent movement that focuses on determining individual signature strengths in six categories including wisdom and knowledge, courage, humanity, justice, temperance and transcendence (Linley et al., 2007; Park, Peterson & Seligman, 2006; Seligman, Steen, Park & Peterson, 2005). Research from the Positive Psychology approach to intervention suggests that encouraging signature strengths has a beneficial effect on well-being (Fordyce, 1977, 1983; Giannapoulis & Vella-Broderick, 2011; Linley, Nielsen, Gillett & Biswas-Diener, 2010; Lyubomirsky, Dickerhoof, Boehm & Sheldon, 2011; Mongrain, Chin & Shapira, 2011; Shapira & Mongrain, 2010; Wood, Linley, Maltby, Kashdan, & Hurling, 2010). This is also supported by a meta-analysis conducted on 51 intervention samples (Sin & Lyubomirsky, 2009). This is a Purple-Span/Path approach to behaviour change, as it gets people to act increase the performance of a familiar behaviour. Positive psychology interventions are based on the philosophy of person-activity fit which suggests that the more suited the activity is to the individual the more effective the intervention will be (Schueller, 2010, 2011, 2012). Research has shown actively encouraging behaviour associated with signature strengths has a greater impact on happiness and depression, than just getting participants to think about their signature strengths (Mazzucchelli, Kane & Rees, 2010; Seligman, Steen, Park & Peterson, 2005).



Although Mongrain and Anselmo-Matthews (2012) performed a replication of Seligman et al., (2005) comparison of behaving and thinking type interventions which found both types had a significant impact on happiness. However, Positive Psychology interventions seem somewhat limited, as if people know they possess certain strengths then they are generally already applying these strengths to an extent. The more relevant option would be to help encourage people to display strengths that they do not currently display. McNulty and Fincham (2012) also challenge the idea that behaviour or strengths labelled as positive always have positive consequences. McNulty and Fincham (2012) make the argument that sometimes positive behaviours have negative consequences or negative behaviours have positive consequences, and that it depends on the context. This would suggest that encouraging flexibility in behaviour repertoire to have responses with positive consequences when a variety of contexts are considered would be beneficial. Perhaps more than encouraging stability of already possessed strengths.

It is apparent from the CBT and positive psychology research reviewed that both are effective behaviour change strategies, as they both focus on engagement, rather than withdrawal. However, this brief review does raise some interesting points. It is a self-validating practice to engage with familiar behaviours in positive psychology interventions, but why engage with behaviour the individual has already indicated as one of their strengths, rather than acquiring novel behaviour skills? By only engaging with behaviour associated with strengths the individual will remain habitual, and will not engage with novel behaviours that have the potential to expand the validating feedback they receive. The CBT research that supports engagement with novel strategies tends to focus on specific psychological outcomes in a standardized fashion, and there has been no examination of the person specific complaints. Perhaps this is why CBT or Positive psychology does not look into simply becoming closer to how the person would like to be. It may be time for a strategy to be

developed that focuses on providing validating feedback that changes the individual view of themselves, and brings them closer to their ideal self. This would be best done through applying tailored diagnostics based on their view of themselves and their unique environment.

One classic therapeutic approach that focuses on changing behaviour using a tailored approach to try and make the individual a better version of themselves is fixed role therapy. Fixed role therapy has its roots in personal construct theory, and was originally designed by Kelly (1955/1991). Fixed role therapy first involves the client providing a self-characterisation (a written character sketch) of their current character and personality to the therapist. The therapist then uses this to create an alternative role sketch for the client to act out during therapy sessions, and in their actual life outside therapy over a period of around two weeks (Epting & Nazario, 1987). The alternate sketch is designed to be only slightly different to the client's normal disposition or character, not the polar opposite. This is to ensure that the client can see themselves being able to realistically act out the character, as the client should not explain to others they are acting (Bonarius, 1970). This will usually involve the client and therapist discussing the alternate role sketch, and making modifications to it before agreeing the character to act out.

There are usually several sessions of therapy where the alternate role is acted out by the client, with the therapist fulfilling the roles of the other person for the many different situations the client will encounter. The progression of these sessions will involve the client and therapist simulating interactions with people gradually more emotionally close to the client across a process of six sessions (Epting & Nazario, 1987). The first session allows the client to try out the alternate role, with the therapist acting out the role of a figure in authority, e.g. boss at work or a teacher. The second session is orientated around interacting with a good friend. The third session involves acting the role when with the client's partner. The fourth

involves simulating an interaction with the parent. The fifth session is different from the previous sessions in that it doesn't focus on interaction with a close other, but involves the client attempting to understand a strong belief system they possess, e.g., religious beliefs, when acting in the alternate role. The sixth session is a discussion between the client and therapist about the experience of acting in the fixed role and deciding what could be used in returning to their actual disposition and character.

Fixed role therapy is different to therapies like CBT and Positive psychology in that it doesn't use the specific same set of strategies to tackle a complaint for every participant, but instead tailors an alternate role focused entirely around the individual's experience. Although there is a format and set of steps applied, fixed role therapy is still highly tailored to the specific participant. This is reflected in the literature on the subject which frequently focuses on case examples, rather than the experimental group vs. control group randomised control trial format used by CBT and Positive psychology. This is a useful way of discussing unique cases that required highly individual tailored therapies to be developed. For example, Bonarius (1970) discusses a single case focused on developing an alternate role where the main construct to test in the role was *understanding people vs. not understanding people*, in order to counteract a construct of *being free vs. being tied* (from/to others) which was affecting the client's relationships with others. This latter construct required others to accept his freedom to act as he wished without compromise otherwise he would be unable to function appropriately, with anxiety and depression an associated result of this. Fixed role therapy was found to be successful in reducing the client's conflict in relationships associated with threat to their freedom, as well as anxiety and depression at post and follow up.

Viney (1981) describes how fixed role therapy can be utilised as one part of a more extended psychotherapy. Viney discusses a case where anxiety was the complaint of the client, with feelings of shame also presented. The repertory grid was used to elicit personality

constructs to examine how she viewed herself and significant others, with discussion of the content following in therapy sessions. Fixed role therapy was then used to develop and test an alternative role outside of the therapy sessions. This alternate role was developed based on the constructs elicited and rated in the repertory grid previously, and the role encouraged the client to be *friendly, open, relaxed* and *inquisitive*. Viney mentions that the client struggled to come to terms with the role at first which is unsurprising considering her main complaint was anxiety, but after attempting the role in a few different situations she found that she was getting useful feedback from those people she interacted with. Eventually the client ended therapy after achieving successful outcomes which included being more confident.

Horley (2006) discusses two case examples of fixed role therapy applied in a forensic context. The first case involved a prisoner with complaints of guilt, lack of trust and paranoia. A self-characterisation was produced by the client that portrayed a caring, yet also moody character prone to fits of violence and suppressing his feelings. This self-characterisation was then used by Horley to come up with a fixed role focused around remaining caring, yet being less vengeful and more in touch with his feelings. However, upon release this therapy was not found to be successful, and when re-incarcerated a different type of therapy was attempted. The second case involved a prisoner complaining of sexually aggressive fantasies that were concerning them. The prisoner provided a self-characterisation that portrayed a sociable, yet angry character. The fixed role developed by Horley focused on retaining the sociable aspect, and also being in control of feelings and being assertive without being aggressive. This was found to be successful, and after release from prison this prisoner continued with counselling. Horley's two examples demonstrate how some positive aspects of the personality are retained in the fixed role while the negative aspects are where the changes are focused. Horley also highlights that FRT is more likely to be successful in the community, rather than prisons due

to FRT being a short therapy, whereas longer intervention may be required for the serious complaints frequently displayed by prisoners.

Fixed role therapy is a combined type therapy, as it involves developing an understanding of the way the individual views themselves and their world via a self-characterisation before the therapy itself asks the individual to interact in a way that reflects the alternate character sketch developed by the therapist. This would be classified as a Green-Span therapeutic approach according to the Fogg and Hreba (2010) classification as it involves trying out new behaviours over a set duration of time (two weeks). This type of therapy is highly tailored to the participant, so it would be expected to have a greater effect on becoming closer to a better self for that participant. However, it does remain reliant on regular therapy sessions. Would it be possible to provide an approach tailored to a participant to a similar degree as FRT without the requirement for a set of intensive therapy sessions? This would also make this type of approach to bring people closer to a better self more widely applicable to a general population, as it wouldn't require attending therapy which many people are reluctant to do.

The research I have conducted so far relates to all this behaviour change research by showing that personality behaviour can, and does naturally vary. This provides support for an underlying capacity in anyone to display varied behaviour associated with a particular personality state if they choose to. The study in chapter 4 suggests that variation in behaviour according to interpersonal context is under personal control. Based on this the individual has the capacity to experiment with different behaviours which allow them to obtain new validating feedback about themselves in the environments they inhabit. This may also allow the individual to become more aware of their ability to be behaviourally flexible. Fixed role therapy provides evidence of this being the case after regular therapy sessions. The discussion of the study in chapter 4 highlighted that even though people can and do display varied

personality as part of a stable identity they do not necessarily acknowledge their capacity to do so. Therefore, as a practical application of the findings so far, a template for tailored strategies that help reduce discrepancies in how the person sees themselves, and how they would like to behave will be developed and piloted. This will not use the standard therapeutic approach that FRT utilises, but instead will utilise a single interview with the rest of the administration taking place via an online system, in order to be more widely applicable to a general population. As a compound effect of reducing discrepancies from the ideal self this programme will encourage realisation of the capacity to be behaviourally flexible.

### *Chapter 5 summary*

The answer to the fourth research question established that people display intra-individual variation in personality to perform behaviour that is expected to be validated in the current context. Problematic habitual behaviour is a result of repeatedly performing the behaviour for a validating effect in stopping a negative outcome from happening. The advantages of displaying a varied personality were described, and the importance of engaging with novel behaviour was discussed. The importance of engagement was then emphasised by discussing how CBT and Positive psychology for behaviour change utilise engagement. A gap was raised which suggested that there was no strategy in either of these approaches that could be used to just bring the individual closer to their specific ideal construction of themselves. Fixed role therapy was discussed as a therapeutic approach that fulfils this need. However, it does require regular therapy sessions. The question was raised about whether it would be possible to provide a therapeutic approach tailored to a participant to a similar degree as fixed role therapy, but without the requirement for a set of intensive therapy sessions. The next chapter will develop and pilot a strategy to bring the individual closer to their ideal view of themselves, that doesn't require an intensive set of therapy sessions.

## **Chapter 6: Giving a practical application to the findings of this research programme.**

To examine the second research programme aim and practically apply the findings of this research programme, the researcher decided to develop and pilot a strategy to help the individual become closer to their view of how they would like to behave. In order to design a strategy that utilises practicing different behaviours with a highly individual focus there are two approaches to behaviour change that should be drawn from. These approaches are Do Something Different and Personal Construct therapy.

The Do Something Different (DSD) intervention is a very recently developed approach that gets people to try novel behaviour outside their dispositional comfort zones. This aims to increase their behaviour repertoire within a set of 15 different behavioural dimensions (Fletcher & Pine, 2012). According to Fogg and Hreba (2010) classification, this is an extensive Green-Dot approach with numerous novel behaviours, in order to lead to developing Green-Path behaviours in cases where the novel behaviour has validating feedback. The DSD approach has been found to have an impact in weight loss (Fletcher, Hanson, Page & Pine, 2011). However, the DSD approach is quite general and styled on encouraging flexibility based within the 15 dimensions, so it does not account for the idiographic nature of people.

Personal construct therapy (PCT) encourages the use of the repertory grid technique to elicit highly unique personality construct data from the individual which provides more relevant data to act upon when encouraging different behaviours to experiment with. So PCT is a Green-Path style intervention. PCT has been shown to be effective in treatments for negative psychological outcomes, particularly anxiety and depression, and reducing discrepancies between the self and ideal self (see meta-analyses by Holland & Neimeyer,

2009; Metcalfe, Winter & Viney, 2007; Viney, 1998). PCT research suggests that both elicited personal constructs and supplied common trait constructs can explain variance in behaviour ratings (Grice, 2004; Grice, Jackson & McDaniel, 2006; and Van Kampen, 2000), not only in non-contextual measurements, but also interpersonal contextual measurements (see the study conducted by the researcher in chapter 4). So the combined use of nomothetic and idiographic assessment will provide a greater representation of personality behaviour, and how commonly shared behaviours may be associated with unique idiosyncratic behaviour.

The strategy developed will apply tools and ideas from both the Do Something Different and Personal construct therapy approaches, in particular from fixed role therapy. To obtain the background information required to help design the programme the repertory grid technique will be applied (Fransella, Bell & Bannister, 2004) while the instructions applied in these programmes will come from the Do Something Different list of tasks in Flex (Fletcher & Pine, 2012). The development of the strategy will now be described.

#### *Tool and techniques to be applied*

##### *The repertory grid*

The repertory grid from personal construct theory would be the most suitable tool to apply to gather the initial data to prepare each programme. This will allow for the collection of idiographic and nomothetic data that references each individual's unique environment. This can be used to develop a very clear idea of how that individual views their behaviour on a common and unique construct level, and what behaviours would be alternate to their normal disposition. This is in contrast to fixed role therapy which tends to use the self-characterisation to elicit an extended description, rather than the repertory grid. The repertory grid data will be interpreted based on a selection of guidelines suggested by Winter (1992).



These steps are as follows:

- 1) Determining the structural characteristics of the construct system.

Does the participant display tight or loose construing? If the construction is loose, is there integration (areas of tightening in the system)?

- 2) The major dimensions.

How many major dimensions are there? What poles of the constructs load on to each dimension?

- 3) Content of the constructs.

How often do certain types of construct appear? Are there themes? Is there any construct related to change?

What poles does the individual define themselves on? Where are there discrepancies in ratings between the self and ideal self? How distant is the individual from significant others?

- 4) How are significant others construed?

What poles does the individual define significant others on? How many others are defined on positive or negative poles of constructs?

- 5) Are there any other inconsistencies or departures from social consensus?

For example, the positives of one construct being associated with negative connotations of another construct, where the positives would be expected to be associated for both constructs.

After interpreting the grid according to these steps, a summary of the repertory grid interpretation will be provided. The Flex list of behaviours will then be used to design each individual's programme.

### *The Flex list of behaviours*

The Flex lists will be used as the source of the behaviours for participants to try (Fletcher & Pine, 2012). In the strategy being developed unique programmes will be designed to help encourage change in the individual's view of the world. The Flex lists consist of 15 bipolar dimensions:

- Unassertive-assertive.
- Trusting-wary.
- Calm/relaxed-energetic/driven.
- Reactive-proactive.
- Definite-flexible.
- Risk taker-plays safe.
- Behave as others want- behave as you wish.
- Spontaneous-systematic.
- Single-minded – open-minded.
- Introverted-extraverted.
- Conventional-unconventional.
- Individually-centred-group-centred.
- Firm-gentle.
- Lively-laidback.
- Predictable-unpredictable.

Each pole of these dimensions has a list of behaviour instructions associated with it.

The programmes in this strategy are intended to work through the participant engaging with novel personality behaviours hand-picked from these lists. These behaviours will differ from the individual's dispositional norm, as established by their combination of unique and common personality attributes. This gives the individual an opportunity to behave in novel ways that alter their interpretation of their environment. This is in contrast to fixed role therapy where the novel behaviour is based on an extended character role sketch, rather than specifically selected instructions. Participants in the study are expected to have the capacity

to attempt and perform alternative behaviours, as the studies conducted so far in this thesis suggest that people have the capacity to display inter-item and cross-contextual variation in their behaviour. The instructions applied in this strategy are designed to be non-invasive small changes which do not create new invalidating situations in their own right (they are not designed to induce guilt by moving too far away from the core role structure severely).

The strategy will involve the following steps for each individual participating:

- 1) Conduct an interview using the repertory grid to obtain personal and supplied construct data for the individual, to identify discrepancies between me now-me as I would like to be ratings, and ratings of behaviour extremes.
- 2) After interpreting the repertory grid a diagnostic will be determined for the individual.
- 3) The process of the programme will then be explained to the participant. The participant will then go away and take part in the programme.
- 4) At the end there will be a post-programme follow up with the participant on changes in the targeted constructs.

A pilot study of the strategy developed will now be described.

**Study 4: Piloting a strategy to beneficially change the individual's view of themselves, and acknowledge the capacity to be behaviourally flexible.**

The strategy described in this chapter will require the development of programmes highly tailored to each participant. Therefore the findings from each programme will mainly be discussed at the individual case level as fixed role therapy reports tend to do. Some participants will take part in a behaviour focused programme while others will take part in a

thinking focused programme to see if this has an impact on the targeted discrepancies between me now and me as I would like to be ratings. Previous research from both Cognitive Behavioural Therapy (Dimidjian et al., 2006; Hunter et al., 2002; Jacob, Christopher & Neuhaus, 2011), and Positive Psychology approaches (Seligman, Steen, Park & Peterson, 2005) have found that interventions focusing solely on a cognitive approach to behaviour change had less effect on well-being than those utilising behavioural focused components. In thinking programmes, instead of receiving a behaviour instruction 4 times per week the individual will be provided with instructions focused around thinking in a different way. The instruction may be a thought orientated instruction in the lists, or based on a modified behavioural instruction. For example, a behaving type programme may use the following instruction; Plan an evening around what you enjoy doing while a modified thinking version of this instruction would be; Think about how an evening focused around what you enjoy most would be like.

The primary hypotheses for this study will be examined at the individual case level. One of the predictions is that there will be changes in the me now ratings of targeted constructs between pre and post-programme for each individual participant, and reduced discrepancies in each participant's me now and me as I would like to be ratings after taking part in their tailored programme. The programmes are also expected to reduce habitual behaviour and other negative outcomes in each individual, and/or increase behavioural flexibility and life satisfaction. A secondary prediction is that there will be a difference in the degree of changes between a behaving and thinking type programme.

## **Method**

### **Aims, Research Questions and Hypotheses**

This study was conducted to help answer the second research programme aim which was to see if the capacity for intra-individual variability can be utilised in making people less resistant to changing behaviour. The first goal of this study is to see if an individual's intra-individual variability can be harnessed to bring the individual closer to their ideal self (a positive form of change). The second goal is to test whether harnessing this capacity for intra-individual variability helps reduce habitual behaviour and other negative psychological outcomes that encourage resistance to change, and/or increases positive outcomes including behavioural flexibility and life satisfaction.

For the first goal the main alternate hypothesis is that a tailored programme which promotes the person to utilise the capacity for intra-individual variation will bring that person closer to their ideal self. This will be in the form of reduced discrepancies between the participant's me now and me as I would like to be ratings in the constructs that are targeted. The alternate hypothesis for the second goal is that taking part in the tailored programme will reduce habitual behaviour and other negative outcomes in the individual, and/or increase behavioural flexibility and life satisfaction. A secondary alternative hypothesis for both goals is that there will be a difference in the change observed between pre and post programme according to whether the individual is taking part in a behaving or thinking type instruction programme.

The null hypotheses are that the tailored programme will not bring the individual closer to their ideal self, and will not reduce habitual behaviour and other negative outcomes in the individual, and/or increase behavioural flexibility and life satisfaction. The secondary null hypothesis is there will be no differences in the change observed between pre and post

programme according to whether the individual is taking part in a behaving or thinking type instruction programme.

## Participants

Initially 11 community participants above the age of 18 were recruited for this pilot, two male and nine female, at pre-programme through volunteer sampling. This was performed by advertising the study throughout the University of Hertfordshire and online. Non-random allocation was used, as due to the seven week duration the researcher was not sure how many participants would be willing to take part, particularly as no other incentives were offered. During the programme two participants did not complete post-programme measurements, so as a result there were nine participants who completed all the measurements requested. Of those who completed their programme and returned post-programme measurements, there were five participants who completed behaviour type programmes and four participants who completed thinking type programmes. Table 30 displays some demographic data for the nine participants who completed their programme and provided post-programme measurements.

Table 30: A list of demographic information for each completing participant

Participant	Programme type	Sex	Age	Live with a partner?	Children at home?	Have a job?
1	Behaving	Male	25	No	None	Yes
2	Thinking	Female	31	No	None	Yes
4	Thinking	Female	56	No	1	Yes
5	Behaving	Female	42	Yes	2	Yes
6	Thinking	Female	26	Yes	None	Yes
7	Behaving	Female	56	No	None	Yes
8	Thinking	Female	44	No	None	No

9	Behaving	Female	25	Yes	None	Yes
10	Behaving	Female	31	Yes	None	Yes

---

## **Design**

The main changes of interest between pre and post programme for each individual participant are those in me now ratings of constructs targeted during the programme and the average of the targeted construct discrepancies between me now-me as I would like to be role elements where it was suitable to calculate this. The average discrepancy in construct ratings between me now-me as I would like to be role elements was also calculated across all 24 constructs for each participant at pre and post programme (12 personal constructs and 12 supplied constructs). Personal and supplied construct discrepancies were also calculated separately. Measures of behavioural flexibility, habitual behaviour, life satisfaction, anxiety, depression and some single item measures of coping were also taken pre-programme and post-programme for each participant.

## **Materials**

Both physical and online measurements were administered in this study. Collecting the repertory grid data required conducting a face to face interview while several outcome measurements from the Do Something Different diagnostics (Fletcher & Pine, 2012) were administered online. All of the post-programme data was collected online via the Do Something Different online system, or where the original measurement was a physical copy Microsoft Word document measures were produced by the researcher and emailed to the participant.

## Physical measures

**Repertory grid.** The repertory grid technique (Fransella, Bell & Bannister, 2004) was used to elicit 12 personal constructs from the participant, and supply 12 constructs based on HEXACO model (Lee & Ashton, 2004) facet markers. The elicited constructs did not undergo pyramiding or laddering procedures. The role title elements used in the triadic opposite procedure included; *me now, me as I would like to be, a good friend, a family member, a person in authority at work, an ex-partner, a person I live/have lived with, a liked teacher, an admired person, a person unlike me, a not liked person and a person I don't quite understand*. The following 12 constructs were supplied to represent each HEXACO trait attribute:

Honesty: *Insincere vs. Sincere ; Does not play fair vs. Plays fair*

Emotionality (reversed): *Fearful vs. Fearless ; Dependent on others vs. Independent*

Extraversion: *Unsociable vs. Sociable ; Calm vs. Lively*

Agreeableness: *Harsh vs. Gentle ; Temperamental vs. Patient*

Conscientiousness: *Disorganised vs. Organised ; Impulsive vs. Prudent*

Openness to experience: *Uncreative vs. Creative ; Unconventional vs. Conventional (reversed)*

All the constructs (elicited and supplied) were rated on a 1-7 scale in the repertory grid, where ratings were provided with 1 representing the extreme of the negative trait construct pole and 7 representing the extreme of the positive trait construct pole. For example, with the supplied honesty construct *Insincere vs. Sincere*, the extreme of *Insincere* would be rated 1 while the extreme of *Sincere* would be rated 7. The elicited constructs positive and negative



poles were determined during the interview, based on the role elements used to elicit the construct. If two elements with positive connotations (e.g., *a good friend* and *an admired person*) were used to elicit the emergent pole, then the emergent pole would be considered positive (rated between 5 and 7 in the grid). If two elements with negative connotations (e.g., *a disliked person* and *an ex-partner*) were used to elicit the emergent pole, then the emergent pole would be considered negative (rated between 1 and 3 in the grid). In hard to determine cases, the participant was asked to explain the construct in more detail.

At post-programme only the *me now-me as I would like to be* discrepancy data were collected by listing the 12 personal and 12 supplied constructs for that individual, with two ratings columns for *me now* and *me as I would like to be*. A copy of the full grid used for the pre-programme interview is included as appendix K.

The interview and interpretation process were piloted before the study took place. One of the pilot interpretations is described (this programme was not administered).

#### *Piloting the repertory grid interview and interpretation*

A short form was developed for the interpretation process. An example interpretation from one of the individuals the repertory grid interpretation process was piloted on is provided over the next few pages (only the personal constructs were considered for the pilot).

Example interpretation form:

**Repertory grid interview interpretation**

*What are the structural characteristics of the construct system?*

The complexity indices suggest that PILOT2 has quite a loose construction system, allowing for varied behaviour predictions (Bieri = .17, PVAFF = 43.24, Intensity = 1456.39).

*What major dimensions are present in the construct system?*

Four major dimensions were present, three worth interpreting as:

**1) Socially acceptable (combination of outgoing, emphatic and ambitious attributes)**

Hardworking (.96) - These values in brackets are factor loadings.

Ambitious (.90)

Generous (.88)

Socially outgoing (.87)

Has a sense of humour (.80)

Understanding, listens (.79)

Calm, laidback (.57)

Normal (-.48) - **Negative loading constructs are labelled with the negative pole.**

**2) Takes action, regardless of consequences**

Not conscientious (-.90)

Decisive (.83)

Tomboyish (-.82)

Dominant (.64)

Normal (-.55)

Self-centred (-.37)

**3) Neurotic**

Dominant (.56)

Crazy (.54)

Wound up (-.45)

Has a sense of humour (.38)

Self-centred (-.37)

*What is the content of the personal constructs (Themes included)?*

**Interest in others** (Socially outgoing vs. Socially introverted; Understanding/listens vs. Self-centred; Generous vs. Selfish)

**Need to succeed** (Hardworking vs. Slacker; Ambitious vs. Doesn't progress; Conscientious vs. Not

conscientious)

**In control** (Calm, laidback vs. Wound up; Dominant vs. Passive; Normal vs. Crazy; Decisive vs. Indecisive)

**Unique:** Girly vs. Tomboyish; Has a sense of humour vs. Boring

*How does the individual construct themselves? (Self and ideal self poles, discrepancies in bold, most apparently meaningful discrepancies are indicated by \* , extremes in italics):*

Me now

Me as I would like to be

**Calm, laidback**

**Calm, laidback**

**Passive\***

**Midway\*** ←

\* indicates the largest numerical discrepancies for the particular individual being examined.

*Hardworking(7)*

*Hardworking (7)*

Understanding/listens

Understanding/listens

**Generous**

**Generous**

**Midway\***

***Normal (1)\****

**Has a sense of humour**

***Has a sense of humour(7)***

**Ambitious**

***Ambitious(7)***

**Socially outgoing**

**Socially outgoing**

**Conscientious\***

**Midway\***

**Tomboyish**

**Tomboyish**

***Indecisive(1)\****

**Decisive\***

Element distances from the *me now* element (higher than the average of all distances) include:

Ex-partner

A confusing person

Family member

Person in authority

Person unlike me

Disliked person

It would be expected to be distant from the disliked person, person unlike me and a confusing person (and the ex-partner in many cases). Although the disliked person displaying the lowest of these distances is a little odd (a former friend perhaps?).

The lowest distances were between the *me now* and a *good friend* and *admired person* elements, who the individual suggests they are very alike which may have dragged the average distance down.

If the admired person is someone they get on with really well, then this suggests a black and white distinction between those they really gel with and those they don't (or no longer do).

---

*How does the individual construct significant others?*

Construct poles with less than 4 individuals on the positive include:

Calm, laidback (1/8)

Dominant (3/8)

Understanding/listens (3/8)

Generous (2/8)

Normal (2/8)

Has a sense of humour (3/8)

Socially outgoing (3/8)

All of which form part of the largest construing component of socially normality (except dominant).

---

*Are there any other inconsistencies or departures from social consensus?*

Calm, laidback was associated with hard-working which is a little unusual. Girly was quite highly associated with crazy, interesting as the individual is female (although this individual does consider herself quite tomboyish).

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*A summary of the repertory grid interpretation:*

The individual displays constructs and construct dimensions considered to be associated with positive functioning; and a cognitively complex construction system. There is some discrepancy between the current self and ideal self, with the individual wishing to be more normal, dominant and decisive and slightly less conscientious (most of the attributes in the takes action, regardless component). The conscientious, midrange crazy and passive aspects appear to be the most important discrepancies to counter in becoming more decisive. Interestingly, most of the self-ideal self discrepancies were in attributes that according to her ratings are male attributes (being more decisive, normal and dominant while not being so conscientious). The individual seems to consider their character quite different from that of the other people they know (suggested by the distances from me now and the number of others not on positive poles). This suggests the individual may feel quite isolated from others, in contradiction with *me now* being rated as socially outgoing. Looking at the ratings the distances are explained by the individual being different on three or four constructs (out of 12), but in particular most of the distant others (except the PIA) are rated as social introverts (or mid range).

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*Recommended instructions for the individual to try:*

The individual has expressed a desire to be more decisive. In terms of their construal this is associated with male attributes such as dominance and lesser conscientiousness that she does not display. So to increase decisiveness a selection of instructions tailored towards decision-making and being more assertive (with secondary effects on thinking things through less) would be ideal. The individual should become more normal (less neurotic as crazy had neurotic connotations according to the participant's explanation) through being able to decide and act with less thought.

A selection of 34 possibilities is listed below:

Be direct in asking for what you want

Say no (when it's OK to)

Refuse a request without giving a reason or excuses

Suggest a trip out to the person closest to you

When questioned today, be decisive in your answer, even if you feel unsure

If you don't like a purchase/meal, then return it/complain

Ask for a reason why

Set yourself deadlines for everything you do

Commit to someone on the spur of the moment

Express your first reactions to someone

Put a strategy in place

Plan the meals you will eat for the next week

Take a stance and see the benefits of a firm line

Be less accommodating (when you think it is appropriate)

Make a strategic decision and act on it

Stick to a choice and don't change your mind

Make a decision that you have been putting off for a while

Set a new house rule and stick to it

Tell someone what you think of them

Don't let others reactions affect you taking a decision if its right

Say yes to the next thing someone asks you to do

Arrange to meet with a friend you haven't seen in a while

Organize an area of your life that's too haphazard (sort out photos, put finances in order, etc)

Decide on three things you are going to do tomorrow and do them

Ignore your plans and do what feels right

Toss a coin to decide, and stick to that choice

List six options for a night out, roll a dice to decide

Don't consult with others when you know what needs to be done

Do not be swayed by popular view, take action on your own viewpoint

Make the first move in a friendship situation

Start a conversation with three strangers today

Take a stance on something you won't put up with

Do the right thing without asking others

Just say fuck it and do it!

After interpreting the participant's repertory grid a particular order for the selected instructions was determined based on a set of rules.

*Number of instructions to administer:*

4 instructions should be administered per week for a period of 6 weeks (Tuesday, Thursday, Saturday and Sunday). This means the participant will complete 24 instructions overall.

*The instructions selected should be based on:*

- 1) Difficulty of performing the instruction (bear in mind the day chosen, and whether the person is employed)
- 2) Nature of the instruction
  - a. Determined by the *me now-me as I would like to be* discrepancies
  - b. Determined by the opposite of behaviour individual extremes (rated 7 or 1 on the Likert scale).

Some aspects of the order pattern will be similar for every individual.

*A general order pattern*

Start with a selection of easy to perform instructions in the list to help the participant get the hang of things (e.g. Read a different newspaper, Order something new at a restaurant).

Instructions 2-4.

Then follow on with slightly more difficult instructions based on the *me now-me as I would like to be* discrepancies, alternating between categories, so certain types of instruction do not appear too close to each other. Instructions 5-24.

However, there will also be totally unique aspects to each individual instruction administration.

An example instruction order is provided based on the previous interpretation example.

Programme order selection:

Plan the meals you will eat for the next week

When someone asks you to do something ask for a reason why

Toss a coin to decide, and stick to that choice

Arrange to meet with a friend you haven't seen in a while

When questioned today, be decisive in your answer, even if you feel unsure

Organize an area of your life that's too haphazard (sort out photos, put finances in order, etc)

Be direct in asking for what you want

List six options for a night out, roll a dice to decide

Set yourself deadlines for everything you do

If you don't like a recent purchase/meal, then return it/complain

Commit to someone on the spur of the moment

Put a strategy in place for an upcoming work or social event

Tell someone what you think of them

Say no (when it's OK to)

Set a new house rule and stick to it

Make the first move in a friendship situation

Make a decision that you have been putting off for a while

When you're at work today take a 5 minute break every hour to refresh

Start a conversation with three strangers today

Have a you day today, treat yourself

Do the right thing without asking others

If something irritates you today don't let it slide

Make a strategic decision and act on it

Have a girly night out, even if you just go out to eat, go out in style and get really dressed up!



**Life satisfaction.** Life satisfaction was measured with 12 items designed by the researcher (applied earlier in this research programme during the first study) to measure various aspects of life satisfaction. These items tapped into satisfaction with social, family and romantic relationships; happiness and pride with life, and satisfaction with career. An example item was: 'I have satisfying social relationships.' All the items were measured on a Likert scale ranging from 1 '*strongly disagree*' to 7 '*strongly agree*'. These 12 items are referred to as life satisfaction in this study (a total score between 12 and 84). The reliability of the 12 items was found to be high in study one of this programme ( $\alpha = .88$ ).

#### **Online measures from the DSD diagnostics (Fletcher & Pine, 2012)**

**Habit rater.** The Habit rater from the Do Something Different diagnostics was administered (Fletcher & Pine, 2012). This consisted of 9 items which were rated on a 0-100 VAS style scale, where higher scores reflect stronger habitual behaviour. An example item was: 'I try to stick to a routine'. The mean score of these nine statements is reported. A copy of this is included in appendix L.

**Behaviour rater.** The behaviour rater uses a tick box format to measure how many attributes from a selection of 30 (describing 15 bi-polar dimensions of behaviour) a participant displays. An example behaviour would be *Systematic*, with its bipolar opposite being *Spontaneous* (two of the 30 behaviours listed). The participant is asked to tick as many boxes as they feel reflect their range of behaviour. This is essentially a simpler, tick box version of the behavioural flexibility scale developed by Fletcher and Stead (2000). A copy of this is included in appendix M.

**Thoughts and Feelings scale.** The Thoughts and Feelings scale from the FIT profiler which is also used in the Do Something Different diagnostics was administered (Fletcher & Stead, 2000; Fletcher & Pine, 2012). This measures frequency of feeling anxious (4 items)

and depressed (4 items), each measured on a 0-12 ratio scale. The 4 point scale each item is measured on is: 1) *Never*, 2) *Very rarely*, 3) *Now and again*, and 4) *Frequently/often*. These have been shown to display good reliability (Anxiety  $\alpha = 0.80$ , Depression  $\alpha = 0.78$ ). These measures have been previously validated by Sharma (2010) against several other measures of anxiety and depression.

**Coping statements.** Eight single item statements were included which help determine ability to cope with different aspects of life. These items were each rated on a 0-100 VAS style scale, where higher scores reflect stronger abilities to cope. An example item was: 'I have felt valued and appreciated'. A copy of these statements is included in appendix N.

An information sheet, consent form and debriefing page were all provided (included as appendix O). This study was approved by the University of Hertfordshire Psychology department ethics committee, protocol number: PSY/10/12/JC.

## **Procedure**

The study was advertised throughout the University of Hertfordshire and online. If an individual agreed to participate then the researcher would meet the participant at a location of their choosing for the pre-programme interview using the repertory grid technique.

**Pre-programme stage.** In the first part of the interview the participant provided names for the 12 role elements (except me now and me as I would like to be). It was emphasised that the same person could not be listed twice. Random triads of three elements were then used to elicit 12 personal constructs using the triadic opposite procedure. The elicitation of a construct involved the participant first listing a personality attribute two of the elements in the triad share, without having to specify that the third element does not share it. The participant was then asked for the opposite of the personality attribute provided to form a

bipolar personal construct. An example random triad of elements would be; me now, admired person, and a good friend. No laddering or pyramiding procedures were applied in these interviews. Once the participant had elicited 12 personal constructs, the participant then rated the 12 supplied HEXACO constructs while the elicited construct grid was set up by the researcher. The participant then completed the elicited construct grid. At the end of the interview, the participant was asked to complete the life satisfaction scale.

The researcher then interpreted the interview data using the steps based on those reported by Winter (1992). The interpretation sheets for all participants have been included as appendices P-Z. After interpreting the data and setting up the programme using the Do Something Different system, the researcher contacted the participant with the online sign up information for their specific tailored programme approximately a week after the interview. The participants were kept blind to the programme type.

**Programme procedure.** The pre-programme behaviour rater, habit rater, thoughts and feelings scales and coping statements were administered during the programme sign up process online, along with some simple demographic questions. After completing the sign up process the participant would start receiving instructions of specific behaviours to try. For example, in behaving type programmes; Plan an evening around what you enjoy doing, or a modified thinking instruction based on this in thinking type programmes, for example; Think about how an evening focused around what you enjoy most would be like. These were sent to the participant using the online system set up by Do Something Different by email or text message (depending on participant preference). The researcher emailed participants halfway through their programme (three weeks) to check how they were getting on. After participating for six weeks, receiving four instructions per week, the participant was sent a request to fill in the post-programme measures. These included post-programme *me now* and *me as I would like to be* ratings and the life satisfaction measure (in word documents emailed

to the participant), and the other psychological outcome measures on the online system. After finishing the study, the participant was debriefed.

## **Results**

These programmes were tailored to each participant specifically based on the combined elicited personal and supplied construct data. Copies of the repertory grid interpretations and programme development for every participant are included as appendices P-Z. Case-level results will be described for every participant who completed the study in full (completed both pre and post measurements). For each case some background information from the demographics, the dimensions of construction as extracted by Principal Components factor analysis on the combined elicited and supplied grid data (using the Principal Components Analysis option in Idiogrid), and themes in the content of elicited personal constructs will be described. The main points of interest from the repertory grid will be discussed, including me now- me as I would like to be construct discrepancies, and the behaviour extremes reported in participant construction (determined from the elicited and supplied construct grid data). The type of instructions the participant was given to try and counter the discrepancies or extremes will be described. The impact of the programme on those constructs targeted will be described. The impact on the psychological outcomes will also be discussed. Table 31 provides a summary of raw data for the discrepancies (for elicited, supplied and combined data) and psychological outcomes for every participant. Post-programme measures from the Do Something Different online system of the extent the participant felt they did things differently when taking part and how likely they would recommend the programme were recorded as an indicator of whether the participant enjoyed taking part.

Case-level non-overlapping of pairs indices were calculated for each participant as an additional way to help determine the strength of changes in me now ratings, me as I would like to be ratings and the psychological outcomes at between pre and post-programme. Nonoverlap of all pairs indices (NAP; Parker & Vannest, 2009) have been used to indicate case level effect size of changes between pre and post-programme for each participant. This index does not examine central tendency statistics, but instead examines data clouds and pairwise comparisons between every data point in group/phase A to every data point in group/phase B. NAP is defined by Parker and Vannest (2009) as the probability that a score drawn at random from the treatment group/phase (B) will be different than a score drawn from the control group/phase (A). NAP indices are normally used in time-series data to compare data points in two different phases, but NAP indices can be applied to groups of pre and post-intervention data points collected on only two time occasions. The independence of data points assumption will be violated, as the data within each group of data points was collected at the same time (it consists of items from the same measurement). However, this assumption is usually violated in single case research which is unsurprising as the data still comes from the same individual, as it is at different, but very short interval time-points within the same phase. However, the traitedness research reviewed in chapter 2 and the first study of this research programme suggests there will be some independence in items from the same questionnaire due to the contextual connotations participants associate with specific items (supported by Lievens, De Corte & Schollaert, 2008). Parker (2006) and Parker and Vannest (2009) acknowledge the independence of data points assumption problem, and recommend using non-parametric overlap techniques (NAP is one) which are less affected by this.

There are several ways of calculating the NAP index, but the way used here will be from the Mann Whitney U test. The test will be conducted on the data points of the measure between pre and post-programme. The larger of the two U values is divided by the sum of

$n_{\text{pre-programme}} * n_{\text{post-programme}}$  data points. For example, if the largest  $U = 61$  in a test where 9 items are measured pre and post-programme,  $NAP = 61/(9*9) = 61/81 = 0.75$ . This effect size will be used to give an indication of the impact of the programme on particular outcomes for each participant. Table 32 presents the NAP indices for each participant on every psychological outcome. In much single case research the  $U$  value of phase B (or the post-phase) is used to determine the effect, with the larger  $U$  value for B indicating a higher score at phase B/post-phase and a smaller  $U$  value indicating a lower score (as Parker and Vannest, 2009 discuss). In this study the NAP indices were calculated with the assistance of SPSS to run the Mann Whitney  $U$  test (using the Legacy Dialogs, then Two Independent Samples option under Non-Parametric Tests). However, SPSS provides the smaller  $U$  value in the output without specifying which group it was for. Therefore, the researcher has calculated the larger  $U$  value from this and used it to calculate a non-directional NAP effect size. The smaller  $U$  value provided by SPSS was subtracted from the sum of  $n_{\text{pre-programme}} * n_{\text{post-programme}}$  data-points to obtain the larger  $U$  value. The larger  $U$  value was then used to calculate the NAP index by dividing the larger  $U$  value by the sum of  $n_{\text{pre-programme}} * n_{\text{post-programme}}$  data-points. Parker and Vannest suggest an non-overlap effect size range of .51-.65 for weak effects, .66-.92 for medium effects and .93-1.00 for large effects (.50 is considered a chance-level finding) in cases where higher scores at phase B (providing a larger  $U$  value) are observed. So using the larger  $U$  value to calculate a non-directional effect size in this study means all the indices calculated can be interpreted using this scale. The direction of the effect has been specified in the text of each case being discussed (based on the raw score in table 31), but if the reader wishes to convert to a 0-1 scale in cases where decreases on a measure between pre and post measurement were observed for a particular participant, all this requires is to subtract the NAP index (reported in table 32) from 1 (e.g.  $1-.88 = .12$ , values below .50 indicating lower scores at post measurement). Due to the small number of items in each test,

most of the indices that are statistically significant changes are for medium-strong changes, so some medium strength changes may not reach statistical significance in the Mann Whitney U test. Any medium strength effects were considered worthy of note. Calculating NAP indices provides the case level examination with greater validity. Due to the varying number of discrepancies used to calculate the target discrepancies for each participant, it was not suitable to calculate NAP indices for the target discrepancies. As anxiety and depression were only measured by four items each these scales were combined into the full thoughts and feelings scale for this analysis, as they are strongly associated outcomes (see the psychological outcome correlations in table 5 from study 1 in support of this). NAP indices were not calculated for the behaviour rater as each item is measured on a binary response. To establish whether the specific aims of each programme were accomplished, any pre-programme discrepancies the programme aimed to act on will be compared to me now at post-programme for each participant. This was to see if the post-programme me now is closer to the pre-programme me as I would like to be. The differences in each aspect of coping measured at pre and post-programme (reported in table 33) will also be discussed.

Table 31: Pre and post intervention average discrepancies and outcomes for each participant (raw data scores).

Participant	Type	Average discrepancy combined		Average discrepancy elicited/unique		Average discrepancy supplied		Life satisfaction		Anxiety		Depression		Behaviour rater score		Habit rater average score	
		Pre	Post	Pre	Post	Pre	Post	Pre	Post	Pre	Post	Pre	Post	Pre	Post	Pre	Post
1	B	0.96	0.63	0.75	0.58	1.16	0.66	63	68	6	7	7	5	16	11	57.44	52.67
2	T	0.75	1.54	0.75	1.92	0.75	1.17	81	70	3	7	2	6	16	15	26.56	18.00
4	T	0.04	0.04	0.00	0.08	0.08	0.00	70	58	6	7	7	6	16	7	27.11	38.56
5	B	1.33	1.04	1.33	1.00	1.33	1.08	67	57	5	5	3	4	11	8	51.00	52.78
6	T	0.25	0.29	0.50	0.33	0.00	0.25	70	75	2	1	2	1	9	16	49.78	45.88
7	B	2.00	1.67	2.75	2.25	1.25	1.08	58	42	8	11	6	9	9	12	49.67	40.11
8	T	0.66	0.92	0.66	1.08	0.66	0.75	71	67	6	3	5	5	7	13	59.44	45.44
9	B	1.04	1.21	1.42	1.33	0.67	1.08	71	76	3	3	1	3	13	13	44.33	36.67
10	B	1.33	1.71	1.58	1.75	1.08	1.67	72	70	9	7	7	4	9	8	49.78	42.22

Note: In type column; B = Behaving type programme, T = Thinking type programme.



Table 32: The non-overlapping of pairs (NAP) indices for the average discrepancies, and the psychological outcomes in each participant.

Non-overlapping of pairs (NAP) indices										
Participant	Type	Me now ratings (all)	MAIWL TB (all)	Me now unique	MAIWLTB unique	Me now HEXACO	MAIWLTB HEXACO	Life satisfaction	TF	Habit rater
1	B	.55	.65	.55	.63	.56	.67	.51	.52	.54
2	T	.68*	.59	.83**	.54	.52	.54	.82**	.88*	.53
4	T	.71**	.72**	.69	.65	.74*	.78*	.65	.50	.60
5	B	.57	.73**	.63	.69	.55	.76*	.69	.55	.52
6	T	.68*	.74**	.67	.71	.69	.78*	.64	.70	.65
7	B	.61	.78**	.65	.90***	.58	.63	.90***	.81*	.64
8	T	.60	.66	.50	.71	.69	.63	.58	.62	.61
9	B	.56	.58	.53	.65	.59	.51	.65	.64	.61
10	B	.51	.59	.53	.56	.51	.62	.51	.73	.58

Note: Mann Whitney U test significance \* $p < .05$  \*\* $p < .01$  \*\*\* $p < .001$ . Significance thresholds differ due to the differing number of items in each measure. MAIWLTB = Me as I would like to be. TF = Thoughts and Feelings scale items.

Table 33: The coping statements score of each participant at pre and post programme.

Coping item	Participant																	
	1		5		7		9		10		2		4		6		8	
	Pre	Post	Pre	Post	Pre	Post	Pre	Post	Pre	Post	Pre	Post	Pre	Post	Pre	Post	Pre	Post
I have coped well with problems/issues	88	91	<b><u>20</u></b>	<b><u>43</u></b>	<b><u>57</u></b>	<b><u>67</u></b>	<i><u>73</u></i>	<i><u>65</u></i>	100	100	<i><u>76</u></i>	<i><u>19</u></i>	<b><u>81</u></b>	<b><u>91</u></b>	70	77	<i><u>93</u></i>	<i><u>75</u></i>
I have found it easy to talk to others	<b><u>76</u></b>	<b><u>100</u></b>	<b><u>29</u></b>	<b><u>65</u></b>	53	59	81	79	65	73	93	85	<i><u>25</u></i>	<i><u>13</u></i>	<b><u>49</u></b>	<b><u>59</u></b>	<b><u>63</u></b>	<b><u>73</u></b>
I have found it easy to make decisions	76	77	<b><u>35</u></b>	<b><u>63</u></b>	47	45	63	67	<b><u>61</u></b>	<b><u>71</u></b>	<i><u>66</u></i>	<i><u>39</u></i>	80	89	<b><u>59</u></b>	<b><u>79</u></b>	<i><u>89</u></i>	<i><u>39</u></i>
I have felt valued and appreciated	<b><u>89</u></b>	<b><u>100</u></b>	<i><u>35</u></i>	<i><u>23</u></i>	47	45	<i><u>83</u></i>	<i><u>67</u></i>	<i><u>100</u></i>	<i><u>53</u></i>	90	87	<i><u>58</u></i>	<i><u>29</u></i>	<i><u>68</u></i>	<i><u>57</u></i>	<i><u>73</u></i>	<i><u>61</u></i>
I have felt happy	<b><u>40</u></b>	<b><u>57</u></b>	<i><u>57</u></i>	<i><u>41</u></i>	51	49	<i><u>95</u></i>	<i><u>81</u></i>	100	100	<i><u>99</u></i>	<i><u>53</u></i>	59	53	<i><u>94</u></i>	<i><u>81</u></i>	<i><u>81</u></i>	<i><u>67</u></i>
I have felt like life has meaning	<b><u>21</u></b>	<b><u>61</u></b>	<i><u>68</u></i>	<i><u>57</u></i>	51	45	<b><u>61</u></b>	<b><u>81</u></b>	100	100	99	100	<i><u>57</u></i>	<i><u>21</u></i>	54	55	81	81
I have good physical health	27	35	<b><u>68</u></b>	<b><u>85</u></b>	51	47	<i><u>91</u></i>	<i><u>67</u></i>	100	100	<i><u>92</u></i>	<i><u>41</u></i>	57	57	<b><u>53</u></b>	<b><u>83</u></b>	<i><u>81</u></i>	<i><u>35</u></i>
I have a good relationship with the person closest to me	64	67	<b><u>6</u></b>	<b><u>15</u></b>	53	53	<i><u>89</u></i>	<i><u>71</u></i>	<b><u>85</u></b>	<b><u>100</u></b>	<i><u>100</u></i>	<i><u>71</u></i>	90	95	97	97	81	73

Note: Each item was measured on a 0-100 scale. Participants 1, 5, 7, 9 and 10 completed behaving type programmes while participants 2, 4, 6 and 8 did thinking type programmes. Bold underlined values are changes =>+10 while italics underlined values are changes =>-10.

## Case level analyses

Each participant grid interpretation, programme development and resulting outcome of the programme will be concisely discussed at the case level. When the impact of a programme on the targeted constructs is discussed, changes in the *me now* ratings are being referred to. When changes in targeted discrepancies are discussed, this refers to changes in *me now-me as I would like to be* discrepancies. When the strength of effects is being discussed, this is referring to the NAP indices calculated (see table 32), with the direction of the effect found by looking at table 31. For reference, the full repertory grid interpretations and programme developments are provided in the appendices (P-Z).

### *Participant one (grid interpretation and programme development included as appendix P)*

Participant one was a 25 year old male who was not living with a partner, had no children and was employed. This participant took part in a behaving type programme. This participant displayed a construct system with four major dimensions of construction labelled: Socially acceptable, socially outgoing, open to others, and scared of committing to/drives others away. There were themes in the personal constructs of participant one, including good-natured, being open, and thinks about things. When the *me now-me as I would like to be* discrepancies were examined this indicated that participant one had discrepancies in wanting to become more open, fearless, impulsive and patient (two that oppose each other slightly). There were a multitude of extremes on positive poles (ratings of seven). Becoming more open and fearless discrepancies were important to tackle, as being open was a prominent theme in personal construction. Being fearful (rather than fearless) was the strongest loading construct pole of the scared of committing to/drives others away dimension ( $\lambda = -.69$ ). To be more open rather than closed, individual-centred instructions with expressive content were applied (e.g. Share your individual needs with one or more of your social group). Risk-taker

instructions were applied to try and make this participant more fearless. As a way to encourage being more impulsive, spontaneous and unpredictable instructions were applied. Some patient instructions were created and applied. An example patient instruction was; Cook something nice that requires extended preparation time – enjoy the rewards of patience. The extremes of good behaviour reported indicate that the person does not necessarily behave as they wish often enough, so instructions to tackle this were included.

Participant one displayed near medium/medium strength decreases in the me as I would like to be ratings between pre and post-programme ratings, but no real change in the me now ratings. Although these observations suggest there was no impact on the me now ratings overall, those constructs that were affected were those that the programme intended to act upon. Participant one construed themselves as more open (*me now* changed by 3 on the 7 point scale), fearless (by 2) and impulsive (by 1), although participant one did not construe themselves as becoming more patient (no change in me now). The average of the four target discrepancies (open, fearless, impulsive and patient) before the programme was 3.25 while after the programme the average was 1.50. All four of these discrepancies were reduced, with me now ratings changing relatively more than me as I would like to be ratings for the open (me now +3, me as I would like to be -1 between pre and post) and fearless discrepancies (me now +2, me as I would like to be +1). However, me as I would like to be ratings changed relatively more than me now ratings for the impulsive (me now -1, me as I would like to be +2 between pre and post) and patient discrepancies (me now 0, me as I would like to be -1). This programme was considered successful, as it acted on most of the targeted constructs and changed me now ratings in the direction intended, with two discrepancies genuinely brought closer to me as I would like to be. Some of the behaviour extremes displayed mild decreases (kind-hearted -1; pleasant -2; lively -2; conventional -1), but not to the point of negative psychological functioning. Furthermore, participant one developed a greater ability to cope in

several respects, including finding it easier to talk to others, feeling valued and appreciated, feeling happy and also feeling that life has meaning.

*Participant two (grid interpretation and programme development included as appendix Q)*

Participant two was a 31 year old female who was not living with a partner, who had no children and was employed. This participant took part in a thinking type programme. This participant displayed a construct system with four major dimensions of construction labelled: Good-natured/socially acceptable, negativity, self-sufficient/disregards others, and people lacking novelty. There were themes in the personal constructs of participant two including good outlook and self vs. other orientated. Participant two constructed themselves as behaving on the construct poles associated with extremes of acting in others interests (respectful, looks out for other people), and all other me now ratings were on poles associated with their Good-natured/Socially acceptable behaviour dimension. One major discrepancy was present in that participant two wanted to be much more easygoing. To make participant two more easygoing (rather than stubborn), thinking versions of flexible and laidback instructions were provided. Participant two displayed extremes of acting in others interests, so to make participant two slightly more self-orientated, behave as I wish instructions were administered.

After completing their programme, participant two construed themselves (*me now*) as more easygoing (by 2 on the 7 point scale), and slightly more self-orientated with reductions on the respectful extreme (by -1); and the looks out for other people extreme (-3, so down to midway between egotistic and looks out for other people). These were aims of this programme. For the reduced target discrepancy of becoming more easygoing, the me now rating changed relatively more than the me as I would like to be rating (me now +2, me as I would like to be +1 between pre and post). Participant two displayed a statistically significant

decrease in me now ratings overall between pre and post-programme which appear to be mainly accounted for by decreases in personal construct ratings. However, the me as I would like to be ratings did not change, leading to wider discrepancies at post-programme. This fits with the significant decreases in life satisfaction and significant increases on the thoughts and feelings scale. Participant two became less able to cope in several respects as well. This programme was successful in terms of the programme aims, but between pre and post-programme there were some detrimental effects on the psychological outcomes.

*Participant four (grid interpretation and programme development included as appendix S)*

Participant four was an employed 56 year old female, who was not living with a partner and had one child at home. This participant took part in a thinking type programme. This participant displayed three dimensions of construction worth interpreting labelled as: Acceptable behaviour, unwilling to try something creative, and outgoing behaviour. There were themes in the personal constructs of participant four including knowing where someone is coming from, interest/need of others and expanding horizons. Participant four tightly construed themselves as being near ideal with notably low cognitive complexity (PVAFF = 70.89, Intensity = 13882.22) and no discrepancies between me now and me as I would like to be. However, the researcher felt participant four was interested in taking part in a programme designed to expand their behavioural flexibility for a reason. An expanding horizons theme was identified in some of participant four's personal constructs (Unambitious vs. Ambitious ; Open to experience vs. Closed ; Participative vs. Isolated; Creative vs. Boring, uncreative). Therefore for the programme, participant four was encouraged to think in ways that made them more like the construct poles that oppose their disposition. This was an attempt to make their construct system less tight and open them up to a different way of viewing things, as this tight construing indicates someone quite resistant to being flexible or displaying interest in novelty. This was achieved by administering modified thinking versions of the instructions

from lists including single-minded, introverted, unconventional, behave as I wish, definite, laidback, spontaneous and systematic lists (as prudent vs. impulsive was rated midway).

After taking part in the programme ratings for participant four on both me now and me as I would like to be displayed medium strength decreases during the programme (personal and supplied constructs). This was the intention of this programme, although there was a medium strength decrease in life satisfaction ratings. The ability of participant four to cope in some respects decreased (finding it easy to talk to others, feeling valued and appreciated, feeling like life has meaning), but their ability to cope with problems generally increased. This programme was successful in terms of the programme aims, but between pre and post-programme there were some detrimental effects on the other psychological outcomes.

*Participant five (grid interpretation and programme development included as appendix T)*

Participant five was an employed 42 year old female who was living with a partner, and had two children at home. This participant took part in a behaving type programme. Participant five displayed four dimensions of construction worth interpreting labelled as: Socially acceptable behaviour, in the background, stressed, and worker bee. There were themes in the personal constructs of participant five including interested in others, motivated and control. Participant five expressed a wide array of discrepancies (see appendix T), so the focus of this programme was solely on reducing discrepancies. Those discrepancies that were targeted included becoming more laidback, co-operative, fearless, patient and relaxed, as these were where the most substantial discrepancies between me now and me as I would like to be (a gap of 3 or 4 on the 7 point scale). Instructions from Flex lists including the laidback, behave as others want, group-centred, calm/relaxed, risk-taker and trusting (instructions that

focused on being more trusting in terms of laidback, relaxed and fearless behaviour) lists were administered to try and reduce these discrepancies.

Those target constructs that were affected included becoming more laidback (*me now* changed by 2 on the 7 point scale), and relaxed (by 2 on the 7 point scale). However, participant five did not construe themselves as more co-operative (no change in *me now*), fearless (decreased by 1) or patient (decreased by 1). The average of the five target discrepancies (laidback, co-operative, fearless, patient and relaxed) before the programme was 3.20 while after the programme the average was 2.00. Four of these discrepancies were reduced. The only discrepancy not reduced was the becoming more patient discrepancy, as even though the *me now* rating decreased by 1, the *me as I would like to be* rating also decreased by 1. This means the discrepancy did not change. For the reduced discrepancies in becoming more laidback and more relaxed, the *me now* rating changed relatively more than *me as I would like to be* (laidback: *me now* -2, *me as I would like to be* -1 between pre and post; and relaxed: *me now* +2, *me as I would like to be* -1). However, the *me as I would like to be* rating changed relatively more than the *me now* rating for the becoming more co-operative (*me now* 0, *me as I would like to be* -1 between pre and post) and more fearless discrepancies (*me now* -1, *me as I would like to be* -2). So this programme had some impact in reducing the initially targeted discrepancies. Participant five displayed statistically significant changes in the *me as I would like to be* ratings which decreased between pre and post-programme. There were no significant changes in the *me now* ratings, although the *me now* ratings for the personal constructs did approach a medium strength decrease. The significant decrease in *me as I would like to be* ratings indicates participant five may have developed a more realistic sense of *me as I would like to be*. There was a medium strength decrease in life satisfaction. Participant five felt less happy, less like life had meaning and less valued and appreciated. However, participant five became more able to cope with their



problems, found it easier to talk to others and make decisions, as well as increases in reported physical health and a good relationship with the person closest to them. So two of the programme aims were met, but life satisfaction and some aspects of coping decreased while several other aspects of coping increased. So this programme had quite a mixed outcome overall.

*Participant six (grid interpretation and programme development included as appendix U)*

Participant six was an employed 26 year old female, who was living with a partner, and had no children at home. This participant took part in a thinking type programme. This participant displayed four major dimensions of construction worth interpreting labelled as: Socially acceptable behaviour, sociopathic type behaviour (e.g. fearless, insincere, does not play fair), lacks imagination, and individualist character. There were themes in the personal constructs of participant six including their (other person's) presence is no problem, believes in themselves, and empathetic. Participant six had a very socially oriented construct system and view of themselves, with me now ratings on all the construct poles associated with socially acceptable behaviour, their presence is no problem and empathetic themes. However, participant six also displayed a minor dimension focused on individualist character and a theme focused on belief in themselves. Participant six had a main discrepancy of wanting to be more self-assured/have positive self-belief, as well as a minor discrepancy in wanting to be more organised. To increase self-assurance/positive self-belief, and provide the participant with a slightly more self-orientated construal of themselves; modified instructions from behave as I wish, single-minded, introverted and definite lists were administered. Laidback and calm/relaxed modified thinking type instructions focused on self-contemplation were also applied. To increase organisation, some modified thinking type instructions from the proactive and systematic lists were applied.

Participant six construed themselves as being more self-assured/having positive self-belief (me now displayed an increase of 3 on the seven point scale) and organised (me now displayed an increase of 1) after taking part in the programme. For the reduced discrepancies of becoming more organised and more self-assured/having positive belief, the me now rating changed relatively more than the me as I would like to be rating (organised: me now +1, me as I would like to be 0 between pre and post; self-assured/having positive belief: me now +3, me as I would like to be +1 between pre and post). Participant six developed a more positive construction of me now, but at the same time also developed a more stringent me as I would like to be, particularly on the supplied constructs. There were medium strength beneficial effects on the psychological outcomes including life satisfaction, the thoughts and feelings measures and the habit rater. The behaviour rater score also increased. There were also increases in finding it easier to talk to others and making decisions and good physical health. Although participant six also claimed they felt less happy and valued and appreciated. Overall, with the considerable increase in construing themselves as self-assured/having positive self-belief and beneficial effects on other psychological outcomes, this programme can be considered successful.

*Participant seven (grid interpretation and programme development included as appendix V)*

Participant seven was an employed 56 year old female, who was not living with a partner and had no children at home. This participant took part in a behaving type programme. This participant displayed four major dimensions of construction labelled: Socially acceptable behaviour, scared to fail, interested yet cautious, and normal (conventional and able to be laidback). There were themes in the personal constructs of participant seven including attracts vs. detracts and laidback. Participant seven displayed a large number of discrepancies (see the full me now list in appendix V), so the focus of this programme was solely on reducing discrepancies. Those discrepancies that were targeted

include the wish to be more able to be laidback, laughs a lot/cheerful, good fun, easygoing and fearless (those discrepancies that were 4 or greater on the 7 point Likert scale).

Instructions from the laidback, lively, energetic/driven, calm/relaxed, risk-taker, behave as I wish, spontaneous and individually centred lists were applied to try and counter these discrepancies. By focusing on these main discrepancies it was hoped that performing the instructions may have had a cumulative effect on some of the other discrepancies (wishing to become more interesting, inspiring and lively).

Participant seven construed themselves as a little more able to be laidback (me now changed by 1 on the 7 point scale) and fearless (by 1 on the 7 point scale). However, none of the other target aims were met after taking part in their programme (no changes in laughs a lot/cheerful, good fun, or easygoing). Although the average of the five target discrepancies (able to be laidback, laughs a lot/cheerful, good fun, easygoing and fearless) before the programme was 4.40 while after the programme the average was 2.80. This is probably because participant seven displayed statistically significant changes in me as I would like to be ratings in general which decreased between pre and post-programme. For four of the targeted discrepancies me as I would like to be ratings changed relatively more than me now ratings (able to be laidback: me now +1, me as I would like to be -2 between pre and post; laughs a lot/cheerful: me now 0, me as I would like to be -1; good fun: me now 0, me as I would like to be -1; easygoing: me now 0, me as I would like to be -1). The discrepancy for becoming more fearless was reduced, but with the same relative impact on the me now rating (+1) and the me as I would like to be rating (-1), making it difficult to credit this reduced discrepancy to either. There were no significant changes in the me now ratings, although these changes approached medium strength. Even though this programme was successful in helping the participant become closer to two targeted aspects of the ideal self, these changes can't necessarily be given credit as genuine changes due to more of a relative contribution

from decreases in me as I would like to be ratings, rather than changes in me now ratings. This participant's life satisfaction ratings decreased, and thoughts and feelings ratings increased, both of these negative outcomes reaching statistical significance. However, there was also a near medium strength decrease in habit rater ratings and the participant became more able to cope with problems which suggests mixed results on the psychological outcomes.

*Participant eight (grid interpretation and programme development included as appendix W)*

Participant eight was an unemployed 44 year old female, who was not living with a partner and had one child at home. This participant took part in a thinking type programme. Participant eight displayed four major dimensions of construction labelled: Self-focused/narcissistic requires validation, conflicted – social leader/socially passive and unorganised, negative personality, and conflicted – self/other focus. There were themes in the personal constructs of participant eight including self-orientated, and strong, leader. Participant eight displayed discrepancies in wishing to be more grounded/calms others/has clarity, organised/disciplined, tidy, fearless, gentle and patient. The focus of this programme was solely on reducing discrepancies, as there were no behaviour extremes. To try and bring the person closer to these aspects of their ideal self, instructions from the predictable, proactive, definite, systematic, gentle, laidback and risk-taker lists were applied.

Participant eight construed themselves as more grounded/calms others/has clarity (me now increased by 1 on the Likert scale), more organised/disciplined (increased by 1), more tidy (increased by 2), more fearless (increased by 1) and more gentle (increased by 1), but did not become more patient (me now decreased by 1). The average of the six targeted discrepancies before the programme was 2.00 while after the programme the average was 1.50. Of the six targeted discrepancies only two were genuinely reduced (tidy and gentle).

For the other four discrepancies the exact same change in me now ratings and me I would like to be ratings was found between pre and post measurements, e.g., me now and me I would like to be ratings displayed an increase of +1, so there was no change to the discrepancy, even if the me now rating changed. For becoming more tidy, the me now rating changed relatively more than the me as I would like to be rating (me now +2, me as I would like to be +1 between pre and post). The discrepancy for becoming more gentle was reduced, but with the same relative impact on the me now rating (+1) and the me as I would like to be rating (-1), making it difficult to credit this reduced discrepancy to either. Participant eight showed no significant changes in the me now ratings, although the me as I would like to be ratings were, or at least approached, medium strength increases. This is in contrast to the reduction in discrepancies for some of the specific target programme aims. This programme was considered successful in terms of acting on most of the target discrepancies, even though the discrepancies overall became wider after taking part in the programme. Participant eight found it easier to talk to others. However, participant eight reported coping less well with problems, found it less easy to make decisions, felt less happy, less valued and appreciated and reported worse physical health after the programme. So there was a mixed impact on the psychological outcomes for this participant.

*Participant nine (grid interpretation and programme development included as appendix X)*

Participant nine was an employed 25 year old female, who was living with a partner with no children at home. This participant took part in a behaving type programme. Participant nine displayed four major dimensions of construction labelled: The socially acceptable individual, the nice and quiet person, inquisitive, and the artist. There were themes in the personal constructs of participant nine including commitment, communication skill and empathy. Participant nine expressed a wide array of discrepancies (see appendix X), so the focus of this programme was solely on reducing discrepancies. The major discrepancy

targeted was the wish to be more charismatic, as this was the most substantial discrepancy on the Likert scale (a discrepancy of 6). Some minor discrepancies were also targeted including trying to increase putting others first, fearless, gentle and patient attributes, and decreasing goal-orientated behaviour (discrepancies of 1 or 2). Instructions from lists including the laidback, trusting, behave as others want, group-centred, calm/relaxed, unconventional, spontaneous and risk-taker lists were applied to try and reduce the discrepancies.

Those target constructs that were affected included participant nine becoming much more charismatic (me now increased by 4 on the Likert scale), puts others first (by 1) and gentle (by 1). Goal-orientated behaviour also decreased (me now changed by 2). However, fearless and patient me now construct ratings both decreased by 1. The average of the target discrepancies before the programme was 2.17 while after the programme the average was 2.00. This is a little misleading as the charismatic discrepancy substantially decreased (-4), with the gentle discrepancy decreasing a little (-2), but puts others first (+2), goal-orientated (+1), fearless (+1) and patient (+1) discrepancies widened. For the charismatic discrepancy the me now rating changed relatively more than me as I would like to be rating (me now +4, me as I would like to be 0 between pre and post). The me now rating changed relatively more than the me as I would like to be rating for becoming less goal-orientated (me now -2, me as I would like to be +1 between pre and post). The discrepancy for becoming more gentle was reduced, but with the same relative impact on the me now rating (+1) and the me as I would like to be rating (-1), making it difficult to credit this reduced discrepancy to either. However, the me as I would like to be rating changed relatively more than the me now rating for the putting others first discrepancy (me now +1, me as I would like to be +3), and becoming more patient (me now -1, me as I would like to be 0). The me now rating changed relatively more than the me as I would like to be rating for the fearless discrepancy (me now -1, me as I would like to be 0). This explains why these three discrepancies widened.

The increase in becoming more charismatic mostly accounts for the decrease in the overall average personal construct discrepancy between pre and post-programme. Participant nine also construed themselves as becoming a little more introverted and prudent which were additional bonuses in terms of their pre-programme discrepancies (both by 1). So major targeted discrepancies, and some minor discrepancies were affected by the programme. Other discrepancies widened with participant nine becoming more insincere, temperamental and disorganised, and the me as I would like to be rating for being independent increasing to 7 at post-programme. This explains the widened average supplied construct discrepancy between pre and post measures. Me as I would like to be ratings for the personal constructs displayed a medium strength increase while the life satisfaction ratings displayed a medium strength increase. Participant nine felt more like life had meaning, but also felt they coped less well with problems, felt less valued and appreciated, less happy, had worse physical health and a worse relationship with the person closest to them. This suggests view of the ideal self for participant nine became more stringent, and they were less able to cope in several ways. However, they also became more satisfied with life and felt like life had more meaning after taking part in the programme. The programme beneficially affected the major target charismatic discrepancy so the programme succeeded in one aim, with mixed results on the psychological outcomes.

*Participant ten (grid interpretation and programme development included as appendix Y)*

Participant ten was an employed 31 year old female, who lived with a partner and no children at home. This participant took part in a behaving type programme. Participant ten displayed six dimensions of construction, three dimensions worth interpreting, labelled as: Socially acceptable behaviour, motivated, and shy. There were themes in the personal constructs of participant ten, including empathy, motivation and interest. Participant ten expressed main discrepancies in wanting to become more open, fearless and adventurous.

There were also some behaviour extremes in terms of being other-orientated on giving, kind, plays fair and gentle constructs. Instructions from lists including trusting, assertive, risk-taker, unconventional, spontaneous were applied to try and reduce the discrepancies. Individually-centred and behave as I wish instructions were included to help reduce the construed extremes.

Participant ten construed themselves as becoming much more open (by 3 on the 7 point scale), more adventurous (by 1), and more fearless (by 1). The average of the three target discrepancies (open, adventurous and fearless) before the programme was 3.67 while after the programme the average was 2.00. For two of these targeted discrepancies me now ratings changed relatively more than me as I would like to be ratings (open: me now +3, me as I would like to be -1 between pre and post; adventurous: me now +1, me as I would like to be 0). The discrepancy for becoming more fearless displayed the exact same increase in me as I would like to be ratings, as was found with me now ratings between pre and post measurements. Participant ten also started to act more in their own interests as well, becoming slightly less kind (-2) and playing slightly less fair (-2), but not to the point that the participant actually became wicked or unfair. Participant ten displayed a considerable increase in the average me now-me as I would like to be discrepancies across all constructs between pre and post-programme. This was mainly accounted for by a large increase in the average discrepancy of the supplied constructs between pre and post-programme. So this programme was successful in affecting the targeted construct discrepancies, even though the overall average discrepancies may not have suggested this is the case. Participant ten displayed no statistically significant changes in ratings between pre and post-programme, although participant ten displayed decreases in anxiety and depression, supported by a medium strength NAP index for the thoughts and feelings scale items. Participant ten felt less valued and appreciated; however, they also felt like they had a better relationship with the



person closest to them, and they found it easier to make decisions after taking part in the programme. So overall, the target constructs changed in the right direction and substantial decreases in anxiety and depression occurred after taking part in the programme.

On the whole the specific me now-me as I would like to be discrepancies that the programmes were targeting for a particular participant were affected, regardless of whether it was a behaving or thinking type programme. Programmes also appeared to affect the targeted discrepancies regardless of the baseline cognitive complexity of the participant, as the PVAFF indices (calculated using the Principal components analyses run in Idiogrid) varied between 31.01 and 70.89 across participants (median = 44.85). A Mann Whitney U test was conducted to see if there was a significant difference in PVAFF indices displayed between behaving and thinking type programmes. This found there was no significant difference in PVAFF values due to programme type,  $U(5,4) = 5.00, p = .22$ , suggesting there was no difference in baseline cognitive complexity by programme type.

The impact of the participant's specific programme on psychological outcomes varied considerably depending on the participant. Programme type level analyses were conducted using the adjusted rank transform test (Leys & Schumann, 2010) to see if programme type (behaving or thinking) interacted with time (pre or post measurement) to have an impact on the average discrepancies or psychological outcomes. The procedure first involved adjusting the raw scores by removing the marginal mean for the time (pre or post) and the marginal mean for the group (behaving or thinking) from each raw score to remove the main effects. An excel formula was set up by the researcher to do this. This produced adjusted raw scores which the researcher then ranked. SPSS was used to run the adjusted rank transform test, a 2 by 2 mixed ANOVA (conducted using the Repeated Measures option under the General Linear Model heading in SPSS) on these ranks to see if there was a significant interaction. These analyses found no significant interactions between programme type and time on the

average personal, supplied or combined discrepancies, or the psychological outcomes measured (all  $p > .05$ ).

A Mann Whitney U test was conducted to see whether there was a significant difference in the extent participants felt they did things differently at post-programme based on their programme type (lowest rating 2, highest rating 8; median = 5). This found there was no significant difference in the extent participants felt they did things differently due to their programme type,  $U(5,4) = 9.50, p = .90$ . Another Mann Whitney U test was conducted to see whether there was a significant difference in how likely the participant was to recommend the programme to someone else based on their programme type (lowest rating 3, highest rating 10; median = 9). This found there was no significant difference in how likely the participant was to recommend the programme to someone else due to their programme type,  $U(5,4) = 8.50, p = .70$ .

The findings of this study will now be discussed.

## **Discussion**

### *Summary and interpretation of findings*

Case level analyses were conducted to determine how effective this pilot strategy was in bringing each of the participants closer to their ideal self, and whether these programmes had an impact on psychological outcomes. A summary of the case analyses will be provided.

### *How successful was the strategy overall?*

All of the programmes were considered successful as they all had an impact on some or all of the targeted constructs, and in the direction they were intended to have an impact. It made no difference whether the programme was a behaving or thinking type programme, or whether the participant was cognitively complex or not. Therefore, the secondary alternative

hypothesis that there will be a difference in the changes observed between pre and post programme according to whether the individual took part in a behaving or thinking type programme can be rejected, and the secondary null hypothesis is accepted.

A couple of participants displayed changes in me now ratings in the direction opposite on the some of the targeted constructs (participants eight and nine). However, more me now rating changes were in the appropriate direction on targeted constructs, relative to the number in the opposing direction for these participants. Participant five displayed an equal number of changes in the appropriate and opposite direction on targeted me now constructs, although the changes in the appropriate direction were stronger than those in the opposite direction. The only participant completing the programme for whom target discrepancies were not calculated at pre and post programme was participant 4. This is because the data for participant 4 suggested there were no discrepancies between me now and me as I would like to be at pre-programme. Instead for their programme participant four was encouraged to think in ways that made them more like the construct poles that oppose their me now/me as I would like to be disposition, in an attempt to expand their horizons and the way they think about the world.

When the reductions in targeted discrepancies between me now and me as I would like to be were considered across the study, it was found that of the 22 reduced target discrepancies observed between pre and post programme, 11 displayed greater change in the me now rating relative to me as I would like to be (a genuine positive reduction in the discrepancy). Eight targeted discrepancies displayed greater changes in me as I would like to be relative to me now (not considered a genuine reduction in the discrepancy) while three displayed equal changes in me now and me as I would like to be in the direction reducing the discrepancy, so these three are ambiguous and difficult to credit either way. The number of genuine positive reductions in me now-me as I would like to be discrepancies was higher

than those that were not genuine. This suggests the programmes generally had a positive effect in reducing the targeted construct discrepancies. Therefore, the alternate hypothesis that utilising an individual's capacity for intra-individual variation would reduce discrepancies between the individual's me now and me as I would like to be ratings on targeted constructs can be partially accepted. This alternate hypothesis can be at least partially accepted as half of the observed reduced discrepancies in target constructs can be confirmed as genuine reductions in the discrepancy between me now and me as I would like to be. This outweighs those that are not genuine discrepancies, with another three reduced discrepancies where me now changes occurred in the correct direction.

There were also beneficial effects of some programmes on psychological outcomes. Participant one displayed increased ability to cope in several aspects of life, with no decreases in abilities to cope. Participant six displayed beneficial effects on all the psychological outcomes after taking part in the programme. Participant nine displayed an increase in life satisfaction while participant ten became less anxious and depressed.

However, there were some detrimental effects on the psychological outcomes for some participants between pre and post-programme. Participants two, four, five and seven displayed decreased life satisfaction. Participants two and seven also displayed increased anxiety and depression. Participants two, four, eight and nine also displayed relatively more decreased abilities to cope, when compared to the increases in coping after the programme. The alternate hypothesis that applying instructions to utilise each individual's capacity for intra-individual variation will reduce habitual behaviour and other negative outcomes in that individual, and/or increase behavioural flexibility, life satisfaction and coping should be rejected, as the impact of the programmes on all of these outcomes was mixed for each participant. Although these detrimental effects between pre and post-programme are difficult

to attribute to a particular cause, it can be speculated that these are due events outside researcher control, for example, relationship or work troubles.

In the case of participant 4, the decision to administer instructions that opposed their current disposition when it was identical to me as I would like to be could be questioned. However, based on the participant's interest in taking part in a programme to increase flexibility, and the expanding horizons theme identified in their personal constructs, the researcher considered this a safe approach to take. The information sheet provided to participants indicated that instructions would be provided to increase their flexibility (capacity to vary how you behave), and the debrief sheet indicated that instructions were provided to either reduce self-ideal self discrepancies or reduce behaviour extremes by getting the participant to act in a way that opposes that disposition. None of the instructions within the Do Something Different programme are designed to be threatening to the individual's view of themselves or interpretation of their world. As the participant was interested in increasing their capacity to display varied behaviour, their construct themes supported expanding their horizons, and the Do Something Different instructions are not designed to invasively threaten the individual's core sense of self, this approach was not expected to induce guilt about moving away from the core role structure in this participant (Kelly, 1955/1991, Lester, 2009). The feedback provided suggested that the participants enjoyed taking part in the programme, with eight of the nine participants suggesting they would likely recommend the programme to others (ratings of 7/10 or greater). Participant 4 provided a rating of 7 on this measure. This supports detrimental changes not being an effect of the programme specifically.

So overall, the programmes were generally successful in achieving some target changes in bringing participants closer to their ideal self, although the impact on the psychological outcomes varied considerably according to the participant. As these

programmes were generally successful, there may be an underlying type of person who is attracted to the programme and whom it is likely to be successful for. Therefore, it is important to examine what lists instructions were frequently taken from.

*Were any of the instruction lists applied frequently during the programmes, indicating a common need of people attracted to taking part in programmes?*

There were some common patterns in the choice of instructions applied based on the needs of the participant upon interpreting the repertory grid. Behave as I wish instructions were commonly used in the programmes of participants one, two, four, six, seven, eight and ten as a way to try and get the individual to act in a way less orientated towards others, and to consider their own needs and interests a bit more. Laidback instructions were applied in programmes for participant two, four, five, seven, eight and nine as a way to get the individual to be more easygoing. Risk-taker instructions were used in the programmes of participants one, five, seven, nine and ten as a way to try and get the individual to become more fearless. Spontaneous instructions were used in the programmes for participants one, four, seven, nine and ten as a way to get the individual to be more impulsive. Overall, this suggests a pre-programme profile of individuals who are worried about being invalidated by others, and do not act in their own interest enough. This may be why behave as I wish and laidback instructions are suited to many participants. Some of these participants are likely to be too scared to take the chances they need to develop and progress which is why the risk-taker and spontaneous instructions were suited to several participants. Definite and systematic instructions were applied in the programmes of participants four, six and eight to encourage these participants to make more decisive choices and be more organised. Those individuals who are slightly chaotic at the outset may be attracted to the Do Something Different type programme.

### *Strengths and limitations*

Very detailed data on dispositional personality was obtained from the repertory grid interviews for each participant. This allowed for highly specific tailoring of each programme according to the Do Something Different principles which means the programme was more likely to have an effect for that person. The procedure was fairly non-invasive with only 4 instructions per week that were reasonably spread out and delivered by the online system. This means that face to face contact with the participant was not necessary besides the initial interview. As this was a non-clinical strategy, face to face therapist-client interaction did not need to be such a prominent part of the process as it is in clinical therapies. However, the lack of face to face contact could have reduced compliancy.

### *Improving this strategy*

This strategy was non-invasive due to its length and low intensity, but making it shorter and slightly more intensive might also help enhance effectiveness on psychological outcomes, as well as recruitment and compliancy. Perhaps 3 or 4 weeks instead of 6 weeks, with 5 instructions a week would improve this while also not compromising the principle of being non-invasive. With greater recruitment potential the use of behaving and thinking type programmes could be randomized, although due to the idiographic nature of what each participant is assigned to try this would never be completely standardised.

The underlying connotations of taking part in a programme may be considered negative, even if the programme is intended for a non-clinical population. Even with positive framing taking part may still imply that there has to be something wrong with the person. Most people in a non-clinical population do not think there is, and strive to avoid anything that others can use to put them in that category and stigmatise them. This fear of stigma from others may have discouraged some people from participating in programmes. This is a big

concern for mental health care (Corrigan, 2004; Vogel, Wade & Hackler, 2007), but also to a lesser degree here. This is particularly true for men based on the gender role of masculinity and being strong (Pederson & Vogel, 2007). This may be the reason why fewer male participants were attracted to taking part in this study. Any indication of being in a psychological intervention programme may be enough to put men off from participating. This programme used a “want to change?” stance when recruiting, but perhaps future recruitment could be improved by instead taking a “be the best you can be” stance. This would promote change in the positive frame of making the participant stronger, rather than adjusting something wrong with them. This stance may be more likely to appeal to both sexes as well.

To further enhance recruitment in a future study, a version of the repertory grid used here could be developed for online use. The main difficulty in this would be ensuring that the triadic elicitation procedure and repertory rating grid is easily understandable, and can be followed by a lay audience without the presence of a researcher. Magni (2010) has discussed a pilot study applying the repertory grid technique remotely via Microsoft Live Meeting software which received positive feedback from participants. This highlights the potential for applying the repertory grid online, along with the possibility for face to face contact during programmes administered from a distance. This may improve programme compliancy.



### *Chapter 6 summary*

A strategy was developed to help change the individual's construction of the self to bring them closer to their ideal self. This utilised the individual capacity for intra-individual variation using personal construct theory and Do Something Different tools and techniques. This strategy was piloted and was found to be effective on the constructs it aimed to target for each participant, but there was a highly varied impact on the psychological outcomes measured depending on the participant. The implications of the research conducted in this research programme will now be discussed in the final chapter.

## **Chapter 7: The implications of this research programme.**

The studies and literature reviews conducted throughout this thesis indicate that different types of intra-individual personality variation occur (inter-item and cross-contextual variation) in one of two forms, behavioural flexibility or situational changeability. These types of variability are predominantly based on the individual's construction of their current environment. A strategy utilising the capacity for intra-individual variability to bring the individual closer to their ideal self was developed. This focused on providing either new behaviour responses or thinking styles for participants to try. The strengths and limitations of this research programme will be discussed, followed by a discussion of the implications of the research programme for personality research and individual behaviour change. Finally, a closing statement will be given.

### **Strengths and limitations of this research programme**

This research programme reviewed and integrated theories based on research from trait/state, social-cognitive and personal construct approaches. The research also used methods based on trait/state theory including questionnaires, diary measurements and the personal construct theory repertory grid technique. These all found support for different types of intra-individual variability in personality including inter-item and cross-contextual variability. This provides the research programme with greater generalisability across different personality research perspectives. Across the research programme reliability analyses were conducted and all of the measurements were found to display good levels of reliability. The HEXACO personality state measures developed for study 2 and the tendency towards habitual behaviour measure in study 1 that only consisted of three items were both found to display good reliability considering how few items were included. In study 3 the two supplied constructs provided to tap into each dimension of the HEXACO model were also

found to do this well, with varied degrees of discrimination from the personal constructs dependent on the complexity of the participant. The fact that these are reliable across methods associated with different approaches is testament to the applicability of the HEXACO model.

Although the findings from studies 1-3 were consistent in finding meaningful inter-item and cross-contextual personality variability that was associated with psychological outcomes, the studies conducted during this research programme were non-experimental. This means causality can be difficult to determine. However, experimental research in the field of personality is not common. The assumption in the area has generally been that you cannot manipulate personality which would be required for efficient experimental research. However, study 4 of this research programme and recent studies (Fleeson, Malanos & Achille, 2002; McNiel & Fleeson, 2006; McNiel, Lowman & Fleeson, 2010; and Wilt, Nofle, Fleeson & Spain, 2012) have produced results that suggest personality state can be manipulated in the short-term. Based on what these researchers have found and the findings of study four in this thesis, future research which continues to manipulate personality states in ethical and socially acceptable ways is a path worth examining further.

Due to the nature of this research programme there were difficulties with recruiting participants for studies 2 and 4 which required participation over a highly extended period of time. There were fewer problems with the second study as this could be administered online, in comparison to the fourth study which required a face to face interview to start with. However, a big strength of this research programme was the depth of the data achieved from each of the participants who took part in the studies conducted. Compliance was not perfect, although participants not committed dropped out early on in study 2. In study 4 the researcher was completely upfront about the length of time participation would take so those not committed will have been put off before contacting the researcher. This did not completely

remove the possibility of dropout later as seen in study 4 with participants three and eleven, although it will have reduced the likelihood.

Even though they were single measurement occasions a large amount of individual data was also collected from studies 1 and 3. This allowed for the calculation of numerous facet level within subject standard deviation indices that could be examined in relation to psychological outcomes in study 1. The collection of idiographic and nomothetic data in study three also provided a detailed picture of the individual.

A limitation of the samples collected throughout the thesis is that they contained mostly female participants. Sex differences have been found in the display of personality traits at the mean level for the Big Five (Costa, Terracciano & McCrae, 2001; Weisberg, DeYoung & Hirsh, 2011) and Cattell 16PF (Guidice, Booth & Irwing, 2012). Costa et al (2001) found female participants displayed higher scores than male participants on every NEO-PI-R facet of neuroticism and agreeableness, and several other facets related to agreeable conduct (gregariousness and warmth). Male participants displayed higher scores on the specific facets of assertiveness, excitement seeking and openness to ideas. Weisberg, DeYoung and Hirsh (2011) also found female participants to display higher neuroticism and agreeableness, as well as slightly higher extraversion than males. Although at the facet level Weisberg et al found men were higher in the extravert facet assertiveness while women are higher in the extravert facet enthusiasm. This suggests there are sex differences within particular traits as well as between traits. Borkeneau, Hrebickova, Kuppens, Realo and Allik (2013) examined the variance in reported trait scores between participants of the same sex (intrasex variance) with self and other reports. Borkeneau et al found higher variance in other-report trait ratings of males than females by both sexes, but no sex differences in variance of self-report ratings apart from females displaying greater variance in neuroticism self-report scores than males. In particular, Borkeneau et al. found that female other-reports

provided more varied ratings for male participants than male other reporters. Borkeneau et al. suggested this means men distinguish individual differences in personality less than women, even if men display more variance in personality. Although in these studies the focus is on between subject level analyses it still highlights the effect that sex has on personality. This means the results of the studies conducted in this thesis are much less likely to be able to be generalised to male or mixed populations.

So there were strengths and limitations to this research programme, but the strengths outweigh the limitations. This programme has interesting implications for the area of personality research and for individual behaviour change which will now be discussed.

### **Implications of this programme for personality research**

This research confirmed that there is important inter-item variation in the ratings people provide for specific behaviours within a personality trait or sub-facet of a personality trait test. This inter-item variation was found to be related to meaningful psychological outcomes. Inter-item variation has rarely been considered in the trait literature with only a small selection studies examining this (Baumeister, 1991; Biderman & Reddock, 2012; Britt, 1993, Dwight, Wolf & Golden, 2002; Reddock, Biderman, & Nyugen, 2011; Reise & Waller, 1993; Shepherd & Belicki, 2008), and not in relation to the range of outcomes examined in this study. Based on these findings there seems to be little benefit to the modern personality researcher to only categorise people in terms of inter-individual trait taxonomies in trait tests. The within subject inter-item variation indices need to be further validated. However, they are definitely worth pursuing further and determining their relationship to repeated measurements of personality. When you consider tests outside of those developed by academics this has broader implications for the wide array of online personality tests that lay

users complete. Online tests are often designed for corporate purposes rather than scientific accuracy. These sorts of test are designed to give feedback that suggest that the individual is 'X' kind of person. People in the lay population tend not to question the reliability of online tests which often have not been psychometrically designed, as they may not possess the critical thinking faculties of those with scientific background. The categorisation common to all personality tests, where feedback usually isn't provided, will be to the uninitiated like a judgement on their character that the individual is not flexible around. This spreads the impression that people are highly invariant in the behaviour they display. So it is important to get the understanding out that individuals do display variation in their behaviour which is reflected in psychometrically validated personality measures.

This programme demonstrated the nature of cross-contextual variation in personality in the six factor HEXACO model. Previous research has established that intra-individual variation in personality across repeated measurements does happen and that it can be predicted by external variables (Beckmann, Wood, & Minibashian, 2010, Bleidorn, 2009, Fleeson, 2001, 2007; Fleeson & Gallagher, 2009, Heller, Komar & Lee, 2007), but no studies have examined quite the range of contextual predictors examined in a single study here. The diary study conducted found the predictive effects of in the moment goal orientations were relatively stronger than particular interpersonal roles. This has implications for the enhancement of interpersonal functioning. If goal orientation is the stronger predictor of personality state, then encouraging social based goals prior to engagement with specific interpersonal roles may be more effective in helping those who lack interpersonal social skills. Getting people to engage with socially based goals will encourage expansion of their social network, rather than just getting them to focus on the specific relationships that they are already in. Another interesting finding of this research was that dispositional anxiety did not have a significant predictive effect on state personality while dispositional depression

consistently predicted state emotionality. This supports a distinction between how these two types of disposition influence personality. Depression is dispositional unhappiness so it makes sense that it would consistently predict state emotionality positively. Anxiety had no significant predictive effect on personality states which suggests that the personality states were not directly affected by dispositional anxiety. This has implications for understanding the process of how behavioural components of therapy for anxiety work. Anxiety has previously been found to be related to dispositional neuroticism, and is usually considered to be an aspect of neuroticism (Harris & Lucia, 2003; and Lucas, Le & Dyrenforth, 2008 to give a couple of the examples listed in the chapter 2 review). If anxiety is not a positive predictor of emotionality or any other states, then therapy for reducing anxiety could involve using an expansive range of behaviours. The process of trying out a selection of suggested alternate specific behaviours in a realistic setting (outside of therapy sessions) as part of the therapy for anxiety may help break down barriers for the person to then try more new behaviours on their own to help reduce anxiety further. Different therapies for anxiety may already do this in different ways. Behaviour activation therapies may focus more on developing particular new behaviour patterns while cognitive therapies focus on preparing strategies for different contexts. However, they essentially have the same goal which is to facilitate novel beneficial behaviour.

The additional honesty dimension proved to be worthwhile to examine as a state, as this displayed a greater proportion of between subject variance than the other HEXACO states when partitioned. The honesty state also displayed between subject level negative skewness which indicated the between subject variance may still be limited. This means the within subject variance in honesty may be also be limited in comparison to other states, implying that honesty is invariable compared to the other states. This has implications in terms of authenticity in personality state variation across measurements. If people display

varied states, yet remain highly invariant in honesty, this suggests that individuals perceive themselves as being sincere or authentic when displaying variation in the other states. This supports Fleeson and Wilt (2010) who found that feeling subjective authenticity was a result of state content significance. Some types of behaviour feel more authentic because of the consequences in the context they are being applied, regardless of the individual's trait disposition. This implies that cross-contextual personality variation is prevalent and also necessary for the individual to feel like they are being authentic or true to themselves in the current circumstances. This research programme helps highlight that displaying some variation in the way you act according to circumstances is socially acceptable, and that people should not fear trying out different behaviours outside their dispositional comfort zone.

The repertory grid technique was used to determine the relative importance of the person and the situation in interpersonal focused cross-contextual personality variation. This was done by focusing on differences between specific interpersonal selves and the relationships formed with situational others. The relative importance of each needed to be clarified to help in applying intra-individual variation as a behaviour change concept. It turned out that the interpersonal self was relatively more important which meant that a person-centred change strategy could be developed. Another implication that this study emphasised was the importance of examining not just the personality attributes that people commonly share, but also those that are highly unique to the individual. Idiographic and nomothetic approaches to examining personality are not combined in most research. This is most likely because of the extensive data collection and analysis that is required, as well as having to interview participants separately which makes it time-consuming. However, these findings suggest more studies need to do this in order to understand how unique idiosyncrasies develop alongside attributes found to be commonly displayed.



Personality researchers tend to focus on a specific perspective to understand personality, e.g. trait or social-cognitive, often to the exclusion of others. There are benefits to doing this, as having a wide range of personality researchers develop careers focusing on specific avenues from a particular perspective leads to developing a more intricate understanding of highly specific areas. Few researchers focus on integrating the empirical findings of highly perspective specific studies in order to help develop broader applications of the research more easily. This is by no means limited to personality research; every area in psychology is guilty of this to some extent. However, some research areas have more recently started to integrate theories of personality, e.g. Grice (2004; Grice, McDaniel & Jackson, 2006) integrates PCP and trait methods in his research. Review articles and meta-analyses also help bring together findings for easier application, but they tend to focus on a specific perspective. What is being suggested here is a big request of personality research due to the complex nature of personality. Writing this in a PhD thesis has also probably induced a bias in terms of having less of a space constraint to discuss and bring together a wide selection of perspectives. Integration is a big part of what this thesis has attempted to do with bringing together trait/state, social-cognitive processing and personal construct ideas and literature. This led to the development of a path of behaviour model applicable across these perspectives.

Having discussed the implications of this research programme for personality research, they will now be discussed in terms of their impact for behaviour change.

## **Implications of this programme for behaviour change**

The discussion at the beginning of chapter 5 suggested that people are resistant to changing behaviour that facilitates a validating or positive outcome for the individual, or one that alleviates an invalidating outcome even if there are other negative consequences. Studies 1-3 support the presence of varied intra-individual behaviour, and demonstrate that most people have the capacity to display varied behaviour across context with a beneficial or validating outcome. Getting this understanding out to a wider audience is important as it will help encourage people to try new things and expand their behaviour repertoire.

The pilot strategy found that using novel instructions to selectively target personality constructs with wider discrepancies was highly effective at reducing discrepancies between the self and ideal self, rather than trying to target a wide array of constructs. Attempting novel instructions that differ from the individual disposition can have an immediate validating impact on the individual's view of their surroundings, and their place in that environment. This also has the compound effect of altering the individual construct of the self. Their construct system changes to allow for the possibility of more flexible behaviour experimentation as it previously had a validating impact. Although based on the behaviour rater data from the pilot the participants did not acknowledge this directly. This is most likely because the individual will acknowledge their own intra-individual variability in terms of the situations they encounter, rather than specific personality behaviour, as suggested in the discussion to study 3 (in chapter 4).

Based on the literature discussed in this thesis 'Hot' based strategies (to use Cognitive Affective Personality System terminology) could be used to encourage different types of sensation in those who display negative habits, based on receiving validation from the different sensation. Negative habits are usually found to be associated with impulsivity, as

mentioned in chapter 2. As an example, Vanderveen et al., (2008a) suggested that those high in impulsivity have difficulty finding a rewarding substitute to smoking, as they often do not have the capacity to try and retain other alternatives when being distracted by impulses to smoke. Impulsivity is generally considered a form of sensation seeking for in the moment gratification. To counter this novel instructions that promote seeking a different type of sensation fulfilment could be applied, including those that promote novelty or excitement seeking behaviour. These would provide a means to help satiate the individual need for sensation that distracts from the negative habitual behaviour. This is part of the philosophy of the Do Something Different intervention approach (Pine & Fletcher, 2011; Fletcher & Pine, 2012). This provides novel ways of behaving along with the anticipation about the new instructions to try out. This also highlights a potential reason why some of the participants were attracted to taking part in the pilot strategy, and ended up being allocated risk-taker or spontaneous type instructions. At baseline these participants needed a form of sensation fulfilment and wanted a way to experience new sensations, or they lacked the fearlessness to engage with new sensations. Using this type of programme to provide new or different sensations may be particularly useful in countering impulsivity based habits.

The capacity to display varied behaviour that can have a beneficial outcome is particularly important to facilitate socialisation processes. The discussion in chapter 5 of the literature reviewed and the findings of the studies conducted indicated that there was a general path involved in processing and behaving (see figure 11, in chapter 5). This is a simple framework that could easily be converted to a layperson format for use by individuals who require a short and easy to memorize way of planning and evaluating their actions in a variety of circumstances.

The framework could be simplified as follows:

Before you act:

- 1) Where are you? What is happening around you?
- 2) What are you going to do?
- 3) Is this a good idea? Or should you try something else?

After your actions:

- 4) Did it work as you had planned?
- 5) If not, what could you do next time instead?

This provides a conscious ‘cool’ form of implementation intention and evaluation that most people do automatically and without conscious thought in simple steps. This is suited to helping counter problematic interpersonal habits. The first step gets the individual to consider their current contextual surroundings (situation). The second and third steps get them to consider their available options in the current situation (processing). This kind of implementation intention would allow more people to utilise the capacity for intra-individual variability based on their current context. The fourth and fifth step asks them to evaluate their actions (validation/ invalidation) and determine how their behaviour could be modified if necessary. Implementation intentions have been found to help give people more conscious control over their actions (Orbell & Verplanken, 2010) which can be used to help change behaviour by thinking about the situation carefully before acting. Admittedly each individual may have a different subjective view on what constitutes a good idea in the current context, particularly if strong emotions have been evoked. Step 3 could also be adjusted to include ‘Do you think other people would approve of this action?’ If the emotion is too strongly felt,

then even the best implementation intentions are likely to be thrown out for an automatic emotion based response (Metcalf & Mischel, 1999).

What this research programme also makes apparent is that one of the most important contributors in helping people facilitate change is the people they engage with. Even if the change is under personal control these others are used as the initial comparison for which alternate display of states are based on. Trying a particular alternative may be highly dependent on the view of the person they most associate the alternative state with, particularly if the alternative is associated with a disliked person. This is a benefit of giving highly specific behaviour instructions to try out in behaviour change, rather than telling the person to act more like a particular state. This gets round the issue of any previous negative associations with the state it is intended to induce. Being behaviourally flexible has implications for personal development, not just in terms of self-improvement, but there is a great deal of potential in developing a greater understanding of others behaviour.

## **Closing statement**

This thesis was conducted with the aim of contributing to the understanding of within subject (intra-individual) variation in personality, by helping answer some research questions important to this area. This research programme as a whole supports the individual capacity for displaying intra-individual variation in personality that is associated with psychological well-being, even if the person is not necessarily aware of this. This capacity can be utilised to encourage change in behaviour patterns, an example being bringing the person closer to their ideal self as demonstrated in chapter 6. Kelly suggested that “man can enslave himself with his own ideas, and then win back his freedom by reconstructing his life” (Kelly, 1955, pp21). The researcher agrees with Kelly, one of the earliest proponents of encouraging flexibility to try different behaviours in order to change. Considering yourself solely under the control of your circumstances can only lead to stagnation, and an inability to escape those circumstances. However, through the proper channels re-establishing personal control is the most important step. The main barrier is anxiety of the novel or different. Applying training from a technique such as Do Something Different can be used to help return control back to the individual, as this encourages the view that there are alternatives to their current circumstances without a negative result.

Within-person variability in personality (both inter-item and cross-contextual) is associated with psychological well-being. This capacity for within-person variation can be utilised to encourage flexibility in behaviour for beneficial outcomes.

I hope you enjoyed reading this thesis.

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**APPENDIX A: IPIP-HEXACO Questionnaire (developed by Ashton, Lee & Goldberg, 2007)**

On the following pages, there are phrases describing people's behaviours. Please use the rating scale below to describe how accurately each statement describes *you*. Describe yourself as you generally are now. Describe yourself as you honestly see yourself; in relation to other people you know of the same sex as you are, and roughly your same age. So that you can describe yourself in an honest manner, your responses will be kept in absolute confidence. Please read each statement carefully, and then circle the rating that most accurately describes you.

**Response Options**

- 1: Very Inaccurate
- 2: Moderately Inaccurate
- 3: Neither Inaccurate nor Accurate
- 4: Moderately Accurate
- 5: Very Accurate

	VI	MI	NAI	MA	VA
<b>Sincerity</b>					
Don't pretend to be more than I am.	1	2	3	4	5
Use flattery to get ahead.	1	2	3	4	5
Tell other people what they want to hear so that they will do what I want them to do.	1	2	3	4	5
Put on a show to impress people.	1	2	3	4	5
Switch my loyalties when I feel like it.	1	2	3	4	5
Play a role in order to impress people.	1	2	3	4	5
Pretend to be concerned for others.	1	2	3	4	5
Act like different people in different situations.	1	2	3	4	5
Find it necessary to please the people who have power.	1	2	3	4	5
Let people push me around to help them feel important.	1	2	3	4	5
<b>Fairness</b>					
Would never take things that aren't mine.	1	2	3	4	5
Would never cheat on my taxes.	1	2	3	4	5
Return extra change when a cashier makes a mistake.	1	2	3	4	5
Would feel very badly for a long time if I were to steal from someone.	1	2	3	4	5
Try to follow the rules.	1	2	3	4	5
Admire a really clever scam.	1	2	3	4	5
Cheat to get ahead.	1	2	3	4	5
Steal things.	1	2	3	4	5
Cheat on people who have trusted me.	1	2	3	4	5
Would not regret my behavior if I were to take advantage of someone impulsively.	1	2	3	4	5
<b>Greed avoidance</b>					
Would not enjoy being a famous celebrity.	1	2	3	4	5
Don't strive for elegance in my appearance.	1	2	3	4	5
Love luxury.	1	2	3	4	5
Have a strong need for power.	1	2	3	4	5
Seek status.	1	2	3	4	5
Am mainly interested in money.	1	2	3	4	5
Wish to stay young forever.	1	2	3	4	5
Try to impress others.	1	2	3	4	5
Prefer to eat at expensive restaurants.	1	2	3	4	5
Am out for my own personal gain.	1	2	3	4	5
<b>Modesty</b>					
Don't think that I'm better than other people.	1	2	3	4	5

See myself as an average person.	1	2	3	4	5
Am just an ordinary person.	1	2	3	4	5
Consider myself an average person.	1	2	3	4	5
Would like to have more power than other people.	1	2	3	4	5
Believe that I am better than others.	1	2	3	4	5
Like to attract attention.	1	2	3	4	5
Am more capable than most others.	1	2	3	4	5
Am likely to show off if I get the chance.	1	2	3	4	5
Boast about my virtues.	1	2	3	4	5

### **Fearfulness**

Am a physical coward.	1	2	3	4	5
Begin to panic when there is danger.	1	2	3	4	5
Would fear walking in a high-crime part of a city.	1	2	3	4	5
Tremble in dangerous situations.	1	2	3	4	5
Would never go riding down a stretch of rapids in a canoe.	1	2	3	4	5
Like to do frightening things.	1	2	3	4	5
Face danger confidently.	1	2	3	4	5
Love dangerous situations.	1	2	3	4	5
Would be good at rescuing people from a burning building.	1	2	3	4	5
Am willing to take risks.	1	2	3	4	5

### **Anxiety**

Often worry about things that turn out to be unimportant.	1	2	3	4	5
Worry about things.	1	2	3	4	5
Get stressed out easily.	1	2	3	4	5
Get upset by unpleasant thoughts that come into my mind.	1	2	3	4	5
Panic easily.	1	2	3	4	5
Rarely worry.	1	2	3	4	5
Rarely feel depressed.	1	2	3	4	5
Am not easily disturbed by events.	1	2	3	4	5
Remain calm under pressure.	1	2	3	4	5
Don't worry about things that have already happened.	1	2	3	4	5

### **Dependent on others**

Need reassurance.	1	2	3	4	5
Let myself be influenced by others.	1	2	3	4	5
Need the approval of others.	1	2	3	4	5
Need protection.	1	2	3	4	5
Often need help.	1	2	3	4	5

Show my sadness.	1	2	3	4	5
Suspect that my facial expressions give me away when I feel sad.	1	2	3	4	5
Seek support.	1	2	3	4	5
Can't do without the company of others.	1	2	3	4	5
Want to be liked.	1	2	3	4	5

### **Sentimentality**

Feel others' emotions.	1	2	3	4	5
Immediately feel sad when hearing of an unhappy event.	1	2	3	4	5
Cry during movies.	1	2	3	4	5
Am sensitive to the needs of others.	1	2	3	4	5
Am deeply moved by others' misfortunes.	1	2	3	4	5
Rarely cry during sad movies.	1	2	3	4	5
Seldom feel weepy while reading the sad part of a story.	1	2	3	4	5
Am seldom bothered by the apparent suffering of strangers.	1	2	3	4	5
Don't understand people who get emotional.	1	2	3	4	5
Seldom get emotional.	1	2	3	4	5

### **Expressiveness**

Talk a lot.	1	2	3	4	5
Am never at a loss for words.	1	2	3	4	5
Am the life of the party.	1	2	3	4	5
Tell people about it when I'm irritated.	1	2	3	4	5
Have an intense, boisterous laugh.	1	2	3	4	5
Don't talk a lot.	1	2	3	4	5
Don't like to draw attention to myself.	1	2	3	4	5
Say little.	1	2	3	4	5
Bottle up my feelings.	1	2	3	4	5
Speak softly.	1	2	3	4	5

### **Social boldness**

Am good at making impromptu speeches.	1	2	3	4	5
Don't mind being the center of attention.	1	2	3	4	5
Feel comfortable around people.	1	2	3	4	5
Have leadership abilities.	1	2	3	4	5
Have a strong personality.	1	2	3	4	5
Would be afraid to give a speech in public.	1	2	3	4	5
Keep in the background.	1	2	3	4	5
Find it difficult to approach others.	1	2	3	4	5



Hate being the center of attention.	1	2	3	4	5
Have little to say.	1	2	3	4	5

### **Sociability**

Usually like to spend my free time with people.	1	2	3	4	5
Talk to a lot of different people at parties.	1	2	3	4	5
Love to chat.	1	2	3	4	5
Make friends easily.	1	2	3	4	5
Enjoy being part of a group.	1	2	3	4	5
Seem to derive less enjoyment from interacting with people than others do.	1	2	3	4	5
Rarely enjoy being with people.	1	2	3	4	5
Would not enjoy a job that involves a lot of social interaction.	1	2	3	4	5
Am hard to get to know.	1	2	3	4	5
Keep others at a distance.	1	2	3	4	5

### **Liveliness**

Maintain high energy throughout the day.	1	2	3	4	5
Have great stamina.	1	2	3	4	5
Am usually active and full of energy.	1	2	3	4	5
Smile a lot.	1	2	3	4	5
Feel healthy and vibrant most of the time.	1	2	3	4	5
Laugh a lot.	1	2	3	4	5
Feel that I have a lot of inner strength.	1	2	3	4	5
Have a lot of fun.	1	2	3	4	5
Tire out quickly.	1	2	3	4	5
Often feel blue.	1	2	3	4	5

### **Forgiveness**

Love my enemies.	1	2	3	4	5
Try to forgive and forget.	1	2	3	4	5
Am inclined to forgive others.	1	2	3	4	5
Am nice to people I should be angry at.	1	2	3	4	5
Find it hard to forgive others.	1	2	3	4	5
Hold a grudge.	1	2	3	4	5
Get back at people who insult me.	1	2	3	4	5
Get even with others.	1	2	3	4	5
Distrust people.	1	2	3	4	5
Feel that most people can't be trusted.	1	2	3	4	5

### **Gentleness**

Rarely complain.	1	2	3	4	5
Take things as they come.	1	2	3	4	5
Accept people as they are.	1	2	3	4	5

Have a good word for everyone.	1	2	3	4	5
Find fault with everything	1	2	3	4	5
Become frustrated and angry with people when they don't live up to my expectations.	1	2	3	4	5
Am quick to judge others.	1	2	3	4	5
Speak ill of others.	1	2	3	4	5
Have a sharp tongue.	1	2	3	4	5
Criticize others' shortcomings.	1	2	3	4	5

### **Flexibility**

Adjust easily.	1	2	3	4	5
Am good at taking advice.	1	2	3	4	5
When interacting with a group of people, am often bothered by at least one of them.	1	2	3	4	5
React strongly to criticism.	1	2	3	4	5
Get upset if others change the way that I have arranged things.	1	2	3	4	5
Am hard to convince.	1	2	3	4	5
Am annoyed by others' mistakes.	1	2	3	4	5
Can't stand being contradicted.	1	2	3	4	5
Am hard to satisfy.	1	2	3	4	5
Am hard to reason with.	1	2	3	4	5

### **Patience**

Find that it takes a lot to make me feel angry at someone.	1	2	3	4	5
Rarely feel angry with people.	1	2	3	4	5
Am usually a patient person.	1	2	3	4	5
Rarely get irritated.	1	2	3	4	5
Seldom get mad.	1	2	3	4	5
Am easily annoyed.	1	2	3	4	5
Get angry easily.	1	2	3	4	5
Get irritated easily.	1	2	3	4	5
Lose my temper.	1	2	3	4	5
Get upset easily.	1	2	3	4	5

### **Organisation**

Keep things tidy.	1	2	3	4	5
Get chores done right away.	1	2	3	4	5
Like order.	1	2	3	4	5
Like to tidy up.	1	2	3	4	5
Want everything to be "just right."	1	2	3	4	5
Leave a mess in my room.	1	2	3	4	5
Leave my belongings around.	1	2	3	4	5
Don't finish the things that I start.	1	2	3	4	5

Often forget to put things back in their proper place.	1	2	3	4	5
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Am not bothered by disorder.	1	2	3	4	5
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### **Diligence**

Push myself very hard to succeed.	1	2	3	4	5
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Get started quickly on doing a job.	1	2	3	4	5
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Am exacting in my work.	1	2	3	4	5
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Work hard.	1	2	3	4	5
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Complete tasks successfully.	1	2	3	4	5
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Do just enough work to get by.	1	2	3	4	5
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Stop when work becomes too difficult.	1	2	3	4	5
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Do too little work.	1	2	3	4	5
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Hang around doing nothing.	1	2	3	4	5
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Quickly lose interest in the tasks I start.	1	2	3	4	5
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### **Perfectionism**

Pay attention to details.	1	2	3	4	5
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Continue until everything is perfect.	1	2	3	4	5
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Have an eye for detail.	1	2	3	4	5
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Want every detail taken care of.	1	2	3	4	5
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Dislike imperfect work.	1	2	3	4	5
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Want everything to add up perfectly.	1	2	3	4	5
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Detect mistakes.	1	2	3	4	5
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Demand quality.	1	2	3	4	5
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Pay too little attention to details.	1	2	3	4	5
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Prefer to just let things happen.	1	2	3	4	5
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### **Prudence**

Avoid mistakes.	1	2	3	4	5
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Make plans and stick to them.	1	2	3	4	5
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Do things according to a plan.	1	2	3	4	5
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Jump into things without thinking.	1	2	3	4	5
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Do things without thinking of the consequences.	1	2	3	4	5
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Make rash decisions.	1	2	3	4	5
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Act impulsively when something is bothering me.	1	2	3	4	5
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Make careless mistakes.	1	2	3	4	5
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Don't know why I do some of the things I do.	1	2	3	4	5
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Make a fool of myself.	1	2	3	4	5
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### **Aesthetic appreciation**

Believe in the importance of art.	1	2	3	4	5
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Get deeply immersed in music.	1	2	3	4	5
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See beauty in things that others might not notice.	1	2	3	4	5
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Enjoy feeling "close to the earth."	1	2	3	4	5
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Have read the great literary classics.	1	2	3	4	5
Do not like art.	1	2	3	4	5
Seldom notice the emotional aspects of paintings and pictures.	1	2	3	4	5
Do not like poetry.	1	2	3	4	5
Do not like concerts.	1	2	3	4	5
Do not enjoy watching dance performances.	1	2	3	4	5

### **Inquisitiveness**

Am interested in science.	1	2	3	4	5
Would love to explore strange places.	1	2	3	4	5
Enjoy intellectual games.	1	2	3	4	5
Love to read challenging material.	1	2	3	4	5
Find political discussions interesting.	1	2	3	4	5
Have a rich vocabulary.	1	2	3	4	5
Don't know much about history.	1	2	3	4	5
Avoid difficult reading material.	1	2	3	4	5
Don't bother worrying about political and social problems.	1	2	3	4	5
Will not probe deeply into a subject.	1	2	3	4	5

### **Creativity**

Have a vivid imagination.	1	2	3	4	5
Come up with something new.	1	2	3	4	5
Carry the conversation to a higher level.	1	2	3	4	5
Am full of ideas.	1	2	3	4	5
Love to think up new ways of doing things.	1	2	3	4	5
Have excellent ideas.	1	2	3	4	5
Do not have a good imagination.	1	2	3	4	5
Have difficulty imagining things.	1	2	3	4	5
Have trouble guessing how others will react.	1	2	3	4	5
Seldom experience sudden intuitive insights.	1	2	3	4	5

### **Unconventionality**

Am considered to be kind of eccentric.	1	2	3	4	5
Know that my ideas sometimes surprise people.	1	2	3	4	5
Do things that others find strange.	1	2	3	4	5
Rebel against authority.	1	2	3	4	5
Swim against the current.	1	2	3	4	5
Would hate to be considered odd or strange.	1	2	3	4	5
Enjoy being thought of as a normal "mainstream" person.	1	2	3	4	5
Like to be viewed as proper and conventional.	1	2	3	4	5
Like to be thought of as a normal kind of person.	1	2	3	4	5
Try to avoid complex people.	1	2	3	4	5

**APPENDIX B: Self-Pluralism scale (developed/published by Altrochhi & McReynolds, 1997; McReynolds, Altrochhi & House, 2000)**

Listed below are a number of statements concerning how you may see yourself. Please read each item and decide whether the statement is *True* or *False* for you personally.

1. People who know me well would say I'm pretty predictable.	True	False
2. I have fairly big mood swings.	True	False
3. Sometimes I'm surprised at myself for the ways I feel or the things I do.	True	False
4. I act and feel essentially the same way whether at home, at work, or with friends.	True	False
5. Sometimes I behave so differently in different situations that people would have difficulty recognizing me as the same person.	True	False
6. I occasionally behave in a way unlike my normal self.	True	False
7. I'm the same sort of person regardless of whom I'm with.	True	False
8. There have been times when I did not remember a series of things that I had done, or the way that I had behaved.	True	False
9. Sometimes I feel like two (or more) persons under the same skin.	True	False
10. Though I behave differently in different situations (for example, at a party, at work, at home) I always feel much the same inside.	True	False
11. I get along best when I act and feel like a totally different person at different times.	True	False
12. If each of the different people who know me well were asked to describe me, the descriptions would be much the same.	True	False
13. I have only minor changes in mood.	True	False
14. One side of my personality is quite different from the other side.	True	False
15. I am the same kind of person in every way, day	True	False

in and day out.		
16. There are parts of me that are so different from each other that I have given them different names.	True	False
17. I am almost never surprised at the way I behave or feel.	True	False
18. I sometimes feel inside like a different person than at other times, but this never seems apparent to other people.	True	False
19. People who know me would say that my behavior changes from situation to situation.	True	False
20. My personality is always the same regardless of whom I'm with or the situation I'm in.	True	False
21. If I were to describe myself in detail I'd have to use two(or more) different descriptions.	True	False
22. People who know me well would say I act quite differently at different times.	True	False
23. Though I vary somewhat from time to time, in general I always feel much the same.	True	False
24. I have two (or more) distinct personalities and at any given time I'm either one or the other.	True	False
25. I change very little from time to time, or from one situation to another.	True	False
26. Sometimes I feel pretty different from the way I feel at other times, but generally I feel much the same way.	True	False
27. There have been times when I felt like a completely different person from what I was the day before.	True	False
28. People who know me well would say I behave basically the same in all circumstances.	True	False
29. I sometimes have conflicts over whether to be one kind of person or a different kind.	True	False
30. I go along on a pretty even keel from day to day.	True	False

### **APPENDIX C: Thoughts and Feelings scale (developed by Fletcher & Stead, 2000)**

How often does each statement apply to you **over the last month**? Tick one box against each statement.

1. Feelings of sadness first thing in the morning.

Very frequently/often  Now and again  Very rarely  Never

2. Finding it difficult to “think on the spot” and concentrate.

Very frequently/often  Now and again  Very rarely  Never

3. Feeling low and wanting to give up trying.

Very frequently/often  Now and again  Very rarely  Never

4. Feeling as if you are “falling apart at the seams” but unsure why.

Very frequently/often  Now and again  Very rarely  Never

5. Lack of interest and enjoyment in food.

Very frequently/often  Now and again  Very rarely  Never

6. Feeling uneasy and needing to “escape”.

Very frequently/often  Now and again  Very rarely  Never

7. Feeling life is difficult to cope with.

Very frequently/often  Now and again  Very rarely  Never

8. Worrying about things which cause feelings of tension and strain.

Very frequently/often  Now and again  Very rarely  Never

**APPENDIX D: The Satisfaction with Life scale items (developed by Diener, Emmons, Larsen & Griffin, 1985)**

In most ways my life is close to my ideal.  
The conditions of my life are excellent  
I am satisfied with my life now.  
So far, I have got the important things I want in life.  
If I could live my life over, I would change almost nothing

**APPENDIX E: 12 contextual life satisfaction items included in addition to the SWLS**

I fit in where I want to fit in.  
I can adjust my behaviour when events require it.  
I have satisfying social relationships.  
I have a wide social circle.  
I get on well with my family.  
I have fulfilling romantic relationships.  
I feel happy with my life.  
I am proud of who I am  
I have a wide range of hobbies/interests.  
I enjoy my career/studies.  
I feel independent.  
I am actively involved in the community.

**APPENDIX F: 3 items reflecting tendency towards habitual behaviour**

I am a very habitual person  
I do not find making changes easy  
I do not easily adapt to new situations



## **APPENDIX G: A short adjective based measure of the six HEXACO traits for use in the diary study**

### **An explanation of the format for each diary questionnaire**

Thank you for providing your informed consent to perform this study into personality.

This page explains the format of the response options for each questionnaire in this diary.

The behaviour states are listed in pairs of adjectives with response options between 1 (representing the extreme of the left adjective) and 7 (representing the extreme of the right adjective).

As an example, when rating the following item:

Inexpressive - Expressive

If you felt very inexpressive 1 would be an appropriate response, while 7 would represent very expressive.

If you felt mildly inexpressive you might pick 3, whereas if you felt mildly expressive 5 would be appropriate.

The What were you doing? questions are all yes/no response answers (where more than one yes response is allowed in a set of questions).

Please choose the first option that comes to mind in each case.

After completion of 2 pages (one page of behaviour states and one page of What were you doing? questions); click on the Finish later button. This will allow you to leave and re-enter the survey when you next need to complete the diary. There should be a gap of at least 5 hours between diary entries, with no more than 2 entries per 24 hour day. Please complete the diary using the same computer every time.

What date and time did you complete this at?:

*Time (record using the 24 hour clock):*

*Date (DD-MM-YY):*

Please rate how you would describe yourself over the past few hours on the scales provided:

Insincere (1-3) - Sincere (5-7)	1	2	3	4	5	6	7
Unfair (1-3) -Fair (5-7)	1	2	3	4	5	6	7
Arrogant (1-3) -Modest (5-7)	1	2	3	4	5	6	7
Fearless (1-3) -Fearful (5-7)	1	2	3	4	5	6	7
Relaxed (1-3) -Anxious (5-7)	1	2	3	4	5	6	7
Independent (1-3)-Dependent on others(5-7)	1	2	3	4	5	6	7
Inexpressive (1-3) -Expressive (5-7)	1	2	3	4	5	6	7
Unsociable (1-3) -Sociable (5-7)	1	2	3	4	5	6	7
Calm (1-3) -Lively (5-7)	1	2	3	4	5	6	7
Harsh (1-3) -Gentle (5-7)	1	2	3	4	5	6	7
Inflexible (1-3) -Flexible (5-7)	1	2	3	4	5	6	7
Temperamental (1-3) -Patient (5-7)	1	2	3	4	5	6	7
Disorderly (1-3) - Organised (5-7)	1	2	3	4	5	6	7
Lazy (1-3) - Diligent (5-7)	1	2	3	4	5	6	7
Impulsive (1-3) - Prudent (5-7)	1	2	3	4	5	6	7
Not curious (1-3) - Inquisitive (5-7)	1	2	3	4	5	6	7
Unimaginative (1-3) - Creative (5-7)	1	2	3	4	5	6	7
Conventional (1-3) - Unconventional (5-7)	1	2	3	4	5	6	7

**APPENDIX H: Categorical indicators of current interpersonal role or social goal orientation in the moment for use in the diary study**

**What were you doing?**

Which of these social roles did your activities fall under over the past few (two or three) hours?

More than one yes response is allowed:

Friend	Yes	No
Partner	Yes	No
Family member	Yes	No
Employee/Student	Yes	No
Alone	Yes	No

Please rate whether your activities fell within each of these motives over the past few hours:

Socialising with others	Yes	No
Avoidance of others	Yes	No
Asserting yourself	Yes	No
Work or personal achievement	Yes	No

<b>APPENDIX I</b>	<b>Me with the good friend</b>	<b>Person I admire</b>	<b>Me with the close family member</b>	<b>A good friend</b>	<b>Person unlike me</b>	<b>Family member close to</b>	<b>Me with the person in authority at work</b>	<b>A confusing person</b>	<b>Person in authority at work</b>	<b>Person I do not like</b>	<b>Rating = 7</b>
<b>Rating = 1</b>											
<b>Sincere</b>											<b>Insincere</b>
<b>Modest</b>											<b>Arrogant</b>
<b>Fearful</b>											<b>Fearless</b>
<b>Dependent on others</b>											<b>Independent</b>
<b>Sociable</b>											<b>Unsociable</b>
<b>Lively</b>											<b>Not lively</b>
<b>Gentle</b>											<b>Harsh</b>
<b>Patient</b>											<b>Tempramental</b>
<b>Organised</b>											<b>Unorganised</b>
<b>Prudent</b>											<b>Implusive</b>
<b>Creative</b>											<b>Uncreative</b>
<b>Conventional</b>											<b>Unconventional</b>

**APPENDIX J: Behavioural Flexibility scale (developed by Fletcher & Stead, 2000)**

These questions require **EITHER** a single tick when you are definite about your answer **OR** you can tick a range if you think that your actions, thoughts or behaviour varies. Several response possibilities are listed below.

*1) One direction, single tick box. You automatically act/think/behave this way. Tick any single box to indicate strength of response.*

---

**Example 1**

Do you show your feelings FREELY or KEEP THEM TO YOURSELF?	5	4	3	2	1	0	1	2	3	4	5
	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	Show them freely			Neither one nor the other			Keep them to yourself				

---

*2) One direction, narrow range. You mostly act/think/behave this way. Tick any 2 or 3 boxes to indicate strength of response.*

---

**Example 2**

Do you show your feelings FREELY or KEEP THEM TO YOURSELF?	5	4	3	2	1	0	1	2	3	4	5
	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	Show them freely			Neither one nor the other			Keep them to yourself				

---

*3) One direction, wide range. You tend to act/think/behave this way. Tick any 4 or all 5 boxes to indicate strength of response.*

---

**Example 3**

Do you show your feelings FREELY or KEEP THEM TO YOURSELF?	5	4	3	2	1	0	1	2	3	4	5
	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	Show them freely			Neither one nor the other			Keep them to yourself				

---

4) *Mid point, single tick box or narrow range. You have no strong tendency to act/think/behave in either way. Tick either 0 or 0 plus 1 or 2 boxes each side (not necessarily the same numbers each side) to indicate strength of response.*

---

**Example 4**

Do you show your feelings FREELY or KEEP THEM TO YOURSELF?	5	4	3	2	1	0	1	2	3	4	5
	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	Show them freely				Neither one nor the other			Keep them to yourself			

---

5) *Both directions, wide range. You sometimes act/think/behave in one way and sometimes in the other way. Tick any 3, 4 or 5 boxes on each side (not necessarily the same numbers each side) to indicate strength of response.*

---

**Example 5**

Do you show your feelings FREELY or KEEP THEM TO YOURSELF?	5	4	3	2	1	0	1	2	3	4	5
	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
	Show them freely						Keep them to yourself				

---

**Please read the instructions again if you are not clear. When you are certain about how to answer, turn over the page to begin.**

Do you behave in an ASSERTIVE or UNASSERTIVE manner?	5	4	3	2	1	0	1	2	3	4	5
	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	Assertive			Neither one nor the other				Unassertive			

Are you a ENERGETIC/DRIVEN or CALM/RELAXED person?	5	4	3	2	1	0	1	2	3	4	5
	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	Energetic/ driven			Neither one nor the other				Calm/ relaxed			

Are you a SYSTEMATIC or SPONTANEOUS person?	5	4	3	2	1	0	1	2	3	4	5
	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	Systematic			Neither one nor the other				Spontaneous			

Do you behave in a CONVENTIONAL or UNCONVENTIONAL manner?	5	4	3	2	1	0	1	2	3	4	5
	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	Conventional			Neither one nor the other				Unconventional			

Are you CAUTIOUS or TRUSTING of others?	5	4	3	2	1	0	1	2	3	4	5
	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	Cautious			Neither one nor the other				Trusting			

Are you a REACTIVE or PROACTIVE person?

5 4 3 2 1 0 1 2 3 4 5

Very reactive                      Neither one nor the other                      Very proactive

---

Are you GROUP or INDIVIDUALLY orientated?

5 4 3 2 1 0 1 2 3 4 5

Group orientated                      Neither one nor the other                      Individually orientated

---

Are you a RISK TAKER or a CAUTIOUS person?

5 4 3 2 1 0 1 2 3 4 5

Risk taker                      Neither one nor the other                      Cautious

---

Do you behave AS YOU WISH or AS OTHERS EXPECT?

5 4 3 2 1 0 1 2 3 4 5

Behave as I wish                      Neither one nor the other                      Behave as expected

---

Are you a OPEN-MINDED or SINGLE-MINDED person?

5 4 3 2 1 0 1 2 3 4 5

Open-minded                      Neither one nor the other                      Single-minded

---



Are you an EXTROVERTED or INTROVERTED person?

5 4 3 2 1 0 1 2 3 4 5

Very extroverted                      Neither one nor the other                      Very introverted

---

Are you a DEFINITE or FLEXIBLE person?

5 4 3 2 1 0 1 2 3 4 5

Very definite                      Neither one nor the other                      Very flexible

---

Would you consider yourself to be a GENTLE or FIRM person?

5 4 3 2 1 0 1 2 3 4 5

Very gentle                      Neither one nor the other                      Very firm

---

Would you consider yourself to be a PREDICTABLE person?

5 4 3 2 1 0 1 2 3 4 5

No, very unpredictable                      Neither one nor the other                      Yes, very predictable

---

Would you consider yourself to be a LIVELY PERSON?

5 4 3 2 1 0 1 2 3 4 5

Not lively at all                      Neither one nor the other                      Very lively

---

<b>APPENDIX K</b>	<b>Me now</b>	<b>An ex-partner</b>	<b>A liked teacher</b>	<b>A family member</b>	<b>A person in authority</b>	<b>A person unlike me</b>	<b>Me as I would like to be</b>	<b>Person I live/lived with</b>	<b>A person who is confusing</b>	<b>A good friend</b>	<b>An admired person</b>	<b>A disliked person</b>	<b>Rating = 7</b>
<b>Rating = 1</b>													
<b>Insincere</b>													<b>Sincere</b>
<b>Unfair</b>													<b>Fair</b>
<b>Fearful</b>													<b>Fearless</b>
<b>Dependent on others</b>													<b>Independent</b>
<b>Unsociable</b>													<b>Sociable</b>
<b>Passive</b>													<b>Lively</b>
<b>Harsh</b>													<b>Gentle</b>
<b>Temperamental</b>													<b>Patient</b>
<b>Disorganised</b>													<b>Organised</b>
<b>Impulsive</b>													<b>Prudent</b>
<b>Uncreative</b>													<b>Creative</b>
<b>Unconventional</b>													<b>Conventional</b>

**APPENDIX L: The Habit rater items (developed by Fletcher & Pine, 2012)**

These were all measured on a sliding VAS scale between 0 and 100 for each item.

Please be honest. How often do you:

Do something you said you would give up? (+ve key)

Say that life is boring? (+ve key)

Find out about something you don't know? (-ve key)

Express the same view? (+ve key)

Suggest ways to make work more interesting? (-ve key)

Do something others would not expect of you? (-ve key)

Seek the opinions of different people? (-ve key)

Try to stick to a routine? (+ve key)

Get bothered when people change plans at the last minute? (+ve key)

**APPENDIX M: The Behaviour Rater (developed by Fletcher & Pine, 2012)**

Tick any boxes that describe how you behave.

<b>Firm</b>	<b>Unpredictable</b>	<b>Individually-centred</b>	<b>Behave as others want you to</b>	<b>Behave as you wish</b>
<b>Reactive</b>	<b>Lively</b>	<b>Definite</b>	<b>Calm/Relaxed</b>	<b>Gentle</b>
<b>Plays safe</b>	<b>Proactive</b>	<b>Laid back</b>	<b>Open-minded</b>	<b>Assertive</b>
<b>Introverted</b>	<b>Systematic</b>	<b>Extroverted</b>	<b>Predictable</b>	<b>Conventional</b>
<b>Flexible</b>	<b>Trusting</b>	<b>Group-centred</b>	<b>Spontaneous</b>	<b>Risk-taker</b>
<b>Wary</b>	<b>Unconventional</b>	<b>Single-minded</b>	<b>Unassertive</b>	<b>Energetic</b>

**APPENDIX N: Coping statements (developed by Fletcher & Pine, 2012).**

These were all measured on a sliding VAS scale between 0 and 100 for each item (all are positively keyed).

I have coped well with problems/issues

I have found it easy to talk with others

I have found it easy to make decisions

I have felt valued and appreciated

I have felt happy

I have felt like life has meaning

I have good physical health

I have a good relationship with the person closest to me.

## **APPENDIX O: The information sheet, consent form and debriefing sheet for study 4.**

### **Information sheet – An intervention to promote behavioural flexibility**

This research is being conducted by Jamie Churchyard MSc at the University of Hertfordshire. The research is exploring ways to promote flexibility in people through a behaviour intervention. Taking part in this study involves completing a behaviour change intervention to increase flexibility (the capacity to vary how you behave) and satisfaction with life.

The intervention will require participation over a period of 6 weeks. There will be a pre-intervention interview session, after this everything else will be taken care of online (intervention sign up, researcher contact (I'll check up on you on a fairly regular basis to see how you are getting on, probably once every 1.5 to two weeks) and completing post-intervention measurements).

The pre-intervention session involves completing an interview about your personality with the researcher. I will then prepare an intervention programme based on the interview. 1 week after the interview I will contact you via email about the procedure for the intervention (how to sign up to the intervention online), and beginning the intervention.

During the intervention period, you will receive either an email or text message (depending on your preference) 4 times per week with an instruction for you (for example; I might ask you to consider being more assertive or organised, and I'll send you an instruction for how to do this). Once you have completed the 6 weeks of the intervention I will send you a selection of post-intervention measures to complete.

Please note that any information you may supply will only be used for the purposes outlined here, participation in the study is voluntary and you may withdraw your assistance at any time if you wish and without explanation. Although participants will be required to fill in a consent form, I will not keep a record of the names of the people who take part in this study, but a participant code will be used instead. In that regard all data will remain anonymous. No serious psychological or physical harm is expected to come from taking part in this study. If you have any questions about the study (before, during or after), please feel free to contact me using the information provided below.

**This study has been approved by the School of Psychology Ethics Committee.**

**Registration Protocol Number: PSY/10/12/JC**

### **Further Information**

For further information about this research please contact Jamie Churchyard

([j.churchyard@herts.ac.uk](mailto:j.churchyard@herts.ac.uk)) or the supervisor Prof Ben Fletcher ([b.fletcher@herts.ac.uk](mailto:b.fletcher@herts.ac.uk))

## Consent form

To provide your confidentiality please create a participant code. This should be based on your initials, month and year of birth. For example, if your name was Joe Ivan Bloggs and you were born in January 1992, your participant code will be: jib011992

Participant code:

I have read and understood the information provided about this study. I understand that all data will be kept confidential and that I may withdraw at any time. If I withdraw from the study, the data that I have submitted will be deleted. Knowing this I give my full consent to take part in the following research investigation.

Do you agree to provide your full informed consent to participate in this study?

Yes [ ]      No [ ]

Date:

Could you please note your age, sex, and email address:

Age:

Sex:

Email address:



## Debriefing sheet

The study you have taken part in has involved attempting to increase behaviour flexibility through the administration of DOs (behaviours to try) that attempt to get the person to try something new that reflects one of two different purposes:

1. Bridging the self-ideal self discrepancy gaps the person raised in the initial interview.
2. Getting the person to behave in a way that is opposite of any extreme dispositions they display. This allows the person to get a brief insight into what things are like for people with other personalities (the benefits and disadvantages). The intention being to make the person more flexible in future interactions.

This was what happened in the behaviour group, by suggesting specific behaviours to try. If you were in the thinking group you would have been requested to think about behaving in a particular way that reflects your ideal self or the opposite of a behaviour extreme you display (leaving the choice of behaving in a particular way up to you). So the intervention also tested the ability of specific behaviour instructions vs thinking about behaving in a particular way.

Both groups completed self-report measures of behaviour range, how habitual you are, anxiety, depression and life satisfaction at pre- and post-intervention to determine whether there were any changes on these outcomes.

This study attempted to design an individually tailed intervention based on traditional academic personality research into trait personality, and the more practically applied research from personal construct theory and the Do Something Different intervention. I hope you enjoyed taking part in this intervention study. If you have any further questions about the study, feel free to contact me by email ([j.churchyard@herts.ac.uk](mailto:j.churchyard@herts.ac.uk)).

Everyone may feel depressed or anxious. These emotions are natural reactions to disappointment or apprehension. However, if you think your mood has been low for some time and is affecting your ability to cope with day-to-day life, you should contact your GP or counselling services and/or seek help and advice from professional organisations. Some of these organisations are listed on the next page:

### **MIND**

**Leading mental health charity in England and Wales. The MindInfoLine offers thousands of callers confidential help on a range of mental health issues.**

15-19 Broadway, London E15 4BQ

Tel. 0845 766 0163; website: [www.mind.org.uk](http://www.mind.org.uk)

### **MENTAL HEALTH FOUNDATION**

**Independent organisation that helps people to survive, recover from and prevent mental health problems**

9th floor, Sea Containers House, 20 Upper Ground, London SE19QB

Tel. 020 78031100; website: [www.mentalhealth.org.uk](http://www.mentalhealth.org.uk)

This is the biggest website on mental health (and mental illness) in the UK.

### **Samaritans**

**National organisation offering support to those in distress who feel suicidal or despairing and need someone to talk to.**

The telephone number of your local branch can be found in the telephone directory. The 24-hour Helpline: 08457 90 90 90; website: [www.samaritans.org.uk](http://www.samaritans.org.uk)

### **Depression Alliance**

**Information, support and understanding for people who suffer with depression and for relatives who want to help.**

35 Westminster Bridge Road, London SE1 7JB

Tel: 0845 123 23 20; website: [www.depressionalliance.org/](http://www.depressionalliance.org/)

## APPENDIX P: Participant 1 repertory grid interpretation/intervention programme

### Repertory grid interview interpretation

*What are the structural characteristics of the construct system?*

Participant 1 appears to be quite cognitively complex (PVAFF = 44.85%, Bieri = 0.26, Intensity = 6221.76). Four components explain 81.63% of variance in the system, six explains 91.86%.

*What major dimensions are present in the construct system?*

Four major dimensions were present, interpreted as:

**1) Socially acceptable:**

Sincere (.90)

Conventional (.89)

Kind-Hearted (.87)

Creative (.87)

Pleasant (.87)

Analytical (.85)

Creative (.83)

Gentle (.82)

Conscientious (.81)

Nice (.78)

Generous (.73)

Patient (.71)

Ambitious (.69)

Prudent (.68)

Organised (.67)

Plays fair (.59)

**2) Socially outgoing:**

Sociable (.95)

Lively (.87)

Funny (.74)

Extravert (.68)

Approachable (.53)

Independent (.50)

3) *Open to others:*

Approachable (.75)

Open (.72)

Dependent on others (-.53)

Plays Fair (.47)

Extravert (.44)

Unconscientious (-.41)

4) *Scared of committing to/drives others away:*

Fearful (-.69)

Selfish (-.53)

Hurtful (-.49)

Prudent (.47)

Closed (-.44)

*What is the content of the personal constructs (Themes included)?*

**Good-natured:** Kind-hearted vs Hateful; Generous vs Selfish; Nice vs Hurtful; Pleasant vs Rude; Conscientious vs Unconscientious.

**Being open:** Open vs Closed; Approachable vs Distant; Extravert vs Introvert; Funny vs Unfunny

**Thinks about things:** Creative vs Doesn't think outside the box; Analytical vs Impulsive.

**Unique:** Ambitious vs Lazy

*How does the individual construct themselves? (Self and ideal self poles, discrepancies in bold, most apparently meaningful discrepancies are indicated by \*, Extremes in italics):*

Me now

Me as I would like to be

*Ambitious (7)*

*Ambitious (7)*

*Kind-hearted (7)*

*Kind-hearted (7)*

**Approachable**

**Approachable (7)**

**Extravert**

**Extravert (7)**

**Generous**

**Generous (7)**

<b>Nice</b>	<b>Nice (7)</b>
<i>Analytical (7)</i>	<i>Analytical (7)</i>
<i>Creative (7)</i>	<i>Creative (7)</i>
<i>Pleasant (7)</i>	<i>Pleasant (7)</i>
<i>Funny (7)</i>	<i>Funny (7)</i>
<b>Conscientious</b>	<b>Conscientious (7)</b>
<b>Closed*</b>	<b>Open*</b>
<b>Sincere</b>	<b>Sincere (7)</b>
<b>Plays Fair</b>	<b>Plays Fair (7)</b>
<b>Fearful*</b>	<b>Fearless*</b>
<i>Independent (7)</i>	<i>Independent (7)</i>
<i>Sociable (7)</i>	<i>Sociable (7)</i>
<i>Lively (7)</i>	<i>Lively (7)</i>
<b>Gentle</b>	<b>Gentle (7)</b>
<b>Midway*</b>	<b>Patient (7)*</b>
<b>Organised</b>	<b>Organised (7)</b>
<b>Prudent (7)*</b>	<b>Impulsive*</b>
<i>Creative (7)</i>	<i>Creative (7)</i>
<i>Conventional (7)</i>	<i>Conventional (7)</i>

Element distances higher than the average (from the *me now* element) include:

Average = 11.85

A person in authority (15.13)

A person unlike me (15.81)

Person I live/have lived with (13.19)

A confusing person (14.07)

A good friend (12.33)

A disliked person (21.33)

*How does the individual construct significant others?*

Constructs with 8 or less individuals on the positive pole include:

Analytical vs Impulsive (6, including both me elements)

Sincere vs Insincere (8, including both me elements)

Plays Fair vs Does not play fair (7, including both me elements)

Gentle vs Harsh (8, including both me elements)

Patient vs Temperamental (4, including me as I would like to be)

Organised vs Disorganised (5, including me as I would like to be)

Prudent vs Impulsive (7, including me now)

Creative vs Uncreative (4, including me now and me as I would like to be)

Conventional vs Unconventional (8, including both me elements)

*Are there any inconsistencies or departures from social consensus? (in construct correlations)*

Extravert is associated with being approachable and funny, but also being selfish and hurtful, and a lack of conscientiousness or sincerity. Indicates most extraverts the person knows aren't really good people. Being creative (both constructs) was strongly associated with being scared. Being conscientious was strongly associated with being closed. Being open was associated with dependence on others, disorganisation, impulsivity and being uncreative. Sincerity is associated with unsociable and unliveliness. Sociability and liveliness associated with harsh, temperamental and impulsive behaviour.

*A summary of the repertory grid interpretation:*

Participant 1 displays major components based on socially acceptable, socially outgoing and two components associated with the opposing aspects of commitment to others. There are discrepancies with participant 1 wishing to be more open, fearless, patient and impulsive (two that oppose each other slightly), and a multitude of extremes on positive poles are displayed. Interestingly, a good friend displays distance greater than the average, which is unexpected. With regard to the way others are constructed, there are themes in that they are not honest, agreeable, conscientious (or analytical) or open to experience. Furthermore, extravert is associated with being selfish, hurtful, lack of conscientiousness and sincerity. This may explain the good friend distance displayed. Being open was associated with dependence on others, disorganisation, impulsivity and being uncreative. So tackling open and impulsive discrepancies together would be a good idea. Sociability and liveliness are associated with being impulsive (although this needs to be tackled without making participant 1 more harsh or temperamental). Being fearless and patient will be tackled separately.

*Recommended DOs for the individual to try:*

To tackle being more impulsive, spontaneous and unpredictable DOs would be good. To be more

open rather than closed, individual-centred DOs with expressive content would be a good choice to express yourself. Risk-taker DOs would help with being fearless. Some patient style DOs have been created. The extremes of good behaviour in comparison to everyone else constructed indicate that the person does not necessarily behave as they wish often enough, so DOs to tackle this may also be included.

#### Spontaneous DOs:

Today, do something on the spur of the moment.

Ignore any plans and just do what feels right.

Phone an old friend out of the blue.

Let the day unfold without organising it.

Invite someone to dance, wherever you are.

Take a walk, and when you choose which direction to go, toss a coin. Heads you go left, tails you go right.

List six options for a night out; roll a dice to decide.

Drop everything and invite a friend or colleague to go for a coffee.

#### Unpredictable DOs:

Do something that's not age-appropriate.

Today, just say Fuck it and do what you want to.

Surprise someone you care about with a treat.

#### Risk-taker DOs:

Have a flutter - Place an affordable bet.

Tell someone what you think of them.

Ask people what honestly think of you.

Face a fear today, no matter how small.

Single? Invite someone who appeals to you out on a date (or ask a trusted friend to set you up on a blind date).

Go to a restaurant and order something you have never heard of.

Go to a club/event/film on your own.

#### Individual-centred DOs:

Share your individual needs with one or more of your social group.

Do the right thing without asking others.

Buy yourself a treat.

Find a quiet spot where you won't be disturbed and read 25 pages of a book.

Set aside 30 minutes for me time.

Behave as I wish DOs:

Don't go along with someone else's suggestion.

Plan an evening around what you enjoy doing.

Be the one who stands out and speaks up.

Dress differently to how you normally do.

Don't let others' reactions affect you taking a decision if it's right.

New DOs (to induce patience):

Cook something nice that requires extended preparation time – enjoy the rewards of patience.

Instead of getting irritated when someone's a bit slow today, remain calm and enjoy the fact that you took the moral high road.



Programme order selection (24):

Drop everything and invite a friend or colleague to have a coffee.

Let the day unfold without organising it.

Today, don't go along with someone else's suggestion.

Go to a restaurant or cafe and order something you have never heard of.

Have a flutter - Place an affordable bet – at the bookies or even just a scratchcard.

Go to a club/event/film on your own.

Do something that's not age-appropriate (try not to be too anti-social...).

Cook something nice that requires extended preparation time – enjoy the rewards of patience.

Dress a bit differently to how you normally do.

Single? Invite someone who appeals to you out on a date (or ask a trusted friend to set you up on a blind date).

List six options for a night out; roll a dice to decide.

Today, make sure you set aside 30 minutes for me time

If you don't normally hold the floor, today be the one who stands out and speaks up.

Buy yourself a treat.

Today, do something on the spur of the moment.

Just allow yourself to be really laidback today, don't do anything unless it's supremely urgent.

Instead of getting irritated when someone's a bit slow today, remain calm and enjoy the fact that you took the high ground.

Today, stop and examine the details around you rather than rush things.

Face a fear today, no matter how small.

Take something that's very ordinary in your life and change it (e.g voicemail, choice of food or room decor)

Today, ask people what they honestly think of you – if anything bad comes up don't take it to heart.

Get in touch with an old friend out of the blue.

Share your individual needs with one or more of your social group.

Today, just say Fuck it and do whatever you want to!

## APPENDIX Q: Participant 2 repertory grid interpretation/intervention programme

### Repertory grid interview interpretation

*What are the structural characteristics of the construct system?*

Participant 2 displays moderately tight cognitive complexity (PVAFF = 60.02, Bieri = .40, Intensity = 10267.38).

*What major dimensions are present in the construct system?*

Four major dimensions were present, interpreted as:

1) Good-natured/Socially acceptable

Every construct except fearless and organised

2) Negativity

Fearful (-.87)

Distracted (-.64)

No hope (-.57)

Lively (.57)

Disorganised (-.50)

Sincere (.50)

Unconventional (-.44)

Wears heart on sleeve (.43)

Lacks consistency (-.42)

Pessimistic (-.41)

Sociable (.41)

3) Self-sufficient, disregards others

Organised (.78)

Independent (.56)

Disrespectful (-.51)

4) People that lack novelty

Sociable (.68)

Organised, plans (.51)

Stubborn (-.46)

Sincere (.43)

Pessimistic (-.42)

Uncreative (-.40)

*What is the content of the personal constructs (Themes included)?*

**Good outlook:** Positive vs Pessimistic; Motivated, does not give up vs No hope; Strong, spirited vs weak; Evil vs Kind; Focused vs Distracted.

**Self vs other orientated:** Wears heart on sleeve vs Selfish; Egotistic vs Looks out for other people, empathetic; Respectful vs Disrespectful, Ignorant.

**Unique:** Funny, not boring vs Boring, no sense of humour; Organised, plans vs Disorganised; Stubborn vs Easygoing; Consistent vs Lacks consistency.

*How does the individual construct themselves? (Self and ideal self poles, discrepancies in bold, most apparently meaningful discrepancies are indicated by \*, extremes in italics):*

Me now	Me as I would like to be
<i>Positive (7)</i>	<i>Positive (7)</i>
<i>Respectful (7)</i>	<i>Respectful (7)</i>
<b>Motivated, does not give up</b>	<b>Motivated, does not give up (7)</b>
<i>Kind (7)</i>	<i>Kind (7)</i>
<b>Wears heart on sleeve</b>	<b>Wears heart on sleeve (7)</b>
<b>Funny, not boring</b>	<b>Funny, not boring (7)</b>
<i>Strong, spirited (7)</i>	<i>Strong, spirited (7)</i>
<b>Focused</b>	<b>Focused (7)</b>
<b>Organised, plans</b>	<b>Organised, plans (7)</b>
<i>Looks out for other people (7)</i>	<i>Looks out for other people (7)</i>
<b>Stubborn*</b>	<b>Easygoing*</b>
<b>Consistent</b>	<b>Consistent (7)</b>
<b>Sincere</b>	<b>Sincere (7)</b>
<b>Plays fair</b>	<b>Plays Fair (7)</b>
<i>Fearless (7)</i>	<i>Fearless (7)</i>
<b>Independent</b>	<b>Independent (7)</b>
<i>Sociable (7)</i>	<i>Sociable (7)</i>
<i>Lively (7)</i>	<i>Lively (7)</i>
<b>Gentle</b>	<b>Gentle (7)</b>
Patient	Patient

**Organised**

**Organised (7)**

**Prudent**

**Prudent (7)**

Creative

Creative

**Unconventional**

**Unconventional (1)**

Element distances higher than the average (from the *me now* element) include:

Average = 10.03

An ex-partner

A person unlike me

A person who is confusing

A disliked person

All roles that would be expected to be above the average distance.

*How does the individual construct significant others?*

Construct poles with less than 4 individuals on the positive include:

Patient vs Temperamental

Conventional vs Unconventional

Participant 2 appears to construct most people in a very positive light.

*Are there any inconsistencies or departures from social consensus? (in construct correlations)*

Everything positive (apart from being Fearless) was associated with being unconventional. Being Fearless was weakly associated with being disrespectful, selfish and insincere.

*A summary of the repertory grid interpretation:*

Participant 2 appears to display a moderately tight construct system, which indicates a lack of experimentation with behaviour. Although her habitual behaviour appears to bring about decent life satisfaction. She displays only considerable discrepancy in the stubborn vs easygoing construct, with a wish to be more easygoing. She displays many extremes on the positive poles of elements indicating that she sees herself as a good person. She also appears to construct most people in a very positive light (except those role elements that have a somewhat negative connotation). This is unsurprising as

the main component focused on being good-natured and behaving in a socially acceptable way, although unconventionality loaded on to this, which is unusual, particularly considering the fairly tight construct system. Overall, the participant appears to behave in a way that is orientated towards others, rather than herself. She appears to display a very black and white view (good vs bad), with a smaller component representing negative self-sufficiency. And so promoting ways of thinking that encourage self-orientated behaviour in a positive sense (to counter the extremes) and being easygoing would be ideal.

*Recommended thinking based DOs for the individual to try:*

Participant 2 wants to be more easygoing as a main priority so modification of some definite-flexible DOs would be good. The fearless, lively and spirited extremes would support being stubborn, so these extremes will be tackled as well. Also the participant behaves in a way that is orientated more towards others than themselves, so thinking DOs to suggest trying to act as they wish should be encouraged.

Note: This is presented as the programme order because the number of possibilities thought of was the exact number of thinking DOs required to create a full programme.

As you are normally quite lively, why not consider acting calmly today.

Consider be more easygoing and letting things slide, rather than stubbornly arguing your point.

Today, in a risky situation, think about what your parents would want you to do?

Think about doing what you want, rather than go along with someone else's suggestion.

Think about what could go wrong today, and what you would do about it.

Today, instead of letting other's reactions affect you, take a decision based on your initiative.

Whenever you get too lively, take a deep breath and think calming thoughts.

Today, consider how things may seem from the other person's point of view.

Take 5 minutes out just to think, once an hour, every hour.

Today think about holding back an opinion if it's judgemental in any way

Today, think about planning the day around what you enjoy doing.

Today, consider trying someone else's suggestion rather than your own.

Think about acting according to an alternative view to one you have held for a long time.

Today, remember a long-lived secret dream, and think about what you could do to make it happen.

Today, let yourself be bored, think about how relaxing it is.

Think about planning your day according to the weather forecast today, check for rain

Consider asking for advice from someone you can't remember asking for advice before.

At least once today, close your eyes and visualise a favourite place

Think about trying something new, and perhaps get the opinion of three friends

Spot your people pleasing habit today, and ask yourself, 'who am I doing this for?'

Take a look at your car's petrol gauge, how close to empty is it?

Today, consider about letting other's viewpoint be right.

Think about a night out you really want to go on, and get others on board.

Go out for a 15 minute aimless stroll today and think about what happened today.

## APPENDIX R: Participant 3 repertory grid interpretation/intervention programme

### Repertory grid interview interpretation

*What are the structural characteristics of the construct system?*

Participant 3 appears to be quite cognitively complex (PVAFF = 51.96, Bieri = 0.31, Intensity = 7959.66).

*What major dimensions are present in the construct system?*

5 dimensions were present, 4 of which were major, interpreted as:

1) *Socially acceptable behaviour*

Sincere (.94)  
Gentle (.94)  
Engaged (.93)  
Democratic (.92)  
Likes to explain things (.91)  
Interested in others (.89)  
Kind (.88)  
Patient (.86)  
Plays fair (.78)  
Able to share knowledge (.77)  
Fearful (-.72)  
Conscientious (.71)  
Willing to listen (.70)  
Organised (.67)  
Dependent on others (-.64)  
Likes company (.59)  
Young at heart, despite age (.58)  
Sociable (.47)  
Lively (.43)

2) *Rigid, anti-social*

Unsociable (-.86)  
Conventional (.77)  
Passive (-.70)  
Prefers own company (-.69)  
Prudent (.68)  
Old for their years (-.61)  
Organised (.46)  
Uncreative (-.46)



3) *Creativity*

Creative (.77)

Organised (.50)

Conscientious (.47)

Fearless (.41)

4) *Obstinate*

Prudent (.52)

Sure they are right (-.46)

Unable or unwilling to share knowledge (-.43)

Old for their years (-.40)

*What is the content of the personal constructs (Themes included)?*

**Empathy:** Sure they are right vs Willing to listen ; Interested in others vs Not interested ; Likes to speak in jargon vs Likes to explain things ; Able to share knowledge vs Unwilling or unable to share knowledge; Kind vs Unkind.

**Taking your time, preparation:** Conscientious vs Someone who rushes things ; Patient vs Impatient, rushed ; Organised, Chaotic

**Unique:** Likes company vs Prefers own company ; Young at heart, despite age vs Old for years ; Authoritative vs Democratic ; Supercilious vs Engaged

*How does the individual construct themselves? (Self and ideal self poles, discrepancies in bold, most apparently meaningful discrepancies are indicated by \*, extremes in italics):*

Me now

Me as I would like to be

**Midway \***

**Willing to listen(7)\***

**Kind**

**Kind(7)**

**Interested in others**

**Interested in others(7)**

**Conscientious**

**Conscientious(7)**

*Likes to explain things(7)*

*Likes to explain things(7)*

*Likes company(7)*

*Likes company(7)*

**Patient**

**Patient(7)**

**Organised**

**Organised(7)**

*Able to share knowledge(7)*

*ATSK(7)*

*Young at heart despite age(7)*

*YAHDA(7)*

**Democratic**

**Democratic(7)**

<b>Engaged</b>	<b>Engaged(7)</b>
Sincere	Sincere
Plays fair	Plays fair
<b>Midway *</b>	<b>Fearless*</b>
Independent	Independent
Sociable	Sociable
Lively	Lively
<b>Gentle</b>	<b>Gentle(7)</b>
<b>Patient</b>	<b>Patient(7)</b>
<b>Organised</b>	<b>Organised(7)</b>
<b>Midway*</b>	<b>Prudent*</b>
<b>Creative</b>	<b>Creative</b>
<b>Conventional</b>	<b>Conventional</b>

Element distances higher than the average (from the *me now* element) include:

Average = 8.12

A family member (12.45)

An ex-partner

A disliked person

A person who is confusing

A person in authority

A person who is confusing (9.38)

This is fairly standard, although family member displays a very high distance.

*How does the individual construct significant others?*

Construct poles with less than 4 individuals on the positive include:

None

*Are there any inconsistencies or departures from social consensus? (in construct correlations)*

Fearless negatively associated with everything except independent and creativity. Independent negatively associated with everything except creativity, fearless and young at heart. Conventional negatively associated with anything creativity is positively associated with (for moderate strength correlations).

*A summary of the repertory grid interpretation:*

Participant 3 is quite cognitively complex, with major components orientated towards socially acceptable, anti-social, creative and obstinate behaviour. There are discrepancies mainly with wanting to be more fearless, prudent and willing to listen, and several other minor discrepancies generally orientated towards being more agreeable, conscientious and engaged with others. Interestingly, a family member displays much greater distance than would be expected, indicating a potentially unclosed relationship. DOs should mainly be orientated around making participant 3 more fearless, prudent and willing to listen, with a few orientated towards the minor discrepancies. In this case the extremes would be difficult to work on.

*Recommended DOs for the individual to try:*

Risk taker, wary, flexible, open-minded, group-orientated, gentle dimensions. Use some of patient DOs.

Risk-taker DOs:

Have a flutter – place an affordable bet

Tell someone what you think of them

Challenge a fear or phobia

Ask people what they honestly think of you

Go to a restaurant and order something you've never heard of

Go to a club/film/event on your own

Wary/plays safe DOs:

Ask for a reason why

Update and change your privacy settings and passwords

Check out all the options before agreeing to do something

Do something background research before agreeing to do something

Have a back up plan in case things go wrong

Reserve judgement before offering an opinion

Flexible DOs:

Let someone sell you something small you had already decided against

Ask yourself how interactions may seem from the other persons point of view

Let someone else be right today

Ask advice from someone in a shop today

Listen to a radio station you wouldn't normally listen to

Let others be themselves, try not to question or criticize

Open-minded DOs:

Seek the advice of a person much younger than you

Plan a trip somewhere unusual and different

If you have an important decision to make, ask for the opinions of various others

Read a blog or article on a topic that challenges your views – look for areas of agreement

Group-centred DOs:

Offer support or help to a friend or colleague who might need it.

Talk to your friends about the needs of your social group.

Gentle DOs:

Put yourself in someone else's shoes before judging them

Sympathise without trying to solve a problem

Listen to someone without interrupting or offering an opinion

Patient DOs:

Cook something nice that requires extended preparation time – enjoy the rewards of patience.

Instead of getting irritated when someone's a bit slow today, remain calm and enjoy the fact that you took the moral high road.

Introverted DOs to oppose an extreme:

Spend some time alone today, read a book, take a walk, just enjoy your own company

Programme order selection (24):

Listen to a radio station you wouldn't normally listen to

Ask for a reason why

Go to a restaurant and order something you've never heard of

Read a blog or article on a topic that challenges your views – look for areas of agreement

Listen to someone without interrupting or offering an opinion

Seek the advice of a person much younger than you

Tell someone what you think of them

Have a flutter – place an affordable bet

Have a back up plan in case things go wrong

Ask yourself how interactions may seem from the other persons point of view

Go to a club/film/event on your own

Cook something nice that requires extended preparation time – enjoy the rewards of patience.

Let others be themselves, try not to question or criticize

Update and change your privacy settings and passwords

Talk to your friends about the needs of your social group.

Ask advice from someone in a shop today

Instead of getting irritated when someone's a bit slow today, remain calm and enjoy the fact that you took the moral high road.

Offer support or help to a friend or colleague who might need it.

Challenge a fear or phobia

Plan a trip somewhere unusual and different

Reserve judgement before offering an opinion

Ask people what they honestly think of you

Spend some time alone today, read a book, take a walk, just enjoy your own company

Go shopping and let someone sell you something small you had already decided against

**APPENDIX S: Participant 4 repertory grid interpretation/intervention programme.**

<b>Repertory grid interview interpretation</b>	
<i>What are the structural characteristics of the construct system?</i>	
Participant 4 appears to display lower cognitive complexity (PVAFF = 70.89, Bieri = 0.47. Intensity = 13882.22), with considerable clustering of roles indicating a tight construct system.	
<i>What major dimensions are present in the construct system?</i>	
4 dimensions were present, 3 worth interpreting as:	
<p>1) <i>Acceptable behaviour</i>  <i>Everything positive load except sociable (no load)</i></p> <p>2) <i>Unwilling to try something creative</i>  <i>Patient (.72)</i>  <i>Uncreative (-.62)</i>  <i>Dowdy, doesn't care about appearance (-.55)</i>  <i>Participative (.45)</i>  <i>Boring, uncreative (-.44)</i>  <i>Prudent (.42)</i></p> <p>3) <i>Outgoing behaviour</i>  <i>Sociable (.70)</i>  <i>Lively (.62)</i>  <i>Fearless (.46)</i></p>	
<i>What is the content of the personal constructs (Themes included)?</i>	
<b>Know where coming from:</b> Clarity vs Mixed messages ; Untrustworthy vs Integrity ; Reliable vs Unreliable, lets you down.	
<b>Interest/need of others:</b> Energy vs Disinterest ; Empathetic vs Distant ; Independent vs Needy	
<b>Expanding horizons:</b> Unambitious vs Ambitious ; Open to experience vs Closed ; Participative vs Isolated; Creative vs Boring, uncreative	
<b>Unique:</b> Positive vs Negative ; Stylish, cares about appearance vs Dowdy doesn't care about appearance	
<i>How does the individual construct themselves? (Self and ideal self poles, discrepancies in bold, most apparently meaningful discrepancies are indicated by *, extremes in italics):</i>	
Me now	Me as I would like to be
<i>Ambitious(7)</i>	<i>Ambitious(7)</i>
<i>OTE (7)</i>	<i>OTE (7)</i>

Independent	Independent
Clarity	Clarity
Integrity	Integrity
Participative	Participative
Positive	Positive
Energy	Energy
Reliable	Reliable
Creative	Creative
Stylish, cares about app	SCAA
Empathetic	Empathetic
<i>Sincere(7)</i>	<i>Sincere(7)</i>
Plays fair	Plays fair
Fearless	Fearless
Independent	Independent
<b>Sociable</b>	<b>Sociable</b>
Lively	Lively
Gentle	Gentle
Patient	Patient
Organised	Organised
Midway	Midway
Creative	Creative
Conventional	Conventional
<p>Element distances higher than the average (from the <i>me now</i> element) include:</p> <p>Average = 6.93</p> <p>A disliked person (20.32)</p> <p>A person who is confusing</p> <p>An ex-partner</p>	



A person unlike me (9.43)

Fairly standard, but the distances are considerable when looking at the average. Suggests a very black and white perspective.

*How does the individual construct significant others?*

Construct poles with less than 4 individuals on the positive include:

Prudent vs Impulsive

*Are there any inconsistencies or departures from social consensus? (in construct correlations)*

The *sociable vs unsociable* construct is not found to be strongly associated to anything, positively or negatively, most likely due to considering everyone sociable, for positive or negative role elements.

*A summary of the repertory grid interpretation:*

Participant 4 appears to display lower cognitive complexity, with a fairly tight construing system, and major components orientated towards acceptable behaviour, a lack of creativity and outgoing behaviour. There are no apparent discrepancies between me now and me as I would like to be, and few extremes. This is a tight construct system, and the participant needs to be encouraged to think in a different way. It's almost like the participant is striving for social perfection and is quite stubborn in this view (tight way of construing things), so thoughts that different from any me now dimensions (all generally considered to be societally acceptable ways to behave in her view) will be encouraged to show that there are other ways of acceptable thinking or behaviour.

*Recommended DOs for the individual to try:*

Thoughts focused around being single-minded, introverted, unconventional, behaving as you wish, firm, definite, laidback/calm, spontaneous and systematic (as impulsive prudent was mid-range).

Definite:

Today, think about being less accommodating to others

Stick to a choice and don't change your mind

Make a decision that you have been putting off for a while.

Think the activities you do and consider where these are taking you

Behave as you wish:

Think about how an evening focused around what you enjoy doing would be like

Today, remember a long-lived secret dream, and think about what you could do to make it happen.

Spot your people pleasing habit today, and ask yourself, 'who am I doing this for?'

Consider doing what you want, rather than go along with someone else's suggestion.

Single-minded:

Scrutinise your views today – are they your own or has someone fed them to you?

Do not be swayed by popular view today

Introverted:

Listen and consider what people are saying today

Today, think about what's going on around you, rather than just acting

Consider how you would feel if shipwrecked alone on an island, and try to come to terms with the concept today

Rather than saying your opinion out loud, just think it loud today

Unconventional:

Try thinking about situations from a different angle today

Stand in front of the mirror and spend a couple of minutes thinking gibberish

Think about acting according to an alternative view to one you have held for a long time.

Laidback/Calm and relaxed:

Take 5 minutes out just to think, once an hour, every hour.

Go out for a 15 minute aimless stroll today and think about what happened today.

When contemplating today, close your eyes and think things through in detail

Write down three things that make you feel relaxed and positive.

Systematic:

List the things you want to achieve over the next week, next year and in your life. Plan how you will reach these goals.

Today, decide on three things you want to do tomorrow.

Spontaneous:

Ask yourself what tomorrow would be like if there was no plan

Programme order selection (24):

Today, once you make a choice, stick to it and don't change your mind

Think about how an evening focused around what you enjoy doing most would be like

Today, think about and take note of what's going on around you

Go out for a 15 minute aimless stroll today and think about what happened over the past week.

When contemplating today, close your eyes and think things through in detail

Spot your people pleasing habits today, and ask yourself, 'who am I doing this for?'

List the things you want to achieve over the next week, next year and in your life. Plan how you will reach these goals.

Stand in front of the mirror and spend a couple of minutes thinking gibberish or just about what comes to mind.

Scrutinise your views today – are they your own or has someone fed them to you?

Ask yourself what tomorrow would be like if there was no plan

Think about acting according to an alternative view to one you have held for a long time.

Rather than saying your opinions out loud, just think them loud today

Try thinking about situations from a different angle today

Consider doing what you want, rather than go along with someone else's suggestion.

Listen and consider what people are saying today

Today, decide on three things you want to do tomorrow.

Write down three things that make you feel relaxed and positive.

Do not be swayed by popular view today

Consider how you would feel if shipwrecked alone on an island, and try to come to terms with the concept today

Make a decision that you have been putting off for a while

Think the activities you do on a regular basis and consider where this behaviour is taking you

Today, think about being less accommodating to others

Take 5 minutes out just to think, once an hour, every hour.

Today, remember a long-lived secret dream, and think about what you could do to make it happen.

## APPENDIX T: Participant 5 repertory grid interpretation/intervention programme.

### Repertory grid interview interpretation

*What are the structural characteristics of the construct system?*

Participant 5 appears to be very cognitively complex (PVAFF = 39.87, Bieri = 0.25, Intensity = 6071.71). Five components explain 91.67% of the variance, suggesting a loose construct system.

*What major dimensions are present in the construct system?*

5 dimensions were present, 4 worth interpreting as:

- 1) *Socially acceptable behaviour*  
Everything except *likes structure, prudent and conventional*
  
- 2) *In the background*  
Passive (-.82)  
Gentle (.81)  
Plays fair (.76)  
Unambitious (-.72)  
Unsociable (-.71)  
Lethargic (-.68)  
Invisible, lacks authority (-.66)  
Sincere (.64)  
Caring (.61)  
Patient (.57)  
Clueless (-.52)  
Empathetic (.43)
  
- 3) *Stressed*  
Impulsive (-.78)  
Likes structure (.77)  
Worries, stresses about things (-.67)  
Dependent on others (-.54)  
Energetic (.49)  
Unconventional (-.46)
  
- 4) *Worker bee*  
Conventional (.71)  
Organised (.55)  
Conscientious, applies themselves (.45)  
Community spirited (.45)  
Unsociable (-.44)  
Prudent (.44)  
Frosty, unapproachable (-.40)

*What is the content of the personal constructs (Themes included)?*

**Interested in others:** Caring vs Uncaring ; Empathetic, interested in others vs Self-centred, egocentric ; Community spirited vs Inward facing ; Open, approachable vs Frosty, unapproachable.

**Motivated:** Conscientious, applies themselves vs Doesn't care, slacker ; Energetic vs Lethargic ; Driven vs Unambitious.

**Control:** Controlling vs Cooperative ; Likes Structure vs Laidback, waits to see what happens; Worrier, stresses about things vs Relaxed ; Charasmatic vs Invisible, lacks authority.

**Unique:** Resourceful vs Clueless

*How does the individual construct themselves? (Self and ideal self poles, discrepancies in bold, most apparently meaningful discrepancies are indicated by \*, extremes in italics):*

Me now	Me as I would like to be
<i>Conscientious, app(7)</i>	<i>Conscientious, app(7)</i>
<b>Charismatic</b>	<b>Charismatic (7)</b>
<b>Caring</b>	<b>Caring(7)</b>
<i>Energetic(7)</i>	<i>Energetic(7)</i>
<b>Likes structure (7)*</b>	<b>Midway*</b>
<i>Driven (7)</i>	<i>Driven (7)</i>
<b>Empathetic, IIO</b>	<b>Empathetic, IIO(7)</b>
<b>Controlling*</b>	<b>Cooperative, team player*</b>
Community spirited	Community spirited
Resourceful	Resourceful
<b>Worrier, stresses*</b>	<b>Relaxed*</b>
Open, approachable(7)	Open, approachable(7)
Sincere	Sincere
<b>Plays fair</b>	<b>Plays fair(7)</b>
<b>Midway*</b>	<b>Fearless(7)*</b>
<b>Independent</b>	<b>Independent(7)</b>
<b>Sociable</b>	<b>Sociable(7)</b>
<b>Lively</b>	<b>Lively(7)</b>
<b>Midway</b>	<b>Gentle</b>

<b>Midway*</b>	<b>Patient(7)*</b>
<b>Organised</b>	<b>Organised(7)</b>
Midway	Midway
<b>Creative</b>	<b>Creative</b>
<b>Midway</b>	<b>Conventional</b>
<p>Element distances higher than the average (from the <i>me now</i> element) include:</p> <p>Average = 9.16</p> <p>A person who is confusing (12.49)</p> <p>A family member</p> <p>An ex-partner</p> <p>A disliked person</p> <p>A person unlike me (10.49)</p> <p>All expected to be greater than average, apart from family member, which is high.</p>	
<p><i>How does the individual construct significant others?</i></p> <p>Construct poles with less than 4 individuals on the positive include: None</p>	
<p><i>Are there any inconsistencies or departures from social consensus? (in construct correlations)</i></p> <p>Not really.</p>	
<p><i>A summary of the repertory grid interpretation:</i></p> <p>Participant 5 is highly cognitively complex, with a loose construct system, and major components focusing on socially acceptable behaviour, being in the background, stress and work oriented people. There are several me now-me as I would like to be discrepancies, with participant 5 wishing to be more laidback, cooperative, relaxed, fearless and patient, with many other minor discrepancies focusing around empathetic and sociable behaviour. The distance from the family member is higher than would be expected. The direction of construct relationships is as expected.</p>	
<p><i>Recommended DOs for the individual to try:</i></p> <p>Laidback DOS:</p> <p>Make vague plans, turn up when you feel like it</p> <p>Don't rush, take a more scenic route</p>	

Leave your watch or mobile at home for a day

Stay in and read a book

Take up a relaxing hobby

Trusting DOs:

Allow someone to do things their own way

The next time someone suggests something fun (and safe) give it a go

Try delegating a job to a colleague/friend/family member

Let someone do something you think you can do better

Behave as others want DOs:

When stuck, ask someone else what you should do

Let a friend decide where to go on your next night out

Group-centred DOs:

Offer support or help to a friend or colleague who might need it.

Talk to your friends about the needs of your social group.

Calm/relaxed DOs:

Take five minutes out, just to think, once an hour, every hour

Let go, of others and the outside world, and focus only on things you can control

Write down three things that make you feel more relaxed and positive

Go for a 15 minute aimless stroll today

Risk-taker DOs:

Have a flutter – place an affordable bet

Tell someone what you think of them

Challenge a fear or phobia



Ask people what they honestly think of you

Go to a restaurant and order something you've never heard of

Go to a club/film/event on your own

Patient DOs:

Cook something nice that requires extended preparation time – enjoy the rewards of patience.

Instead of getting irritated when someone's a bit slow today, remain calm and enjoy the fact that you took the moral high road.

Programme order selection (24):

Allow someone to do things their own way

Don't rush today, wherever you're going take a more scenic route

Go to a restaurant and order something you've never heard of

Today, stay in and read a book

Leave your watch or mobile at home for a day

Write down three things that make you feel more relaxed and positive

Let a friend decide where to go on your next night out

Have a flutter – place an affordable bet

The next time someone suggests something fun (and safe) give it a go

Tell someone what you think of them

Make vague plans, turn up when you feel like it

Talk to your friends about the needs of your social group.

Try delegating a job to a colleague/friend/family member

When stuck, ask someone else what you should do

Go to a club/film/event on your own

Cook something nice that requires extended preparation time – enjoy the rewards of patience.

Take five minutes out, just to think, once an hour, every hour

Offer support or help to a friend or colleague who might need it

Challenge a fear or phobia

Today, try and take up a relaxing new hobby

Instead of getting irritated when someone's a bit slow today, remain calm and enjoy the fact that you took the moral high road.

Let go, of others and the outside world, and focus only on things you can control

Go for a 15 minute aimless stroll today

Ask people (colleagues, family or friends) what they honestly think of you

**APPENDIX U: Participant 6 repertory grid interpretation/intervention programme.**

<p><b>Repertory grid interview interpretation</b></p>
<p><i>What are the structural characteristics of the construct system?</i></p> <p>Participant 6 appears to display modest cognitive complexity (PVAFF = 62.44, Bieri = 0.39. Intensity = 10677.90).</p>
<p><i>What major dimensions are present in the construct system?</i></p> <p>5 dimensions were present, 4 worth interpreting as:</p> <ol style="list-style-type: none"> <li>1) Socially acceptable behaviour Everything except Conventional</li> <li>2) Sociopathic type behaviour Fearless (.71) Insincere (-.53) Outgoing (.49) Does not play fair (-.44)</li> <li>3) Lacks Imagination Conventional (.70) Impulsive (-.46) Uncreative (-.46) Self-assured, positive self-belief (.44)</li> <li>4) Individualist character Self-assured, positive self-belief (.56) Prudent (.52) Unsociable (-.49)</li> </ol>
<p><i>What is the content of the personal constructs (Themes included)?</i></p> <p><b>Their presence is no problem:</b> Patient vs Impatient, anxious, short-tempered ; Obnoxious, self-righteous vs Listens and respects others views ; Easy to talk to vs Someone you feel uncomfortable around ; Annoying vs Ok to be around, happy to spend time with ; Happy, joyful vs Miserable</p> <p><b>Believes in themselves:</b> Determined vs Lazy ; Lack of self-belief in ability vs Self-assured, positive self-belief</p> <p><b>Empathetic:</b> Caring vs Doesn't care ; Helpful vs Unhelpful</p> <p><b>Unique:</b> Scatty vs Organised ; Awkward in social situations vs Outgoing ; Sense of humour vs No sense of humour, can't take a joke.</p>

*How does the individual construct themselves? (Self and ideal self poles, discrepancies in bold, most apparently meaningful discrepancies are indicated by \*, extremes in italics):*

Me now	Me as I would like to be
<b>Patient</b>	<b>Patient</b>
<b>Organised</b>	<b>Organised(7)</b>
<b>Listens and respects others view</b>	<b>LAROV</b>
Caring	Caring
<i>Easy to talk to(7)</i>	<i>Easy to talk to(7)</i>
Outgoing	Outgoing
<i>Determined(7)</i>	<i>Determined(7)</i>
<b>Lack of self-belief*</b>	<b>Self-assured, positive self-belief*</b>
Sense of humour	Sense of humour
Helpful	Helpful
Happy, joyful	Happy, joyful
Happy to spend time with	HTSTW
Sincere	Sincere
Plays Fair	Plays Fair
Fearless	Fearless
Independent	Independent
Sociable	Sociable
Lively	Lively
Midway	Midway
Patient	Patient
Organised	Organised
Midway	Midway
Creative	Creative
Midway	Midway

Element distances higher than the average (from the *me now* element) include:

Average = 7.51

An ex-partner (13.04)

A disliked person

A person unlike me

A person who is confusing (8.54)

All would be expected to display greater distances than average.

*How does the individual construct significant others?*

Construct poles with 4 or less individuals on the positive include:

Determined vs Lazy

Self-assured, positive self belief vs Lack of self-belief in ability

Fearless vs Fearful

Independent vs Dependent on others

Gentle vs Harsh

Organised vs Disorganised

Prudent vs Impulsive

Creative vs Uncreative

Conventional vs Unconventional

Most are common constructs rather than personal constructs. All due to a mass of midrange ratings, rather than negative.

*Are there any inconsistencies or departures from social consensus? (in construct correlations)*

Nothing really out of the ordinary.

*A summary of the repertory grid interpretation:*

Participant 6 appears to display modest cognitive complexity, but with a loose construing system, and major components orientated towards socially acceptable behaviour, sociopathic type behaviour (the opposite of the first component), a lack of imagination and individualist character. There are few apparent discrepancies between me now and me as I would like to be (in terms of wanting to be more organised and self-assured) and few extremes (on determined and easy to talk to poles). Thoughts that are different from any me now dimensions (all generally considered to be societally acceptable ways

to behave in her view) will be encouraged to show that there are other ways of acceptable thinking or behaving. To this end, as she has a very socially focused view, thoughts orientated towards individual thinking and her own needs, and making firm decisions that she believes in will be encouraged, which should help counter the discrepancy for self-assurance and positive self-belief (as she states she currently lacks self-belief). Some thoughts to consider in terms of being more organised will be included.

*Recommended DOs for the individual to try:*

Thoughts focused around being single-minded, introverted, organised, behaving as you wish, firm, definite, laidback/calm, spontaneous and systematic (as impulsive prudent was mid-range).

**Definite:**

Today, think about being less accommodating to others

Stick to a choice and don't change your mind

Make a decision that you have been putting off for a while.

Think the activities you do and consider where these are taking you

**Behave as you wish:**

Think about how an evening focused around what you enjoy doing would be like

Today, remember a long-lived secret dream, and think about what you could do to make it happen.

Spot your people pleasing habit today, and ask yourself, 'who am I doing this for?'

Consider doing what you want, rather than go along with someone else's suggestion.

**Single-minded:**

Scrutinise your views today – are they your own or has someone fed them to you?

Do not be swayed by popular view today

**Introverted:**

Listen and consider what people are saying today

Today, think about what's going on around you, rather than just acting

Consider how you would feel if shipwrecked alone on an island, and try to come to terms with the concept today

Rather than saying your opinion out loud, just think it loud today

Organised (Proactive):

Ask yourself and think about, 'How can I be more prepared for what's to come?'

Plan the meals you will eat for the next week

Today, time-table your day into half-hour slots (or do a time-table today, for tomorrow).

Laidback/Calm and relaxed:

Take 5 minutes out just to think, once an hour, every hour.

Go out for a 15 minute aimless stroll today and think about what happened today.

When contemplating today, close your eyes and think things through in detail

Write down three things that make you feel relaxed and positive.

Systematic:

List the things you want to achieve over the next week, next year and in your life. Plan how you will reach these goals.

Today, decide on three things you want to do tomorrow.

Spontaneous:

Ask yourself what tomorrow would be like if there was no plan

Programme order selection (24):

Today, once you make a choice, stick to it and don't change your mind

Think about how an evening focused around what you enjoy doing most would be like

Today, think about and take note of what's going on around you

Go out for a 15 minute aimless stroll today and think about what happened over the past week.

When contemplating today, close your eyes and think things through in detail

Spot your people pleasing habits today, and ask yourself, 'who am I doing this for?'

List the things you want to achieve over the next week, next year and in your life. Plan how you will reach these goals.

Ask yourself and think about, 'How can I be more prepared for what's to come?'

Scrutinise your views today – are they your own or has someone fed them to you?

Ask yourself what tomorrow would be like if there was no plan

Plan the meals you will eat for the next week

Rather than saying your opinions out loud, just think them loud today

Today, time-table your day into half-hour slots (or do a time-table today, for tomorrow).

Consider doing what you want, rather than go along with someone else's suggestion.

Listen and consider what people are saying today

Today, decide on three things you want to do tomorrow.

Write down three things that make you feel relaxed and positive.

Do not be swayed by popular view today

Consider how you would feel if shipwrecked alone on an island, and try to come to terms with the concept today

Make a decision that you have been putting off for a while

Think the activities you do on a regular basis and consider where this behaviour is taking you

Today, think about being less accommodating to others

Take 5 minutes out just to think, once an hour, every hour.

Today, remember a long-lived secret dream, and think about what you could do to make it happen.



**APPENDIX V: Participant 7 repertory grid interpretation/intervention programme.**

**Repertory grid interview interpretation**

*What are the structural characteristics of the construct system?*

Participant 7 appears to be quite cognitively complex (PVAFF = 49.24, Bieri = 0.28, Intensity = 7282.60).

*What major dimensions are present in the construct system?*

5 dimensions were present, 4 worth interpreting as:

- 1) *Socially acceptable behaviour*  
Everything except Persistent, Fearless, Patient and Prudent loaded (only negative loading was the Conventional construct)
  
- 2) *Scared to fail*  
Fearful (-.97)  
Someone who gives up (-.83)  
Tempramental (-.63)  
Sociable (.60)  
Dependent on others (-.55)  
Caring (.48)  
Gentle (.47)  
Sad (-.40)
  
- 3) *Interested yet cautious (balanced)*  
Prudent (.84)  
Lively (.70)  
Sociable (.58)  
Patient (.56)
  
- 4) *Normal*  
Conventional (.79)  
Able to be laidback (.43)

*What is the content of the personal constructs (Themes included)?*

**Attracts vs Detracts:** Enigmatic vs Someone a bit boring; Good fun vs Someone who's a drain; Interesting vs Dull; Inspiring vs Demotivating; Laughs a lot, cheerful vs Someone who is sad.

**Laidback:** Able to be laidback vs Somebody who gets stressed easily; Can be fixated vs Easygoing

**Unique:** Earthy vs Pretentious; Picky vs Random; Persistent vs Someone who gives up; Caring vs Uncaring; Sociable vs Unsociable

*How does the individual construct themselves? (Self and ideal self poles, discrepancies in bold, most apparently meaningful discrepancies are indicated by \*, extremes in italics):*

Me now	Me as I would like to be
<b>SWGSE*</b>	<b>Able to be laidback*</b>
<b>Midway*</b>	<b>Enigmatic*</b>
<b>Sad*</b>	<b>Laughs a lot, cheerful*</b>
<b>Someone who is a drain*</b>	<b>Good fun*</b>
<b>Earthy</b>	<b>Earthy</b>
<b>Midway*</b>	<b>Interesting*</b>
<b>Gets fixated*</b>	<b>Easygoing*</b>
<b>Midway*</b>	<b>Inspiring*</b>
<b>Midway*</b>	<b>Random*</b>
<b>Persistent</b>	<b>Persistent</b>
<i>Caring(7)</i>	<i>Caring(7)</i>
Sociable	Sociable
<i>Sincere(7)</i>	<i>Sincere (7)</i>
<b>Plays fair</b>	<b>Plays fair(7)</b>
<b>Fearful*</b>	<b>Fearless</b>
<b>Midway*</b>	<b>Independent*</b>
<b>Sociable</b>	<b>Sociable</b>
<b>Midway</b>	<b>Lively</b>
<b>Midway</b>	<b>Gentle</b>
<b>Midway</b>	<b>Patient</b>
Organised	Organised
Midway	Midway
<b>Creative</b>	<b>Creative(7)</b>
<b>Midway</b>	<b>Conventional</b>

Element distances higher than the average (from the *me now* element) include:

Average = 7.85

A disliked person (14.04)

Me as I would like to be (12.49)

Disliked person is as expected, although the distance of me as I would like to be is considerable.

*How does the individual construct significant others?*

Construct poles with less than 4 individuals on the positive include:

Able to be laidback vs Gets stressed easily

Picky vs Random

Gentle vs Harsh

Patient vs Temperamental

Conventional vs Unconventional

*Are there any inconsistencies or departures from social consensus? (in construct correlations)*

Sociable found to be related to giving up easily, being fearful, temperamental and disorganised. Sincerity associated with temperamental and disorganised behaviour. Disorganised associated with sociable and gentle behaviour.

*A summary of the repertory grid interpretation:*

Participant 7 appears to be cognitively complex, with the only two distant roles being the disliked person and me as I would like to be roles. The distance of the me as I would like to be role is considerable and should be counteracted. There were four main components, the general socially acceptable behaviour component, a factor reflecting being scared to fail (mainly reflected by strong fearful and giving up constructs), a balanced interest with caution component and a small normal component. Themes included people who attract vs detract and capacity to be laidback. There are a multitude of self-ideal self discrepancies that can be intervened in. In terms of constructs associating with social consensus, many socially acceptable behaviours (sincerity, sociable and gentle) being associated with disorganisation, while the person sees themselves as organised and does not wish to change, so perhaps a few disorganised DOs should be included in the programme. Sociable was also found to be related to giving up easily, being fearful and temperamental, which is unusual.

*Recommended DOs for the individual to try:*

Due to the considerable number of discrepancies, those with the greatest discrepancies will take priority, the main discrepancies being a wish to be more laidback, cheerful, good fun, easygoing and fearless (so the participant wishes to be more laidback, but also more lively in a cheerful way). Focusing on these may help tackle some of the lesser discrepancies by having a cumulative effect, including being more interesting, inspiring and lively. A couple of DOs focused around being patient, independent and disorganised may also be included. Appropriate DOs may come from the following areas:

Laidback DOs:

Make vague plans, and turn up when you feel like it

Don't rush, take a scenic route today

Let the day unfold without organising it

Leave your watch or mobile at home for a day

Stay at home and read a book instead of going out

Lively DOs:

Try and get some of tomorrow's activities done today

Join a gym or sign up for a weekly class

Get up earlier and get a chore done before work

Today, volunteer yourself to help out

Energetic/driven DOs:

Take on a new role or activity

Take some initiative, when you might normally leave a task to someone else

Exercise first thing in the morning to raise energy levels

Calm/relaxed DOs:

Do something slowly rather than rush today

Take five minutes out to think once per hour, every hour

Go out for a 15 minute aimless stroll today

Risk-taker DOs:

Have a flutter – place an affordable bet

Challenge a fear or phobia

Ask people what they honestly think of you

Go out to a restaurant and order something you have never heard of

Go to a club/film/event on your own

*Lower priority:*

Behave as you wish DOs:

Don't go along with someone else's suggestion

Plan an evening around what you enjoy doing

Spontaneous DOs:

Try something silly or frivolous – just for fun, get some friends involved as well

List six options for a night out and roll a dice

Individually centred DOs:

Do the right thing without consulting someone else

Make or buy yourself your favourite meal

Spot your people-pleasing habit today and ask yourself, 'Who am I doing this for?'

Programme order selection (24):

Don't rush, take a scenic route today

Try and get some of tomorrow's activities done today

Have a flutter – place an affordable bet

Try something silly or frivolous – just for fun, get some friends involved as well

Get up earlier and get a chore done before work

Don't go along with someone else's suggestion

Go out to a restaurant and order something you have never heard of

Stay at home and read a book instead of going out today

Do the right thing without consulting someone else

Do something slowly rather than rush today

Go to a club/film/event on your own

Today, volunteer yourself to help out

Exercise first thing in the morning to raise energy levels

Make or buy yourself your favourite meal

List six options for a night out (get some other people involved) and roll a dice to decide

Challenge a fear or phobia

Spot your people-pleasing habit today and ask yourself, 'Who am I doing this for?'

Take five minutes out to think once per hour, every hour

Join a gym or sign up for a weekly class

Let the day unfold without organising it

Ask people what they honestly think of you

Plan an evening around what you enjoy doing

Take on a new role or try a new activity

Go out for a 15 minute aimless stroll today

## APPENDIX W: Participant 8 repertory grid interpretation/intervention programme.

### Repertory grid interview interpretation

*What are the structural characteristics of the construct system?*

Participant 8 appears to display a very cognitively complex system (PVAFF =31.01%, Bieri = 0.22, Intensity = 4182.18).

*What major dimensions are present in the construct system?*

6 dimensions were present, 4 worth interpreting as:

- 1) *Self-focused, narcissistic, requires validation*
  - Concerned about personal interests (.90)
  - Insecure (-.88)
  - Tempramental (-.86)
  - Does not play fair (-.73)
  - Anxious, swept up in others emotions (-.69)
  - Uncreative (-.66)
  - Authoritarian, Selfish, Narcisstic (-.65)
  - Goal-driven (.64)
  - Fearful (-.60)
  - Harsh (-.60)
  - Organised (.58)
  - Insincere (-.55)
  - Conventional (.54)
  - Organised, disciplined (.52)
  - Lively (.50)
  - Good leader (.40)
- 2) *Conflicted – Social leader/socially passive, unorganised*
  - Dislikes arguing (.78)
  - Unconventional (-.73)
  - Follows senses, instincts (.68)
  - Opinionated, likes/wants others to follow ideas (.67)
  - Goal-driven (.66)
  - Untidy, messy (-.62)
  - Disorganised (-.62)
  - In touch, accepting of strengths and weaknesses (.60)
  - Good leader (.58)
  - Passive (-.45)
  - Unsociable (-.41)
  - Harsh (-.40)
- 3) *Negative personality*
  - Dependent on others (-.85)
  - Impulsive (-.67)
  - Insincere (-.66)

Passive (-.63)  
 Can't motivate others, follows orders (-.61)  
 Untidy, messy (-.57)  
 Unsociable (-.49)  
 Does not play fair (-.47)  
 Anxious, swept up in others emotions (-.45)  
 Prioritises themselves (-.41)

4) *Conflicted – Self/other focused*  
 Prioritises themselves (-.64)  
 Fearless (.54)  
 Harsh (-.48)  
 Sheep, follows others ideas (-.44)  
 Sociable (.44)

*What is the content of the personal constructs (Themes included)?*

**Self-orientated:** Authoritarian, Selfish, Narcissistic vs In touch, accepting of strengths and weakness; Prioritises others vs Prioritises themselves; Want to be king/queen of castle vs Concerned about personal interests; Goal-driven vs Carefree, unconcerned, does own thing; Opinionated, likes and wants others to follow ideas vs Sheep, follows others ideas.

**Strong, leader:** Good leader vs Can't motivate others, follows orders; Not instinctive vs Follows senses/instinctive; Insecure vs Secure with themselves, inner core of strength; Grounded, calms others, has clarity vs Anxious swept up in others emotion.

**Unique:** Organised, disciplined vs Disorganised, no discipline; Argumentative vs Dislikes arguing; Tidy vs Untidy, messy

*How does the individual construct themselves? (Self and ideal self poles, discrepancies in bold, most apparently meaningful discrepancies are indicated by \*, extremes in italics):*

Me now	Me as I would like to be
In touch, AOSAW	In touch, AOSAW
Midway	Midway
<b>Good leader</b>	<b>Good leader</b>
Goal driven	Goal driven
CAPI	CAPI
Follows senses/instincts	Follows senses/instincts
<b>Secure with self/inner strength</b>	<b>Secure with self/inner strength</b>
<b>Midway*</b>	<b>Grounded, calm others, has clarity*</b>
Opinionated	Opinionated



**Midway\*** **Organised, disciplined\***

**Dislikes arguing** **Dislikes arguing**

**Untidy, messy\*** **Tidy\***

Sincere Sincere

**Plays fair** **Plays fair**

**Midway\*** **Fearless\***

Independent Independent

Midway Midway

Midway Midway

Lively Lively

**Midway\*** **Gentle\***

**Midway\*** **Patient\***

**Disorganised** **Disorganised**

Prudent Prudent

Creative Creative

Midway Midway

Element distances higher than the average (from the *me now* element) include:

Average = 8.75

A person I live/lived with (12.08)

A person in authority (11.62)

A person who is confusing (10.72)

Ex-partner (9.90)

A disliked person (9.85)

A person unlike me (9.27)

*How does the individual construct significant others?*

Construct poles with less than 4 individuals on the positive include:

Gentle vs Harsh (2 people)

Patient vs Temperamental (2 people)

Prioritises others vs Prioritises themselves (2 people, but an ambiguous construct)

*Are there any inconsistencies or departures from social consensus? (in construct correlations)*

Pattern of passive, unconventional and disorganised behaviours associated with being in touch with strengths and weaknesses. Good leader mildly associated with fearful, associated with temperamental. Goal-driven associated with temperamental, harsh behaviour, mildly with does not play fair. Concerned about personal interests associated with a selection of negative constructs including insecurity and insincerity. Disorganised and unconventional associated with being secure with themselves. Argumentative associated with grounded, calms others! Opinionated associated with fearful. Organised, disciplined associated with temperamental. Tidiness associated with sociability. Lively associated with temperamental, uncreative and conventional behaviour. Patience associated with disorganisation and creativity. Organised associated with conventional and uncreative.

*A summary of the repertory grid interpretation:*

Participant 8 appears to be very cognitively complex, with a loose construing system. There are major components orientated towards a narcissistic self-focus, conflicted nature and a general negative attribute. There are few apparent discrepancies between me now and me as I would like to be (in terms of wanting to be more organised/tidy, agreeable and fearless) and no extremes. Most me now scores are all generally opposites of the major negative components in her view. Thoughts that alleviate discrepancies will be encouraged. Also there are a lot of midway ratings, which may indicate a desire to be and remain behaviourally flexible, but could also reflect internal conflict in this case as one of her main components represents this. This is further reflected in her ratings for the two different organised constructs, where she would like to be organised and disciplined, but also remain disorganised! This suggests a potentially conflicted construct system. Thoughts aimed at alleviating this conflict, should also be encouraged.

*Recommended DOs for the individual to try:*

Encourage more organised thoughts, as this is where a discrepancy is. As this may be reflective of a conflicted nature, include thoughts for predictable too, as this will encourage organisation in a predictable way, which may reduce conflict (based on disorganisation being part of the conflicted component). Encouraging proactive, definite and systematic thinking would encourage organisation and reduce conflict as well. Thoughts to encourage a more gentle nature and more laidback thinking would be good to encourage a less temperamental nature. Encouraging slightly more risky thinking would be of benefit to this participant too.

Predictable:

Consider setting regular times for specific actions, e.g calling friends or relatives.

Think about setting up a regular appointment with the bank to discuss savings or with a surgery for

check-ups, perhaps starting today.

Imagine your life as if it were stage managed

Plan your life for the next week

Proactive:

Consider your future, think about a skill you may need to learn or develop

Ask yourself how you can be better prepared for what's to come

Plan the meals you will eat for the next week.

Getting enough exercise? Think about different or more exciting forms of exercise today.

Definite:

Imagine you and your personality are a brand, what would your slogan be?

Think about where your actions are taking you today

Today, consider the big issues and what can be done to rectify them.

Systematic:

List the things you want to achieve in the next week and next year, think about how you will achieve these goals.

Have a look around the house and see if anything needs tidying up.

Stop and ask yourself 'how can I do this systematically'

Decide on three things to do tomorrow.

Gentle:

Today, learn the words of a poem by heart

Today, put yourself in someone else's shoes before judging them.

Listen without interrupting to offer an opinion, let them finish

Smile broadly instead of speaking out

Laidback:

Stop and examine the details today, think of one thing you missed normally.

Close your eyes and think something through in detail.

Today, think about how a laidback person, such as the Dalai Lama would respond.

Risk-taker:

Before acting today, think about what may be the worst thing that could happen, it won't be nearly as bad as you think.

Today, think about scares you the most, and how you would confront it.

Programme order selection (24):

Today, when making decisions, close your eyes and think things through in detail.

Smile broadly instead of speaking out

Have a look around the house, how does it look? Does anything need to be moved or tidied up?

Consider planning the meals you will eat for the next week.

Decide on three things to do tomorrow.

Before acting today, think about what may be the worst thing that could happen, it won't be nearly as bad as you think.

Imagine your day as if it were stage managed, what's the first act?

Today, learn the words of a poem by heart

Ask yourself how you can be better prepared for what's to come today

Stop and examine the details today, think of one thing you missed normally.

Think about setting up a regular appointment with the bank to discuss savings or with a surgery for check-ups, perhaps starting today.

List the things you want to achieve in the next week and next year, think about how you will achieve these goals.

Imagine you and your personality are a brand, what would your slogan be?

Today, listen without interrupting to offer an opinion, let them finish

Consider setting regular times for specific actions, e.g calling friends or relatives.

Today, think about scares you the most, and how you would confront it given the opportunity.

Plan your life for the next week

Today, when a situation crops up, think about how a laidback person, such as the Dalai Lama would respond.

Getting enough exercise? Think about different or more exciting forms of exercise to try in future.

Consider your future, think about a skill you may need to learn or develop in order to succeed.

Stop before acting , and ask yourself 'how can I do this systematically and effectively?'

Today, put yourself in someone else's shoes before judging them.

Today, consider the big issues in your life and what can be done to rectify them.

Think about where your actions are taking you today, and what this may mean for your future.

**APPENDIX X: Participant 9 repertory grid interpretation/intervention programme.**

**Repertory grid interview interpretation**

*What are the structural characteristics of the construct system?*

Participant 9 appears to display a very cognitively complex system (PVAFF = 32.30%, Bieri = 0.20, Intensity = 4695.77).

*What major dimensions are present in the construct system?*

Five dimensions were present, four worth interpreting as:

1) *The socially acceptable individual*

Juggles commitments (-.86)

Good communicator (.85)

Focused (.84)

Loves life (.77)

Goal-orientated (.74)

Lively (.72)

Sociable (.71)

Organised (.69)

Sincere (.68)

Extraverted (.66)

Kind (.61)

Fearless (.54)

Carefree (.52)

Plays fair (.41)

Patient (.41)

2) *The nice, quiet person*

Patient (.87)

Prudent (.85)

Conventional (.78)

Puts others first (.77)

Plays fair (.66)

Unsociable (-.62)

Introverted (-.60)

Kind (.59)

Passive (-.58)

Gentle (.53)

Independent (.52)

Organised (.49)

Boring (-.48)

3) *Inquisitive*

Curious (.73)

Independent (.60)

Carefree (.57)

Fearless (.56)

Gentle (.45)

Does not play fair (-.40)

4) *The artist dimension*

Charismatic (.58)

Gentle (.56)

No clear direction (-.51)

Creative (.49)

Disorganised/Scatty (-.44)

Sincere (.41)

*What is the content of the personal constructs (Themes included)?*

**Commitment:** Focused vs Disorganised/Scatty; Goal-orientated vs No clear direction; One-dimensional vs Juggles commitments.

**Communication skill:** Good communicator vs Withdrawn; Extraverted vs Introverted; Sharp vs Slow; Charismatic vs Boring.

**Empathy:** Kind vs Mean; Curious vs Disinterested; Puts others first vs Self-absorbed

**Unique:** Carefree vs Worries a lot; Loves life vs Depressed.

*How does the individual construct themselves? (Self and ideal self poles, discrepancies in bold, most apparently meaningful discrepancies are indicated by \*, extremes in italics):*

Me now

Me as I would like to be

**Boring (1)\***

**Charismatic (7)\***

**Kind**

**Kind (7)**

<b>Carefree</b>	<b>Carefree</b>
<b>Good communicator</b>	<b>Good communicator (7)</b>
<b>Curious</b>	<b>Curious (7)</b>
<b>Extraverted</b>	<b>Extraverted</b>
<b>Focused(7)</b>	<b>Focused</b>
<b>Goal-orientated(7)</b>	<b>Goal-orientated</b>
<i>Sharp(7)</i>	<i>Sharp(7)</i>
<b>Loves life</b>	<b>Loves life (7)</b>
<i>Juggles commitments(1)</i>	<i>Juggles commitments(1)</i>
<b>Self-absorbed</b>	<b>Midway</b>
<i>Sincere(7)</i>	<i>Sincere(7)</i>
<b>Plays fair</b>	<b>Plays fair(7)</b>
<b>Fearless</b>	<b>Fearless (7)</b>
<b>Midway</b>	<b>Independent</b>
Sociable	Sociable
<i>Lively (7)</i>	<i>Lively (7)</i>
<b>Harsh</b>	<b>Gentle*</b>
<b>Midway</b>	<b>Patient</b>
<i>Organised (7)</i>	<i>Organised (7)</i>
<b>Midway</b>	<b>Prudent</b>
<i>Creative (7)</i>	<i>Creative (7)</i>
Midway	Midway

Element distances higher than the average (from the *me now* element) include:

Average = 10.43

An ex-partner (18.60)

A good friend (12.04)

A person in authority (11.14)



A disliked person (11.05)

A person who is confusing (10.95)

Most are as expected, although the distance between me now and a good friend is unusual.

*How does the individual construct significant others?*

Construct poles with 4 or less individuals on the positive include:

Kind vs Mean

Carefree vs Worries a lot

Puts others first vs Self-absorbed

Gentle vs Harsh

Patient vs Temperamental

Most are noticeably constructs to do with being agreeable or empathetic.

*Are there any inconsistencies or departures from social consensus? (in construct correlations)*

Being independent is strongly negatively related with sociable, lively and extravert behaviour. Being sociable, lively, extraverted, focused and goal-orientated are all negatively related to gentle behaviour. Being organised is negatively related to being charismatic. Being creative is strongly negatively related to putting others first. Being conventional is strongly negatively related to charisma.

*A summary of the repertory grid interpretation:*

Participant 9 is highly cognitively complex, with a loose construct system, and major components focusing on socially acceptable behaviour, nice/quiet people, being inquisitive and an “artist” dimension. There are several me now-me as I would like to be discrepancies, with participant 9 wishing to be more charismatic and gentle, with many other minor discrepancies focusing around becoming more empathetic and slightly less focused/goal-orientated. The distance from the good friend is higher than would be expected. The direction of construct relationships is generally as expected, although there are a few odd construct relationships, two of particular interest to the discrepancies are the negative association of gentle behaviour to sociable, lively, extraverted, focused and goal-orientated behaviour; while being organised and conventional are negatively related to being charismatic. Construal of others indicates participant 9 associates with a lot of people who lack empathetic/agreeable attributes. Based on these associations, and the themes in personal constructs, participant 9 appears to contrast people with empathetic or communicative skills, against people who are more committed and goal-focused.

*Recommended DOs for the individual to try:*

As the main discrepancies involve a wish to be more gentle and charismatic, a selection of the gentle DOs will be applied, as well as some of the spontaneous and unconventional DOs. Some DOs orientated around being a little more fearless (Risk-taker), and patient (Researcher created patience DOs) can be included, along with some group-centred or behave as others wish DOs to counter the discrepancy with putting others first, as well as some DOs to slightly reduce extreme focused and goal-orientated behaviour (Laidback, calm/relaxed).

Spontaneous DOs:

Ignore your plans and do what feels right

Drop everything and invite a friend or colleague to go for a coffee

Let today unfold without organising it, see what happens

Phone an old friend out of the blue

Go for a walk, toss a coin each time you have to choose what way to go, heads go left, tails go right

Unconventional DOs:

Wear something different and daring

Take something in your life that's very ordinary and change it, e.g voicemail, choice of food

Buy yourself a treat – from a toy shop

Take an alternative route to work or if possible work different hours for a week

Wave at a stranger on a passing bus/pull a funny face when you pass a mirror or window

Gentle DOs:

Don't push someone for answers today; wait and see what happens

Hug someone today

Offer to help someone in need today

Smile broadly instead of speaking out

Risk-taker DOs:

Have a flutter – place an affordable bet

Ask someone what they honestly think of you

Challenge a small fear or phobia

Go to a restaurant or cafe and order something you've never heard of

Behave as others want DOs:

Say yes to the next thing someone asks you to do

Let a friend decide your next night out

Ask your boss/supervisor for three ways you can improve your work, try them

Group-centred DOs:

Initiate a chat with one or more of your social group about the needs of the group

Organise a night to play a board game with at least three other people

Laidback and calm/relaxed DOs:

Leave your mobile phone at home for a day

Practise meditation/breathing slowly

Patient DOs:

Cook something nice that requires extended preparation time – enjoy the rewards of patience.

Instead of getting irritated when someone's a bit slow today, remain calm and enjoy the fact that you took the moral high road.

Programme order selection (24):

Wave at a stranger on a passing bus and pull a funny face when you pass a mirror

Offer to help someone in need today

Go to a restaurant or cafe and order something you've never heard of

Cook something nice that requires extended preparation time – enjoy the rewards of patience.

Take an alternative route to work or if possible work different hours for a week

Let a friend decide where to go for your next night out

Have a flutter – place an affordable bet

Let today unfold without organising it, see what happens

Don't push someone for answers today; wait and see what happens

Say yes to the next thing someone asks you to do

Buy yourself a treat – from a toy shop

Initiate a chat with one or more of your social group about the needs of the group

Leave your mobile phone at home for a day

Instead of getting irritated when someone's a bit slow today, remain calm and enjoy the fact that you took the higher ground.

Organise a night to play a board game with at least three other people

Smile broadly instead of speaking out

Ask your boss/supervisor for three ways you can improve your work, try them

Hug someone today

Ask someone what they honestly think of you

Challenge a small fear or phobia

Wear something different and daring

Drop everything and invite a friend or colleague to go for a coffee

Go for a walk, toss a coin each time you have to choose what way to go, heads go left, tails go right

Take something in your life that's very ordinary and change it, e.g voicemail, choice of food

## APPENDIX Y: Participant 10 repertory grid interpretation/intervention programme.

### Repertory grid interview interpretation

*What are the structural characteristics of the construct system?*

Participant 10 appears to display a very cognitively complex system (PVAFF = 35.36%, Bieri = 0.26, Intensity = 5107.26).

*What major dimensions are present in the construct system?*

6 dimensions were present, 3 worth interpreting as:

1) *Socially acceptable behaviour*

Sincere (.92)  
Honest (.91)  
Kind (.87)  
Patient (.85)  
Plays fair (.83)  
Gentle (.78)  
Helpful (.77)  
Prudent (.67)  
Open (.66)  
Funny (.64)  
Caring (.63)  
Giving (.63)  
Creative (.54)  
Inquisitive (.47)  
Sociable (.46)  
Successful (.42)

2) *Motivated*

Driven (.94)  
Independent (.88)  
Successful (.84)  
Hardworking (.81)  
Adventurous (.76)  
Inquisitive (.75)  
Organised (.62)  
Unhelpful (-.56)  
Harsh (-.52)  
Uncaring (-.49)  
Temperamental (-.45)

3) *Shy*

Passive (-.91)  
Fearful (-.66)  
Sociable (.58)  
Caring (.54)



<b>Patient</b>	<b>Patient</b>
<b>Organised</b>	<b>Organised(7)</b>
Prudent	Prudent
<b>Creative</b>	<b>Creative(7)</b>
<b>Conventional</b>	<b>Conventional</b>
<p>Element distances higher than the average (from the <i>me now</i> element) include: Average = 10.63</p> <p>A person who is confusing (14.56)</p> <p>A disliked person (14.11)</p> <p>An ex-partner (13.23)</p> <p>A person unlike me (12.12)</p> <p>An admired person (11.14)</p> <p>Most of these are expected, although it's odd that the admired person is so distant.</p>	
<p><i>How does the individual construct significant others?</i></p> <p>Construct poles with less than 4 individuals on the positive include:</p> <p>None, indicating participant 10 generally has quite a positive view of other people.</p>	
<p><i>Are there any inconsistencies or departures from social consensus? (in construct correlations)</i></p> <p>Hardworking is quite strongly negatively related to caring (-.39). Being independent is strongly negatively associated with being caring (-.38), helpful (-.55), sociable (-.36), gentle (-.51) and patient (-.45).</p>	
<p><i>A summary of the repertory grid interpretation:</i></p> <p>Participant 10 displays major components based on socially acceptable behaviour, being motivated and being shy. There are major discrepancies with participant 10 wishing to be more open, fearless, and adventurous. There are extremes in being kind, gentle, giving and playing fair. Interestingly, an admired person displays distance greater than the average, which is unexpected. Participant 10 appears to have a very positive construction of others, which is likely associated with the extremes in kind, gentle and playing fair. Being independent is associated with being uncaring, unhelpful, unsociable, harsh and temperamental. The discrepancies to be more open can be tackled by providing some trusting and assertive DOs, while being more adventurous and fearless can be tackled by providing risk-taker, unconventional and spontaneous DOs. There were several positive extremes as well, so DOs to counter these from the individually-centred and behave as I wish lists will be provided.</p>	

*Recommended DOs for the individual to try:*

Trusting DOs:

Let someone do something you feel you can do better

Try delegating a job to a colleague/friend/family member

Tell someone a secret

Assertive DOs:

Speak up when you would normally hold back

Be direct in asking what you want

Express an opinion

Suggest a trip out to the person close to you

If you don't like a haircut/meal/purchase then send it back, complain or return it.

Risk-taker DOs:

Have a flutter – place an affordable bet

Tell someone what you think of them

Take up an extreme sport.

Face a fear today, no matter how small.

Go to a restaurant and order something you have never heard of.

Go to a club/event/film on your own.

Unconventional DOs:

Wear something different and daring

Take something in your life that's very ordinary and change it, e.g voicemail, choice of food or decor

Take an alternative route to work or if possible work different hours for a week

Today, pull a funny face whenever you walk past a mirror or window.

Spontaneous DOs:



Do something on the spur of the moment

Let the day unfold without organising it, and see what happens

On a walk, toss a coin each time you can choose what way to go

Individually centred DOs:

Share your individual needs with one or more of your social group

Buy yourself a treat

Set aside thirty minutes for me time.

Behave as I wish DOs:

Don't go along with someone else's suggestion

Plan an evening around what you enjoy doing

Be the one who stands up and speaks out

Suggest a night out for friends or family and get everyone on board

Spot your people pleasing habits and ask who you are doing this for?

Programme order selection (24):

Take something in your life that's very ordinary and change it, e.g voicemail, choice of food

Be direct in asking what you want

Plan an evening around what you enjoy doing

Have a flutter – place an affordable bet

Take an alternative route to work or if possible work different hours for a week

Set aside thirty minutes for me time.

Go to a restaurant and order something you have never heard of.

Wear something different and daring

Today, express an opinion, whether it's at work or socially

Suggest a night out for friends or family and get everyone on board

If you don't like a haircut/meal/purchase then send it back, complain or return it.

On a walk, toss a coin each time you can choose what way to go

Sign up for a lesson in a winter sport (e.g skiing or snowboarding)

Spot your people pleasing habits and ask who you are doing this for?

Buy yourself a treat

Go to a club/event/film on your own.

Share your individual needs with one or more of your social group

Don't go along with someone else's suggestion

Today, tell someone what you think of them

Suggest a trip out to the person close to you

Be the one who stands up and speaks out

Let someone do something you feel you can do better

Let the day unfold without organising it, and see what happens

Face a fear today, no matter how small.

## APPENDIX Z: Participant 11 repertory grid interpretation/intervention programme.

### Repertory grid interview interpretation

*What are the structural characteristics of the construct system?*

Participant 11 appears to display a very cognitively complex system (PVAFF = 30.38%, Bieri = 0.25, Intensity = 4144.44).

*What major dimensions are present in the construct system?*

6 dimensions were present, 4 worth interpreting as:

- 1) *Motivated to succeed*
  - Driven (.93)
  - Good at planning things (.89)
  - On top of things (.83)
  - Organised (.82)
  - Sincere (.81)
  - Trustworthy/dependable (.68)
  - Particular, wants things to be just right (-.67)
  - Plain-spoken (.62)
  - Knowledgeable (.60)
  - Demanding (.58)
  - Prudent (.52)
  - Extraverted (.51)
  - Communicative (.50)
  - Plays fair (.44)
  - Goes only with what others say (.40)
- 2) *Calm and reliable*
  - Creative (.77)
  - Passive (-.77)
  - Patient (.74)
  - Plays Fair (.73)
  - Trustworthy/dependable (.67)
  - Gentle (.63)
  - Undemanding (-.58)
  - Unconventional (-.56)
  - Plain-spoken (.54)
  - Unsociable (-.52)
  - Let things fall as they may (.48)
  - Private (-.47)
  - Knowledgeable (.44)
  - Sincere (.43)
- 3) *Loner*
  - Independent (.78)
  - Unsociable (-.67)

Private (-.63)  
 Unwilling to go outside comfort zone (-.60)  
 Prudent (.54)  
 Does not play fair (-.45)

4) *Unconcerned about others views of them*  
 Fearless (.85)  
 Stubborn (-.62)  
 Unconventional (-.60)

*What is the content of the personal constructs (Themes included)?*

**Organisation:** Getting lost vs On top of things; Lets things fall as they may vs Particular, wants things to be just right; Good at planning things vs Bad at planning, unable to think ahead;

**Communication:** Private vs Extraverted; Communicative vs Uncommunicative; Plain-spoken vs Facetious; Demanding vs Undemanding

**Unique:** Goes along with what others say vs Stubborn; Trustworthy/dependable vs Untrustworthy; Driven vs Lackadaisical; Knowledgeable vs Doesn't know stuff; Open vs Unwilling to go outside comfort zone.

*How does the individual construct themselves? (Self and ideal self poles, discrepancies in bold, most apparently meaningful discrepancies are indicated by \*, extremes in italics):*

Me now	Me as I would like to be
Midway	Midway
<b>Getting lost *</b>	<b>On top of things*</b>
Midway	Midway
Trustworthy/dep	Trustworthy/dep
<b>Lets things fall as they may</b>	<b>Midway</b>
<b>Bad at planning*</b>	<b>Good at planning*</b>
<b>Midway</b>	<b>Driven</b>
<b>Midway</b>	<b>Communicative</b>
Knowledgeable	Knowledgeable
Plain-spoken	Plain-spoken
<b>Open</b>	<b>Open</b>
<b>Undemanding</b>	<b>Midway</b>
<b>Sincere</b>	<b>Sincere</b>

Plays fair	Plays fair
<b>Midway</b>	<b>Fearless</b>
Midway	Midway
<b>Midway</b>	<b>Sociable</b>
<b>Passive*</b>	<b>Lively*</b>
<b>Midway</b>	<b>Gentle</b>
Patient	Patient
<b>Disorganised*</b>	<b>Organised*</b>
<b>Prudent</b>	<b>Midway</b>
<b>Creative</b>	<b>Creative</b>
Unconventional	Unconventional

Element distances higher than the average (from the *me now* element) include:

Average distance = 9.24

A disliked person (11.75)

A person unlike me (11.53)

A family member (10.82)

An ex-partner (10.44)

A person who is confusing (10.15)

All of these are expected, except perhaps the family member element.

*How does the individual construct significant others?*

Construct poles with less than 4 individuals on the positive include:

Goes along with what others say vs Stubborn

Extraverted vs Private

Lets things fall as they may vs Particular, wants to get things right

Plain-spoken vs Facetious

Gentle vs Harsh

*Are there any inconsistencies or departures from social consensus? (in construct correlations)*

Lively was found to be strongly negatively associated with plays fair, gentle, patient, creative and lets things fall as they may (opposite particular, wants things to be right). Prudent was negatively associated with Sociable. Patient was negatively associated with conventional. Creative was negatively associated with extraversion (opposite private).

*A summary of the repertory grid interpretation:*

Participant 11 displays major components based on being motivated to succeed, calm/reliable, a loner component and a small component associated with lack of concern for how others view them. There are main discrepancies with participant 11 wishing to be more on top of things, good at planning, lively and organised (a common theme of organisation), and some other minor discrepancies in wanting to be a little more driven, communicative, demanding, fearless, sociable and impulsive, but no extremes are displayed. With regard to the way others are constructed, there are no particular themes that stand out on constructs with less than four individuals on the positive. Being lively was associated with several more negative qualities, and lively was one of the main discrepancies. So tackling this discrepancy in particular would be a good idea. So the main discrepancies to tackle are the desire to be more organised and lively, as well as providing some DOs that encourage being communicative, demanding, fearless, sociable and impulsive.

*Recommended DOs for the individual to try:*

To tackle the main discrepancies of wanting to be more organised and lively, DOs from the systematic and lively lists will be used. To encourage being communicative, demanding, fearless, sociable and impulsive, DOs from the assertive, extroverted, risk-taker, and spontaneous lists can be used.

Systematic DOs:

Make a plan of action for the next two days

Organize an area of your life that's too haphazard, e.g sort out CDs, put finances in order

Time-table your whole day in half-hour slots

Sort out that pile of paperwork you've been ignoring

Lively DOs:

Try and get some of tomorrow's activities done today

Join a gym or sign up for a weekly class

Get up earlier and get a chore done before work

Today, volunteer yourself to help out

Assertive DOs:

Speak up when you would normally hold back

Be direct in asking what you want

Express an opinion

Suggest a trip out to the person close to you

If you don't like a haircut/meal/purchase then send it back, complain or return it.

Extroverted DOs:

Contribute to a discussion where you wouldn't normally join in.

Make the first move in a friendship situation, e.g plan a party or organise a get together with friends

Say hello to someone you have never said hello to before.

Start a conversation with three strangers today.

Risk-taker DOs;

Have a flutter - Place an affordable bet.

Tell someone what you think of them.

Ask people what honestly think of you.

Face a fear today, no matter how small.

Single? Invite someone who appeals to you out on a date (or ask a trusted friend to set you up on a blind date).

Go to a restaurant and order something you have never heard of.

Go to a club/event/film on your own.

Spontaneous DOs:

Today, do something on the spur of the moment.

Ignore any plans and just do what feels right.

Phone an old friend out of the blue.

Let the day unfold without organising it.

Invite someone to dance, wherever you are.

Take a walk, and when you choose which direction to go, toss a coin. Heads you go left, tails you go right.

List six options for a night out; roll a dice to decide.

Drop everything and invite a friend or colleague to go for a coffee.

Programme order selection (24):

Make a plan of action for the next two days

Be direct in asking what you want

Go to a restaurant and order something you have never heard of.

Say hello to someone you have never said hello to before.

Contribute to a discussion where you wouldn't normally join in.

Organize an area of your life that's too haphazard, e.g sort out CDs, put finances in order

Today, volunteer yourself to help out

Have a flutter - Place an affordable bet.

Tell someone what you think of them.

Time-table your whole day in half-hour slots

If you don't like a haircut/meal/purchase then send it back, complain or return it.

Take a walk, and when you choose which direction to go, toss a coin. Heads you go left, tails you go right.

Try and get some of tomorrow's activities done today

List six options for a night out; roll a dice to decide.

Speak up when you would normally hold back

Make the first move in a friendship situation, e.g plan a party or organise a get together with friends



Drop everything and invite a friend or colleague to go for a coffee.

Start a conversation with three strangers today.

Sort out that pile of paperwork you've been ignoring

Suggest a trip out to the person close to you

Get up earlier and get a chore done before work

Express an opinion

Let the day unfold without organising it.

Face a fear today, no matter how small.