

**University of Cape Town**



**School of Management Studies**

**DISSERTATION**

**The Effect of Schema-Based Training on Dispositional Reasoning Components:  
Comparing Frame-of-Reference Training and Schema-Feedback Training**

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A dissertation in partial fulfilment of the requirements for the award of the Degree of  
Master of Arts in Organisational Psychology

Supervisor: Mr Francois S. De Kock

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**COMPULSORY DECLARATION**

This work has not been previously submitted in whole, or in part, for the award of any degree. It is my own work. Each significant contribution to, and quotation in, this dissertation from the work, or works, of other people has been attributed, and has been cited and referenced

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### Abstract

Prior research shows that accurate interviewers have higher ‘dispositional reasoning’, defined as the ability to understand the relationship between personality, behaviour and situations. Drawing on schema theory, the present study attempted to determine if dispositional reasoning could be developed in students who participated in interview training. We used two different experiments to assess the relative effectiveness of two different training approaches to enhance the subcomponents of dispositional reasoning: trait induction, trait extrapolation and trait contextualisation. Our first experiment used traditional frame-of-reference (FOR) training in an attempt to develop dispositional reasoning. In a second experiment, we developed schema-feedback training, a novel approach to training dispositional reasoning that is based on the use of schema refinement through feedback. We found that neither approach had an effect on the participants’ dispositional reasoning component scores when compared to a ‘no-training’ comparison group. The low statistical power (due to a relatively small sample size) was a limitation in this study. Further research is necessary to determine the malleability of interviewers’ dispositional reasoning.

*Key words:* dispositional reasoning; frame-of-reference (FOR) training; schema-feedback training; accuracy.

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## The Effect of Schema-Based Training on Dispositional Reasoning Components

Organisations commonly use interviews in recruitment and selection (Salgado, Viswesvaran & Ones, 2001; Schmidt & Hunter, 1998). Accurate interviewers are therefore integral to the interview process, as organisations will benefit from hiring the best candidate for the job (Grigoryev, 2006). Some interviewers are better than others at making accurate inferences about interviewees' profiles (Dipboye, Macan & Shahani-Denning, 2012; Funder, 1999), partly because of higher dispositional reasoning (Christiansen et al., 2005; De Kock, Lievens & Born, in press). Dispositional reasoning is the ability to understand the relationship between personality, behaviour, and situations. As it predicts important rating outcomes, developing dispositional reasoning may be a way in which to improve overall rating accuracy.

Dispositional reasoning is the knowledge of how traits, behaviours and situations contribute to an individual's manifest behaviour (De Kock et al., in press). Three subcomponents make up the overall construct: *trait induction*, *trait extrapolation* and *trait contextualisation* (Christiansen et al., 2005; De Kock et al., in press). Trait induction occurs when individuals understand how certain behaviours are characteristic of certain personality traits. Trait extrapolation involves the understanding of the co-variance of personality traits. Trait contextualisation is the process of understanding that certain situations are more likely to encourage the exhibition of personality traits. A person's dispositional reasoning may be contained in organised, preconceived patterns of thought known as *schemas*.

Over time, people develop schemas that allow them to rapidly decode complex situations such as judgements of behaviour and personality (Landau, Meier & Keefer, 2010). Most people will already have pre-existing dispositional reasoning schemas. However, these schemas may be underdeveloped or incorrect, resulting in poor dispositional reasoning ability. Refinement or addition of schemas is the anticipated outcome of a number of organisational training initiatives that make use of frame-of-reference training (FOR) methodology.

Based on the social cognition theory (Fiske & Taylor, 2013) of human judgement, FOR training aims to develop or change relevant schemas in individuals (Lievens, 2001). By exposing raters to various lifelike scenarios known as *vignettes*,



the FOR training method trains them to recognise good and poor performance (Roch, Woehr, Mishra & Kleszyzyska, 2011). In so doing, by refining the individual's perceptions of familiar and easily noticeable behaviours, FOR training targets the individual's judgement schema. FOR training is successful in improving rater accuracy in performance appraisals (Roch et al., 2011), and is extensible to interviewer and assessment centre rater training programmes.

Prior studies (eg. Powell, 2007; Powell & Goffin, 2009) used FOR training to develop student interviewers' dispositional reasoning, but with no success. They asked students to take part in a training programme based on traditional FOR methods, and then assessed their dispositional reasoning. Results showed no increase in dispositional reasoning. The study had two drawbacks, however. First, the authors only focused on one component of dispositional reasoning, trait induction. It is unclear whether training would affect the other two components of the construct. Second, FOR training may not be the most effective approach at training dispositional reasoning. FOR training, although widely used in other areas, might not be applicable to training interviewers in dispositional reasoning, due to the complex nature of the dispositional reasoning schematic framework. We propose schema-feedback training, a novel training approach that aims to target and refine the schemas associated with dispositional reasoning.

Feedback training involves a training style of repeated trial and error to refine the schema to become more accurate. As frequent feedback guides the participant toward the correct behaviour (Schmidt & Bjork, 1992), the present study will attempt to refine the dispositional reasoning of participants. We will therefore address the perceived shortcomings of the current approach to dispositional reasoning training by attempting to refine the dispositional reasoning schema through practice and feedback. This intervention will additionally target each subcomponent of the dispositional reasoning construct. The aim of this research is to contribute to the overall understanding of the concept of dispositional reasoning, while increasing knowledge of the precursors of interviewer accuracy. This may have implications for the practices of interviewers in industry, by enhancing their ability to make more accurate hiring decisions.

### **Rater Accuracy**

Accuracy research is concerned with determining the true nature of reality (Funder, 1999). Accuracy research attempts to determine whether the judgements that people make of themselves and others are correct or incorrect and how these judgements may be improved (Funder, 1987). The definition of accuracy in person judgement is the overlap between benchmark ratings made by experts and those made by raters in practice (Engelhard, 1996). Accuracy in rating is important in a number of organisational functions. For example, performance reviews, assessment centres, and interviews rely on raters to make good decisions when judging others

The rater plays an important role in the accuracy of judgements. The individual undertaking the judgement may possess certain traits that allow them to be more accurate when making decisions (Lippa & Dietz, 2000). An inaccurate rater will therefore have negative consequences for the organisation. Individual differences in interviewers may therefore affect their accuracy of judgement (Graves, 1993). A popular contemporary theory for understanding individual judgement accuracy is Funder's Realistic Accuracy Model.

#### **Funder's Realistic Accuracy Model**

Funder's Realistic Accuracy Model (RAM) describes the individual process of accurate personality judgement, using four conditions or *stages* (Funder, 2012). Meeting the conditions of these stages will allow the judge to make an accurate decision. Firstly, in the *relevance* stage, the target individual should exhibit behaviour that is relevant to a certain identified personality trait. Secondly, in the *availability* stage, the judge should witness this behaviour. In the third stage, *cue detection*, the judge should accurately detect the behaviour exhibited by the target. In the fourth and last stage, *cue utilisation*, the judge should correctly use the information detected to make an accurate judgement of the target. Violation of any of these conditions will result in an inaccurate decision. The quality of the target, the judge and the information delivered and perceived is therefore also important to ensure accurate judgement.

According to Funder's RAM, accurate judgement will only take place if a *good target* is used. A good target will display behaviour that is in accordance with

their core personality (Funder, 2012). Accurate judgement is also contingent on the trait under scrutiny. A *good trait* will be visibly perceptible and therefore easier to detect, resulting in higher other-other agreement (Funder, 2012). The quality and quantity of relevant information will also affect the accuracy of judgement. *Good information* comes from being able to observe the target in different contexts, over a longer period (Funder, 2012). Lastly, the person conducting the judgement should themselves possess the characteristics necessary for making a good judgement (Funder, 2012). An expert in person perception, the *good judge*, would be able to make accurate decisions in a short space of time. Social cognition and schema theories explain how it is possible for people to make quick, accurate judgements.

### **Social Cognition Theory**

Social cognition theory posits that human cognition allows for the extraction of information from complex situations to achieve complex judgements in a relatively short space of time (Augoustinos, Walker & Donaghue, 2014; Fiske & Taylor, 2013). People are able to decide, for example, to make a turn while riding a bicycle, at the same time as watching for oncoming traffic and switching gears. Abstract inferential rules, found in schemas, aid this process of rapid judgement, allowing people to make sense of situations easily (Fiske & Taylor, 2013; Huesmann, 1998). Schemas allow people to navigate daily situations with minimal cognitive effort.

**Schemas.** Schemas are mental structures (Landau et al., 2010) containing abstract conceptualisations of accumulated knowledge of stimuli (Macrae & Bodenhausen, 2000). Schemas are therefore the substructures that influence a person's attitudes and social thought. As people are not able to attend to every stimulus in their environment, they rely on schemas, which are readily available, to assist in processing social information quickly. For example, an expert in person perception would store their implicit theories of personality in schemas (Augoustinos et al., 2014; Landau et al., 2010).

Individuals therefore utilise schemas to reduce complex social situations into manageable events. Mental categories found in schemas are necessary for simplifying a world that is information-saturated, allowing people to interpret current situations based on past experiences (Bargh & Chartrand, 1999; Landau et al., 2010). Schemas

differ from long-term memories, as they require no conscious effort to retrieve (Van Merriënboer & Sweller, 2005). Additionally, experts are more likely to use schemas to interpret situations, while novices will use other problem-solving techniques (Paas, 1992). Experts in person perception may possess the relevant schemas needed for making accurate judgements, known as dispositional reasoning.

### **Dispositional Reasoning**

Dispositional reasoning is the general reasoning about traits, behaviours and situations (De Kock et al., in press). Accurate raters use dispositional reasoning to come to decisions about a person's behaviour (Christiansen et al, 2005). Good judges use their dispositional reasoning ability to detect and utilise cues when making a judgement. Trait induction, trait extrapolation and trait contextualisation are three subcomponents that form part of the dispositional reasoning construct (see Figure 1).

### **Trait Induction**

Trait induction allows the judge to understand the link between the target's behaviour and an underlying personality trait (De Kock et al., in press). The process of trait induction is concerned with the knowledge of how traits are made manifest in behaviour (Christiansen et al., 2005). This has previously been conceptualised as behaviour-trait knowledge (Christiansen et al, 2005). Trait theory, first posited by Cattell (1957) and later improved on by Allport (1961) and Eysenck (1970), defines traits as recurring patterns of behaviour that are relatively stable over time. This theory forms the basis of exploring how people perceive another's traits when they act in a certain way. Modern conceptions of personality, specifically the Five-Factor Model (FFM) of McCrae and Costa (1997) are based on the findings of factor analysis, which confirms that certain behaviours, when clustered as dimensions, point to underlying traits.

Good judges who are high in behaviour-trait knowledge are able to interpret the links between traits and behaviour. For example, someone who is high in trait induction would know that someone who demonstrates himself or herself to be talkative would most likely be an extrovert (Goldberg, 1992). Someone who is low in trait induction would not, for example, be able to understand that conscientiousness is

associated with behaviour such as arriving to work to on time every day. Figure 1 depicts the process of trait induction, seen in the paths that link behaviours to traits.

Previous research has shown that trait induction predicts interviewer judgement accuracy to a slight effect (.14,  $p = .11$ , 95% CI: [-.02, .30]; De Kock et al, in press). An interviewer who possesses high levels of trait induction will therefore be able to make decisions that are more accurate. Along with trait induction, people use the process of trait extrapolation when undertaking dispositional reasoning.

### **Trait Extrapolation**

Based on the target's exhibition of a certain trait, a good judge will use trait extrapolation to identify the likelihood of that target possessing another, similar trait (De Kock et al., in press). Trait extrapolation relates to the ability to comprehend how traits and their behavioural manifestations co-vary naturally (Christiansen et al., 2005). A person who is able to understand the relationship between traits and behaviours better than others will use existing information to make a rational representation of another person based on only some noticeable aspects of that person's behaviour (De Kock et al., in press). For example, an interviewer high in trait extrapolation will know that if an interviewee states that they enjoy extreme sports, they will most likely also be daring and adventurous. Trait extrapolation is depicted graphically in Figure 1, as seen in the arrows between traits.

Concerned with the trait extrapolation process is the notion that individuals possess implicit personality theories (IPTs) that influence the way in which they perceive others (Grant & Holmes, 1981). IPTs are stored in schemas that allow for quick response when making a judgement. People learn IPTs over time and some may have more accurate personal theories of personality than others. In making judgements, people rapidly draw upon IPTs when needed.

When a person utilises trait extrapolation they use heuristic processes to do so. Individuals may differ in their ability to understand how traits co-vary, which may affect their overall dispositional reasoning ability. Trait extrapolation has a moderate effect on interviewer judgement accuracy (.33,  $p < .001$ , 95% CI: [.18, .47]; De Kock et al, in press). An interviewer who possesses high levels of trait

extrapolation will therefore be able to make decisions that are more accurate. The final component of dispositional reasoning is trait contextualisation.

### **Trait Contextualisation**

Trait contextualisation refers to the ability to identify situations that are relevant to different traits (De Kock et al., in press; Tett & Guterman, 2000). A good judge, using trait contextualisation, will also understand that the context in which the target finds themselves in will influence the likelihood of them expressing certain traits. Figure 1 depicts the trait contextualisation process. Those with a better understanding of trait contextualisation are more likely to understand in which situations a person is more likely to express a trait. The natural context that behaviour takes place in should be accounted for when making a judgement, as this context will influence the expression of behaviour.

Trait activation theory (Tett & Guterman, 2000) posits that personality traits are consistent and that different people have different propensities to express a trait through behaviour in different situations. In other words, for a person to manifest a trait, certain situational cues must be present. For example, people high on anxiety do not always exhibit anxious behaviour, but in some situations, they are more likely to. Some situations are more likely to bring out the expression of a personality trait, while other situations will stifle the same trait's expression (Haaland & Christiansen, 2002; Tett & Burnett, 2003; Robinson, 2009).

As an individual making a judgement on such behaviour, a good judge will likely understand how the situation or context will either amplify or reduce the likelihood of a person expressing a trait. Additionally, when making a judgement, a good judge is more likely to take into account the situational factors and adjust their judgement accordingly. Trait contextualisation has a moderate effect on interviewer judgement accuracy (.26,  $p < .002$ , 95% CI: [.10, .41]; De Kock et al, in press).

Developing the dispositional reasoning schematic framework in interviewers may be advantageous in improving their overall judgement accuracy. Developing trait induction, trait extrapolation and trait contextualisation in interviewers who are low in the ability may allow them to make more accurate hiring decisions.

**Research Question**

The research question for the present study is as follows: Can interviewers improve their overall dispositional reasoning, and if so, how? Because dispositional reasoning is an important precursor to accuracy, it is important to determine if it can be developed among raters such as interviewers in organisations.

Two studies are necessary to answer this research question. Study 1 will determine whether dispositional reasoning is trainable through traditional frame-of-reference (FOR) training. Study 2 will attempt to train participants using the novel schema–feedback method.

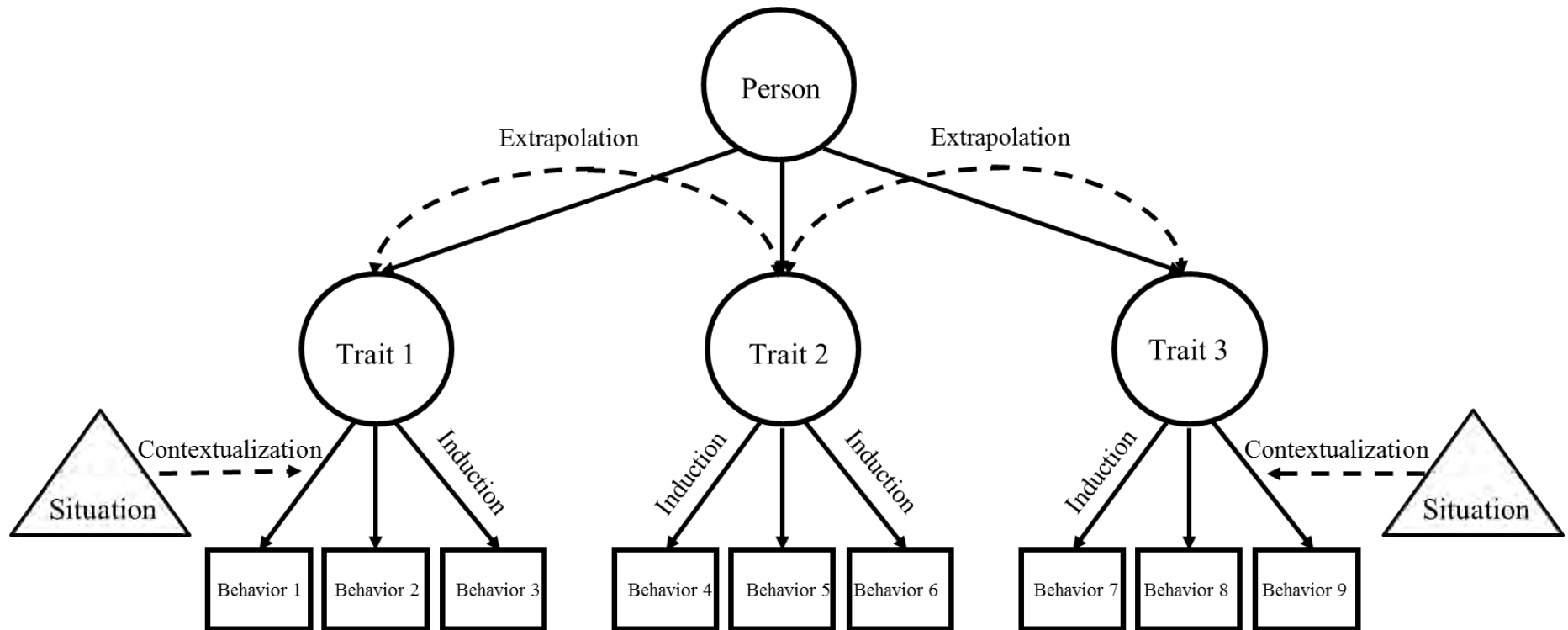


Figure 1. Dispositional reasoning framework. Adapted from “An In-depth Look at Dispositional Reasoning and Interviewer Accuracy” by De Kock, F.S., Lievens, F., & Born, M.P., in press, *Human Performance*, p. 43. Reprinted with permission.



## Developing Dispositional Reasoning

### Approaches to Rater Training

**Rater error training.** Historically, training to improve accuracy in judgement has focused on minimising rater error (Funder, 1999). Rater error training therefore aims to alert raters to errors they are making, while instructing them to attend to such errors in future inferential decisions (Fiske & Taylor, 2013). Based on the idea that error is common in human judgement, rater error training aims to eliminate rating errors such as leniency and the halo effect in participants (Smith, 1986). The rater error approach has been criticised for being ineffective in improving accuracy by inadvertently lowering participant accuracy in the process of attempting to reduce error (Noonan & Sulsky, 2001). However, in their review of rater training approaches, Woehr and Huffcutt (1994) found that rater error training results in a modest increase in rating accuracy ( $d = .26$ ), when compared to performance dimension training.

**Performance dimension training.** Performance dimension training trains raters to recognise behaviour dimensions to be rated on when interacting with targets (Lievens, 1998; Smith, 1986). The performance dimension approach is based on the proposition that people form evaluations of others while in the moment of observing their behaviour, and not at a later time when an evaluation may be required. Performance dimension training thus attempts to train raters to conduct assessments in the moment, rather than at a later stage, in an attempt to improve accuracy (Woehr & Huffcutt, 1994). Performance dimension training improves accuracy only slightly ( $d = .13$ ; Woehr & Huffcutt, 1994), when compared to other methods.

**Evaluation.** Both rater error training and performance dimension training neglect the schematic framework that raters draw upon when making judgement decisions. For this reason, accuracy practitioners and researchers favour frame-of-reference (FOR) training, which targets schemas. FOR training aims to impose expert schemas on participants to ensure a consistent frame-of-reference that is readily applicable to any situation in which it is needed. FOR training is therefore the obvious method to use when attempting to develop dispositional reasoning in interviewers, by instilling the schema of behaviour cues, their associated traits, and the role of situations in activating them.

## **Study 1: Frame-of-Reference Training for Dispositional Reasoning**

### **Frame-of-Reference Training (FOR)**

FOR training is a method developed for use in performance appraisal that is proven to increase rater accuracy, and is used to affect the way in which raters encode, represent, organise and recall information (Bernardin & Buckley, 1981; Roch et al., 2011; Woehr & Huffcutt, 1994). This approach attempts to train raters along common evaluative standards, and defines performance dimensions by using examples of behavioural incidents or vignettes (Roch et al., 2011; Woehr & Huffcutt, 1994). In developing a FOR framework for assessing accuracy, expert raters are asked to provide ratings for behaviours. During training, these expert ratings illustrate best practices in rater accuracy to participants (Athey & McIntyre, 1987). FOR training thus provides participants with a theory of best performance for the dimensions to be evaluated (Sulsky & Kline, 2007). FOR training differs from other approaches to increasing rater accuracy due its conceptual reliance on social cognition theory (Lievens, 2001). Empirical evidence points to the success of FOR training in training raters to adopt a common schema.

### **Empirical Evidence**

**Effect on rating outcomes.** Research has confirmed that schema change does occur when participants undergo FOR training, with participants' schemas becoming more similar to the normative, trained schema (Gorman & Rentsch, 2009). Additionally, in a meta-analysis of FOR techniques, researchers found an effect size of .50 across all operationalisations of accuracy (Roch et al., 2011), meaning that the technique is useful for increasing accuracy in various organisational applications. FOR training has traditionally proved successful in increasing accuracy among raters in performance appraisal, and various other applications now make use of the technique (Day & Sulsky, 1995; Woehr & Huffcutt, 1994). For example, assessment centre assessors also show an increase in accuracy when trained in schema-based FOR training (Lievens, 2001). Assessors who underwent FOR training showed higher inter-rater reliability when compared to those who took part in other training approaches (Lievens, 2001).

**Effect on dispositional reasoning.** Previous research found that attempting to improve dispositional reasoning in interviewers through FOR training had no effect (Powell, 2007; Powell & Goffin, 2009). Researchers attempted to develop dispositional reasoning in interviewers through FOR training. In their experimental design, the authors undertook an FOR intervention that aimed to improve participants' dispositional reasoning

and by extension, their interview accuracy (Powell, 2007; Powell & Goffin, 2009), discussed below.

The researchers recruited 146 students, divided into an experimental group and a placebo group, to rate the personality traits of the videotaped targets in order to assess judgement accuracy. Both groups were first given a practice session in which they rated the personality traits of a target. The experimental group was asked to write down the cues that the target displayed that informed their ratings. The experimental group was then administered a training intervention to improve dispositional reasoning and judgement accuracy.

The training intervention consisted of (a) a brief lecture about personality traits and the types of behaviours associated with each, (b) a written exercise that allowed for practice in personality cues and (c) a session in which participants shared their ratings for the practice video target and how they came to their scores. The facilitator then gave each person in the group feedback, by sharing the true scores as obtained through expert ratings for the practice target, and explaining how the judges arrived at these scores through an explanation of the cues that they used. The placebo group received training of comparable length with different content. After training, both groups completed Christiansen et al.'s (2005) dispositional reasoning measure. The participants then watched the remaining three videos, making personality ratings for each to measure accuracy against the expert ratings.

Although the results showed that the training had an effect on rating accuracy, there was no effect on dispositional reasoning as seen in Table 1 below. The experimental ( $M = 20.93$ ) and control groups ( $M = 20.60$ ) did not differ significantly in their dispositional reasoning scores,  $p = .77$  (Powell & Goffin, 2009).

Table 1

*Summary T-test and Descriptive Statistics Results for Powell and Goffin's (2009) Study*

	Condition				<i>t</i>	<i>df</i>	<i>p</i>
	Trained Group		Control Group				
	<i>M</i>	<i>n</i>	<i>M</i>	<i>n</i>			
Dispositional intelligence	20.93	80	20.60	84	.43	162	.77

*Note.*  $p < .05^*$

The increase in accuracy reported in the study cannot therefore be attributed to an increase in knowledge of personality or dispositional reasoning, and it remains unknown what caused the increase (Powell, 2007). As dispositional reasoning is the knowledge of personality, developing the skill should theoretically be possible (Powell, 2007). The limitations of Powell and Goffin's (2009) study may have influenced the results. The authors did not address all three subcomponents of dispositional reasoning. In order to fully understand the applicability of FOR training to developing dispositional reasoning, it is necessary to determine whether all three subcomponents of the construct are affected by training. We therefore hypothesise that:

***Hypothesis 1a (H1a):*** FOR training will have an effect on trait induction in an experimental group, when compared to a no-training group.

***Hypothesis 1b (H1b):*** FOR training will have an effect on trait extrapolation in an experimental group, when compared to a no-training group.

***Hypothesis 1c (H1c):*** FOR training will have an effect on trait contextualisation in an experimental group, when compared to a no-training group.

### **Method: Study 1**

#### **FOR Training: Overview**

A team of five postgraduate organisational psychology students conducted this research project. In Study 1, we assessed the possibility of developing dispositional reasoning in a student sample through FOR training. The experiment consisted of three experimental conditions, each pertaining to a subcomponent of the dispositional reasoning construct.

#### **Research Design**

We used a between-groups post-test-only experimental design, allowing for the control of extraneous factors while manipulating the style of training for each group (Rosenthal & Rosnow, 2008). The design is not fully-crossed, as not all participants received training on each component. Each condition, with the exception of a no-training group, received a different training programme tailored to a different subcomponent of dispositional reasoning. Table 2 below contains the experimental design. Groups R<sub>1</sub>, R<sub>2</sub> and R<sub>3</sub> took part in FOR training targeted at trait induction, trait extrapolation and trait contextualisation respectively. Group R<sub>4</sub> did not receive any training. Due to time constraints, we used a cross-sectional design. We opted not to include a pre-test in the design, to control for

potential learning effects and maturation (Cozby, 2007). The design chosen effectively minimises threats to internal validity (Rosenthal & Rosnow, 2008). External validity may however be affected, due to the restricted nature of the experiments (Rosenthal & Rosnow, 2008).

Table 2

*Experimental Design: Study 1*

Treatment group	Intervention	Observation
R <sub>1</sub>	X <sub>1</sub>	O <sub>1</sub>
R <sub>2</sub>	X <sub>2</sub>	O <sub>2</sub>
R <sub>3</sub>	X <sub>3</sub>	O <sub>3</sub>
R <sub>4</sub>		O <sub>7</sub>

*Note.* R<sub>1</sub>= trait induction training group; R<sub>2</sub> = trait extrapolation training group; R<sub>3</sub> = trait contextualisation training group; R<sub>4</sub>= contrast no-training group.

### **Participants**

We used non-probability convenience sampling to source participants. In an attempt to increase external validity, we recruited all participants from undergraduate courses within the School of Management Studies at the University of Cape Town (UCT), as they would likely enter managerial roles in organisations after graduating. Most of the students recruited would have had some knowledge of the selection process and interviewing through courses taken at university. Participation in the study was incentivised through the chance to win a cash prize of R250.

We recruited 77 students in total to take part in the FOR training. Participants were each randomly assigned to one of four conditions: induction, extrapolation, contextualisation, and a no-training contrast group. The induction group had 16 participants, the extrapolation group 15 and the contextualisation group 14 participants. We recruited this sample from first and third year organisational psychology classes at UCT. The majority of the sample spoke

English as a first language (induction 87.50%, extrapolation 66.70%, contextualisation 71.40%). We recruited 32 participants for the no-training sample from within the School of Management Studies at UCT. Most of the sample (81.30%) spoke English as a first language. Table 3 below contains full age, gender and race demographics for all conditions.

Table 3

*Descriptive Statistics: Study 1*

Characteristic	Training Condition							
	Induction ( <i>n</i> = 16)		Extrapolation ( <i>n</i> = 15)		Contextualisation ( <i>n</i> = 14)		No-Training ( <i>n</i> = 32)	
Age								
Mean	21.67		20.93		21.93		21.91	
<i>SD</i>	2.02		1.22		3.89		1.67	
Race	<i>f</i>	%	<i>f</i>	%	<i>f</i>	%	<i>f</i>	%
Asian	0	0	0	0	1	7.14	2	6.25
Black	3	18.75	3	20	4	28.57	5	15.63
Coloured	3	18.75	5	33.33	4	28.57	4	12.5
Indian	0	0	0	0	0	0	1	7.14
White	8	50	6	40	5	35.71	18	56.25
Other	1	12.5	1	6.66	0	0	1	7.14
N.A.	1	6.25	0	0	2	14.29	1	7.14
Sex	<i>f</i>	%	<i>f</i>	%	<i>f</i>	%	<i>f</i>	%
Female	14	87.5	10	66.66	12	85.71	13	40.63
Male	2	12.5	5	33.33	2	14.29	19	59.38

*Note.* N.A. = prefer not to answer.

## Materials

In accordance with the FOR training method (Roch et al., 2011), we developed new lecture material and exercises for the purposes of the training. We used Microsoft PowerPoint to create sets of lecture slides that would assist the researchers in giving training on the relevant dispositional reasoning subcomponents. These lecture slides contained basic information on the processes of trait induction, extrapolation and contextualisation for each relevant training group, as seen in Appendix A. We designed the lecture slides to also aid in structuring the training, by including an itinerary and illustrating an example answer for the training task.

The trait induction group was given a replication of Powell's (2007) worksheet exercise as a training task. The trait induction task consisted of six items including a practice item (see Appendix B). Each item contained a written vignette of a dialogue between an interviewer and an interviewee. This vignette contained information that would then assist the participant in assigning the interviewee to a choice of three personality categories. We developed new training tasks for the trait extrapolation and contextualisation groups based on Powell's trait induction task (see Appendix B). We used Goldberg's (1992) factor markers to create the items for the trait extrapolation training task. The trait contextualisation task contained items based on the California Q-Set (Block, 2008) and the Riverside Behavioral Q-Sort (Funder, Furr & Colvin, 2000). All tasks were paper-and-pencil based.

## Procedure

We collected data over a two-week period during August 2014. The UCT Commerce Faculty Ethics in Research Committee granted permission to undertake the research (see Appendix C). The executive director of student affairs at UCT granted access to the student sample. Participants had the right to withdraw from the research at any time, and had to indicate consent to participate in the research (see Appendix D).

**No-training contrast group.** We conducted four no-training sessions at different times to accommodate students within the School of Management Studies, with comparable methods and control. Participants met the researchers at one of the computer laboratories at UCT upper campus. The researchers informed the participants of their rights, and then asked them to log on to their computers. Participants were directed to a URL that linked to an online version of De Kock et al.'s (in press) Revised Interpersonal Judgement Inventory (RIJI), which measures dispositional reasoning. We used Qualtrics (Version 37,892) to deliver the test. The participants completed the entire dispositional reasoning test, as well as

a biographical measure. The mean completion time was 32 minutes. After finishing the measure, most participants opted to leave early.

**FOR training group.** We conducted the FOR training sessions on two different days in the UCT Commerce Alumni computer laboratories. Both sessions were comparable in method. Student participants assembled outside the door to the laboratory. A researcher randomly assigned the participants into trait induction, extrapolation and contextualisation conditions using randomisation (Rosenthal & Rosnow, 2008). Training for each condition took place in a portioned-off area of the laboratory, under the control of a researcher. Once in their respective venues, the researchers briefed participants on the session's agenda and informed participants of their rights. Once consent was gathered, the session began with a short lecture on personality, behaviour and context by the researchers. The lectures aimed to teach participants in the three groups about the principles of trait induction, trait extrapolation and trait contextualisation, respectively. Each lecture lasted for approximately 10 minutes.

**Exercise and discussion.** After completing the short lecture, researchers presented the participants with the subcomponent-specific paper-and-pencil-based task. The exercise included a number of short questions based on what they had learnt in the preceding lecture. The researchers gave the participants five minutes to complete the exercise. At the end of five minutes, researchers asked participants to discuss their answers with the person sitting next to them. The researchers gave the participants five minutes to discuss their answers. After this, the researchers read out the correct answers to the questions, and asked the participants to check their scores.

**Post-test.** Finally, participants were required to complete the post-test. The researchers asked the participants to log on to their computers and browse to a specific URL pertaining to their condition. Participants then completed the relevant section of the RIJI measure, as well as a biographical measure. The average completion time for the post-test for each condition is as follows: trait induction, 6 minutes; trait extrapolation, 15 minutes; trait contextualisation, 14 minutes. Participants who finished early were able to leave the venue before others finished. The researchers then collected all copies of the tasks, before thanking the participants for their time. The duration of the entire procedure was approximately 45 minutes.

**Debriefing.** We fully debriefed the participants as to the nature of the study through an email sent to all participants, as well as an in-person debriefing conducted by one of the researchers during the participants' lecture time. Participants were given the opportunity to ask questions about the study. Additionally, we announced the winner of the lucky draw.



## Measures

**The Revised Interpersonal Judgment Inventory (RIJI).** The RIJI (De Kock et al., in press) measures dispositional reasoning, and consists of 64 items divided into three subsections. Each subsection of the dispositional reasoning test measures the subcomponents of trait induction, extrapolation and contextualisation.

**Trait induction measure.** The trait induction subsection consists of 20 items that measure behaviour-trait inferences. The trait induction measure requires participants to identify traits best matched to a list of adjectives based on Goldberg's (1992) factor markers. Previous research found the induction subscale to be acceptably reliable with a confirmatory factor analysis-derived (CFA-derived) construct reliability of .77 (De Kock et al., in press). As a post-test, the trait induction condition completed this section only. Appendix E contains an example item.

**Trait extrapolation measure.** The trait extrapolation measure consists of 23 items that assess understanding of trait co-occurrence. Participants select one of four descriptions that are most or least likely to be true of a fictitious 'paper person' presented to them. Previous research found the subscale to be reliable, with a CFA-derived construct validity of .81 (De Kock et al., in press). As a post-test, the trait extrapolation condition completed this section only. Appendix E contains a sample item.

**Trait contextualisation measure.** The trait contextualisation measure consists of 23 items that assess the test-taker's understanding of trait-situation relevance. There are two subsets of items in this measure. The first subset of items presents participants with a trait description by listing examples of behaviours associated with high and low scores on the measure. Respondents are then asked to choose which of five situations would most likely cause a person to elicit the relevant behaviour. The second subset of items describes a situation, with respondents required to identify a trait that would most likely be observed in that situation. Previous research found the subscale to be reliable with a CFA-derived construct reliability of .76 (De Kock et al., in press). As a post-test, the trait contextualisation condition completed this section only. Appendix E contains a sample item from this scale.

**Biographical measure.** Participants completed questions on their age, sex, race and home language for statistical purposes (see Appendix F).

## Statistical Analysis

We exported the data from Qualtrics (Version 37,892) to analyse using the IBM Software Package for Social Sciences (SPSS; Version 22). Descriptive statistics were used to

describe the sample. A combination of independent samples t-tests and Mann-Whitney U tests were used to test hypotheses H1a, H1b and H1c at a 5% significance level.

**Reliability and validity.** Internal consistency reliability analysis was not appropriate for the data, as items in the RIJI were not equal in difficulty (Scheepers, 2004) and due to the small size of the sample groups, exploratory and confirmatory factor analysis could not be undertaken. As discussed above, previous studies have supported the measurement properties of the RIJI, however.

## Results: Study 1

### Preliminary Analyses

We ran preliminary analyses to assess the assumptions for running t-tests (Field, 2013). These included testing for any significant outliers, determining if the data was normally distributed, and testing for homogeneity of variances.

**Outliers.** We screened the data set for any outliers which may have skewed the data (Field, 2013), based on mean scores for each participant in each condition. Using a cut-off of  $z = 3.29$ , we found no significant outliers in any of the FOR conditions. No significant outliers were found in the no-training condition.

**Normality.** To determine whether parametric statistics such as t-tests were viable for use, we checked the distribution of the data using the Shapiro-Wilk test (Field, 2013). In the Shapiro-Wilk test, non-significance ( $p > .05$ ) indicates a normal distribution (Field, 2013). Table 4 below contains the results of the Shapiro-Wilk tests for the FOR and no-training trait induction, extrapolation and contextualisation groups. All groups indicated normality, except for the no-training trait induction condition, which violated the condition. Therefore, any analyses involving the no-training trait induction condition will use non-parametric statistics (Field, 2013).

Table 4

*Shapiro-Wilk's Test of Normality of Data: FOR and No-Training Conditions*

	Shapiro-Wilk		
	<i>W</i>	Degrees of Freedom	<i>p</i>
FOR Induction	0.94	15	.37
FOR Extrapolation	0.96	15	.63
FOR Contextualisation	0.95	14	.61
NT Induction	0.92*	32	.02
NT Extrapolation	0.96	32	.16
NT Contextualisation	0.93	32	.05

*Note.* FOR = frame-of-reference; NT = no-training;  $p < .05^*$

**Homogeneity of variance.** Equivalent variance across conditions is a necessary assumption for parametric statistics (Field, 2013). To test for the assumption of homogeneity of variance we used Levene's test (Field, 2013). We found equal variance between all experimental conditions and the relevant no-training conditions: induction ( $F = 2.03, p = .16, n.s.$ ); extrapolation ( $F = 0.12, p = .73, n.s.$ ); contextualisation ( $F = 0.41, p = .53, n.s.$ ).

### **Descriptive Statistics**

Table 5 below shows the descriptive statistics for each condition. Figures 2 and 3 contain a graphical comparison of mean and median scores attained in each condition.

Table 5

*Descriptive Statistics for Subscales by FOR and No-Training Condition*

Condition	Scale	<i>n</i>	<i>Mdn</i> <sup>d</sup>	<i>M</i> <sup>d</sup>	<i>SD</i> <sup>d</sup>	Min.	Max.	95% CI <sup>d</sup>
FOR	Induction <sup>a</sup>	15	80.00	75.00	12.96	10	19	[67.83, 82.17]
	Extrapolation <sup>b</sup>	15	79.17	79.00	10.31	13	23	[72.90, 84.32]
	Contextualisation <sup>c</sup>	14	72.73	75.00	14.77	10	21	[66.14, 83.21]
NT	Induction	32	75.00	70.00	18.96	3	19	[63.31, 77.00]
	Extrapolation	32	77.08	76.00	9.44	14	22	[73.03, 79.84]
	Contextualisation	32	75.00	73.00	12.88	9	20	[67.94, 77.23]

*Note.* FOR = frame-of-reference; NT = no-training; CI = confidence interval.

<sup>a</sup> Scores on the induction scale have a possible range of 0 to 19;

<sup>b</sup> Scores on the contextualisation scale have a possible range of 0 to 23;

<sup>c</sup> Scores on the extrapolation scale have a possible range of 0 to 21;

<sup>d</sup> Given in percentage form.

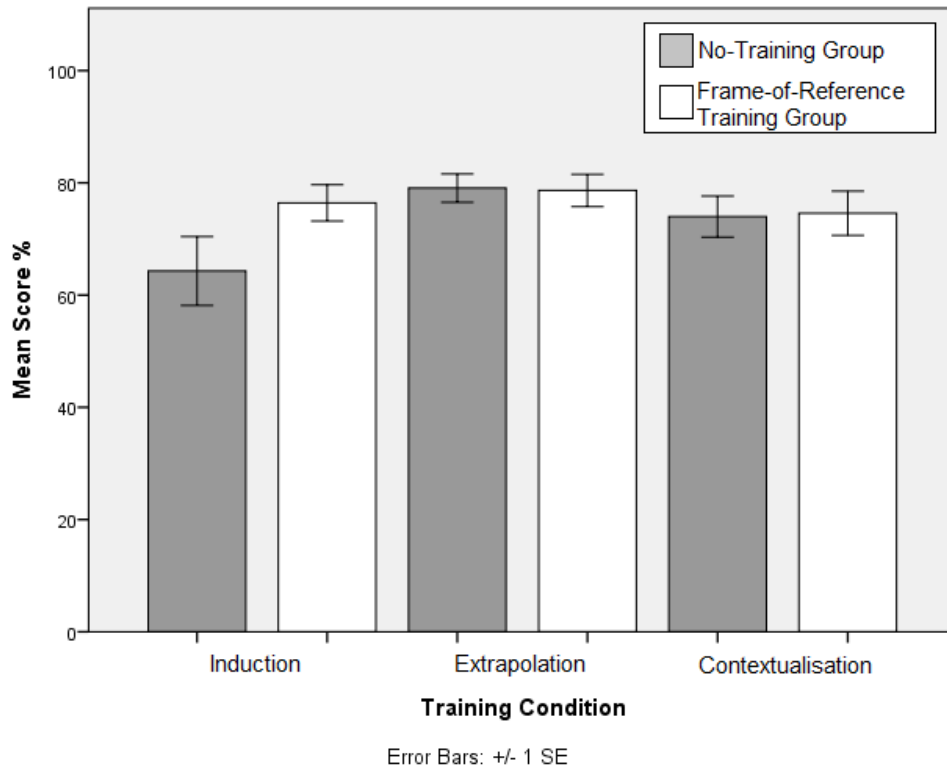


Figure 2. Graphic representation of mean scores as percentages across FOR training and no-training conditions.

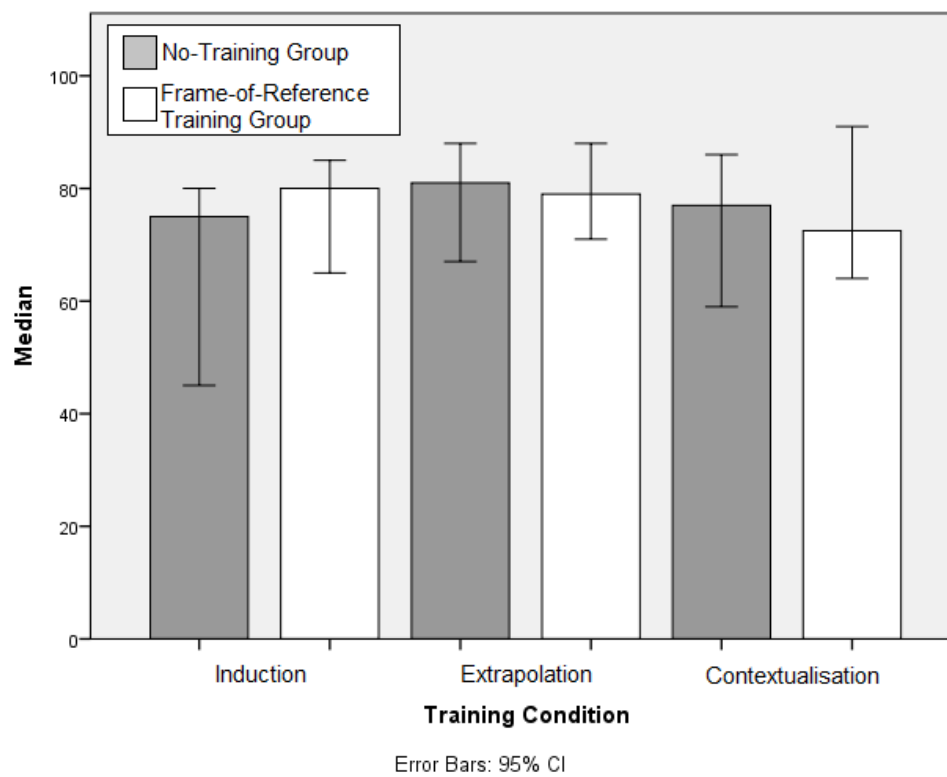


Figure 3. Graphic representation of median scores as percentages across FOR training and no-training conditions.

## Hypothesis Testing

**Hypothesis 1a.** Hypothesis 1a stated that FOR training would increase trait induction scores in an experimental group, when compared to a no-training group. A Mann-Whitney U test attempted to determine the statistical significance of the difference between the medians of the two groups. No significant difference in trait induction was found between the no-training ( $Mdn = 75.00$ ) and FOR groups ( $Mdn = 80.00$ ),  $U = 208.50$ ,  $z = -0.73$ ,  $p = .47$ . Although the difference between the groups was not statistically significant, the results indicated a small effect size,  $r = -.11$  (Cohen, 1988). The small sample size used could be the reason for the non-significant result; however, the effect size indicates that there may be a practically significant effect (Rosenthal & Rosnow, 2008). We retain the null hypothesis.

**Hypothesis 1b.** Hypothesis 1b stated that FOR training would have an effect on trait extrapolation in an experimental group, when compared to a no-training group. An independent samples t-test attempted to determine the statistical significance of the difference between the two groups. We found no statistically significant difference in trait extrapolation between the FOR training ( $M = 0.79$ ,  $SE = 0.03$ ) and no-training groups ( $M = 0.76$ ,  $SE = 0.02$ ),  $t_{45} = -.72$ ,  $p = .48$ . The results indicated a small effect size,  $r = .11$  (Cohen, 1988). We therefore retain the null hypothesis.

**Hypothesis 1c.** Hypothesis 1c stated that FOR training would have an effect on trait contextualisation in an experimental group, when compared to a no-training group. An independent samples t-test found no statistically significant difference in trait contextualisation between the FOR training ( $M = 0.74$ ,  $SE = 0.04$ ) and no-training groups ( $M = 0.72$ ,  $SE = 0.02$ ),  $t_{44} = -.48$ ,  $p = .63$ . The results indicated a small effect size,  $r = .07$  (Cohen, 1988). We therefore retain the null hypothesis.

## Statistical Power

Nonparametric tests have less statistical power when compared to equivalent parametric tests, particularly when a small sample size is used (Corder & Foreman, 2009). A post-hoc power analysis was therefore conducted to determine whether the null hypotheses have been incorrectly retained, using G\*Power (Faul et al., 2009). Statistical power analyses were also carried out on all parametric tests. The relevant effect size, significance level (.05) and sample size were used to determine the statistical power of all Mann-Whitney U tests and t-tests used in the study (Corder & Foreman, 2009). We employed a benchmark statistic of .80 to indicate high statistical power (Cohen, 1988). The analysis reported low statistical power for all tests conducted. Tables 6 and 7 below contain a summary of the results.

Table 6

*Summary of Results: Trait Induction*

Hypothesis Tested	<i>Mann-Whitney U</i>				Power
	<i>U</i>	<i>z</i>	<i>p</i>	<i>r</i>	
Hypothesis 1a	208.50	-.73	.47	-.11	.10

*Note.*  $p < .05^*$

Table 7

*Summary of Results: Trait Extrapolation and Trait Contextualisation*

Hypothesis Tested	<i>Independent Samples T-Test</i>				Power
	<i>t</i>	<i>df</i>	<i>p</i>	<i>r</i>	
Hypothesis 1b	-.72	45	.48	.11	.36
Hypothesis 1c	-.48	44	.63	.07	.08

*Note.*  $p < .05^*$

### **Discussion: Study 1**

#### **Main Findings**

In Study 1, we attempted to develop trait induction, trait extrapolation and trait contextualisation in a student sample. The results indicated that FOR training had no effect on all three dispositional reasoning subcomponents. The results of this study mirror the findings of previous research (Powell, 2007; Powell & Goffin, 2009) that attempted to develop dispositional reasoning, specifically trait induction, through FOR training. The results of this study indicate that FOR training is also not effective in developing the remaining dispositional reasoning components of extrapolation and contextualisation. The low sample size for the experimental groups may have been a limitation of the study. However, there are shortcomings associated with developing dispositional reasoning through the FOR training method that may also explain the lack of effect.

### **Shortcomings of FOR Training**

It is not under dispute that FOR training improves accuracy in a number of applications (Roch et al., 2011). However, exploration of the concepts underpinning FOR training is necessary. It may be that a rater's a priori schema affects their accuracy, regardless of training, consequently influencing the results of FOR training. Before undergoing FOR training, raters will have varied conceptions of the meaning of good performance, which may differ from those used by the organisation. A rater's pre-existing schemas of good performance may not include elements found in the normative schema imposed during training, known as an error of omission (Spranca, Minsk & Baron, 1991; Uggerslev & Sulsky, 2008). Additionally, the rater may initially include elements in their schema of good performance that are not present in the normative schema, known as error of commission (Spranca et al., 1991; Uggerslev & Sulsky, 2008). Although it is relatively easy to adopt new information into a schema, when people are required to change an existing schema by removing a previously held belief there is resistance due to the perseverance effect (Ross, Lepper & Hubbard, 1975; Uggerslev & Sulsky, 2008). The increase in accuracy found in previous FOR training studies may therefore merely be a result of a priori schemas moderating the results.

FOR training traditionally develops expert schemas in novices, such as accuracy in performance appraisal judgements. However, most people will already have a well-developed dispositional reasoning schema in place, due to its day-to-day use and refinement in interactions with others. Because dispositional reasoning differs among individuals, it may be that some peoples' schemas are more correct than others are.

The entrenched nature of the schema may also mean that some people have an incorrect dispositional reasoning schema in place. Because subtraction from an incorrect schema is more difficult, training that attempts to do so in an explicit manner may not be sufficient, due to a resistance to change (Rousseau, 2001). As the FOR approach is largely concerned with enhancing conscious processes, it may not be suited for training dispositional reasoning. A proposed new method of training, schema-feedback, aims to refine already-developed schemas through by targetting the process of dispositional reasoning. The proposed training method will additionally target each subcomponent of the dispositional reasoning construct, as was not done in previous attempts at developing dispositional reasoning (Powell 2007; Powell & Goffin, 2009). We implemented this training style in Study 2.



## **Study 2: Schema-Feedback Training**

To address the potential limitations of FOR training, in Study 2 we propose schema-feedback training as a method to target and refine the dispositional reasoning schematic framework through consistent feedback. Like FOR training, social cognition schema theory informs this method. According to social cognition theory, people are trainable to improve their use of abstract inferential rules that allow them to make sense of situations (Fiske & Taylor, 2013). As people learn better by being presented with new material that is similar to what is already known to them (Tse, 2011), schema-feedback training aims to improve already-existing abstract inferential rules relating to dispositional reasoning.

### **Schema Refinement**

Schema refinement is the proposed process to address the difficulty of controlling and modifying processes that rely on automatic schemas (Holt & Rainey, 2002). Because most people already possess schemas relevant to people perception, training dispositional reasoning may not be effective if an unsatisfactory method is used (Blanch-Hartigan et al., 2012). The issues of training a new automatic process are compounded by the fact that such processes take a considerable amount of time to learn (Holt & Rainey, 2002). However, incorporating new information into existing schemas is possible if the participant undergoing training already has a schema relevant to the skill to be refined (Tse, 2011).

Schema refinement therefore places an emphasis on both schema construction and automation through training (Van Merriënboer & Sweller, 2005). Any intervention into dispositional reasoning should then be directly related to refining the schemas pertaining to trait induction, trait extrapolation and trait contextualisation, which individuals already possess, in an effort to modify or refine them. As fruitful learning often requires the use of problem-solving and reasoning skills (Van Merriënboer & Sweller, 2005), it would be useful to incorporate this into training dispositional reasoning through practice and feedback methods.

### **Practice and Feedback**

Practice and feedback training is more successful than other methods at targeting automatic judgement policies (Blanch-Hartigan et al., 2012), such as the dispositional reasoning schematic framework. FOR training, which only includes limited feedback, would therefore not be appropriate. Schema-feedback training differs from FOR training as it focuses on multiple iterations of feedback in an attempt to refine a schematic framework. Problem solving generally consists of practice and immediate feedback, a process most

people undergo daily. People take part in ongoing practice and receive ongoing implicit feedback in dispositional reasoning through their daily interactions with others. Replicating this natural procedure of schema development may therefore be more successful than instructional approaches when attempting to train automatic abilities (Blanch-Hartigan et al., 2012).

Only repeated practice can sublimate the need for conscious activity when performing a behaviour (Bargh & Chartrand, 1999; Holt & Rainey, 2002). Therefore, individuals gain expertise when they have repeated exposure to a number of examples of behaviour (Fiske & Taylor, 2013). Additionally, the time needed to perform most tasks decreases with practice (Palmeri, 1999). Therefore, repetitive completion of a task results in automatic behaviour (Bargh & Chartrand, 1999).

As people do not usually receive explicit feedback when making judgement decisions about other people, their automatic reasoning and schemas are rarely challenged in a real-world setting (Blanch-Hartigan, 2012). Conscious feedback will therefore provide the rater with an opportunity to practice evaluation against true scores (Smith, 1986). When challenged over their dispositional judgements, individuals may re-evaluate their pre-existing schemas and adjust them accordingly (Blanch-Hartigan, 2012). Feedback training with practice has been found to be effective in training raters in performance appraisal (Smith, 1986), and it is of interest to determine whether this approach can be applied to dispositional reasoning training, too.

### **Schema-Feedback Training for Dispositional Reasoning Components**

We propose three similar training interventions targeting each of the dispositional reasoning subcomponents, to address the failure of previous studies to target the entirety of the concept. Because training has been found to be most effective when the tool used for training is conceptually similar to the assessment tool used to gauge the effectiveness of training (Blanch-Hartigan et al., 2012), the RIJI dispositional reasoning scale will influence each training programme. Each training programme will therefore be tailored to the theory surrounding trait induction, trait extrapolation and trait contextualisation, discussed in more detail below.

**Developing trait induction.** The proposed method of developing trait induction training aims to harness the process of spontaneous trait inference, which occurs when a person identifies a behaviour in trait terms, when that behaviour is representative of the trait (Bargh, 1994; Crawford, Skowronski, Stiff, Scherer, 2007). Schema-feedback training will

attempt to refine the process of spontaneous trait inference through feedback targeting the schematic processes influencing trait induction. Continuous feedback will attempt to refine the participant's schema. As schemas are memory based, feedback training will assist in enhancing encoding, storage and recall.

For example, if an interviewer is unaware that someone who is organised will also be conscientious, they will have an opportunity to examine this claim through schema-feedback training. The feedback they receive in the training may cause them to re-evaluate their idea of conscientiousness, leading to schema refinement. Additionally, if an interviewer holds an incorrect schema about the behaviours linked to personality traits, they have the opportunity to refine these schemas through training. For example, a person who believes that aggression is indicative of extraversion is able to re-evaluate this position. It is therefore hypothesised that:

***Hypothesis 2a (H2a):*** Schema-feedback training will have an effect on trait induction in an experimental group, when compared to a no-training group.

***Hypothesis 3a (H3a):*** Schema-feedback training will be better than FOR training at developing trait induction scores.

**Developing trait extrapolation.** Over time, implicit personality theories (IPTs) are developed and stored in relevant schemas. The stereotypes that some people hold about individuals from certain groups is an example of how these schemas are used (Grant & Holmes, 1981). These schemas can often be wrong, and do not reflect the person under judgement accurately. For example, someone may wrongly assume that intellectual people are also always shy. Schema-feedback training aims to correct improper assumptions of trait covariance by offering feedback to the ideas held by people who make judgements. Schema-feedback training therefore affords the individual multiple opportunities to refine their judgements schemas and IPTs. Additionally, schema-feedback training provides the opportunity for interviewers to refine their schemas through addition of new information about trait covariance. It is therefore hypothesised that:

***Hypothesis 2b (H2b):*** Schema-feedback training will have an effect on trait extrapolation in an experimental group, when compared to a no-training group.

***Hypothesis 3b (H3b):*** Schema-feedback training will be better than FOR training at developing trait extrapolation scores.

**Developing trait contextualisation.** Trait contextualisation training would aim to increase the ability of people to correctly identify how a situation may affect another person's expression of a trait. The aim of a training programme in this regard would be to sensitise raters to the effects of the environment in which judgement is taking place (Bargh, 1994). Schema-feedback training will attempt to refine the participants' schemas relating to the process of trait contextualisation through ongoing practice and feedback. Participants in schema-feedback training will therefore be given multiple opportunities to either add or subtract from their trait contextualisation schematic framework. Multiple instances of feedback will enhance the participants' understanding of trait activation (Tett & Guterman, 2000). For example, someone who incorrectly believes that an individual would be able to express empathy while changing a light bulb would be made aware of this assumption. Schema-feedback training would then provide an example of a situation where expression of empathy would be more likely. It is therefore hypothesised that:

*Hypothesis 2c (H2c):* Schema-feedback training will have an effect on trait contextualisation in an experimental group, when compared to a no-training group.

*Hypothesis 3c (H3c):* Schema-feedback training will be better than FOR training at developing trait contextualisation scores.

By training raters at a componential level through continuous feedback training, they may be able to increase their dispositional reasoning. Schema-feedback training is additionally hypothesised to be better at developing dispositional reasoning when compared to FOR training.

## **Method: Study 2**

### **Research Design**

For this second experiment, we again used a between-groups post-test-only experimental design. The design is not fully-crossed, as not all participants received training on each component. Each condition, with the exception of a no-training group, received a different schema-feedback training programme tailored to a different subcomponent of dispositional reasoning. Table 8 below contains the experimental design. Groups R<sub>1</sub>, R<sub>2</sub> and R<sub>3</sub> took part in schema-feedback training targeted at trait induction, trait extrapolation and trait contextualisation respectively. Group R<sub>4</sub> did not receive any training; we utilised the same no-training groups scores obtained from Study 1. We used a cross-sectional design.

Table 8

*Experimental Design: Study 2*

Treatment group	Intervention	Observation
R <sub>1</sub>	X <sub>1</sub>	O <sub>1</sub>
R <sub>2</sub>	X <sub>2</sub>	O <sub>2</sub>
R <sub>3</sub>	X <sub>3</sub>	O <sub>3</sub>
R <sub>4</sub>		O <sub>7</sub>

*Note.* R<sub>1</sub>= induction training group; R<sub>2</sub>= extrapolation training group;  
R<sub>3</sub> = contextualisation training group; R<sub>4</sub>= contrast no-training group.

**Participants**

We made use of non-probability convenience sampling. All participants were undergraduates in the School of Management Studies at UCT. Students stood the chance of winning a R250 cash prize for taking part in the study. We recruited 152 participants for the schema-feedback training session, who we randomly assigned to three conditions. The trait induction condition had 41 participants, the extrapolation condition 39 participants, the contextualisation condition 40 participants and the no-training condition 32 participants. In all groups, most participants spoke English as a first language (induction 80.50%, extrapolation 76.90%, contextualisation 77.50%, and no-training 81.30%). We used the same no-training contrast group from Study 1. Table 9 below contains full age, gender and race descriptive statistics for all conditions.

Table 9

*Descriptive Statistics: Study 2*

Characteristic	Training Condition							
	Induction ( <i>n</i> = 41)		Extrapolation ( <i>n</i> = 39)		Contextualisation ( <i>n</i> = 40)		No-Training ( <i>n</i> = 32)	
Age								
Mean	20.34		20.62		20.70		21.91	
<i>SD</i>	1.28		1.39		1.54		1.67	
Race	<i>f</i>	%	<i>f</i>	%	<i>f</i>	%	<i>f</i>	%
Asian	1	2.43	3	7.69	1	2.5	2	6.25
Black	6	14.63	8	20.51	7	17.5	5	15.63
Coloured	9	21.95	12	30.77	10	25	4	12.50
Indian	2	4.87	0	0	1	2.5	1	7.14
White	20	48.78	13	33.33	17	42.5	18	56.25
Other	2	4.87	0	0	0	0	1	7.14
N.A.	1	2.44	3	7.69	4	10	1	7.14
Sex	<i>f</i>	%	<i>f</i>	%	<i>f</i>	%	<i>f</i>	%
Female	29	70.73	32	82.05	34	85	13	40.63
Male	12	29.27	7	17.95	6	15	19	59.38

*Note.* N.A. = prefer not to answer.

## Materials

**Training task.** Participants in each condition took part in a training task. Each task was in the form of a text-based scenario game. The process was designed to be rapid with instant feedback, to mimic the process used in daily life to develop dispositional reasoning. Tasks consisted of 30 questions, each with a choice of three answers: one correct and two incorrect. If the participant chose an incorrect answer, they would receive feedback indicating that they had chosen the wrong answer. The participants would then have to redo the question until they were correct. We randomised the order of appearance of the questions to reduce the likelihood of cheating (Cozby, 2007). Appendix G contains a flow diagram representing the logic behind the appearance of items. The question and answer process is discussed in further detail for each condition, with examples, below.

We designed all items in the three training tasks to be as distinct as possible from the RIJI post-test, to control for possible priming or maturation. In order to reduce perceived

similarities between the training and the dispositional reasoning post-test, we designed the items as a text-based ‘mini-quest’. A preface to the training instructed participants to take on the role of a ‘trainee detective’ in need of enhancing their person perception skills (see Appendix H). The participant, in the role of the detective, would then begin the ‘quest’. Items were presented in the context of a detective game, where the participant would be presented with a fictitious person displaying attributes representative of that item. The participant would then have to correctly identify the answer before proceeding to the next item. At the end of the training, participants received a mock ‘certificate’ indicating their success at person perception. Each training task differed in content, based on the theory supporting the relevant subcomponent.

**Training task development.** We used Qualtrics (Version 37,892) to develop three unique computer-based training tasks for this experiment. We designed each task to develop trait induction, extrapolation or contextualisation in the relevant experimental groups, based on the proposed theory of schema refinement. We consulted relevant literature on dispositional reasoning (Christiansen et al., 2005; De Kock et al., in press) and feedback training when designing the intervention. We carried out a pilot test, in which we asked participants to complete an early version of the training tasks developed, to assess each training task for item clarity, difficulty and length. We discarded some items that pilot testers identified as being confusing or ambiguous. We then assessed the average time that it would take to complete the training, to check whether the pilot test participants indicated fatigue.

**Trait induction task development.** We developed 30 questions for the trait induction training based on the California Q-Set, commonly used to assess personality (Block, 2008). The California Q-Set contains a number of statements that describe personality, which we rephrased as questions to fit the storyline of the detective game. Each question was given a possible three answers, one correct and two incorrect. The task required participants to choose only one answer, which we developed by adapting Goldberg’s (1992) Big Five factor structure. A table containing descriptions of the Big Five personality factors was used to ready the participants before the task began. The items developed for the trait induction training aligned with the original trait induction scale, which required participants to match traits with their corresponding behaviours (De Kock et al., in press).

An example item is as follows: “You meet Luke outside. He is the UCT rugby captain. He is quite a talkative person. What do you think is related to this behaviour?” The participant then has the choice of one of three responses: (1) extraversion/active; (2)

curiosity/being perceptive; or (3) being conscientious/responsible. Appendix I contains a further sample item.

***Trait extrapolation task development.*** We developed 30 new items for the trait extrapolation exercise, based on the Riverside Situational Q-sort (RSQ) Version 3.15 (Wagerman & Funder, 2009) and Goldberg's (1992) factor markers. Each item consisted of a question based on statements from the RSQ, which describes personal situations, tailored to fit the storyline of the detective game. Goldberg's factor correlation matrix was used to develop three possible answers for each item, two incorrect and one correct. Positive correlations between traits in Goldberg's factor matrix, indicating trait covariance, were used to develop the correct answers for each item. Negative correlations between traits were used to develop the incorrect distractor items.

An example question is as follows: "You see your psychology professor and try to avoid him. He is often hostile and tends not to make friends easily. He will also most likely be: (1) calm and collected in most situations; (2) helpful towards his colleagues; or (3) easily irritated by his colleagues". Appendix I contains a further example item.

***Trait contextualisation task development.*** We developed 30 new items for the schema-feedback contextualisation task, based on the RSQ (Wagerman & Funder, 2009) and the Riverside Behaviour Q-set (RBQ) Version 3.11 (Funder, Furr & Colvin, 2000). The RSQ items consist of statements of personal situations, which we rephrased into questions to fit the storyline of the mini-quest. The RBQ items, which describe behaviour, were used to create one correct and two incorrect answer options for each of the 30 questions. We developed these items to complement the trait contextualisation scale (De Kock et al., in press) used as the post-test.

An example item is as follows: "You sit next to Marcus. He tells you about his latest girlfriend troubles. When other around you need or desire reassurance, you: (1) are talkative and cheerful; (2) express sympathy and warmth; or (3) emphasise your accomplishments". Appendix I contains a further sample item from the trait contextualisation training task.

## **Procedure**

Participants met at the Commerce computer laboratory on UCT upper campus during their lecture time. We randomly assigned the participants into the three conditions (induction, extrapolation, and contextualisation) at the door, using randomisation (Rosenthal & Rosnow, 2008). The researcher at the door handed each participant a piece of paper with a group number and a URL address. There were three unique URLs that each



pointed to a different training task hosted on the Qualtrics (Version 37,892) website, each pertaining to a single subcomponent of dispositional reasoning. The pieces of paper indicated to the researchers which experimental group each participant belonged to, allowing researchers to direct participants to sections of the laboratory reserved for each condition. We asked the students to log on to their computers and access the URL printed on their slips of paper. While doing this, we informed the participants of their rights during the research process.

**Training.** Once all students had accessed the URLs successfully, the experiment began in earnest. Participants in each condition then took part in the training tasks developed for their relevant condition, all through the Qualtrics (Version 37,892) website. Participants were presented with a number of items relating to one of the subcomponents of dispositional reasoning, based on their random group assignment. They were required to answer an item correctly before proceeding on to the next item. If they answered an item incorrectly, they were required to try again until achieving the correct answer. There were 30 items in total for each subcomponent training task. The average completion time for the training for each sub-condition is as follows: trait induction, 15 minutes; trait extrapolation, 15 minutes; trait contextualisation, 14 minutes.

**Post-test.** Qualtrics (Version 37,892) redirected participants to the dispositional reasoning RIJI post-test relevant to their sub-condition once they had completed the training exercises. For example, the trait induction experimental group completed trait induction training and were then required to complete only the trait induction subscale of the dispositional reasoning test. The post-test also included the biographical questionnaire. This test also took place on the Qualtrics website. The average completion time for the post-test for each sub-condition is as follows: trait induction, 6 minutes; trait extrapolation, 10 minutes; trait contextualisation, 10 minutes. Participants generally left once they were finished. The entire process lasted approximately an hour.

**Debriefing.** As in Study 1, we fully debriefed the participants as to the nature of the study, through an email sent to all participants as well as an in-person debriefing conducted by one of the researchers during the participants' lecture time. Participants were given the opportunity to ask questions about the study. Additionally, we announced the winner of the lucky draw.

## Measures

For all conditions in this study we used a biographical measure, as well as De Kock et al.'s (in press) Revised Interpersonal Judgment Inventory (RIJI) measure as a dispositional reasoning post-test (discussed in Study 1, above).

## Statistical Analysis

We extracted the data from Qualtrics (Version 37,892) for analysis using the IBM Software Package for Social Sciences (SPSS; Version 22). Descriptive statistics were used to describe the sample. A combination of independent samples t-tests and Mann-Whitney U tests were used to test all remaining hypotheses. See Study 1 for a discussion on the measurement properties of the RIJI dispositional reasoning scale.

## Results: Study 2

### Preliminary Analyses

As with Study 1, we conducted preliminary analyses on the data to test for violation of the assumptions of parametric tests (Field, 2013). As analysis of the no-training conditions has already been undertaken, we present here the results for the schema-feedback training conditions only.

**Outliers.** We screened the data set for any outliers which may have skewed the data (Field, 2013), based on mean scores for each participant in each condition. Using a cut-off of  $z = 3.29$ , we found one significant outlier in the induction schema-feedback condition which may have influenced results. However, upon inspection, the outlying participant's results indicated that they had completed the post-test in a reasonable time (5.47 minutes), which indicated that they were not simply guessing in order to leave the venue early. We therefore decided to keep the outlier in our analyses to avoid unnecessarily tailoring the results (Field, 2013).

**Normality.** To determine whether parametric statistics such as t-tests were viable for use, we checked the distribution of the data using the Shapiro-Wilk test (Field, 2013). In the Shapiro-Wilk test, non-significance ( $p > .05$ ) indicates a normal distribution (Field, 2013). Of the schema-feedback groups, only the extrapolation condition indicated normally distributed data. All analyses involving the schema-feedback induction and extrapolation conditions would therefore have to use non-parametric methods (Field, 2013). For the sake of completeness, results of the Shapiro-Wilk test for the no-training conditions are also included in Table 10 below.

Table 10

*Shapiro-Wilk's Test of Normality of Data: Schema-Feedback and No-Training Conditions*

Condition	<i>W</i>	Degrees of Freedom	<i>p</i>
SF Induction	0.90*	41	.002
SF Extrapolation	0.96	35	.162
SF Contextualisation	0.91*	38	.006
NT Induction	0.92*	32	.018
NT Extrapolation	0.95	32	.156
NT Contextualisation	0.93	32	.051

*Note.* SF = schema-feedback; NT = no-training;  $p < .05^*$

**Homogeneity of variance.** To test for the assumption of homogeneity of variance we used Levene's test (Field, 2013) as used in Study 1. We found equal variance between all experimental conditions and the relevant no-training conditions: trait induction ( $F = 1.22, p = .27, n.s.$ ); trait extrapolation ( $F = 0.24, p = .63, n.s.$ ); trait contextualisation ( $F = 0.12, p = .91, n.s.$ ).

### **Descriptive Statistics**

Table 11 below shows the descriptive statistics for each condition. Figures 4 and 5 contain a graphical comparison of mean and median scores attained in each condition.

Table 11

*Descriptive Statistics: Schema Feedback and No-Training Conditions*

Condition	Scale	<i>n</i>	<i>Mdn.</i> <sup>d</sup>	<i>M</i> <sup>d</sup>	<i>SD</i> <sup>d</sup>	Min.	Max.	95% CI <sup>d</sup>
SF	Induction <sup>a</sup>	41	80.00	73.00	15.89	4	19	[67.79, 77.82]
	Extrapolation <sup>b</sup>	35	75.00	74.00	11.26	12	23	[69.59, 77.32]
	Contextualisation <sup>c</sup>	38	77.27	74.00	14.14	8	21	[69.40, 78.69]
NT	Induction	32	75.00	70.00	18.96	3	19	[63.31, 77.00]
	Extrapolation	32	77.08	76.00	9.44	14	22	[73.03, 79.84]
	Contextualisation	32	75.00	73.00	12.88	9	20	[67.94, 77.23]

*Note.* SF = schema-feedback; NT = no-training; CI = confidence interval.

<sup>a</sup> Scores on the induction scale have a possible range of 0 to 19.

<sup>b</sup> Scores on the contextualisation scale 0 to 23.

<sup>c</sup> Scores on the extrapolation scale 0 to 21.

<sup>d</sup> Given in percentage form.

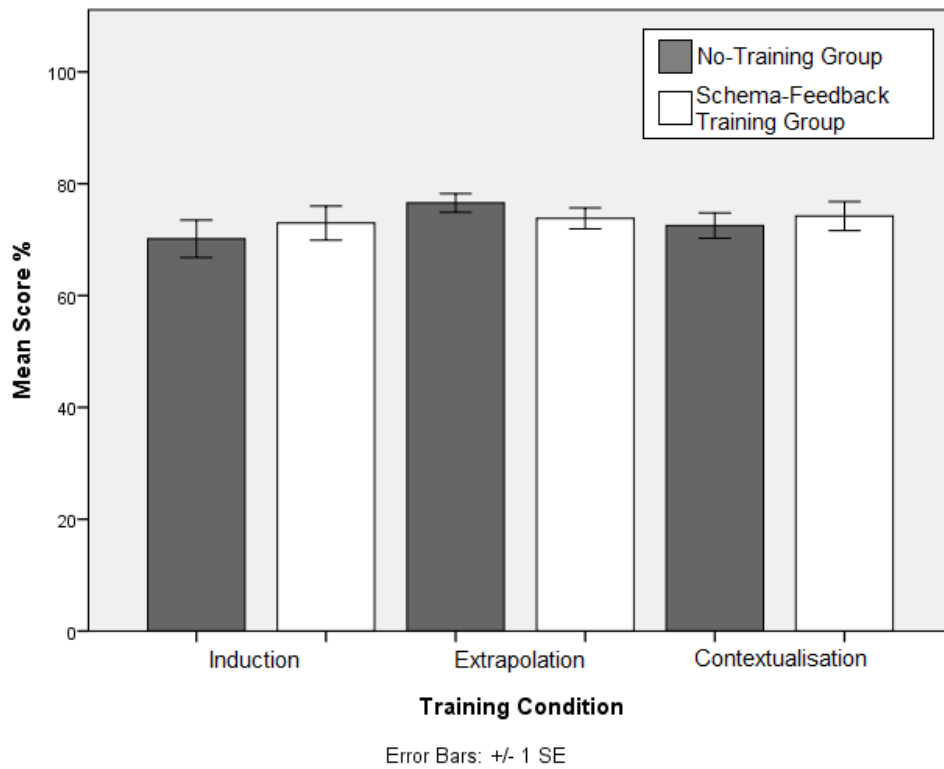


Figure 4. Graphic representation of mean scores across schema-feedback and no-training conditions.

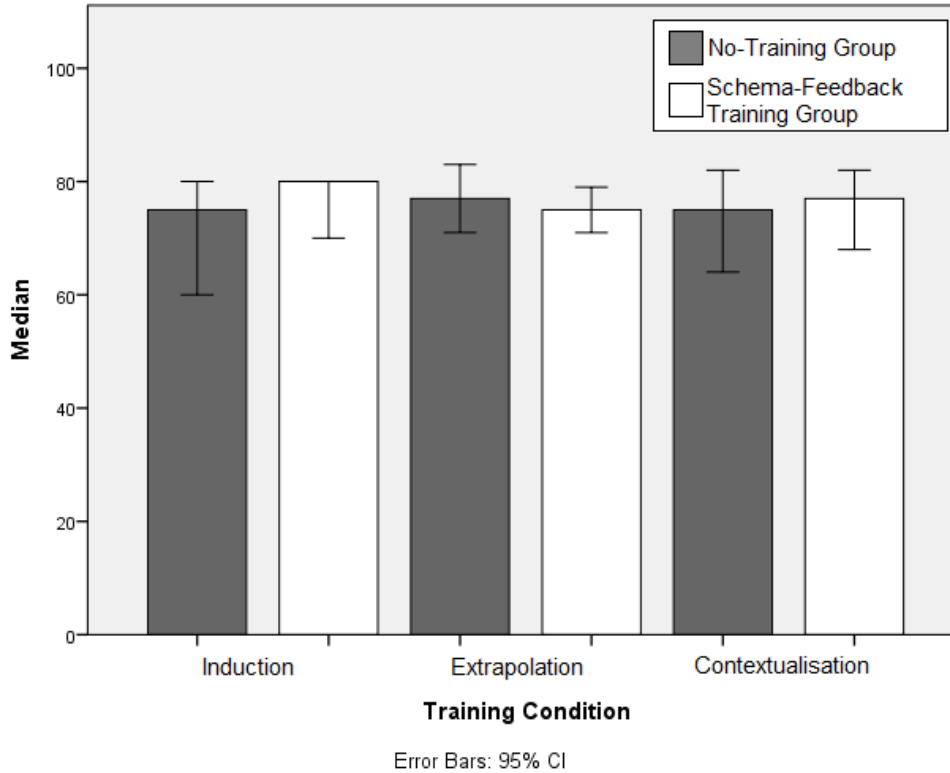


Figure 5. Graphic representation of median scores across schema-feedback and no-training conditions.

### **Hypothesis Testing: Schema-Feedback vs. Contrast**

**Hypothesis 2a.** Hypothesis 2a stated that schema-feedback training would have an effect on trait induction in an experimental group, when compared to a no-training group. The data failed the assumptions for an independent samples t-test. A Mann-Whitney U test found no statistically significant difference in trait induction between the no-training ( $Mdn = 75.00$ ) and schema-feedback groups ( $Mdn = 80.00$ ),  $U = 607.50$ ,  $z = -0.55$ ,  $p = .59$ . A small effect size was reported,  $r = -.06$  (Cohen, 1988). We therefore retain the null hypothesis.

**Hypothesis 2b.** Hypothesis 2b stated that schema-feedback training would have an effect on trait extrapolation in an experimental group, when compared to a no-training group. An independent samples t-test determined if there was a difference between the two groups. We found no statistically significant difference in trait extrapolation between the schema-feedback training ( $M = 0.73$ ,  $SE = 0.02$ ) and no-training groups ( $M = 0.76$ ,  $SE = 0.02$ ),  $t_{65} = 1.17$ ,  $p = .25$ . The results indicated a small effect size,  $r = .14$  (Cohen, 1988). We therefore retain the null hypothesis.

**Hypothesis 2c.** Hypothesis 2c stated that schema-feedback training would have an effect on trait contextualisation in an experimental group, when compared to a no-training group. A Mann-Whitney U test tested this hypothesis. No statistically significant difference in trait contextualisation was found between the no-training ( $Mdn = 75.00$ ) and schema-feedback groups ( $Mdn = 77.27$ ),  $U = 560.00$ ,  $z = -0.57$ ,  $p = .57$ . An effect size of  $r = -.07$  was reported. We therefore retain the null hypothesis.

### **Statistical Power**

As in Experiment 1, we employed a benchmark statistic of .80 to indicate high statistical power (Cohen, 1988). The analysis reported low statistical power for all tests conducted. Tables 12 and 13 below contain a summary of all results.

Table 12

*Summary of Results: Trait Induction and Trait Contextualisation*

Hypothesis Tested	<i>Mann-Whitney U</i>				Power
	<i>U</i>	<i>z</i>	<i>p</i>	<i>r</i>	
Hypothesis 2a	607.50	-0.55	.59	-.06	.08
Hypothesis 2c	560.00	-0.57	.57	-.07	.09

Note.  $p < .05^*$

Table 13

*Summary of Results: Trait Extrapolation*

Hypothesis Tested	<i>Independent Samples T-Test</i>				Power
	<i>t</i>	<i>df</i>	<i>p</i>	<i>r</i>	
Hypothesis 2b	1.17	65	.25	.14	.14

Note.  $p < .05^*$

**Hypothesis Testing: Schema-Feedback vs. FOR Training**

We additionally hypothesised that schema-feedback training would be better at developing dispositional reasoning when compared to FOR training across the dispositional reasoning components. We used independent samples t-tests and Mann-Whitney U tests to investigate hypotheses 3a, 3b and 3c. We conducted statistical power analyses on each test, as seen in the summary results in Tables 14 and 15 below.

**Hypothesis 3a.** Hypothesis 3a stated that schema-feedback training would be better than FOR training at developing trait induction scores. A Mann-Whitney U test found no statistically significant difference in trait induction between the FOR ( $Mdn = 80.00$ ) and schema-feedback groups ( $Mdn = 80.00$ ),  $U = 290.00$ ,  $z = -0.33$ ,  $p = .74$ . An effect size of  $r = -.04$  was reported. We therefore retain the null hypothesis.

**Hypothesis 3b.** Hypothesis 3b stated that schema-feedback training would be better than FOR training at developing trait extrapolation scores. An independent samples t-test found no statistically significant difference in trait extrapolation between the schema-

feedback training ( $M = 0.73$ ,  $SE = 0.02$ ) and FOR ( $M = 0.79$ ,  $SE = 0.03$ ),  $t_{48} = -1.52$ ,  $p = .14$ . A small effect size of  $r = .21$  was reported. We therefore retain the null hypothesis.

**Hypothesis 3c.** Hypothesis 3c stated that schema-feedback training would be better than FOR training at developing trait contextualisation scores. A Mann-Whitney U test found no statistically significant difference in trait contextualisation between the FOR ( $Mdn = 72.73$ ) and schema-feedback groups ( $Mdn = 77.27$ ),  $U = 262.00$ ,  $z = -0.08$ ,  $p = .93$ . An effect size of  $r = -.01$  was reported. We therefore retain the null hypothesis.

Table 14

*Summary of Results: Trait Extrapolation*

Hypothesis Tested	<i>Independent Samples T-Test</i>				Power
	<i>t</i>	<i>df</i>	<i>p</i>	<i>r</i>	
Hypothesis 3b	-1.52	48	.14	.21	0.17

*Note.*  $p < .05^*$

Table 15

*Summary of Results: Trait Induction and Trait Contextualisation*

Hypothesis Tested	<i>Mann-Whitney U</i>				Power
	<i>U</i>	<i>z</i>	<i>p</i>	<i>r</i>	
Hypothesis 3a	290.00	-0.33	.74	-.04	0.07
Hypothesis 3c	262.00	-0.08	.93	-.01	0.05

*Note.*  $p < .05^*$

### **Discussion: Study 2**

The above results indicate that the newly developed schema-feedback training protocol was unsuccessful in developing dispositional reasoning at a componential level in three sample groups, when compared to a no-training group. Additionally, when comparing the results of the two studies carried out, we found that schema-feedback training was no



better than FOR training in developing dispositional reasoning. This study's results may indicate that training methods to improve dispositional reasoning may not be effective.

## **General Discussion**

### **Main Findings**

Interviewers use dispositional reasoning, the knowledge of personality, behaviours and situations (De Kock et al., in press), when judging job candidates. We aimed to determine whether dispositional reasoning could be developed using training tasks that targeted the individual's existing dispositional reasoning schemas. We used the popular frame-of-reference (FOR) training technique, as well as a newly developed schema-feedback training method to test our hypotheses.

We first hypothesised that FOR training would be beneficial in developing dispositional reasoning when accounting for all three subcomponents of the construct. We further hypothesised that dispositional reasoning could also be refined using a newly developed schema-feedback training method that targeted the three subcomponents that make up the dispositional reasoning construct. Additionally, we hypothesised that the schema-feedback method would be more effective at enhancing dispositional reasoning over the established FOR training technique.

Overall, we found that both types of training initiatives aimed at improving individuals' dispositional reasoning had no statistical effect in a sample of university students. FOR training had no effect on dispositional reasoning ability, for all three subcomponents. Schema-feedback training administered in this study similarly had no effect on participants' levels of dispositional reasoning ability, in support of similar findings in previous research (Powell, 2007; Powell & Goffin, 2009). As both training tasks were based on the notion of schema refinement, a discussion of schema theory is necessary.

Schema theory (Fiske & Taylor, 2013; Landau et al., 2011) influenced the development of both training protocols used in this study and may underlie the reasons for the failure of both approaches. People use schemas, developed from their experiences, to understand and organise new information (Gorman & Rentsch, 2009). Most people have schemas that they use in daily life to reduce the need for cognitive effort. Person perception processes like dispositional reasoning are contained in such schemas, allowing individuals to make rapid judgements when interacting with others (Fiske & Taylor, 2013). It is possible that most people are likely to be experts in dispositional reasoning because they have

opportunities to refine their schemas in daily life through interactions with others (Gorman & Rentsch, 2009).

FOR training attempts to develop schemas in trainees that will match expert levels (Gorman & Rentsch, 2009). The schema-feedback method of training also aimed at developing expert schemas in participants. It may be that if participants already function at an expert level, the training was redundant. Likewise, it is possible that the training designed for this study was too simplistic in nature to induce schema change in people already functioning at an expert level. Experts are more likely to resist changing their schemas than novices (Crocker, Fiske & Taylor, 1984; Rousseau, 2001). This resistance to change, named cognitive inertia, may come about due to the difficulty of changing schemas once they are sufficiently entrenched (Reger, Gustafson, Demarie & Mullane, 1994). The nature of schemas is to reduce cognitive effort, and if they were easily changeable, this economy of the schema would be lost (Labianca, Gray & Brass, 2000; Larson, 1994).

Indeed, schemas can change, but sudden conversions are not likely (Larson, 1994; Rousseau, 2001). Some schemas are unlikely to be changed or discarded even when individuals are confronted with contradictory evidence (Reger et al., 1994; George & Jones, 2001). Attempts at changing schemas need to be widespread, in that individuals have no choice but to change their schemas to accommodate the new information (George & Jones, 2001; Labianca et al., 2000). When a schema is challenged, but only narrowly, individuals tend to view the challenge as an exception and will not rework their pre-existing schemas to fit it in (George & Jones, 2001; Labianca et al., 2000). Schema change takes cognitive effort, and thus people are not likely to undergo such changes if they are not motivated to (Labianca et al., 2000; Rousseau, 2001).

People are therefore more likely to only take in information that is supportive of their existing beliefs (Rousseau, 2001). Change must therefore be attractive, positive and gradual in order for the person to undergo schema change (Balogun & Johnson, 2004; Rousseau, 2001). Schemas can also change when a reward exists for supporting their revision and accuracy (Rousseau, 2001). It is possible that participants in this study did not see the need to change their dispositional reasoning schemas and as such unconsciously dismissed the opportunity to do so as unnecessary or unhelpful. Additionally, people are less likely to believe in the necessity of change if the process is non-transparent (Rousseau 2001). The true intention of this study was perhaps not communicated effectively and as such, participants may not have seen the need to change their already-existing schemas.

When schemas change, they can also become incorrect. Incorrect schemas result in errors of judgement whereby people alter reality to fit their schemas (Labianca et al., 2000; Rousseau, 2001). Incongruent information is absorbed into a pre-existing schema, without fundamentally changing the overall belief (Larson, 1994). To compound this, it is difficult to disconfirm a schema once applied incorrectly (Crocker et al., 1984; Rousseau, 2001). In some instances in this study, participants possessed inaccurate schemas regarding trait induction, extrapolation and contextualisation. It may then be that already-poor schemas were refined or supported using information learnt in the training exercises. The need for retrospection on the rationale behind FOR and schema-feedback training is therefore apparent.

Based on the results of the present study and previous attempts at training dispositional reasoning by means of FOR training, the use of the FOR method in some cases should be scrutinised. The results of the present study seem to suggest that FOR training is not suited to developing dispositional reasoning, although FOR training is successful in a number of other approaches. Although every effort was made to ensure that the FOR training used in this study followed best practice (Roch et al., 2012), we did expect this no-result, as also found in previous research (Powell 2007; Powell & Goffin, 2009). In order to address the inadequacies of FOR training in the present study, we designed and implemented schema-feedback training in the hope of finding positive results.

We developed schema-feedback training to address the already-established limitations of employing the FOR training method in training raters in dispositional reasoning. Based on our understanding of dispositional reasoning, we developed methods that attempted to refine participants' pre-existing schemas through a process of feedback training. However, we found the new training method to be as unsuccessful as current practices.

The shortcomings of this new method may be attributable to the incorrect application of the learning process. As the training task developed for this study was in some regards a simple categorisation exercise, it may be that participants were consciously aware of the nature of the learning process. Categorisation tasks that rely on unconscious procedural memory, such as the one created for schema-feedback training in this study, should be complex enough to ensure that participants do not rely on their conscious logical reasoning processes (Ashby & O'Brien, 2005). Because the training task items and items on the RIJI post-test were similar in both form and content, participants may have noticed patterns in answering and simply applied these when necessary. Due to limited resources, it was not possible to create a more sophisticated procedure.

We assumed that as people generally practice dispositional reasoning unconsciously during everyday interactions with others, a single supplementary practice session would be sufficient to encourage new dispositional reasoning abilities among the research participants. However, it may have been necessary to conduct extra training sessions to fully develop dispositional reasoning in participants. Computer-based training, although efficient, may not be an ideal way in which to train dispositional reasoning. A more true-to-life way of providing feedback during training sessions would perhaps have been more believable and thus beneficial.

The schema-feedback training method relied largely on regular feedback to differentiate itself from other methods. Feedback ensured that participants received an instant reaction to their answers in the training session, mimicking real-life instances in which dispositional reasoning is necessary. It may be that this feedback was insufficient, as the written vignettes presented may not have been believable, resulting in its dismissal by the participants. Additionally, an issue with frequent feedback as used in this study is that participants begin to understand the feedback as part of the task. When performing the post-test, participants did not receive feedback on their answers, which would disrupt the retention of information learnt during training (Schmidt & Bjork, 1992).

It may be that dispositional reasoning simply cannot be taught or learnt. Dispositional reasoning classifies as an intelligence, but it is uncertain whether the construct falls under the fluid or crystallised variety (De Kock et al., in press). Fluid intelligence relates to innate ability that is unchanged throughout an individual's lifetime, while crystallised intelligence refers to the results of an individual's life experiences on their intellectual capabilities (Cattell, 1963). It is possible that dispositional reasoning is a type of fluid intelligence, in that individuals innately differ in their dispositional reasoning ability. Any efforts at training individuals in dispositional reasoning would therefore be meaningless. Further research should investigate whether dispositional reasoning is indeed an untrainable, inherent ability.

### **Limitations**

There were a number of limitations in this study. In both experimental designs, participants were required to concentrate for a relatively long period. A small number of participants left the sessions early, in some cases not finishing the training or post-test. The length of the schema-feedback training task may have discouraged participants, especially if they were required to repeat items they had answered incorrectly. Fatigue and lack of

motivation to complete the training may therefore have influenced the results (Cozby, 2007). Future research should shorten the time needed for the training.

We employed a cross-sectional design due to limited available time. A time-series design may be beneficial in future replications of this study, to determine whether training may influence dispositional reasoning ability over time. The short amount of time devoted to training participants in dispositional reasoning may not have been enough to increase ability in such a complex cognitive process, and it may be necessary to hold additional training sessions in the future.

We made use of a convenience sample of university students in this study, which is not easily generalizable to a broader population. To control for this limitation, we recruited students from within the School of Management Studies, who would more likely have an interest in the subject of interviewer accuracy. The low sample size of the experimental groups may have also affected the results of this study, in particular the statistical power (Cohen, 1988). The differing group sizes between conditions may have also affected the true comparability of the groups. Future research would benefit from using a larger sample of real-life interviewers to increase the external validity and generalisability of the study.

The results of this study raised the possible limitation of low-fidelity training in dispositional reasoning. Both the FOR and schema-feedback training methods relied on the use of written vignettes of behaviour that may not have been realistic enough to ensure full engagement from participants. Future attempts at training dispositional reasoning could attempt high-fidelity simulations, which would be more akin to the natural process of dispositional reasoning.

### **Future Directions for Research**

Future research that makes use of the schema-feedback training design should address the limitations associated with this study by reducing the amount of time needed for training. For example, future studies may benefit from multiple training sessions that are shorter in length, in order to simultaneously control for fatigue while extending learning over time. Both this and past attempts at developing dispositional reasoning have relied on student samples. It may be more beneficial for future studies to take place in the organisational setting, to enhance generalisability.

It may also be that the design of the training did not fully incorporate the methods required to develop dispositional reasoning. Future research should focus on the way in which the dispositional reasoning schema is made automatic, best described by the theory of

automaticity. The automaticity theory of learning describes the process of how people learn to carry out tasks without specifically focussing on them (Bargh, 1994). According to automaticity theory, people automatically and instinctively use their memories of completing tasks in the past when carrying out tasks in the present (Palmeri, 1999). Automatically drawing on schemas to complete tasks is necessary in order to reduce the cognitive load on an individual (Van Merriënboer & Sweller, 2005). Although traditionally used to explain unconscious motor processes such as driving a vehicle or tying one's shoelaces, automaticity theory can also be used to understand the process of dispositional reasoning and person judgement.

People who have expertise in a domain are more likely to make rapid, accurate judgements (Fiske & Taylor, 2013). In situations that an expert rater recognises, they will rapidly retrieve a schema that provides a solution (Evans, 2008). Klein (1993) defines this rapid process as 'recognition-primed' decision-making. Once the lower-level activities of a particular skill become automatic, better higher-order cognition can take place (Bargh & Chartrand, 1999). Although some explicit reasoning does take place when making social judgements, the automatic retrieval of schemas is the most important process (Evans, 2008). Behaviour becomes automatic through the use of schemas, much the same as learning to read (Van Merriënboer & Sweller, 2005). The automaticity theory of learning explains how dispositional reasoning comes to be an instinctive process in people. Future research may do well to attempt to refine existing dispositional reasoning schemas through an understanding of the process of automaticity.

A way to incorporate the theory of automaticity in future dispositional reasoning research may be to design a serial reaction time (SRT) task, which is used to measure procedural learning (Ashby & O'Brien, 2005; Knopman & Nissen, 1991). SRT tasks are usually administered by computer. The computer presents stimuli in a rapid fashion to the participant, who then is required to repeat the sequence in which the stimuli appeared. Stimuli are presented in repeating patterns in a number of rounds, before being completely randomised. The participant is then asked if they had noticed the recurring pattern of stimuli in the previous rounds. They are then required to attempt to complete the pattern of stimuli from memory (Knopman & Nissen, 1991). SRT tasks differ from the tasks used in schema-feedback training in this study as they rely on procedural memory to enhance adoption of a common frame-of-reference. This is useful in determining the accuracy of the automatic learning process, and may be a more applicable method of schema-feedback

training than the method employed in this study, to overcome the limitations associated with giving feedback.

This study seems to support the assertion made in previous research (Powell, 2007; Powell & Goffin, 2009) that FOR training methods may not be useful in training raters in dispositional reasoning. However, this assertion may be premature. As FOR training is successful in a number of related applications, the method may simply need to be better adapted to training dispositional reasoning. For example, the time taken to train and the number of instances of training may need to be increased in the future.

### **Implications for Practice**

Although the results of this study are inconclusive due to factors such as a small sample size and the use of student participants, there are some points raised that may have implications for managerial practice. It is evident that current methods in training interviewers or other such raters in organisations rely on FOR training or similar methods. However, this study seems to be consistent with evidence that suggests that dispositional reasoning cannot be developed through FOR training methods. Practitioners should therefore exercise caution when using FOR training in interviewer training for dispositional reasoning.

Schema-feedback training, designed specifically for this study, was also unsuccessful in developing dispositional reasoning. It may be that regular dispositional reasoning training should take place in organisations, as opposed to once-off training sessions. However, managers should exercise restraint when attempting to train interviewers in dispositional reasoning until future research is able to determine the best possible way to do so.

This study adds to growing evidence that dispositional reasoning cannot be taught, and that good raters are born, not made. It may be that workshops to increase dispositional reasoning are unnecessary, and that to maximise accurate ratings, organisations should rather screen interviewers and other raters for dispositional reasoning.

### **Conclusion**

Dispositional reasoning remains an important construct to study in the field of management science, due to its link with interviewer accuracy (Christiansen et al., 2005). Training individuals to be better at dispositional reasoning may have implications for the reliability of selection practices, especially in relation to job interviews. The results of this study indicate that conventional methods of training interviewers, when applied to dispositional reasoning, may not be sufficient. Additionally, the newly developed schema-

feedback training method was also unsuccessful in developing dispositional reasoning in the sample used in this study.

The limitations associated with this study may have affected the results obtained, but further research is necessary to determine if dispositional reasoning can indeed be developed. Perhaps what has been most evident in discussing the results of this study is how little is known about how schemas actually develop, especially schemas of personality. Future research should devise novel methods to determine the most appropriate way in which to target and refine dispositional reasoning schemas in individuals. Determining the best method to develop dispositional reasoning has clear relevance for the fields of industrial-organisational psychology and human resource management, due to the construct's link with accuracy. Our results may suggest that dispositional reasoning is an intelligence, but further research is needed to test this idea.



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## Appendix A

## Frame-of-Reference Training Lecture Slides

**Trait Induction Training****Personality in Personnel Selection**

Please listen to all instructions carefully.



1

**Your Rights**

- Participation is voluntary. You may leave the venue now, if you do not wish to take part.
- Your responses are confidential and anonymous.
- Results are used only for research purposes by the university.
- Please complete the demographic information, used for research reasons only.
- Contact the researcher with questions at [hlljoh018@myuct.ac.za](mailto:hlljoh018@myuct.ac.za)

2

**R250 Cash Participation Prize**

- Please sign the consent form in front of you if you wish to take part in the research
- You may use your student number or choose an anonymous identifier code on the form in front of you.
- For example, you may choose to identify yourself as "pizza\_lover".
- The email address associated with your student number will be used to contact you should you win the lucky draw for the R250 cash prize

3

**Today's Session**

- We will be learning about personality and how it can affect the job interview
- We will complete a task where you will be asked to rate a number of people on their personality during an interview situation
- You will be asked to share these ratings afterwards
- We will then complete a short assessment

4

**Agenda**

1. Brief lecture (10 minutes)
2. Fun Task (5 minutes)
3. Group discussion (5 minutes)
4. Feedback (5 minutes)
5. Questionnaire (15 minutes)

5

**Personality**

- If you were asked to describe yourself, what adjectives would you use?
- What makes you different from the person sitting next to you?

The answer:

**PERSONALITY**

6



### Personality and The Job Interview

- Job interviews are widely used in the recruitment of employees
- This process is susceptible to issues of reliability and validity
- Specifically with regards to the role of the interviewer in the process.
- Some interviewers may be more accurate than others at picking the right person for the job
- Interviewers who are more accurate are likely to better understand the link between personality and behaviour

### Personality Traits

- Personality traits are patterns of thought, emotion, and behaviour that are relatively consistent over time and across situations (Funder, 2012, p. 177).
- They can be described with familiar adjectives such as reliable, sociable, or creative, as well as narcissistic, authoritarian, or conscientious
- We all identify personality by observing peoples' behaviour and then interpreting it

## the Big Five

extraverted-----introverted  
 open to new experiences-----closed-minded  
 conscientious-----disorganized  
 agreeable-----disagreeable  
 neuroticism-----emotional stability

### (1) OPENNESS

- Characterized by sophistication, creativity, intelligence, curiosity.
- Such people are also deep, perceptive, intellectual, imaginative.
- People low in this trait will be: unsophisticated, unintelligent, unimaginative, ignorant, shallow, imperceptive.

### (2) CONSCIENTIOUSNESS

- People high in this are careful and painstaking.
- Other traits include being reliable, thorough and organised, dependable.
- Generally, a person who is organised is cautious.
- One who is economical is also practical.
- People low in this trait will be: unreliable, careless, disorganised, rash, impractical

### (3) EXTRAVERSION

- Being sociable and talkative; spontaneous and active.
- Also energetic, enthusiastic, adventurous
- People who display low levels of extraversion would be reserved, quiet, inhibited, passive, lethargic, apathetic and unadventurous.

#### (4) AGREEABLENESS

- Being able to 'put yourself in someone else's shoes'
- Sympathetic, polite, kind, generous.
- An agreeable person would generally be considerate and selfless.
- People with low levels of agreeableness: quarrelsome, rude, stingy, stubborn, cold, inconsiderate and selfish.

#### (5) EMOTIONAL STABILITY

- Emotional stability – characterised by a sense of peace, composure, objectivity.
- Other traits: placid, relaxed, undemanding, independent, unperturbed
- People low in emotional stability will be: volatile, subjective, fretful, nervous, suggestible, high-strung

## the Big Five

extraverted-----introverted  
 open to new experiences-----closed-minded  
 conscientious-----disorganized  
 agreeable-----disagreeable  
 neuroticism-----emotional stability

#### Task – Instructions

- The sheet of paper in front of you contains a task called "Personality Practice"
- You will be presented with questions that are relevant to the workplace setting
- Based on what we have learnt about personality, **choose the best possible answer**

#### Task Example

Question:	We've all had times when the pressure at work or school is extremely high. Tell me about a time when you had several competing deadlines on important projects that you needed to complete successfully.					
Answer:	I find when I'm busy, as long as I stick to my schedule, I can handle any problems that arise. If I know I've blocked off a certain number of hours to study for an exam then I stay calm and don't worry about anything else. I just really concentrate on that topic during the hours I've set aside. I found that as long as I planned my time and stuck with my plan it's very manageable.					
Emotional Stability		Conscientiousness		Extraversion		
High	Low	High	Low	High	Low	

#### Task – Personality Practice

- You will now have 5 minutes to complete the task.
- Please read all questions thoroughly and answer as best as you can
- If you have any questions, please raise your hand

### Discussion

Discuss with the person next to you:

- Did you get the same answers?
- How did you get to your answers?
- What stood out in each example that pointed to a certain trait?
- *You have 5 minutes to discuss*

28

### Feedback - Answers

- Question 1 - Conscientiousness
- Question 2 - Emotional Stability
- Question 3 - Extraversion
- Question 4 - Conscientiousness
- Question 5 - Extraversion

29

### Assessment

On your computers, open the browser.

Navigate to this address:

[bit.do/UCT1](https://bit.do/UCT1)

- Please do not start the assessment until asked to do so

30

### Thank You

- Thank you for your time.
- Please hand in your papers at the front before you leave
- If you have left your details for the lucky draw, the winner will be announced via email within the next week.

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## Trait Extrapolation Training

### Understanding the Link between Personality and Behaviour

Please listen to all instructions  
carefully.



3

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The answer:

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- They can be described with familiar adjectives such as reliable, sociable, or creative, as well as narcissistic, authoritarian, or conscientious
- We all identify personality by observing peoples' behaviour and then interpreting it

8

### Traits & Behaviours

- Most people know when a trait and a behaviour are linked
- For example, if someone is honest, they will most likely be reliable
- If an interviewer finds that an interviewee is daring, they will most likely be assertive, as well.
- It is important for an interviewer to know about these links to get the most well-rounded view of an applicant

9

### Examples of Traits that are Linked

Talkative →	Bold
Hardworking →	Methodical
Creative →	Emotional
Distant/Cold →	Awkward
Unemotional →	Relaxed and quiet
Daring →	Assertive
Co-operative →	Helpful
Intellectual →	Thorough
Neat →	Intelligent
Nervous →	Clones

### Examples of Traits that are Linked

Punctual →	Trustworthy
Energetic →	Imaginative
Secretive →	Selfish
Compassionate →	Agreeable
Relaxed →	Quiet
Jealous →	Unsympathetic
Hostile →	Irritable
Philanthropic →	Dependable
Organised →	Efficient
Spontaneous →	Curious

10

### Task – Instructions

- The sheet of paper in front of you contains a task called "Personality Practice"
- You will be presented with questions that are relevant to the workplace setting
- Based on what we have learnt about personality, choose the best possible answer

11

### Task Example

1. Sindi showed up for the interview on time, with her documents neatly packed. She is *most* likely to be:
- a) Productive and meet deadlines
  - b) The first to spread office gossip
  - c) Anxious under pressure

16

### Task – Personality Practice

- You will now have 5 minutes to complete the task.
- Please read all questions thoroughly and answer as best as you can
- If you have any questions, please raise your hand

17

### Discussion

Discuss with the person next to you:

- Did you get the same answers?
- How did you get to your answers?
- What stood out in each example that pointed to a certain trait?
- *You have 5 minutes to discuss*

18

### Feedback - Answers

1.B	5.A	9.A
2.A	6.A	10.A
3.C	7.B	11.B
4.B	8.B	12.C

19

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On your computers, open the browser.

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[bit.do/UCT2](https://bit.do/UCT2)

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20

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21

## Trait Contextualisation Training

### Understanding the Link between Personality and Situations

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- Please sign the consent form in front of you if you wish to take part in the research
- You may use your student number or choose an anonymous identifier code on the form in front of you.
- For example, you may choose to identify yourself as "pizza\_lover".
- The email address associated with your student number will be used to contact you should you win the lucky draw for the R250 cash prize

3

### Today's Session

- We will be learning about personality and how it can affect the job interview
- We will complete a task where you will be asked to rate a number of people on their personality during an interview situation
- You will be asked to share these ratings afterwards
- We will then complete a short assessment

4

### Agenda

1. Brief lecture (10 minutes)
2. Fun task (5 minutes)
3. Group discussion (5 minutes)
4. Feedback (2 minutes)
5. Questionnaire (15 minutes)

5

### Personality

- If you were asked to describe yourself, what adjectives would you use?
- What makes you different from the person sitting next to you?

The answer:

**PERSONALITY**

6

### Personality and The Job Interview

- Job interviews are widely used in the recruitment of employees
- This process is susceptible to issues of reliability and validity
- Specifically with regards to the role of the interviewer in the process.
- Some interviewers may be more accurate than others at picking the right person for the job
- Interviewers who are more accurate are likely to better understand the link between personality and situations

### Personality Traits

- Personality traits are patterns of thought, emotion, and behaviour that are relatively consistent over time and across situations (Funder, 2012, p. 177).
- They can be described with familiar adjectives such as reliable, sociable, or creative, as well as narcissistic, authoritarian, or conscientious

## the Big Five

extraverted ----- introverted  
 open to new experiences ----- closed-minded  
 conscientious ----- disorganized  
 agreeable ----- disagreeable  
 neuroticism ----- emotional stability

### (1) OPENNESS

- Characterized by sophistication, creativity, intelligence, curiosity.
- Such people are also deep, perceptive, intellectual, imaginative.
- People low in this trait will be: unsophisticated, unintelligent, unimaginative, ignorant, shallow, imperceptive.
- **Will show up in:** situations where there is a need for one to come up with strategies, give suggestions, do some research, or work with problem to bring solutions.

### (2) CONSCIENTIOUSNESS

- People high in this are careful and painstaking.
- Other traits include being reliable, thorough and organised, dependable.
- Generally, a person who is organised is cautious.
- One who is economical is also practical.
- People low in this trait will be: unreliable, careless, disorganised, rash, impractical
- **Will show up in:** situations of chaos or uncertainty.

### (3) EXTRAVERSION

- Being sociable and talkative; spontaneous and active.
- Also energetic, enthusiastic, adventurous
- People who display low levels of extraversion would be reserved, quiet, inhibited, passive, lethargic, apathetic and unadventurous.
- **Will show up in:** social settings where there is a need to interact with other people.



#### (4) AGREEABLENESS

- Being able to 'put yourself in someone else's shoes'
- Sympathetic, polite, kind, generous.
- An agreeable person would generally be considerate and selfless.
- People with low levels of agreeableness: quarrelsome, rude, stingy, stubborn, cold, inconsiderate and selfish.
- **Will show up in:** situations where a compromise is necessary, situations where conflict arises, etc.

#### (5) EMOTIONAL STABILITY

- Emotional stability – characterised by a sense of peace, composure, objectivity.
- Other traits: placid, relaxed, undemanding, independent, unperturbed
- People low in emotional stability will be: volatile, subjective, fretful, nervous, suggestible, high-strung
- **Will show up in:** a stressful situation; where wellbeing is compromised. In tragic circumstances e.g. death, loss, grief.

## the Big Five

extraverted-----introverted  
 open to new experiences-----closed-minded  
 conscientious-----disorganized  
 agreeable-----disagreeable  
 neuroticism-----emotional stability

#### Examples of Links

Situation	Behaviour
Asking questions in class	Being extroverted/talkative
A job needs to be done	Concentrating/ Working Hard
Anxiety-inducing situation	Insecurities expressed
Enjoyable situation	Laughter
Being blamed for something	Self-pity / victimisation
Competitive situation	Agreement
Others around need reassurance	You express sympathy and warmth
People disagreeing about something	They speak sarcastically to each other
Physical threat	Fearful and timid behaviour

#### Task - Instructions

- The sheet of paper in front of you contains a task called "Personality Practice"
- You will be presented with questions that are relevant to the workplace setting
- Based on what we have learnt about personality, choose the **best possible** answer

#### Task Example

Question:	Tell me about a stressful period in your work life.
Answer:	I'm an architect. A client was pressuring our company to deliver a design within a week, and the project was very complicated and intricate. I had a lot of other things going on in my personal life at the time but I knew I had to get this work done in time. If I didn't, my company would lose the client. I knew I could get the work done, so I tried my best to complete it.
This interviewee is most likely to also:	
Work hard	Laugh frequently
	Be relaxed

### Task – Personality Practice

- You will now have 5 minutes to complete the task.
- Please read all questions thoroughly and answer as best as you can
- If you have any questions, please raise your hand

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### Discussion

Discuss with the person next to you:

- Did you get the same answers?
- How did you get to your answers?
- What stood out in each example that pointed to a certain trait?
- *You have 5 minutes to discuss*

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### Feedback - Answers

1. Be cooperative
2. Speak fluently
3. Be enthusiastic
4. Speak in a loud voice
5. Work systematically
6. Express insecurity
7. Be competitive
8. Be interested in abstract thought

21

### Assessment

On your computers, open the browser.  
Navigate to this address:

[bit.do/UCT3](http://bit.do/UCT3)

- Please do not start the assessment until asked to do so

22

### Thank You

- Thank you for your time.
- Please hand in your papers at the front before you leave
- If you have left your details for the lucky draw, the winner will be announced via email within the next week.

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## Appendix B

## Frame-of-Reference Training Tasks

**Trait Induction Training Task**

**Personality and the Job Interview**  
**Research Project – Section of Organisational Psychology**

Research Ethics

Your student number will only be used for research purposes, and to contact you if you win the lucky prize. You may choose to not disclose your student number, and rather choose an anonymous identifier code. For example, you could choose to call yourself "PizzaLover".

Please use this code throughout the session when asked.

This study has been approved by the Commerce Faculty's Research in Ethics Committee. Your participation is voluntary and your responses will be anonymous. You can choose to withdraw from the research at any stage.

If you have any questions, please feel free to contact the researcher, Jonathan Hall at [hlljoh018@myuct.ac.za](mailto:hlljoh018@myuct.ac.za)

**I hereby give consent for my data to be used for research purposes:**

Signature: \_\_\_\_\_ Date: \_\_\_\_\_

**Anonymous Identifier Code / Student Number:**

***PLEASE ONLY TURN OVER WHEN ASKED  
TO DO SO***

## PERSONALITY PRACTICE

### Instructions

- You will be presented with questions that an interviewer is asking a person applying for a job
- Each answer deals with a different person's response
- Based on what we have learnt about personality, assign the person to **ONE category** that best describes them

• Eg

Emotional Stability	
High	Low

Study the

*five personality traits for a moment, and then answer the questions that follow as best as you can.*

#### **Emotional Stability**

Those low in emotional stability tend to be anxious, hostile, self-conscious, and sad. Those high in emotional stability tend to be calm, even-tempered, and capable of handling themselves in stressful situations.

#### **Extraversion**

This trait deals primarily with sociability and assertiveness. Those high in extraversion like people, are active, and warm. Those low in extraversion are reserved, independent, and have a low need for thrills.

#### **Openness**

This trait deals primarily with openness to new experiences. Those high on openness are curious, imaginative, and have a deep appreciation for art and beauty. Those low in openness find change difficult and prefer to stick with the tried and true.

#### **Agreeableness**

Those high in agreeableness are extremely altruistic and humble. In addition, they believe that others are trustworthy. Those low in agreeableness tend to be sceptical and are reluctant to get involved with the problems of others.

#### **Conscientiousness**

Those high in conscientiousness are strong-willed and determined. They are also well-organized and have high aspiration levels. Those low in conscientiousness tend to procrastinate, may be unreliable, and are not very methodical.

**Question 1**

Question:	There are always times when things are so busy that you have to keep running all the time, and other times when there is little to do. Tell me about the slowest period in your recent work experience, or a slow period at school.					
Answer:	I work for a professor, and I have to manage my own time, because she's not always looking over my shoulder. At the end of the year when my job is wrapping up there isn't as much to do. What I like to do then is go over everything I've done so far and double-check all my work. I will also take these times to meet with the professor to check if there is anything else she'd like me to do. There are also periods during the school year when I don't have any tests or assignment due, so what I do then is to spend time getting ahead on my readings.					
Emotional Stability		Conscientiousness		Extraversion		
High	Low	High	Low	High	Low	

**Question 2**

Question:	Changes in life can be very stressful. Tell me about a time when your job responsibilities suddenly changed a great deal.					
Answer:	When I started a new job at an accounting office there was an adjustment period when I had to take in a lot of new information. When I'm starting a new position it's more stressful than when I've been doing it for a year or so. At this job there were a lot of demands, coming in early and opening the office, getting things ready – there was a lot to remember. When you're just starting you maybe feel like you're forgetting something. If things got too stressful maybe I would just take a break and go get a coffee.					
Emotional Stability		Conscientiousness		Extraversion		
High	Low	High	Low	High	Low	

**Question 3**

Question:	We all experience some unpleasant times with our peers. Tell me about the most trying time you have had with a co-worker or classmate.					
Answer:	I was working at a law firm and there was a woman who sat behind me and we both worked for different lawyers. My lawyer had specific file cabinets and this woman would always put things in my lawyer's file cabinets, and take the liberty of taking things out. So my lawyer would go to look for things and they would be gone and I would be blamed because I was the one responsible for these file cabinets. I found out that this woman thought they were her file cabinets. I was really uncomfortable because I don't like to be stuck in the middle of a problem. So instead of going to her I went to my lawyer and explained that she was using his filing cabinets. He told me I'd have to talk to her about it, which was really uncomfortable, because as soon as I did, I					

	wasn't taken seriously because I had just started that position about a month earlier, and she had more seniority over me.				
Emotional Stability		Conscientiousness		Extraversion	
High	Low	High	Low	High	Low

**Question 4**

Question:	We have all had job tasks that were not that enjoyable. Describe a time when you were required to perform a job task that you really disliked. What, if anything, did you do about it?				
Answer:	At work as a cashier we were supposed to sort, count, and wrap coins throughout the day, so that our cash registers didn't get too full by the end of the day. I didn't like doing that. If my manager was around I would do it, if she was right behind me. But if she wasn't, I just wouldn't do it. I procrastinated until either my manager was around and reminded me, or until the very end of my shift. It was a boring task, so I just needed a push to get started.				
Emotional Stability		Conscientiousness		Extraversion	
High	Low	High	Low	High	Low

**Question 5**

Question:	Tell me about a specific time when you have helped to settle a disagreement between two fellow workers.				
Answer:	I worked at a clothing store, and it was quite competitive because sales people were paid on commission. Sometimes there would be a couple of people who would feel that a customer was theirs, maybe because they had known them prior to coming into the store. Sometimes I would have to deal with two people who weren't happy with each other because somebody stole their sale, but that person maybe didn't feel that they did. Someone came to me once and complained about another person. I'm not one to hold back my opinions, and I told them that I thought that anybody who walked into the store was a potential customer for anyone who worked in the store. I could usually convince the person to change their point of view, or at least understand the other person's point of view.				
Emotional Stability		Conscientiousness		Extraversion	
High	Low	High	Low	High	Low

### Trait Extrapolation Training Task

#### PERSONALITY PRACTICE

The table below shows personality traits that are related. Each trait in column A is related to the corresponding trait in column B. Study it and then answer questions that follow.

COLUMN A	COLUMN B
Hard-working	Methodical
Daring	Assertive
Distant/cold	Unkind
Ignorant	Shallow
Quiet	Passive
Efficient	Productive
Anxious	Unstable

**Read the questions carefully and choose the most correct answer. Only circle one option**

- When the interviewer asked about his hobbies, Keenan mentioned sports car racing, sky-diving and extreme sports. He is **most** likely to be
  - Quiet and reserved in most situations
  - Daring and spontaneous
  - Sympathetic
- Dealing with work stress is tough- some people break down under pressure. Such people are also **most** likely to:
  - Anxious
  - Engage in philosophical discussions
  - Be talkative
- After her job interview, Daisy decided to walk around the firm and chat to her potential colleagues. She is **least** likely to be:
  - Sociable
  - Come up with bold ideas
  - Sit back and listen while others talk

4. When people call in sick to work, she is usually the one to send them flowers and 'get-well-soon' cards. She is **most** likely to:

- a) Enjoy philosophical discussions
- b) Be kind and warm
- c) Disagree with suggestions from others

5. He does **not** enjoy working in teams. He is **least** likely to be:

- a) Cooperative
- b) Inconsiderate
- c) Daring

6. In a job advert for a heart surgeon, one of the requirements listed is to be a person who pays attention to detail. Such people are **least** likely to be:

- a) Sloppy, rash and disorganised
- b) Perceptive and intellectual
- c) Outgoing and friendly

7. The boss always encourages and is receptive to new ideas. She is **most** likely to:

- a) Have mood swings
- b) Be supportive
- c) Dominate conversations as she likes talking

8. In university, Sibusiso was a top student, the head tutor and still managed to maintain a part-time job. His potential employer is impressed by his organisation skills. Sibusiso is **most likely** to be:

- a) Easily irritated
- b) Thorough and efficient in assigned tasks
- c) Put others first before himself

9. In his undergrad, he was already interested in highly intellectual PhD-level debates. He is most **likely** to:

- a) Be curious and imaginative
- b) Respond in a rude manner when asked questions
- c) Be nervous



10. Liz was tense and panicking throughout the whole selection process. She is **most** likely to:

- a) Be easily worked up and emotional
- b) Be Innovative
- c) Be daring and adventurous

11. He is curious about different cultures. He is also likely to:

- a) Be demanding of others
- b) Enjoy engaging in deep conversations
- c) Be impractical when making decisions

12. Sam is efficient. He is also

- a) Rude
- b) Volatile
- c) Punctual

## Trait Contextualisation Training Task

### PERSONALITY PRACTICE

- You will be presented with questions that an interviewer is asking a person applying for a job
- Each answer deals with a different person's response
- Based on what we have learnt about personality, and the person's responses to each question, assign the person to **ONE category** that they will also most likely be.
- Eg 

Emotional Stability
---------------------

#### Question

1

Question:	Tell me about a time when you felt good about something you accomplished.		
Answer:	It was a usual rainy Cape Town winter day, and I drove past an elderly man whose car had broken down on the side of the freeway. It was obvious that he needed help but no-one was stopping for him. So I pulled off in front of him and helped him change his tyre.		
<b>This interviewee is most likely to also:</b>			
Keep to themselves	Be cooperative	Be demanding	

#### Question 2

Question:	Tell me what makes you different.		
Answer:	I think in an unconventional way. I love thinking about new ideas and new ways to solve old problems. Philosophy is one of my passions, and I spend a lot of time thinking about life and how it works.		
<b>This interviewee is most likely to also:</b>			
Speak fluently	Act irritated	Smile frequently	

#### Question 3

Question:	Tell me how you achieve your goals in life.		
Answer:	When I set a goal, I don't rest until I have achieved it. When I know what I want, I go for it, often having to make tough decisions in the process. But I know that those decisions will affect the end goal, and so I make them quickly and decisively.		
<b>This interviewee is most likely to also:</b>			
Be sympathetic	Be enthusiastic	Express guilt	

**Question 4**

Question:	Tell me about something you love.		
Answer:	I love public speaking. After taking a 'Toastmasters' course, I discovered my passion for delivering speeches. I think it's because being the centre of attention excites me, like being on the stage during a performance.		
<b>This interviewee is most likely to also:</b>			
Seek reassurance often	Work hard	Speak in a loud voice	

**Question 5**

Question:	What is important to you in your work?		
Answer:	I'm an attention-to-details type of person. If something is out of place it drives me crazy. I like to know that every piece of work that I complete has been done to my very strict standards.		
<b>This interviewee is most likely to also:</b>			
Be controlling	Work systematically	Keep others at a distance	

**Question 6**

Question:	Tell me about a time when you felt uncomfortable in a situation.		
Answer:	I was working in a restaurant, as a waiter. It was a busy day and I had a lot of tables to serve. I forgot to place an order with the kitchen, and some customers ended up waiting a long time for their food. They complained to my manager, who gave me verbal warning. At the same time, I heard the other waiters gossiping about me behind my back. I'm usually on the ball, so the criticism really got to me that day.		
<b>This interviewee is most likely to also:</b>			
Express hostility	Express insecurity	Give up easily	

**Question 7**

Question:	Tell me about a time when you went above and beyond your expected work duties.		
Answer:	I am an accounting article clerk, and there are a lot of us at my current employer. So we hardly get the chance to stand out from the crowd, if you know what I mean. Recently, the firm put out a notice asking for clerks who were willing to work overtime on one of the CEO's projects. I immediately signed myself up, as I knew getting to know the CEO would stand me in good stead in the long run at the firm.		
<b>This interviewee is most likely to also:</b>			
Be competitive	Be agreeable	Be physically attractive	

**Question 8**

Question:	Tell me about your hobbies.		
Answer:	I have a lot of friends in the creative industry so I spend quite a deal of my time at literature and poetry evenings. I'm an avid reader so I love to hear what my friends have created.		
<b>This interviewee is most likely to also:</b>			
Seek reassurance	Speak loudly	Be interested in abstract thought	

Appendix C  
Ethics Approval

UNIVERSITY OF CAPE TOWN



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**Faculty of Commerce  
Ethics in Research Committee**

Courier: Room 2.21 Leslie Commerce Building Upper Campus University of Cape Town  
Post: University of Cape Town • Private Bag • ~~Rondebosch~~ 7701  
Email: Irwin.brown@uct.ac.za  
Telephone: +27 21 650-2311  
Fax No.: +27 21 689-7570

July 10, 2014

Johnathan Hall  
Management Studies

**Project title:**

**The Role of In-Line Feedback Training on Dispositional Reasoning Components**

Dear Researcher,

This letter serves to confirm that this project as described in your submitted protocol has been approved.

Please note that if you make any substantial change in your research procedure that could affect the experiences of the participants, you must submit a revised protocol to the Committee for approval.

Regards,

*Harold Kincaid*

Professor Harold Kincaid  
Commerce Faculty Ethics in Research Committee

## Appendix D Consent Form



UNIVERSITY OF CAPE TOWN  
**FACULTY OF COMMERCE**  
Igniting Knowledge and Opportunity



---

### PERSON PERCEPTION INVENTORY (PPI)

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This questionnaire is used to determine the way in which you think about people and their behaviours. Your participation in this research is voluntary and you may withdraw at any time. The information you give in this questionnaire will be used for research purposes only. Your identity will not be made known to anyone else but the researcher (Abigail Gotlieb) and will only be used to link your responses on this questionnaire with the way in which you make ratings in the planned assessment center project. Your responses on this questionnaire will not be used for decision-making in any way.

Please indicate your informed consent with the information given above.

- I give consent  
 I do not give consent

## Appendix E

## Sample Revised Interpersonal Judgment Inventory (RIJI) Items

**Trait Induction**

Circle the letter that corresponds most to the trait you think is represented by the word:

	<b>Trait</b>				
<b>Behaviour</b>	Emotional stability	Extraversion	Openness	Agreeableness	Conscientiousness
Sloppy					<u>X</u>
Irritable	<u>X</u>				

**Trait Extrapolation**

**DIRECTIONS:** The following items contain descriptions of people, followed by characteristics that may be associated with them. Select the letter that represents the **BEST** answer.

Marieta is concerned about the well-being of other team members of her work team. She's **LEAST** likely to:

- A. Withdraw from the discussion in the meeting
- B. Pursue a task until it has been meticulously completed
- C. Spend time reflecting in the challenges facing the team
- D. Be unfeeling of and indifferent to the personal problems of her fellow team members

**Trait Contextualisation**

Which of the following situations is most relevant to the trait of *empathy*?

- A. Your manager has suggested that participating in a quality improvement committee would help employees improve their work quality. You overhear some colleagues talking about starting one.
- B. A co-worker has just learned that she is being laid off next week due to cutbacks and is visibly upset about it.
- C. You need to change a light bulb in the ceiling in your living room. The only thing you have to stand on is a wobbly chair that is barely high enough for you to reach the bulb.

## Appendix F

### Biographical Measure



#### Age

#### Gender

- Male
- Female

#### Ethnicity (for descriptive purposes only)

- Asian
- Black
- Coloured
- Indian
- White
- Other
- 
- Prefer not to answer

#### First language

#### Highest educational qualification

- First year undergrad
- Second year undergrad
- Third year undergrad
- Fourth year undergrad
- Honours
- Masters
- PhD
- Other, please specify
- 

If you would like to be entered into a competition for a cash prize, please enter your email address in the space below.

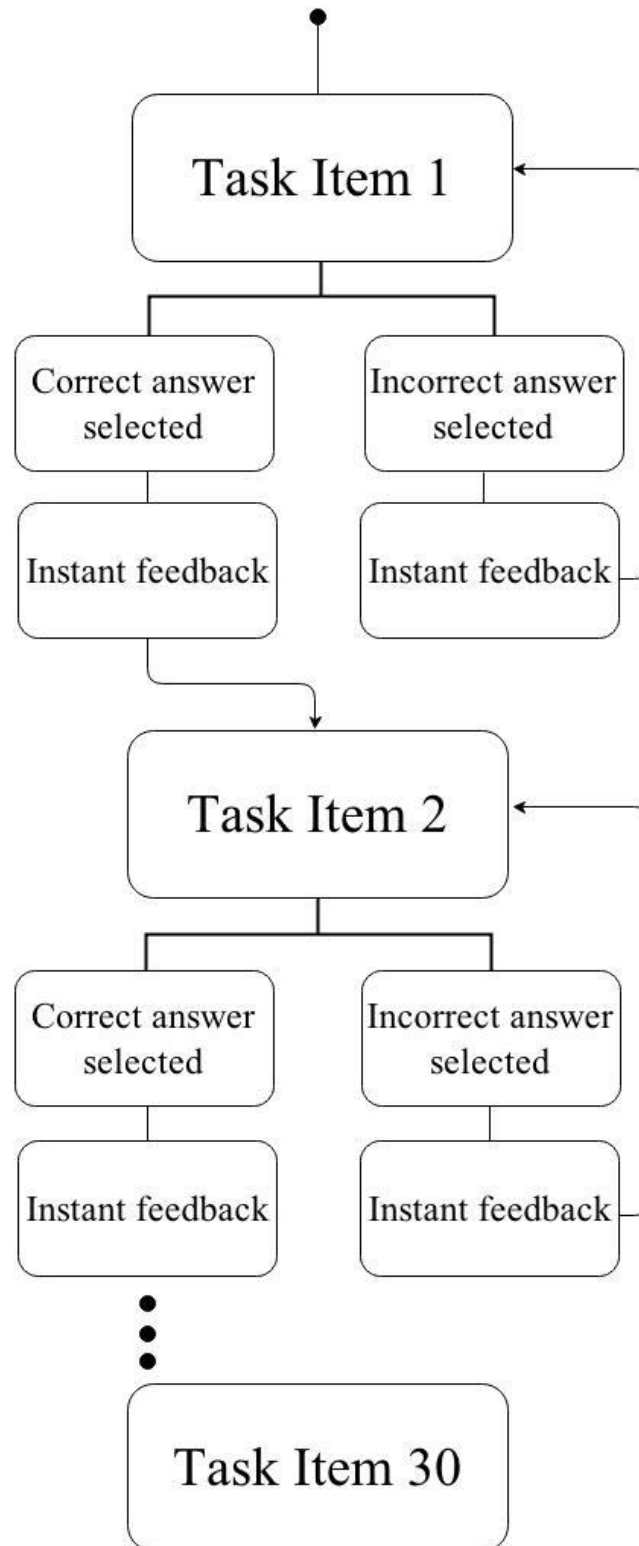
If you would like to receive feedback about the study's results, please enter your email address in the space below.

Please fill in your student number. This will only be used as an identifier across the different surveys.  
If you are not comfortable giving your student number, please enter a unique identifier which you will remember.



## Appendix G

## Schema-Feedback Training Item Appearance Logic



## Appendix H

### Schema-Feedback Training Task Instructions

#### **Mentalist Training**

You are a UCT student and part-time detective. Part of the detective job involves interacting with people and then drawing conclusions on their behaviour. Although most people are good enough at this, you need to be better. You enlist the help of premier 'mentalist' Patrick Jane.

Patrick has enlisted the help of some friends who are scattered around the UCT campus. Your task is to encounter them, and try and read them!

If you get through your training, you will be able to take the Mentalist board exam, and show everyone just how good you are at what you do!

Are you up for the challenge?



## Appendix I

## Schema-Feedback Training Task Examples

**Trait Induction**

You suddenly remember that you need to hand in your Psychology tut! You run to Hahn Building.

You often feel anxious about things... what does this relate to?

- Bold and assertive
- Calm and stable
- Analytical and refined

Luckily, you remember that you handed the tut in well before the due date.

You pride yourself on being organised. This means you are....?

- Conscientious
- An extrovert
- Open to experiences

You see your scary Psychology professor and duck into a corner to avoid him.

If someone doesn't like confrontation, what trait does this mostly relate to?

- Agreeableness
- Emotional stability
- Extraversion

## Trait Extrapolation

*Tsepo thinks you are good, but has one more question about his friend Sarah:*

She will always co-operate with people that she works with and because of this she will also tend to:

- Be helpful in situations
- Be moody
- Be unsympathetic of others' feelings

----- Page Break -----

You walk towards the Jammie stop and run into your Organisational Psychology professor.

He describes himself as an intellectual. Therefore he will also describe himself as:

- Thorough in his work
- Easily wound up and emotional
- Shy in most situations

----- Page Break -----

You leave your professor and jump on the Jammie Shuttle.

The bus driver says that her desk in the office is always neat and tidy. She will also most likely be:

- Sympathetic towards her colleagues
- Considered intelligent
- Distrustful of others

## Trait Contextualisation

You make it to the Psychology Department in time to hand in your tut. You notice you spelled your lecturer's name wrong.

Minor details are important to you, because...?

- You try control the situation
- You work systematically
- You keep others at a distance

Page Break

Here's Claire. She's in a debate with friend Zarah.

They're speaking about their political and lifestyle values. She...?

- Speaks fluently and expresses her ideas well
- Behaves in a fearful or timid manner
- Is talkative

Page Break

Claire has upset Zarah.

Zarah feels that she has been criticised directly and indirectly by Claire.

Zarah most likely...?

- Gives up when faced with obstacles
- Expresses hostility
- Expresses insecurity